Undergraduate Academic Board
Agenda

September 12, 2014
2:00-5:00
ADM 204

I. Roll
( ) Alberta Harder (FS)  ( ) Vacant (CBPP)  ( ) Kevin Keating (LIB)
( ) Utpal Dutta (FS)  ( ) Vacant (COH)  ( ) Rick Adams (KPC)
( ) Francisco Miranda (CAS, Chair)  ( ) Vacant (COH)  ( ) Sheri Denison (Mat-su)
( ) Barbara Harville (CAS)  ( ) Irasema Ortega (COE)  ( ) Jared Griffin (Kod)
( ) Vacant (CAS)  ( ) Carrie King (CTC)  ( ) Christina Stuive (ADV)
( ) Vacant (CAS)  ( ) Jeff Hoffman (SOE)

Ex-Officio Members
( ) Susan Kalina
( ) Lora Volden
( ) Scheduling and Publications

II. Approval of the Agenda (pg. 1-4)

III. Approval of Meeting Summary (pg. 5-9)

IV. Administrative Report
A. Vice Provost for Undergraduate Academic Affairs Susan Kalina
B. University Registrar Lora Volden

V. Chair’s Report
A. UAB Chair- Francisco Miranda
B. GERC

VI. New Business
A. Presentation from HR Director, Ron Kamahele

VII. Program/Course Action Request- Second Readings
Chg ENGL A109 Introduction to Writing in Academic Contexts (3 cr)(3+0)(pg. 10-15)

VIII. Program/Course Action Request- First Readings
Add JUST A432 Crime Analysis and Mapping (3 cr)(3+0)(pg. 16-21)
Add VTCH A121 Small Animal Medicine (3 cr)(3+0)(pg. 22-26)
Add VTCH A122 Veterinary Surgical Nursing (3 cr)(3+0)(pg. 27-31)
Add VTCH A122L Veterinary Surgical Nursing Laboratory (1 cr)(0+3)(pg. 32-36)
Add VTCH A130 Applied Small Animal Behavior I (1 cr)(1+0)(pg. 37-41)
Add VTCH A195 Clinical Externship I (3 cr)(0+9)(pg. 42-46)
Add VTCH A223 Veterinary Microbiology and Parasitology (3 cr)(3+0)(pg. 47-52)
Add VTCH A223L Veterinary Microbiology and Parasitology Laboratory (1 cr)(0+3)(pg. 53-58)
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IX. **Old Business**

X. **Informational Items and Adjournment**
Undergraduate Academic Board
Summary

August 29, 2014
2:00-5:00
ADM 204

I. Roll
(x) Alberta Harder (FS)
(x) Utpal Dutta (FS)
(x) Francisco Miranda (CAS, Chair)
(x) Barbara Harville (CAS)
( ) Vacant (CAS)
(x) Kevin Keating (LIB)
(x) Vacant (CBPP)
( ) Vacant (COH)
(x) Vacant (COH)
(x) Irasema Ortega (COE)
( ) Vacant (COH)
(x) Carrie King (CTC)
(x) Jeff Hoffman (SOE)
(x) Rick Adams (KPC)
(x) Sheri Denison (Mat-su)
(x) Jared Griffin (Kod)
(x) Christina Stuive (ADV)

Ex-Officio Members
(x) Susan Kalina
(x) Lora Volden
(x) Scheduling and Publications

II. Approval of the Agenda (pg. 1-5)
Approved

III. Approval of Meeting Summary (pg. 6-9)
Approved

IV. Administrative Report
A. Vice Provost for Undergraduate Academic Affairs Susan Kalina
   Worked over the summer to create a website for Undergraduate Academic Affairs. There is also a new policy site under the Provost's website which includes information on academic assessment. The 2014 Annual Academic Assessment Seminar will be held on Friday, September 12 from 9:00-3:00 in Library 307.

   Programs approved by the NWCCU this summer include the Marriage and Family Therapy graduate certificate, Alutiiq language OEC, and the Alaska Native Business Management minor.

B. University Registrar Lora Volden
   Reminder for faculty initiators to use the new 2014-2015 curriculum catalog for course and program proposals.

V. Chair’s Report
A. UAB Chair- Francisco Miranda

B. GERC

VI. New Business
A. Physics Prerequisite Change Request (pg. 10)
   Motion to approve the placement test being codable and therefore able to be moved from “Registration Restrictions” into “Prerequisites” in an effort to streamline the registration process for students and alleviate workload on academic advisors and faculty.
   Approved

VII. Program/Course Action Request- Second Readings
VIII. Program/Course Action Request- First Readings

Chg AE A403 Arctic Engineering (Stacked with AE A603) (3 cr) (3+0) (pg. 11-18)
Waive first, approve for second

Add AKNS A218A Alaska Native Drummaking Techniques: Athabascan and Southeast Style (Cross listed w/MUS A218A) (3 cr) (1+2) (pg. 19-22)
Waive first, approve for second

Add MUS A218A Alaska Native Drummaking Techniques: Athabascan and Southeast Style (Cross listed w/AKNS A218A) (3 cr) (1+2) (pg. 23-26)
Waive first, approve for second

Add AKNS A218B Alaska Native Drummaking Techniques: Inupiaq and Yup’ik Style (Cross listed w/MUS A218) (3 cr) (1+2) (pg. 27-30)
Waive first, approve for second

Add MUS A218B Alaska Native Drummaking Techniques: Inupiaq and Yup’ik Style (Cross listed w/AKNS A218B) (3 cr) (1+2) (pg. 31-34)
Waive first, approve for second

Chg SPAN A320 Studies in Contemporary Hispanic Cultures (3 cr) (3+0) (pg. 35-42)
Waive first, approve for second

Chg ENGL A109 Introduction to Writing in Academic Contexts (3 cr) (3+0) (pg. 43-49)
Accepted for first reading, will return to UAB

Chg CE A405 Transportation Engineering I (3 cr) (3+0) (pg. 50-54)
Waive first, approve for second

Chg CE A406 Transportation Engineering II (3 cr) (3+0) (pg. 55-59)
Waive first, approve for second

Add PRT A280 Industrial Petrochemical Processes (3 cr) (3+0) (pg. 60-64)
Waive first, approve for second

Chg Post-Bac Certificate, Elementary Education (pg. 65-74)
Postponed until further notice

Del OEC, CAD for Building Construction (pg. 75-76)
Del AAS, Architectural and Engineering Technology (pg. 77-78)
Del UC, Architectural Drafting (pg. 79-80)
Del UC, Structural Drafting (pg. 81-82)
Del UC, Civil Drafting (pg. 83-84)
Del UC, Mechanical and Electrical Drafting (pg. 85-86)
OEC, AAS, and UC courses are waived for first, approve for second

Add STAT A401 Statistical Methods (stacked with STAT A601) (3 cr) (3+0) (pg. 87-94)
Waive first, approve for second

Chg STAT A402 Scientific Sampling (stacked with STAT A602) (3 cr) (3+0) (pg. 95-102)
Waive first, approve for second
Chg STAT A403 Regression Analysis (stacked with STAT A603) (3 cr)(3+0)(pg. 103-108) 
Waive first, approve for second

Chg STAT A404 Analysis of Variance (stacked with STAT A604) (3 cr)(3+0)(pg. 109-115) 
Waive first, approve for second

Del STAT A405 Nonparametric Statistics (3 cr)(3+0)(pg. 116) 
Already removed

Chg STAT A407 Time Series Analysis (stacked with STAT A607) (3 cr)(3+0)(pg. 117-124) 
Waive first, approve for second

Chg STAT A408 Multivariate Statistics (stacked with STAT A608) (3 cr)(3+0)(pg. 125-132) 
Waive first, approve for second

Chg Minor, Statistics (pg. 133-135) 
Waive first, approve for second

Add VTCH A101 Introduction to Veterinary Technology (1 cr)(1+0)(pg. 136-140) 
Waive first, approve for second

Add VTCH A102 Veterinary Medical Terminology (1 cr)(1+0)(pg. 141-144) 
Waive first, approve for second

Add VTCH A110 Medical Calculations for Veterinary Technicians (1 cr)(1+0)(pg. 145-150) 
Waive first, approve second

Add VTCH A111 Veterinary Office Procedures and Hospital Management (3 cr)(3+0)(pg. 151-157) 
Waive first, approve second

Add VTCH A112 Veterinary Anatomy and Physiology (3 cr)(3+0)(pg. 158-163) 
Waive first, approve second

Add VTCH A112L Veterinary Anatomy and Physiology Laboratory (1 cr)(0+3)(pg. 164-170) 
Waive first, approve second

Add VTCH A113 Veterinary Nursing Skills (3 cr)(3+0)(pg. 171-176) 
Waive first, approve for second

Add VTCH A113L Veterinary Nursing Skills Laboratory (1 cr)(0+3)(pg. 177-182) 
Waive first, approve for second

Add VTCH A120 Pharmacology for Veterinary Technicians (2 cr)(2+0)(pg. 183-188) 
Waive first, approve for second

Add VTCH A121 Small Animal Medicine (3 cr)(3+0)(pg. 189-193)
Add VTCH A122 Veterinary Surgical Nursing (3 cr)(3+0)(pg. 194-198)
Add VTCH A122L Veterinary Surgical Nursing Laboratory (1 cr)(0+3)(pg. 199-203)
Add VTCH A130 Applied Small Animal Behavior I (1 cr)(1+0)(pg. 204-208)
Add VTCH A195 Clinical Externship I (3 cr)(0+9)(pg. 209-213)
Add VTCH A223 Veterinary Microbiology and Parasitology (3 cr)(3+0)(pg. 214-219)
| Add | VTCH A223L     | Veterinary Microbiology and Parasitology Laboratory (1 cr)(0+3)(pg. 220-225) |
| Add | VTCH A231     | Veterinary Diagnostic Imaging and Dentistry (2 cr)(2+0)(pg. 226-230) |
| Add | VTCH A231L    | Veterinary Diagnostic Imaging and Dentistry Laboratory (1 cr)(0+3)(pg. 231-236) |
| Add | VTCH A232     | Veterinary Anesthesia and Analgesia (3 cr)(3+0)(pg. 237-242) |
| Add | VTCH A232L    | Veterinary Anesthesia and Analgesia Laboratory (1 cr)(0+3)(pg. 243-248) |
| Add | VTCH A233     | Veterinary Clinical Pathology (3 cr)(3+0)(pg. 249-253) |
| Add | VTCH A233L    | Veterinary Clinical Pathology Laboratory (1 cr)(0+3)(pg. 254-258) |
| Add | VTCH A240     | Applied Small Animal Behavior II (1 cr)(1+0)(pg. 259-264) |
| Add | VTCH A241     | Laboratory and Exotic Animal Medicine (2 cr)(2+0)(pg. 265-270) |
| Add | VTCH A241L    | Laboratory and Exotic Animal Medicine Laboratory (1 cr)(0+3)(pg. 271-276) |
| Add | VTCH A242     | Large Animal Medicine and Clinical Procedures (2 cr)(2+0)(pg. 277-282) |
| Add | VTCH A242L    | Large Animal Medicine and Clinical Procedures (1 cr)(0+3)(pg. 283-288) |
| Add | VTCH A243     | Career Success for Veterinary Technicians (1 cr)(1+0)(pg. 289-294) |
| Add | VTCH A244     | Veterinary Technician National Exam Preparation (1 cr)(1+0)(pg. 295-298) |
| Add | VTCH A295     | Clinical Externship II (3 cr)(0+9)(pg. 299-305) |
| Add | AAS, Veterinary Technology (pg. 306-312) |

**All ANTH courses postponed to next meeting**

| Del  | ANTH A336 | Peoples and Cultures of Scandinavia (3 cr)(3+0)(pg. 313) |
| Chg   | ANTH A415 | Applied Anthropology (Stacked with ANTH A615) (3 cr)(3+0)(pg. 314-322) |
| Del  | ANTH A435 | Northwest Coast Cultures (3 cr)(3+0)(pg. 323) |
| Chg   | ANTH A454 | Culture and Ecology (GER)(Stacked with ANTH A654) (3 cr)(3+0)(pg. 324-342) |
| Add   | ANTH A465 | Culture and Globalization (GER)(stacked with ANTH A665) (3 cr)(3+0)(pg. 343-360) |
| Del   | ANTH A483 | Archaeology of Animals (stacked with ANTH A683) (4 cr)(3+2)(pg. 361-362) |
| Del   | ANTH A484 | Lithic Technology (3 cr)(3+0)(pg. 363) |
| Del   | ANTH A485 | Human Osteology (Stacked with ANTH A685) (4 cr)(3+2)(pg. 364-365) |
| Del   | ANTH A486 | Applied Human Osteology (Stacked with ANTH A686) (3 cr)(3+0)(pg. 366-367) |
| Chg   | Bachelor of Arts, Anthropology (pg. 368) |
| Chg   | Bachelor of Science, Anthropology (pg. 369-379) |

**Biology Courses to be reviewed on September 12th**

| Add   | BIOL A108 | Principles and Methods in Biology (6 cr)(3+9) |
| Add   | BIOL A442 | Experiential Learning: Animal Behavior (3 cr)(1+4) |
| Chg   | BIOL A451 | Microbial Biotechnology (3 cr)(3+0) |
| Add   | BIOL A453 | Experiential Learning: Microbial Ecology (4 cr)(2+4) |
| Add   | BIOL A454 | Experiential Learning: Microbial Biotechnology (4 cr)(2+4) |
| Add   | BIOL A455 | Experiential Learning: Bioinformatics (4 cr)(2+4) |
| Add   | BIOL A463 | Molecular Biology of Cancer (3 cr)(3+0) |
| Add   | BIOL A464 | Metals in Biology (3 cr)(3+0) |
| Chg   | BIOL A471 | Immunology (Crosslisted with CHEM A471)(3 cr)(3+0) |
| Chg   | CHEM A471 | Immunology (Crosslisted with BIOL A471)(3 cr)(3+0) |
| Chg   | BIOL A472 | Biogeography (3 cr)(3+0) |
| Chg   | BIOL A473 | Conservation Biology (GER)(3 cr)(3+0) |
| Add   | BIOL A474 | Ecotoxicology (3 cr)(3+0) |
Add     BIOL A475     Fish Ecology (3 cr)(3+0)
Add     BIOL A476     Wildlife Population Dynamics and Management (3 cr)(3+0)
Chg     BIOL A478     Biological Oceanography (stacked with BIOL A678)(3 cr)(3+0)
Add     BIOL A480     Ecological and Conservation Genetics (3 cr)(3+0)
Chg     BIOL A481     Marine Biology (GER)(3 cr)(3+0)
Add     BIOL A482     Spatial Ecology (3 cr)(3+0)
Add     BIOL A483     Exploration Ecology (2 cr)(2+0)
Add     BIOL A484     Experiential Learning: Exploration Ecology Field Study (4 cr)(0+8)
Add     BIOL A486     Evolutionary Ecology (3 cr)(3+0)
Chg     BIOL A487     Comparative Anatomy of Vertebrates (3 cr)(3+0)
Chg     BIOL A488     Experiential Learning: Development Biology (4 cr)(2+4)
Chg     BIOL A489     Population Genetics and Evolutionary Processes (GER)(3 cr)(3+0)
Chg     BIOL A495     Instructional Practicum: Laboratory (1 cr)(0+3)
Chg     Bachelor of Arts, Biological Sciences
Chg     Bachelor of Science, Biological Sciences
Chg     Bachelor of Science, Natural Sciences

IX.  Old Business

X.  Informational Items and Adjournment
   A.  
## Course Action Request

### University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

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### Complete Course Title
Introduction to Writing in Academic Contexts
Intro Writing Acad Contexts

### Abbreviated Title for Transcript (30 character)

### Type of Course
- [ ] Academic
- [ ] Preparatory/Development
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

### Type of Action
- [ ] Add
- [x] Change
- [ ] Delete

### Repeat Status
- [ ] No
- [ ] # of Repeats
- [ ] Max Credits

### Grading Basis
- [x] A-F
- [ ] P/NP
- [ ] NG

### Implementation Date
- From: Spring/2015
- To: 9999/

### Cross Listed with
- [ ] N/A

### Stacked with
- [ ] N/A

### Cross-Listed Coordination Signature

### Impacted Courses or Programs

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

<table>
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<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
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Initiator Name (typed): SAD
Initiator Signed Initials: _________
Date: __________________

### Coordination with Library Liaison
Date: 4/24/12

### General Education Requirement
- [ ] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [ ] Humanities
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [ ] Integrative Capstone

### Course Description
(suggested length 20 to 50 words)
Emphasizes longer essays, annotated bibliography, and digital literacy skills in a computerized environment. Teaches students to analyze audience, purpose, and context; to apply conventions of academic writing and basic research; and to use sound revision strategies (including editing for grammar and punctuation). Special Note: Serves as an alternative or complement to PRPE A108 and prepares students for ENGL A111.

### Course Prerequisite(s)
- [ ] PRPE A086 with a minimum grade of C
- [ ] Accuplacer-Reading Comprehension with a score of 065 and Accuplacer-Sentence Skills with a score of 075

### Co-requisite(s)
- [ ] N/A

### Automatic Restriction(s)
- [ ] College
- [ ] Major
- [ ] Class
- [ ] Level

### Registration Restriction(s)
- [ ] N/A

### Justification for Action
To update course CCG and pedagogy.
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II. Course Information
A. College: College of Arts and Sciences
B. Course Prefix: ENGL—English
C. Course Number: ENGL A109
D. Credits: 3.0
E. Contact Hours: (3 + 0)
F. Course Title: Introduction to Writing in Academic Contexts
G. Grading Basis: A-F
H. Implementation Date: Spring 2015
I. Cross Listing/Stacking: N/A
J. Course Description: Emphasizes longer essays, annotated bibliography, and digital literacy skills in a computerized environment. Teaches students to analyze audience, purpose, and context; to apply conventions of academic writing and basic research; and to use sound revision strategies (including editing for grammar and punctuation). Special Note: Serves as an alternative or complement to PRPE A108 and prepares students for ENGL A111.

K. Special Attributes: N/A
L. Course Prerequisites: [PRPE A086 with a minimum grade of C] OR [Accuplacer-Reading Comprehension with a score of 065 and Accuplacer-Sentence Skills with a score of 075]

M. Course Fees: Yes

III. Course Level Justification
ENGL A109 prepares students for successful completion of ENGL A111 and serves as an introductory course to college composition.

IV. Instructional Goals and Student Learning Outcomes
A. Instructional Goals:
The instructor will:
- Familiarize students with digital environments, including basic word processing tools and Blackboard.
- Demonstrate basic research strategies, including information literacy practices, source handling, and APA documentation.
- Introduce principles of academic writing generated for specific purposes, including summary and response, explanatory, analytical, and persuasive writing.
• Demonstrate effective revision strategies.

B. Student Learning Outcomes and Assessment Methods. The student will:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct papers using word processing tools and submit assignments on Blackboard</td>
<td>Word-processed essays, group work, electronic discussion boards, quizzes, and/or class exercises</td>
</tr>
<tr>
<td>Analyze, synthesize, summarize, and use sources responsibly</td>
<td>Word-processed essays, annotated bibliographies, group work, quizzes, reading journals, and/or class exercises</td>
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<tr>
<td>Prepare papers in a variety of academic genres, each focused on fulfilling a specific purpose</td>
<td>Word-processed essays, short writing assignments, and exams</td>
</tr>
<tr>
<td>Analyze written texts prior to revision, revise papers, and proofread for appropriate use of Standard American English</td>
<td>Peer reviews, drafts, exams, quizzes, and/or class exercises</td>
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</tbody>
</table>

V. Course Outline

A. Digital Environment
   1. Electronic techniques for writing papers
   2. Electronic techniques for in-class writing
   3. Electronic techniques for revising writing
   4. Electronic course platforms such as Blackboard

B. Academic Writing
   1. Rhetorical situation
   2. Summaries
   3. Reading responses
   4. Annotated bibliographies
   5. Writing generated by specific purposes as selected from the following choices (generally, 3-4 per semester):
      a. Explanatory essays
      b. Analytical essays
      c. Persuasive essays
      d. Investigative essays
      e. Evaluative essays
f. Observational essays  
g. Research-supported essays (400-800 words)

C. Basic Research Strategies  
1. Libraries and databases  
2. Internet sources  
3. Source evaluation and information literacy  
4. APA documentation

D. Conventions and Style of Standard American English  
1. Structure  
2. Correctness  
3. Error patterns  
4. Academic style

E. Revision  
1. Drafting  
   a. Technology aids  
   b. Drafting and revising  
2. Coherence and focus  
3. Purpose  
4. Editing and proofreading

VI. Suggested Texts


VII. Bibliography


# Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>CH College of Health</th>
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<tbody>
<tr>
<td>1b. Division</td>
<td>AJUS Division of Justice</td>
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<tr>
<td>1c. Department</td>
<td>Justice Center</td>
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## Course Information

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<th>2. Course Prefix</th>
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<tr>
<td>3. Course Number</td>
<td>A432</td>
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<tr>
<td>5b. Contact Hours</td>
<td>(Lecture + Lab) (3+0)</td>
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### Complete Course Title

Crime Analysis and Mapping

**Abbreviated Title for Transcript (30 character)**

- Crime Analysis and Mapping

### Course Details

- **Type of Course**: Academic
- **Type of Action**: Add
- **Repeat Status**: N/A
- **Grading Basis**: A-F

### Course Description (suggested length 20 to 50 words)

Introduces analytical concepts and computer applications used in the study of temporal and spatial crime data. Demonstrates how these techniques can be used by justice agencies with a special emphasis given to police departments.

### Prerequisites

- **Course Prerequisite(s)**
  - JUST A200 and JUST A201 with a minimum grade of C.

### Registration Restriction(s)

- **Completion of all GER Tier 1 (Basic College-Level Skills) courses; Junior or Senior standing**

### Justification for Action

Quantitative crime analysis is a vital part of evidence-based practice in modern criminal justice agencies. This course allows students to explore the analysis methods currently in use by agencies nationwide.

## Approval Process

- **Initiator (faculty only)**: Troy Payne
- **Date**: Date
- **Approved**
- **Disapproved**

<table>
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<tr>
<th>2. Coordinator</th>
<th>Department Chair</th>
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- **Cross-Listed Coordination Signature**: 

---

Troy Payne

Initiator (TYPE NAME)

Disapproved

Department Chair

Disapproved

College/School Curriculum Committee Chair

Disapproved

Provost or Designee

Approved

Board Chair

Approved

Undergraduate/Graduate Academic

Approved

Dean/Director of School/College

Disapproved

Provost or Designee
University of Alaska Anchorage  
College of Health  
Course Content Guide  

I. Date of Initiation: March 2014  

II. Curriculum Action Request  
A. School: College of Health  
B. Course Prefix: JUST  
C. Course Number: A432  
D. Number of Credits: 3  
E. Contact Hours: 3+0  
F. Course Program: Bachelor of Arts, Justice  
G. Course Title: Crime Analysis and Mapping  
H. Grading Basis: A-F  
I. Implementation Date: Spring/2015  
J. Cross-listed/Stacked: N/A  
K. Course Description: Introduces analytical concepts and computer applications used in the study of temporal and spatial crime data. Demonstrates how these techniques can be used by justice agencies with a special emphasis given to police departments.  
L. Course Prerequisites: (JUST A200 and JUST A201) with a minimum grade of C.  
M. Course Co-requisites: N/A  
N. Other Restrictions: Class  
O. Registration Restrictions: Completion of all GER Tier 1 (Basic College-Level Skills) courses; Junior or Senior standing  
P. Course Fees: Yes  
Q. Course Attributes General Education Requirement, Integrative Capstone  

III. Instructional Goals and Student Learning Outcomes  
A. The instructor will do the following in class:  
   1. Review the theoretical and empirical literature regarding the distribution of criminal events across time and space.  
   2. Demonstrate techniques and software applications used to analyze temporal and spatial crime data for meaningful patterns.  
   3. Discuss presentation methods used to display temporal and spatial crime data.  
   4. Explain the importance of data-driven methods in contemporary criminal justice practice.  
   5. Discuss the importance of the target audience for shaping how temporal and spatial analyses are presented.
B. Student learning outcomes and assessment

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
<th>Integrative Capstone goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interpret maps and other analytical products.</td>
<td>Writing assignments, in-class discussion</td>
<td>Knowledge integration, critical thinking</td>
</tr>
<tr>
<td>2. Critique crime maps and other analytical products.</td>
<td>In-class discussion</td>
<td>Critical thinking, knowledge integration</td>
</tr>
<tr>
<td>3. Synthesize the criminological literature regarding crime and place.</td>
<td>Writing assignments, in-class discussion</td>
<td>Information literacy, critical thinking</td>
</tr>
<tr>
<td>4. Analyze spatial and temporal data using computer software.</td>
<td>Mapping assignments, data analysis assignments, in-class presentations</td>
<td>Quantitative perspectives, information literacy, critical thinking</td>
</tr>
<tr>
<td>5. Examine characteristics of crimes using computer software.</td>
<td>Writing assignments, in-class presentations</td>
<td>Quantitative perspectives, knowledge integration, critical thinking</td>
</tr>
<tr>
<td>6. Present maps and other analytical products to a variety of audiences orally and in writing.</td>
<td>Mapping assignments, data analysis assignments, in-class presentations, writing assignments</td>
<td>Effective communication, information literacy</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

This course is designed to fulfill the Integrative Capstone requirement. The course advances the analysis, writing, and presentation skills previously acquired in Tier 1 GER courses and other Justice courses. Students will interpret and critique maps and analytical reports, and will create their own maps and analyses suitable for presentation in the style typical of a police department crime analyst. The structure and content of the course requires complex knowledge integration, critical thinking, information literacy, quantitative skills, and effective communication.

V. Topical Course Outline

1. Definition and typology of crime analysis
   1.1. Tactical and investigative crime analysis
   1.2. Strategic crime analysis
   1.3. Administrative crime analysis
2. Criminological foundations of crime analysis
2.1. Environmental criminology
2.2. Situational crime prevention
2.3. Problem-oriented policing
2.4. Crime displacement and diffusion of benefits

3. Data
3.1. Data integrity
3.2. Data generation processes and the importance of knowing where data come from
3.3. Querying and joining data
3.4. Formatting data for analysis

4. Statistics review
4.1. Frequency distributions
4.2. Crosstabulation
4.3. Hypothesis testing
   4.3.1. Chi-square
   4.3.2. t-test

5. Geographic concepts
5.1. Map projection
5.2. Spatial autocorrelation
5.3. The modifiable areal unit problem

6. Computer-based GIS introduction
6.1. Displaying map data
   6.1.1. Vector data
   6.1.2. Raster data
6.2. Symbology guidelines
6.3. Querying map data

7. Analysis
7.1. Distance analysis
7.2. Temporal analysis
7.3. Pattern identification
   7.3.1. Hotspots analysis
   7.3.2. Serial crimes
7.4. Key characteristics of specific crime types
7.5. The role of analysis in problem-oriented policing

8. Dissemination of analytical products
8.1. Tactical vs. strategic vs. administrative analysis
8.2. Consideration of audience
   8.2.1. General public
   8.2.2. Line-level officers and supervisors
   8.2.3. Command staff

VI. Suggested Texts
VII. Bibliography


*Denotes classic/seminal work
**Course Action Request**  
**University of Alaska Anchorage**  
Proposal to Initiate, Add, Change, or Delete a Course

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<th>5b. Contact Hours (Lecture + Lab)</th>
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<tr>
<td>VTCH</td>
<td>A121</td>
<td>None</td>
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<td>(3+0)</td>
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**6. Complete Course Title**  
Small Animal Medicine  
Small Animal Medicine  
Abbreviated Title for Transcript (30 character)

**7. Type of Course**  
☒ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development

**8. Type of Action:**  
☒ Add  ☐ Change  ☐ Delete

**If a change, mark appropriate boxes:**  
☐ Prefix  ☐ Course Number  ☐ Credits  ☐ Contact Hours  ☐ Grade Basis  ☐ Repeat Status  ☐ Grading Basis  ☐ Cross-Listed/Stacked  ☐ Course Description  ☐ Course Prerequisites  ☐ Test Score Prerequisites  ☐ Co-requisites  ☐ Other Restrictions  ☐ Registration Restrictions  ☐ Class  ☐ Level  ☐ College  ☐ Major  ☐ Other (please specify)

**9. Repeat Status No**  
# of Repeats  ☑ Max Credits

**10. Grading Basis**  
☒ A-F  ☐ P/NP  ☐ NG

**11. Implementation Date**  
semester/year

From: Fall/2015  To: 9999

**12. Cross Listed with**  
☒ Stacked with  ☐ Cross-Listed Coordination Signature

**13a. Impacted Courses or Programs:** List any programs or college requirements that require this course.  
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed):  
Initiator Signed Initials:  
Date:________________

**13b. Coordination Email**  
Date: 05/07/2014  
submitted to Faculty Listserv: (uae-faculty@lists.uaa.alaska.edu)

**13c. Coordination with Library Liaison**  
Date: 03/05/2014

**14. General Education Requirement**  
Mark appropriate box:

- ☐ Oral Communication  ☐ Written Communication  ☐ Quantitative Skills  ☐ Humanities  
- ☐ Fine Arts  ☐ Social Sciences  ☐ Natural Sciences  ☐ Integrative Capstone

**15. Course Description**  
*(suggested length 20 to 50 words)*

Introduces the topics of small animal health and disease for dogs and cats. Covers preventive medicine and specific disease processes commonly encountered in veterinary practice and clinically relevant to veterinary technicians. Addresses vaccination protocols and nutrition.

**16a. Course Prerequisite(s)**  
*(list prefix and number or test code and score)*  
(VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C

**16b. Co-requisite(s)**  
*(concurrent enrollment required)*  
None

**16c. Other Restriction(s)**  
☐ College  ☑ Major  ☐ Class  ☐ Level

**16d. Registration Restriction(s)**  
*(non-codable)*  
Acceptance into AAS Veterinary Technology Program

**17. Mark if course has fees**  
☒  

**18. Mark if course is a selected topic course**  
☐  

**19. Justification for Action**  
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.
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I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A121
D. Credits/Contact Hours: 3.0 (3+0) Contact Hours
E. Course Title: Small Animal Medicine
F. Grading: A-F
G. Implementation Date: Spring 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Introduces the topics of small animal health and disease for dogs and cats. Covers preventive medicine and specific disease processes commonly encountered in veterinary practice and clinically relevant to veterinary technicians. Addresses vaccination protocols and nutrition.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C
   ii. Co-requisites: None
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course builds on knowledge gained in VTCH A110, VTCH A111, VTCH A112, and VTCH A113.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Introduce the basic nutrients and describe the nutrient requirements of dogs and cats
   • Discuss the history and regulation of pet foods, pet food labels, nutrient content, types of food, and pet food evaluation
   • Describe feeding regimens for different life stages of dogs and cats
   • Discuss nutritionally responsive disorders
   • Use the systems approach to describe the clinical signs, diagnoses, and treatments of commonly encountered diseases of dogs and cats
• Discuss preventive medicine including immunity, vaccine types, and vaccination schedules in dogs and cats

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate understanding of nutrients and describe the nutrient requirements of dogs and cats</td>
<td>Quizzes, written exams, class discussion, completion of Skills List* tasks</td>
</tr>
<tr>
<td>Describe dog and cat pet foods: history, regulation, labels, nutrient content, types, and evaluations</td>
<td>Class discussion, quizzes, field trips, written exams, completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate an understanding of nutrient requirements for various life stages of dogs and cats</td>
<td>Written assignments, quizzes, written exams, completion of Skills List tasks</td>
</tr>
<tr>
<td>Display an understanding of nutritionally responsive disorders</td>
<td>Written assignments, quizzes, written exams, completion of Skills List tasks</td>
</tr>
<tr>
<td>List the clinical signs, diagnoses, and treatments of commonly encountered dog and cat diseases</td>
<td>Quizzes, written exams, written client handouts, completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate understanding of preventive medicine in dogs and cats including immunity and vaccines and vaccination schedules</td>
<td>Quizzes, written exams, written client handouts, completion of Skills List tasks</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, written client education handouts, and written and practical exams.

VI. Topical Course Outline
A. Nutrition
   1. Basics of nutrition
   2. Nutrient requirements of dogs and cats
   3. Pet foods
   4. Evaluating pet foods
   5. Feeding for life stages
   6. Therapeutic nutrition
B. Health and Disease
   1. Responsibilities of the veterinary technician
   2. Client education
   3. Disease process
C. Systems Approach to Health and Disease
1. Respiratory diseases
2. Cardiovascular diseases
3. Digestive and hepatobiliary diseases
4. Urinary diseases
5. Endocrine diseases
6. Reproductive diseases
7. Immune-mediated diseases
8. Eye, ear, and integumentary diseases

D. Preventative Medicine
1. Life stage wellness visits
   a. Puppy and kitten patients
   b. Adult patients
   c. Geriatric patients
2. Immunity
3. Vaccines
4. Vaccine administration

VII. Suggested Text(s)


VIII. Bibliography


## Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>MA Mat-SU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1b. Division</td>
<td>choose one</td>
</tr>
<tr>
<td>1c. Department</td>
<td></td>
</tr>
</tbody>
</table>

### Course Information

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>VTCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Course Number</td>
<td>A122</td>
</tr>
<tr>
<td>4. Previous Course Prefix &amp; Number</td>
<td>None</td>
</tr>
<tr>
<td>5a. Credits/CEUs</td>
<td>3.0</td>
</tr>
<tr>
<td>5b. Contact Hours (Lecture + Lab)</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

### Course Title

**Veterinary Surgical Nursing**

**Abbreviated Title for Transcript (30 character)**

### Type of Course

- Academic
- Preparatory/Development
- Non-credit
- CEU
- Professional Development

### Type of Action

- Add
- Change
- Delete

### Repeatability

- Repeat Status No
- # of Repeats
- Max Credits

### Grading Basis

- A-F
- P/NP
- NG

### Implementation Date

- From: Fall/2015
- To: /9999

### Cross-Listed/Stacked

- Cross Listed with
- Stacked with

### Course Description

Covers nursing fundamentals used in common surgical procedures. Includes procedural management and instrument identification, care, and use. Emphasizes asepsis, surgical assistance, and patient management.

### Prerequisites

**VTCH A102, VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCHA113L** with a minimum grade of C

### Registration Restrictions

- Acceptance into AAS Veterinary Technology Program

### General Education Requirement

- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

### Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

### Signature

**Initiator (faculty only)**

Karen L. Carpenter, DVM

**Initiator Signed Initials:** __________

**Date:**

**Approved**

**Disapproved**

**Dean/Director of School/College**

**Date:**

**Approved**

**Disapproved**

**Undergraduate/Graduate Academic**

**Date:**

**Approved**

**Disapproved**

**Board Chair**

**Date:**

**Approved**

**Disapproved**

**Provost or Designee**

**Date:**

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UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. **Initiation Date:** June 2013

II. **Course Information**
A. **College:** Matanuska-Susitna College
B. **Course Prefix:** VTCH – Veterinary Technology
C. **Course Number:** A122
D. **Credits/Contact Hours:** 3.0 (3+0) Contact Hours
E. **Course Title:** Veterinary Surgical Nursing
F. **Grading:** A-F (Must pass VTCH A122L with a minimum grade of C to pass VTCH A122)
G. **Implementation Date:** Spring 2016
H. **Cross Listing:** Not applicable
I. **Stacking:** Not applicable
J. **Course Description:**
Covers nursing fundamentals used in common surgical procedures. Includes procedural management and instrument identification, care, and use. Emphasizes asepsis, surgical assistance, and patient management.
K. **Course Attributes:** Not applicable
L. **Course Requirements:**
   i. **Prerequisites:** (VTCH A102, VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCHA113L) with a minimum grade of C
   ii. **Co-requisites:** VTCH A122L
   iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
M. **Course Fee:** Yes

III. **Course Level Justification**
This course builds on the basic nursing skills taught in VTCH A113.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
A. **Instructional Goals:**
The instructor will:
   - Present instruments, equipment, drapes, gowns, and suture material used during common surgical procedures and discuss use and care
   - Describe routine surgical procedures and related equipment
   - Explain all aspects of patient management related to common surgical procedures for a variety of species
   - Describe preparation of surgical suite
   - Describe patient surgical site preparation, positioning, monitoring, and post-operative care
• Discuss proper aseptic technique during patient and surgical team preparation, operating room procedures, and postoperative care
• Present proper post-surgical equipment and surface cleaning and sterilization methods

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
<tr>
<td>Properly identify common surgical, anesthetic, and monitoring instruments, drapes, gowns, and suture material and demonstrate knowledge of use and care</td>
</tr>
<tr>
<td>Measures</td>
</tr>
<tr>
<td>Class participation, role-playing, demonstration, written assignments, quizzes, written and practical exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Demonstrate knowledge of routine surgical procedures and related equipment</td>
</tr>
<tr>
<td>Class participation, written assignments, quizzes, written exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate a knowledge and integration of all aspects of patient management for common surgical procedures for a variety of species, including patient and surgical site preparation, positioning, monitoring, and post-operative care</td>
</tr>
<tr>
<td>Class participation, role-playing, discussion, demonstration, written assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain how to provide the appropriate instruments, supplies, surgical assistance, and environment for maintaining asepsis during surgical procedures</td>
</tr>
<tr>
<td>Role-playing, discussion, demonstration, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe the proper procedures for cleaning and sterilizing post-surgical equipment and surfaces</td>
</tr>
<tr>
<td>Written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>

*“Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. **Guidelines for Evaluation or Assessment Methods**
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, homework, class participation, and exams.

VI. **Topical Course Outline**
A. Instrumentation
   1. General surgery instruments and supplies
   2. Care and use of surgical instruments, equipment, and supplies
   3. Drapes, gowns, masks, and gloves
   4. Suture materials
B. Procedural Management
   1. Sterilization
   2. Operating room preparation
3. Small animal patient preparation
4. Surgical team preparation
5. Post-surgical clean-up

C. Surgical Assistance
1. Proper operating room conduct
2. Proper aseptic technique
3. Routine surgical procedures and related equipment
4. Assistance with care of exposed tissues and organs
5. Techniques for passing instruments and supplies
6. Operation and maintenance of surgical equipment
7. Documentation and operative records

D. Patient Management
1. Patient assessment
2. Patient monitoring
3. Medical records and consent forms
4. Post-operative care

VII. Suggested Text(s)


VIII. Bibliography


1a. School or College
   MA Mat-SU

1b. Division
   choose one

1c. Department

2. Course Prefix
   VTCH

3. Course Number
   A122L

4. Previous Course Prefix & Number
   None

5a. Credits/CEUs
   1.0

5b. Contact Hours
   (Lecture + Lab)
   (0+3)

6. Complete Course Title
   Veterinary Surgical Nursing Laboratory
   Vet Surgical Nursing Lab
   Abbreviated Title for Transcript (30 character)

7. Type of Course
   ☑ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development

8. Type of Action:  ☑ Add  ☐ Change  ☐ Delete

If a change, mark appropriate boxes:
   ☐ Prefix
   ☐ Credits
   ☐ Title
   ☐ Grading Basis
   ☐ Course Description
   ☐ Test Score Prerequisites
   ☐ Other Restrictions
   ☐ Class
   ☐ Level
   ☐ College
   ☐ Major
   ☐ Other

9. Repeat Status No  # of Repeats  Max Credits
   ☐ A-F  ☐ P/NP  ☐ NG

10. Grading Basis
    ☑ A-F  ☐ P/NP  ☐ NG

11. Implementation Date
    ☑ From:  Fall/2015  ☐ To:  /9999

12. ☐ Cross Listed with
    ☐ Stacked with
    Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
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<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13b. Coordination Email
     Date: 05/07/2014
     submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
     Date: 03/05/2014

14. General Education Requirement
    Mark appropriate box:
    ☐ Oral Communication  ☐ Written Communication  ☐ Quantitative Skills  ☐ Humanities
    ☐ Fine Arts  ☐ Social Sciences  ☐ Natural Sciences  ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
    Applies nursing fundamentals used in common surgical procedures. Includes procedural management and instrument identification, care, and use. Emphasizes asepsis, surgical assistance, and patient management.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
     (VTCH A102, VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCHA113L)
     with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)
     VTCH A122

16c. Other Restriction(s)
     ☐ College  ☐ Major  ☐ Class  ☐ Level

16d. Registration Restriction(s) (non-codable)
     Acceptance into AAS Veterinary Technology Program

17. ☑ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
    This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only)
Karen L. Carpenter, DVM
Initiator (TYPE NAME)

Approved
Disapproved
Dean/Director of School/College
Date
Approved
Disapproved
Undergraduate/Graduate Academic
Board Chair
Date
Approved
Disapproved
Provost or Designee
Date
Approved
Disapproved
Department Chair
Date
Approved
Disapproved
College/School Curriculum Committee Chair
Date

I. **Initiation Date:** June 2013

II. **Course Information**
   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A122L
   D. **Credits/Contact Hours:** 1.0 (0+3) Contact Hours
   E. **Course Title:** Veterinary Surgical Nursing Laboratory
   F. **Grading:** A-F (Must pass with a minimum grade of C to receive credit for VTCH A122)
   G. **Implementation Date:** Spring 2016
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:**
      Applies nursing fundamentals used in common surgical procedures. Includes procedural management and instrument identification, care, and use. Emphasizes asepsis, surgical assistance, and patient management.
   K. **Course Attributes:** Not applicable
   L. **Course Requirements:**
      i. **Prerequisites:** (VTCH A102, VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C
      ii. **Co-requisites:** VTCH A122
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
   M. **Course Fee:** Yes

III. **Course Level Justification**
   This course is the laboratory component of VTCH A122.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
   A. **Instructional Goals:**
      The instructor will:
      - Display instruments, equipment, drapes, gowns, and suture material used during common surgical procedures and demonstrate use and care
      - Provide participation in routine surgical procedures and use and operation of related equipment
      - Demonstrate all aspects of patient management for common surgical procedures for a variety of species, including patient and surgical site preparation, positioning, monitoring, and post-operative care
      - Model proper aseptic technique during patient and surgical team preparation and operating room procedures
- Show how to properly clean and sterilize post-surgical equipment and surfaces

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use common surgical, anesthetic, and monitoring instruments, drapes, gowns, and suture</td>
<td>Class participation and demonstration, laboratory assignments, quizzes,</td>
</tr>
<tr>
<td>material and show proper use and care</td>
<td>practical exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Display proper surgical nursing skills during routine surgical procedures and use of</td>
<td>Class participation, laboratory assignments, quizzes, practical exams,</td>
</tr>
<tr>
<td>related equipment</td>
<td>and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate all aspects of patient management for common surgical procedures for a</td>
<td>Class participation discussion, assignments, quizzes, exams, and</td>
</tr>
<tr>
<td>variety of species, including patient and surgical site preparation, positioning,</td>
<td>completion of Skills List tasks</td>
</tr>
<tr>
<td>monitoring, and post-operative care</td>
<td></td>
</tr>
<tr>
<td>Provide the appropriate instruments, supplies, and surgical assistance and maintain an</td>
<td>Class participation, demonstration, laboratory assignments, quizzes,</td>
</tr>
<tr>
<td>aseptic environment during surgical procedures</td>
<td>practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate proper cleaning and sterilization of post-surgical equipment and surfaces</td>
<td>Class participation, practical exams, and completion of Skills List tasks</td>
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* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, homework, class participation, and exams.

VI. Topical Course Outline
A. Instrumentation
1. General surgery instruments and supplies
2. Care and use of surgical instruments, equipment, and supplies
3. Drapes, gowns, masks, and gloves
4. Suture materials

B. Procedural Management
1. Sterilization
2. Operating room preparation
3. Small animal patient preparation
4. Surgical team preparation
5. Post-surgical clean-up

C. Surgical Assistance
1. Proper operating room conduct
2. Proper aseptic technique
3. Routine surgical procedures and related equipment
4. Assistance with care of exposed tissues and organs
5. Techniques for passing instruments and supplies
6. Operation and maintenance of surgical equipment
7. Documentation and operative records

D. Patient Management
1. Patient assessment
2. Patient monitoring
3. Medical records and consent forms
4. Post-operative care

VII. Suggested Text(s)


VIII. Bibliography


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
MA Mat-SU

1b. Division
choose one

1c. Department

2. Course Prefix
VTCH

3. Course Number
A130

4. Previous Course Prefix & Number
None

5a. Credits/CEUs
1.0

5b. Contact Hours
(Lecture + Lab)
(1+0)

6. Complete Course Title
Applied Small Animal Behavior I

7. Type of Course
☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action: ☒ Add or ☐ Change or ☐ Delete

If a change, mark appropriate boxes:
☐ Prefix ☐ Course Number ☐ Contact Hours ☐ Repeat Status ☐ Grading Basis ☐ Cross-Listed/Stacked
☐ Title ☐ Course Description ☐ Course Prerequisites ☐ Other Restrictions ☐ Course Description ☐ (please specify)
☐ Credits ☐ Grading Basis ☐ Cross-Listed/Stacked ☐ Registration Restrictions ☐ Other Restrictions ☐ (please specify)
☐ Contact Hours ☐ Title ☐ Course Description ☐ Registration Restrictions ☐ Other Restrictions ☐ (please specify)
☐ Repeat Status ☐ Grading Basis ☐ Cross-Listed/Stacked ☐ Registration Restrictions ☐ Other Restrictions ☐ (please specify)

9. Repeat Status No ♦ # of Repeats ♦ Max Credits

10. Grading Basis
☒ A-F ☐ P/NP ☐ NG

11. Implementation Date
From: Fall/2015 To: 1999

12. ☐ Cross Listed with
Stacked with
Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initiator Name (typed): ___________________________ Initiator Signed Initials: _______ Date: ____________

13b. Coordination Email
Date: 05/07/2014
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 03/31/2014

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Introduces natural history and developmental behavior of dogs and cats, principles of learning theory, and practical applications to behavior modification. Applies specific behavior modification techniques to developing written client education handouts.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
(VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)
None

16c. Other Restriction(s)
☒ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)
Acceptance into AAS Veterinary Technology Program

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only)
Karen L. Carpenter, DVM
Initiator (TYPE NAME)

Approved ☑️ Disapproved ☐ Dean/Director of School/College Date

Approved ☐ Disapproved ☑️ Department Chair Date

Approved ☐ Disapproved ☐ Undergraduate/Graduate Academic Board Chair Date

Approved ☐ Disapproved ☐ Provost or Designee Date

Disapproved ☑️ College/School Curriculum Committee Chair Date

Disapproved ☐ College/School Curriculum Committee Chair Date

Disapproved ☐ Provost or Designee Date

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UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A130
D. Credits/Contact Hours: 1.0 (1+0) Contact Hours
E. Course Title: Applied Small Animal Behavior I
F. Grading: A-F
G. Implementation Date: Fall 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Introduces natural history and developmental behavior of dogs and cats, principles of learning theory, and practical applications to behavior modification. Applies specific behavior modification techniques to developing written client education handouts.

K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
   ii. Co-requisites: None
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program

M. Course Fee: Yes

III. Course Level Justification
This course introduces the principles of learning as applied to dog and cat behaviors.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   - Explain natural history, domestication, and social organization of dogs and cats
   - Describe behavior and communication methods of dogs and cats
   - Discuss olfactory, auditory, and visual communication behaviors and relate them to predatory feeding behaviors
   - Explain the principles and applications of learning theory for training and behavior modification
   - Discuss behavioral problem prevention for puppies and kittens
   - Explain how to teach dogs and cats desirable behaviors
• Provide opportunity for supervised behavior modification work with dogs and cats
• Describe development of client handouts on resolving common problem behaviors of dogs and cats
• Provide guidance and feedback on student-produced client education handouts

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
<tr>
<td>Demonstrate knowledge of natural history, domestication, and social organization of dogs and cats</td>
</tr>
<tr>
<td>Explain behavior and communication methods of dogs and cats</td>
</tr>
<tr>
<td>Describe olfactory, auditory, and visual communication behaviors and relate them to predatory feeding behaviors of dogs and cats</td>
</tr>
<tr>
<td>Explain the principles of learning theory and the practical application of that theory for training and behavior modification</td>
</tr>
<tr>
<td>Apply learning theory to teach desirable behaviors to dogs and cats</td>
</tr>
<tr>
<td>Explain common problem behaviors of and modification techniques for dogs and cats</td>
</tr>
<tr>
<td>Apply behavior modification techniques to problem behaviors commonly encountered in dogs and cats</td>
</tr>
<tr>
<td>Develop client education handouts</td>
</tr>
</tbody>
</table>

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this program and possibly this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation, and exams.

VI. Topical Course Outline
A. Domestication of Dogs and Cats
   1. Evolutionary history and taxonomy
   2. Natural selection and its effect on domestication
   3. Social groups of dogs and cats
   4. Breed specific behaviors
B. Communication in Dogs and Cats
   1. Olfactory communication
   2. Auditory signals
   3. Visual signals
C. Principles of Learning Theory
   1. Classical conditioning
   2. Operant conditioning
   3. Instrumental learning
   4. Reinforcement vs. punishment
   5. Reinforcing stimuli for dogs and cats
   6. Primary and secondary reinforcements
   7. Habituation and sensitization
   8. Positive vs. aversive behavior control

D. Practical Applications: Training Preparations
   1. Identify objectives and goals
   2. Select training program or behavior modification technique
   3. Develop training schedule
   4. Evaluate progress

E. Practical Applications: Getting Started
   1. Selecting primary and secondary reinforcements
   2. Timing and schedule of reinforcement
   3. Shaping (successive approximation)
   4. Behavior chains and Premack principle

F. Problem Prevention and Training for Puppies and Kittens
   1. Socialization
   2. House and litter box training
   3. Gentle play behavior in puppies and kittens
   4. Introducing puppies and kittens to other pets

G. Teaching Dogs and Cats Good Manners
   1. Dog: sit, down, stay, wait, walk on loose lead, come when called
   2. Cat: use specific sleeping areas, come when called

H. Clinical Application for Veterinary Technicians
   1. Written communication through handout development
   2. Oral communication through role playing and volunteer work

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
### Course Action Request

**University of Alaska Anchorage**  
Proposal to Initiate, Add, Change, or Delete a Course

1. **School or College**  
   - MA Mat-SU

2. **Course Prefix**  
   - VTCH

3. **Course Number**  
   - A195

4. **Previous Course Prefix & Number**  
   - None

5. **Credits/CEUs**  
   - 3.0

6. **Complete Course Title**  
   - Clinical Externship I

7. **Type of Course**  
   - Academic
   - Preparatory/Development
   - Non-credit
   - CEU
   - Professional Development

8. **Type of Action:**  
   - Add
   - Change
   - Delete

9. **Repeat Status No**  
   - # of Repeats
   - Max Credits

10. **Grading Basis**  
    - A-F
    - P/NP
    - NG

11. **Implementation Date**  
    - From: Fall/2015
    - To: /9999

12. **Cross Listed with**

13a. **Impacted Courses or Programs:** List any programs or college requirements that require this course.

13b. **Co-requisite(s)** (concurrent enrollment required)

14. **General Education Requirement**
   - Oral Communication
   - Written Communication
   - Social Sciences
   - Quantitative Skills
   - Humanities
   - Fine Arts
   - Natural Sciences
   - Integrative Capstone

15. **Course Description**

16a. **Course Prerequisite(s)**

16b. **Co-requisite(s)**

16c. **Other Restriction(s)**

16d. **Registration Restriction(s)** (non-codable)

17. **Mark if course has fees**

18. **Mark if course is a selected topic course**

19. **Justification for Action**

   This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

---

**Initiator (faculty only)**

**Karen L. Carpenter, DVM**

**Initiator (TYPE NAME)**

**Approved**

**Disapproved**

**Dean/Director of School/College**

**Date**

**Approved**

**Disapproved**

**Undergraduate/Graduate Academic**

**Date**

**Approved**

**Disapproved**

**Board Chair**

**Date**

**Approved**

**Disapproved**

**Provost or Designee**

**Date**

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42
I. **Initiation Date:** June 2013

II. **Course Information**

   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A195
   D. **Credits/Contact Hours:** 3.0 (0+9) Contact Hours
   E. **Course Title:** Clinical Externship I
   F. **Grading:** A-F
   G. **Implementation Date:** Summer 2016
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:**
      Provides guided learning experience in a veterinary clinical setting. Applies veterinary technology theory and skills acquired during first year of VTCH courses.
      
   **Special note:** Requires 45 hours of work experience for each credit (135 approved hours).

   K. **Course Attributes:** Not applicable

   L. **Course Requirements:**
      i. **Prerequisites:** (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, and VTCH A223L) with a minimum grade of C
      ii. **Co-requisites:** None
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program

   M. **Course Fee:** Yes

III. **Course Level Justification**

   Intermediate-level course requiring knowledge and skills acquired in first-year veterinary technology curricula.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**

   A. **Instructional Goals:**
      The instructor will:
      - Explain course and faculty expectations including attendance, time-log maintenance, journaling, communication, professionalism, ambassadorship, dress, appearance, and confidentiality
      - Review student clinical skills self-assessment forms
      - Query students regarding externship expectations and concerns
      - Describe safety and risk-management procedures including incident report submission, insurance coverage, and medical-care protocol for externship incidents
• Provide an opportunity for applying theoretical knowledge and acquired skills in a veterinary facility
• Coordinate with externship supervisor to ensure that student works out a learning agreement, is informed of externship supervisor expectations, and develops a work schedule
• Provide an opportunity for real-world learning regarding expectations for veterinary technicians in a practice setting
• Orchestrate ongoing communication among faculty, externship supervisors, and students concerning workplace performance and challenges
• Provide opportunity for students to share workplace experiences
• Monitor and mentor student performance during externship
• Provide opportunity for final work-performance evaluations and students’ evaluations of experiences and externship sites

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe and model course and faculty expectations including attendance, time-log maintenance, journaling, communication, professionalism, ambassadorship, dress, appearance, and confidentiality</td>
<td>Written and oral assignments, quizzes, exams, and externship supervisor evaluation</td>
</tr>
<tr>
<td>Complete clinical skills self-assessment before and after externship</td>
<td>Clinical skills self-assessment</td>
</tr>
<tr>
<td>Explain safety and risk-management procedures including incident report submission, insurance coverage, and medical-care protocol for externship incidents</td>
<td>Written and oral assignments, quizzes, and exams</td>
</tr>
<tr>
<td>Describe externship supervisor expectations</td>
<td>Class discussion</td>
</tr>
<tr>
<td>Apply theoretical knowledge and acquired skills in a veterinary facility</td>
<td>Externship supervisor evaluation, and possible completion of Skills List* tasks</td>
</tr>
<tr>
<td>Apply veterinary technician skills in a real-world setting</td>
<td>Class participation, journaling, externship supervisor evaluation, and possible completion of Skills List tasks</td>
</tr>
<tr>
<td>Communicate workplace performance and challenges to faculty and externship supervisors</td>
<td>Journaling, oral assignments, and externship site evaluation</td>
</tr>
<tr>
<td>Discuss workplace experiences in a group setting</td>
<td>Class participation and written and oral assignments</td>
</tr>
<tr>
<td>Perform veterinary technician duties as assigned by externship supervisor</td>
<td>Externship supervisor evaluation and possible completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify strengths, weaknesses, and lessons learned</td>
<td>Self-reflection</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.
V. Guidelines for Evaluation or Assessment Methods

The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for the program and a possible assessment tool for this course dependent on availability of program instructors for evaluation of skills. Other assessment tools are at the instructor’s discretion and may include class participation; attendance; written and oral assignments; quizzes; exams; student self-assessment; and externship supervisor evaluation of work habits, attitude, appearance, professionalism, demonstration, and competency of skills.

VI. Topical Course Outline

A. Externship Orientation
   1. Externship site selection and placement
   2. Course and faculty expectations
      a. Attendance and professionalism
      b. Ambassadorship
      c. Dress and appearance
      d. Confidentiality
      e. Student self-assessment of competence level before and after externship
      f. Time-log maintenance
      g. Journaling
      h. Communication with other students
   3. Communication essential to successful relationship among faculty, externship supervisors, and students
   4. Student concerns and expectations
   5. Safety and risk management

B. Placement in a Veterinary Facility
   1. Initial interview process
   2. Learning agreement
   3. Externship supervisor expectations
   4. Work schedule

C. Continuing Communication among Faculty, Externship Supervisors, and Students Regarding Workplace Performances and Challenges

D. Student Sharing of Workplace Experiences

E. Student Observation and Practice of Fundamental Skills Learned to Date
   1. Veterinary technician skills
   2. Facility management skills
   3. Ethical and legal conduct

F. Final Evaluation of Work Performance and Externship Experience
   1. Areas of strength
   2. Areas needing improvement
   3. Lessons learned
VII. Suggested Text(s)


VIII. Bibliography


1a. School or College
MA Mat-SU

1b. Division
choose one

1c. Department

2. Course Prefix
VTCH

3. Course Number
A223

4. Previous Course Prefix & Number
None

5a. Credits/CEUs
3.0

5b. Contact Hours
(Lecture + Lab)
(3+0)

6. Complete Course Title
Veterinary Microbiology and Parasitology

7. Type of Course
☑ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action:
☑ Add ☐ Change ☐ Delete

If a change, mark appropriate boxes:
☐ Prefix ☐ Credits ☐ Title ☐ Repeat Status
☐ Grading Basis ☐ Course Number ☐ Contact Hours ☐ Cross-Listed/Stacked
☐ Course Description ☐ Course Prerequisites ☐ Registration Restrictions
☐ Text Score Prerequisites ☐ Co-requisites ☐ General Education Requirement
☐ Other Restrictions ☐ (please specify)

9. Repeat Status No ☐ # of Repeats ☐ Max Credits

10. Grading Basis
☑ A-F ☐ P/NP ☐ NG

11. Implementation Date
From: Fall/2015 To: 9999

12. ☐ Cross Listed with ☐ Stacked with
Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.aaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initiator Name (typed): ___________ Initiator Signed Initials: ___________ Date: ___________

13b. Coordination Email
Date: 05/07/2014
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 03/27/2014

14. General Education Requirement
Mark appropriate box: ☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Introduces clinical veterinary microbiology and parasitology, zoonotic diseases, and veterinary public health.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
(VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)
VTCH 223L

16c. Other Restriction(s)
☐ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)
Acceptance into AAS Veterinary Technology Program

17. ☑ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only)
Karen L. Carpenter, DVM

Initiator (TYPE NAME) Date

☑ Approved ☐ Disapproved
Dean/Director of School/College Date

☑ Approved ☐ Disapproved
Undergraduate/Graduate Academic Date

☑ Approved ☐ Disapproved
Board Chair Date

☑ Approved ☐ Disapproved
Provost or Designee Date
I. **Initiation Date:**  
June 2013

II. **Course Information**
A. **College:** Matanuska-Susitna College  
B. **Course Prefix:** VTCH – Veterinary Technology  
C. **Course Number:** A223  
D. **Credits/Contact Hours:** 3.0 (3+0) Contact Hours  
E. **Course Title:** Veterinary Microbiology and Parasitology  
F. **Grading:** A-F (Must pass VTCH A223L with a minimum grade of C to pass VTCH A223)  
G. **Implementation Date:** Spring 2016  
H. **Cross Listing:** Not applicable  
I. **Stacking:** Not applicable  
J. **Course Description:**  
Introduces clinical veterinary microbiology and parasitology, zoonotic diseases, and veterinary public health.  
K. **Course Attributes:** Not applicable  
L. **Course Requirements:**  
   i. **Prerequisites:** (VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C  
   ii. **Co-requisites:** VTCH A223L  
   iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program  
M. **Course Fee:** Yes

III. **Course Level Justification**  
This course builds on information taught in previous VTCH A100 level courses.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
A. **Instructional Goals:**  
The instructor will:  
   • Introduce students to the characteristics of viral, bacterial, and fungal organisms commonly seen in small and large animal veterinary practices  
   • Discuss staining procedures; tests for identifying common viral, bacterial, and fungal pathogens encountered in small and large animal practices; and collecting and handling specimens  
   • Describe the different types of culture media used in veterinary medicine and the procedures used for inoculation  
   • Describe methods for incubating inoculated culture media  
   • Discuss methods commonly used to test for viruses  
   • Describe nosocomial infections, common nosocomial agents, and procedures to prevent and control them
• Discuss zoonoses, common zoonotic infectious agents, and methods for prevention and control
• Discuss the common endoparasites and ectoparasites of domestic animals: common names, affected hosts, key clinical signs, life cycles, zoonotic potential, treatments, and prevention and control methods
• Describe methods for collecting and handling specimens used for identifying common animal endoparasites and ectoparasites
• Discuss veterinary public health issues and disease prevention including food-borne pathogens and the epidemiology of potential animal-borne pathogens
• Describe disease outbreak surveillance and control measures

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate knowledge of the characteristics of viral, bacterial, and fungal organisms commonly seen in veterinary practices</td>
<td>Written assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Explain methods for collecting, handling, and evaluating samples used to identify common viral, bacterial, and fungal pathogens encountered in veterinary practices</td>
<td>Assignments, projects, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Exhibit understanding of different types of culture media used in veterinary medicine and the procedures for inoculation</td>
<td>Class discussion, written assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate knowledge of the methods for incubating inoculated culture media</td>
<td>Quizzes, assignments, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Display understanding of methods commonly used to test for viruses</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate knowledge of nosocomial infections, common nosocomial agents, and procedures for prevention and control</td>
<td>Class participation, written assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe zoonoses, common zoonotic infectious agents, and zoonotic prevention and control</td>
<td>Written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Display knowledge of common endoparasites and ectoparasites of domestic animals and mechanisms for causing disease</td>
<td>Class discussion, written assignments/projects, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain methods for collecting and handling specimens used for identifying common animal endoparasites and ectoparasites</td>
<td>Class discussion, handouts, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate understanding of veterinary public health issues and disease prevention including food-borne pathogens and potential animal-borne pathogens</td>
<td>Quizzes, exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>
Explain disease outbreak surveillance and control measures

Class participation and discussion, disease outbreak surveillance exercises/problems, quizzes, exams, and completion of Skills List tasks

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation, role-playing exercises, and exams.

VI. Topical Course Outline
A. Diagnostic Methods
   1. Culture systems
   2. Immunohistochemical assays
   3. Polymerase chain reactions
B. Specimen Collection
   1. Methods
   2. Appropriate collection devices
   3. Sites and timing of sample collection
   4. Labeling requirements
   5. Microorganisms requiring special collecting and handling
   6. Processing specimens
C. Bacterial Isolation and Identification Procedures
   1. Culture media and inoculation techniques
   2. Incubation conditions
   3. Identification procedures such as gram staining and commercial kits
   4. Urine cultures
D. Common Bacterial Species
   1. Gram-positive and anaerobic cocci
   2. Gram-positive rods
   3. Gram-negative bacteria
   4. Spirochetes and curved bacteria
   5. Mycoplasma species
E. Mycology
   1. Specimen collection, examination, and culture
   2. Systemic mycoses
   3. Yeasts
F. Virology
   1. Viral pathogens
   2. Isolation
   3. Antigen detection
G. **Serology**
   1. Antibody response to infection
   2. Collection of serum
   3. Test procedures
   4. Interpretation of test results

H. **Nosocomial Infections**
   1. Agents
   2. Recognition and control of infections
   3. Antiseptics, disinfectants, and sterilization
   4. Biological safety

I. **Parasitology**
   1. Endoparasites of domestic animals
      a. Common names and affected species
      b. Life cycles and zoonotic potential
      c. Key clinical signs
      d. Methods of diagnosis
         1) Collection, storage, and safe examination of fecal samples
         2) Fecal float, smear, and SNAP® tests
         3) Blood samples
      e. Treatments
   2. Ectoparasites of domestic animals
      a. Common names and affected species
      b. Life cycles and zoonotic potential
      c. Key clinical signs
      d. Methods of diagnosis
      e. Treatments

J. **Zoonotic Diseases**
   1. Common zoonotic diseases seen in veterinary medicine
   2. Viral pathogens
   3. Bacterial infections
   4. Internal parasites
   5. Protozoal infections
   6. External parasites

K. **Public Health**
   1. Food-borne diseases
   2. Monitoring and surveillance
   3. Antimicrobial resistance
   4. Laboratory animal facilities
   5. Diagnostic laboratories
   6. Biomedical research
   7. Public health education and community extension

VII. **Suggested Text(s)**


**VIII. Bibliography**


*Classic text
**Course Action Request**

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA Mat-SU</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tr>
<td>VTCH</td>
<td>A223L</td>
<td>None</td>
<td>1.0</td>
<td>(0+3)</td>
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<table>
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<tr>
<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Veterinary Microbiology and Parasitology Laboratory</td>
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<tr>
<td>Vet Micro and Parasitology Lab</td>
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<th>7. Type of Course</th>
<th>8. Type of Action:</th>
<th>9. Repeat Status No</th>
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<th>10. Grading Basis</th>
<th>11. Implementation Date</th>
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<tbody>
<tr>
<td>A-F</td>
<td>From: Fall/2015</td>
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| 12. Cross Listed with |

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<tr>
<th>13a. Impacted Courses or Programs: List any programs or college requirements that require this course.</th>
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</table>

<table>
<thead>
<tr>
<th>13b. Coordination Email</th>
<th>13c. Coordination with Library Liaison</th>
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<tbody>
<tr>
<td>Date: 05/07/2014</td>
<td>Date: 03/27/2014</td>
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<table>
<thead>
<tr>
<th>14. General Education Requirement</th>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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</thead>
<tbody>
<tr>
<td>Oral Communication</td>
<td>Applies the fundamentals of specimen collecting, handling, and testing in clinical veterinary microbiology and parasitology, zoonotic diseases, and veterinary public health.</td>
</tr>
<tr>
<td>Written Communication</td>
<td></td>
</tr>
<tr>
<td>Quantitative Skills</td>
<td></td>
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<tr>
<td>Humanities</td>
<td></td>
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<td>Fine Arts</td>
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<td>Social Sciences</td>
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<td>Integrative Capstone</td>
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<table>
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<tr>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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</thead>
<tbody>
<tr>
<td>VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L</td>
<td>VTCH 223</td>
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<thead>
<tr>
<th>16c. Other Restriction(s)</th>
<th>16d. Registration Restriction(s) (non-codable)</th>
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<tbody>
<tr>
<td>College</td>
<td>Acceptance into AAS Veterinary Technology Program</td>
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<tr>
<td>Major</td>
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| 17. Mark if course has fees | 18. Mark if course is a selected topic course |

<table>
<thead>
<tr>
<th>19. Justification for Action</th>
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</table>

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Initiator Signed Initials:</th>
</tr>
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<tbody>
<tr>
<td>Karen L. Carpenter, DVM</td>
<td>________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator (TYPE NAME)</th>
<th>Date</th>
<th>Initiator (TYPE NAME)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
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<table>
<thead>
<tr>
<th>Dean/Director of School/College</th>
<th>Date</th>
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<tbody>
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<tr>
<th>Department Chair</th>
<th>Date</th>
<th>Board Chair</th>
<th>Date</th>
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<tr>
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<table>
<thead>
<tr>
<th>Provost or Designee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disapproved</td>
<td></td>
</tr>
</tbody>
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53
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A223L
D. Credits/Contact Hours: 1.0 (0+3) Contact Hours
E. Course Title: Veterinary Microbiology and Parasitology Laboratory
F. Grading: A-F (Must pass with a minimum grade of C to receive credit for VTCH A223)
G. Implementation Date: Spring 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
   Applies the fundamentals of specimen collecting, handling, and testing in clinical veterinary microbiology and parasitology, zoonotic diseases, and veterinary public health.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A110, VTCH A111, VTCH A112, VTCH A112L, VTCH A113, and VTCH A113L) with a minimum grade of C
   ii. Co-requisites: VTCH A223
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course is the laboratory component of VTCH A223 and builds on previous 100-level laboratory courses.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Show students the characteristics of and how to identify viral, bacterial, and fungal organisms commonly seen in small and large animal veterinary practices
   • Model methods for collecting and handling specimens, staining procedures, and tests used for the identification of common viral, bacterial, and fungal pathogens encountered in small and large animal practices
   • Show the different types of culture media used in veterinary medicine and demonstrate the procedures used for their inoculation
- Demonstrate methods for incubating and inoculating culture media
- Show methods commonly used to test for viruses
- Display common nosocomial agents and demonstrate procedures to prevent and control them
- Show common zoonotic infectious agents and demonstrate methods for prevention and control
- Display the common endoparasites and ectoparasites of domestic animals: common names, affected hosts, key clinical signs, life cycles, zoonotic potential, treatments, and prevention and control methods
- Demonstrate and model safe methods for collecting and handling specimens used for identifying common animal endoparasites and ectoparasites
- Present food-borne pathogens and potential animal-borne pathogens and demonstrate and describe their epidemiology
- Demonstrate disease outbreak surveillance and control measures

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify viral, bacterial, and fungal organisms commonly seen in veterinary practices and describe their characteristics</td>
<td>Laboratory projects, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Demonstrate methods for collecting, handling, and evaluating samples used to identify common viral, bacterial, and fungal pathogens encountered in veterinary practices</td>
<td>Laboratory assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify different types of culture media used in veterinary medicine and demonstrate procedures for inoculation</td>
<td>Class participation, laboratory assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate methods for incubating inoculated culture media</td>
<td>Laboratory exercises, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify and explain methods commonly used to test for viruses</td>
<td>Laboratory assignments, quizzes, practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify and describe common nosocomial agents, and demonstrate procedures for preventing and controlling them</td>
<td>Laboratory assignments, quizzes, practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify and describe common zoonotic infectious agents, and show methods of prevention and control</td>
<td>Research projects, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify common endoparasites and ectoparasites of domestic animals and explain mechanisms for causing disease</td>
<td>Laboratory assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate safe methods for collecting and handling specimens used for identifying common animal endoparasites and ectoparasites</td>
<td>Laboratory assignments, quizzes, written and practical exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>
Identify potential food-borne and animal-borne pathogens and demonstrate and describe related epidemiology

Laboratory assignments, quizzes, written and practical exams, and completion of Skills List tasks

Demonstrate disease outbreak surveillance and control measures

Disease outbreak surveillance exercises, quizzes, written and practical exams, and completion of Skills List tasks

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, laboratory written, laboratory, and oral assignments, class participation, and written and practical exams.

VI. Topical Course Outline
A. Diagnostic Methods
   1. Culture systems
   2. Immunohistochemical assays
   3. Polymerase chain reactions

B. Specimen Collection
   1. Methods
   2. Appropriate collection devices
   3. Sites and timing of sample collection
   4. Labeling requirements
   5. Microorganisms requiring special collecting and handling
   6. Processing specimens

C. Bacterial Isolation and Identification Procedures
   1. Culture media and inoculation techniques
   2. Incubation conditions
   3. Identification procedures such as gram staining and commercial kits
   4. Urine cultures

D. Common Bacterial Species
   1. Gram-positive and anaerobic cocci
   2. Gram-positive rods
   3. Gram-negative bacteria
   4. Spirochetes and curved bacteria
   5. Mycoplasma species

E. Mycology
   1. Specimen collection, examination, and culture
   2. Systemic mycoses
   3. Yeasts

F. Virology
   1. Viral pathogens
   2. Isolation
3. Antigen detection

G. Serology
1. Antibody response to infection
2. Serum collection
3. Test procedures
4. Interpretation of test results

H. Nosocomial Infections
1. Agents
2. Recognition and control of infections
3. Antiseptics, disinfectants, and sterilization
4. Biological safety

I. Parasitology
1. Endoparasites of domestic animals
   a. Common names and affected species
   b. Life cycles and zoonotic potential
   c. Key clinical signs
   d. Methods of diagnosis
      1) Collection, storage, and safe examination of fecal samples
      2) Fecal float, smear, and SNAP® tests
      3) Blood samples
   e. Treatments
2. Ectoparasites of domestic animals
   a. Common names and affected species
   b. Life cycles and zoonotic potential
   c. Key clinical signs
   d. Methods of diagnosis
   e. Treatments

J. Zoonotic Diseases
1. Common zoonotic diseases seen in veterinary medicine
2. Viral pathogens
3. Bacterial infections
4. Internal parasites
5. Protozoal infections
6. External parasites

K. Public Health
1. Food-borne diseases
2. Monitoring and surveillance
3. Antimicrobial resistance
4. Laboratory animal facilities
5. Diagnostic laboratories
6. Biomedical research
7. Public health education and community extension
VII. Suggested Text(s)


VIII. Bibliography


*Classic text
# Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

---

1a. School or College: MA Mat-SU  
1b. Division: choose one  
1c. Department:  

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTCH</td>
<td>A231</td>
<td>None</td>
<td>2.0</td>
<td>(2+0)</td>
</tr>
</tbody>
</table>

6. Complete Course Title:  
**Veterinary Diagnostic Imaging and Dentistry**  
Abbreviated Title for Transcript (30 character)

7. Type of Course:  
☑ Academic  
☐ Preparatory/Development  
☐ Non-credit  
☐ CEU  
☐ Professional Development

8. Type of Action:  
☑ Add  
☐ Change  
☐ Delete

If a change, mark appropriate boxes:

- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Other Restrictions
- Class
- Level
- College
- Major
- Other

9. Repeat Status No  
# of Repeats  
Max Credits

10. Grading Basis:  
☑ A-F  
☐ P/NP  
☐ NG

11. Implementation Date:  
semester/year  
From: Fall/2015  
To: /9999

12. Cross Listed with  
Stacked with

13a. Impacted Courses or Programs:  
List any programs or college requirements that require this course.  
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Initiator Name (typed):  
Initiator Signed Initials:

13b. Coordination Email:

Date: 05/07/2014  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison:

Date: 03/31/2014

14. General Education Requirement:

- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words):

Introduces theories and principles of diagnostic imaging and dentistry techniques used in veterinary medicine. Discusses safe procedures for producing quality radiographs. Explains dentistry evaluation, diagnostics, and prophylaxis in small animals.

16a. Course Prerequisite(s) (list prefix and number or test code and score):  
(VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required):

VTCH A231L

16c. Other Restriction(s):

- ☑ College
- ☑ Major
- ☑ Class
- ☑ Level

16d. Registration Restriction(s) (non-codable):

Acceptance into AAS Veterinary Technology Program

17. ☑ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action:

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

---

Initiator (faculty only):

Karen L. Carpenter, DVM

Initiator (TYPE NAME):

☐ Approved  
☐ Disapproved

Dean/Director of School/College

Date

Undergraduate/Graduate Academic

Board Chair

Date

Provost or Designee

Date
I. **Initiation Date:** June 2013

II. **Course Information**
   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A231
   D. **Credits/Contact Hours:** 2.0 (2+0) Contact Hours
   E. **Course Title:** Veterinary Diagnostic Imaging and Dentistry
   F. **Grading:** A-F (Must pass VTCH A231L with a minimum grade of C to pass VTCH A231)
   G. **Implementation Date:** Fall 2016
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:**
      Introduces theories and principles of diagnostic imaging and dentistry techniques used in veterinary medicine. Discusses safe procedures for producing quality radiographs. Explains dentistry evaluation, diagnostics, and prophylaxis in small animals.
   K. **Course Attributes:** Not applicable
   L. **Course Requirements:**
      i. **Prerequisites:** (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
      ii. **Co-requisites:** VTCH A231L
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
   M. **Course Fee:** Yes

III. **Course Level Justification**
   This intermediate course builds on the prerequisite anatomy, nursing skills, and small animal medicine information taught in VTCH A112, VTCH A113, VTCH A121, and VTCH A122.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
   A. **Instructional Goals:**
      The instructor will:
      - Discuss radiation safety and radiographic procedures
      - Present radiographic equipment preparation, quality control, processing, and record keeping
      - Introduce ultrasonography, alternative imaging, and instrument maintenance
• Describe process of evaluating patient dental health status and performing routine dental prophylaxis
• Explain importance of client dental home-care education
• Describe dental home-care techniques

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain radiation safety and radiographic procedures</td>
<td>Class participation, role-playing, class discussion, written assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Demonstrate knowledge of radiographic equipment preparation, quality control, processing, and record keeping</td>
<td>Class participation, role-playing, class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate understanding of ultrasonography, alternative imaging, and instrument maintenance</td>
<td>Class participation, role-playing, class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe process of evaluating patient dental health status and performing routine dental prophylaxis</td>
<td>Class participation, role-playing, class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Discuss importance of client dental home-care education</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe dental home-care techniques</td>
<td>Role-playing, class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class discussion and participation, and exams.

VI. Topical Course Outline
A. Radiology
   1. Basic concepts
   2. Equipment operation and maintenance
   3. Safety and quality-control measures
   4. Technique charts
   5. Positioning
   6. Film processing
   7. Record keeping
      a. Logs
      b. Reports
c. Files
d. Records
8. Contrast studies
9. Ultrasonography

B. Dentistry
1. Ethical and legal concerns
2. Oral examination and disease recognition
3. Equipment and personal protection
4. Anesthesia and pain management
5. Periodontal disease
6. Endodontic disease
7. Gingivostomatitis
8. Feline tooth resorption
9. Dental prophylaxis and extractions
10. Dental records
11. Dental radiology
12. Dental home care

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA Mat-SU</td>
<td>choose one</td>
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</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
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<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tr>
<td>VTCH</td>
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<td>1.0</td>
<td>(0+3)</td>
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<table>
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<tr>
<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Veterinary Diagnostic Imaging and Dentistry Laboratory</td>
</tr>
<tr>
<td>Vet Diag Imaging &amp; Dentist Lab</td>
</tr>
<tr>
<td>Abbreviated Title for Transcript (30 character)</td>
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</table>

<table>
<thead>
<tr>
<th>7. Type of Course</th>
<th>8. Type of Action:</th>
<th>9. Repeat Status No</th>
<th># of Repeats</th>
<th>Max Credits</th>
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<tr>
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<td>Add</td>
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<tr>
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<th>11. Implementation Date</th>
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<td>A-F</td>
<td>semester/year</td>
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<td>P/NP</td>
<td>From: Fall/2015</td>
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<td>NG</td>
<td>To:</td>
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<tr>
<th>12. Cross Listed with</th>
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<table>
<thead>
<tr>
<th>13a. Impacted Courses or Programs:</th>
<th>13b. Coordination Email</th>
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<tbody>
<tr>
<td>List any programs or college requirements that require this course.</td>
<td>Date: 05/07/2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13c. Coordination with Library Liaison</th>
<th>14. General Education Requirement</th>
<th>15. Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 04/01/2014</td>
<td>Mark appropriate box:</td>
<td>(suggested length 20 to 50 words)</td>
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<td></td>
<td>Oral Communication</td>
<td>Applies theories and principles of diagnostic imaging and dentistry techniques used in veterinary medicine. Uses safe procedures for producing quality radiographs. Employs learned dentistry techniques for performing dental evaluations, diagnostics, and prophylaxes in small animals.</td>
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<td></td>
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<td>Natural Sciences</td>
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<td></td>
<td>Integrative Capstone</td>
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</table>

<table>
<thead>
<tr>
<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
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<tbody>
<tr>
<td>(VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C</td>
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</table>

<table>
<thead>
<tr>
<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<tbody>
<tr>
<td>VTCH A231</td>
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<table>
<thead>
<tr>
<th>16c. Other Restriction(s)</th>
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<tbody>
<tr>
<td>College</td>
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<thead>
<tr>
<th>16d. Registration Restriction(s) (non-codable)</th>
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<tbody>
<tr>
<td>Acceptance into AAS Veterinary Technology Program</td>
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</tbody>
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<table>
<thead>
<tr>
<th>17. Mark if course has fees</th>
</tr>
</thead>
</table>

| 18. Mark if course is a selected topic course |

<table>
<thead>
<tr>
<th>19. Justification for Action</th>
</tr>
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<tbody>
<tr>
<td>This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.</td>
</tr>
<tr>
<td>Initiative (Faculty only)</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Karen L. Carpenter, DVM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator (Type Name)</th>
<th>Date</th>
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<table>
<thead>
<tr>
<th>Initiator (Faculty only)</th>
<th>Date</th>
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<tbody>
<tr>
<td>Dean/Director of School/College</td>
<td></td>
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<table>
<thead>
<tr>
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<th>Date</th>
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<tr>
<th>Initiator (Faculty only)</th>
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<td>Department Chair</td>
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<table>
<thead>
<tr>
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<th>Date</th>
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<table>
<thead>
<tr>
<th>Initiator (Faculty only)</th>
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<tbody>
<tr>
<td>College/School Curriculum Committee Chair</td>
<td></td>
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<table>
<thead>
<tr>
<th>Initiator (Type Name)</th>
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<thead>
<tr>
<th>Initiator (Faculty only)</th>
<th>Date</th>
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<tr>
<td>Provost or Designee</td>
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<table>
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<tr>
<th>Initiator (Type Name)</th>
<th>Date</th>
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<tr>
<th>Initiator (Faculty only)</th>
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<tbody>
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<tr>
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<th>Date</th>
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<td>Provost or Designee</td>
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<th>Initiator (Type Name)</th>
<th>Date</th>
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<tr>
<td></td>
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</table>
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A231L
D. Credits/Contact Hours: 1.0 (0+3) Contact Hours
E. Course Title: Veterinary Diagnostic Imaging and Dentistry Laboratory
F. Grading: A-F (Must pass with a minimum grade of C to receive credit for VTCH A231)
G. Implementation Date: Fall 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Applies theories and principles of diagnostic imaging and dentistry techniques used in veterinary medicine. Uses safe procedures for producing quality radiographs. Employs learned dentistry techniques for performing dental evaluations, diagnostics, and prophylaxes in small animals.
K. Course Attributes: Not applicable
L. Course Requirements:
i. Prerequisites: (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
ii. Co-requisites: VTCH A231
iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course is the laboratory component of VTCH A231 and builds on the information taught in VTCH A112, VTCH A113, VTCH A121, and VTCH A122 and the corresponding laboratories.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
• Demonstrate radiation safety and radiographic procedures
• Demonstrate radiographic equipment preparation, quality control, processing, and recordkeeping
• Present ultrasonography, alternative imaging, and instrument maintenance
- Demonstrate evaluating patient dental health status and performing routine dental prophylaxis
- Model educating clients on dental home care

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
<tr>
<td>Produce quality diagnostic radiographs while demonstrating radiation safety</td>
</tr>
<tr>
<td>Prepare radiographic equipment and apply principles of quality control, processing, and recordkeeping</td>
</tr>
<tr>
<td>Perform ultrasonography, alternative imaging, and instrument maintenance</td>
</tr>
<tr>
<td>Evaluate patient’s dental health status and perform routine dental prophylaxis (manual and machine)</td>
</tr>
<tr>
<td>Role play communication of dental home-care techniques</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written, oral, and laboratory assignments, class discussion and participation, role playing, quizzes, and exams.

VI. Topical Course Outline
A. Radiology
   1. Basic concepts
   2. Equipment operation and maintenance
   3. Safety and quality control measures
   4. Technique charts
   5. Positioning
   6. Film processing
   7. Recordkeeping
      a. Logs
      b. Reports
      c. Files
      d. Records
   8. Contrast studies
   9. Ultrasonography
B. Dentistry
   1. Ethical and legal concerns
   2. Oral examination and disease recognition
   3. Equipment and personal protection
   4. Anesthesia and pain management
   5. Periodontal disease
   6. Endontic disease
   7. Gingivostomatitis
   8. Feline tooth resorption
   9. Dental prophylaxis and extractions
  10. Dental records
  11. Dental radiology
  12. Dental home care

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
### Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<table>
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<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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6. Complete Course Title

Veterinary Anesthesia and Analgesia

Abbreviated Title for Transcript (30 character)

7. Type of Course

- [ ] Academic
- [ ] Preparatory/Development
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

8. Type of Action:

- [x] Add
- [ ] Change
- [ ] Delete

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis

- [x] A-F
- [ ] P/NP
- [ ] NG

11. Implementation Date

From: Fall/2015 To: 9999

12. [ ] Cross Listed with

[ ] Stacked with

Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
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<td></td>
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<tr>
<td>3.</td>
<td></td>
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13b. Coordination Email Date: 05/07/2014

submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison Date: 04/01/2014

14. General Education Requirement

Mark appropriate box:

- [ ] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [ ] Humanities
- [ ] Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

Provides in-depth knowledge of anesthesia techniques, including identification and use of anesthetic-related drugs and equipment. Discusses performing pre-anesthesia evaluations, administering and monitoring anesthesia, providing post-anesthesia care, recognizing and responding to anesthetic emergencies, evaluating patients, and implementing pain management protocols.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

(VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

VTCH A232L

16c. Other Restriction(s)

- [ ] College
- [x] Major
- [ ] Class
- [ ] Level

16d. Registration Restriction(s) (non-codable)

Acceptance into AAS Veterinary Technology Program

17. [x] Mark if course has fees

18. [ ] Mark if course is a selected topic course

19. Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.
<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
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<tbody>
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<td>Karen L. Carpenter, DVM</td>
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</table>
UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A232
D. Credits/Contact Hours: 3.0 (3+0) Contact Hours
E. Course Title: Veterinary Anesthesia and Analgesia
F. Grading: A-F (Must pass VTCH A232L with a minimum grade of C to pass VTCH A232)
G. Implementation Date: Fall 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
   Provides in-depth knowledge of anesthesia techniques, including identification and use of anesthetic-related drugs and equipment. Discusses performing pre-anesthesia evaluations, administering and monitoring anesthesia, providing post-anesthesia care, recognizing and responding to anesthetic emergencies, evaluating patients, and implementing pain management protocols.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
   ii. Co-requisites: VTCH A232L
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This intermediate course builds on the prerequisite pharmaceutical and nursing skills taught in VTCH A113, VTCH A120, and VTCH A122.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Discuss anesthesia-related drugs, calculations, dosages, and routes of administration
   • Describe placing endotracheal tubes and administering anesthesia
   • Explain delivery of anesthesia and operation and maintenance of associated instruments and equipment
   • Discuss patient monitoring during anesthetic procedures
- Explain resuscitation procedures
- Describe the management of controlled-substances logs
- Explain techniques for evaluating patients and determining pain-management protocols
- Discuss evaluating responses to post-operative analgesia
- Explain the importance of client education for post-operative home care

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain anesthesia-related drugs, dosages, and administration routes (injection, endotracheal tube, mask)</td>
<td>Class participation, written assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Calculate dosages of anesthesia-related drugs</td>
<td>Class participation and discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate knowledge of endotracheal tubes and placement in patients</td>
<td>Class participation, role-playing, assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe delivery of anesthesia and operation and maintenance of associated instruments and equipment</td>
<td>Class participation, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain patient monitoring during anesthetic procedures</td>
<td>Class participation and discussion, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe resuscitation procedures as needed for different scenarios</td>
<td>Class participation and discussion, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Discuss managing controlled-substances logs</td>
<td>Class participation and discussion, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Discuss techniques for evaluating patients and determining pain-management protocols</td>
<td>Class participation and discussion, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe evaluating analgesic levels for post-operative patients</td>
<td>Class participation, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain the importance of client education for post-operative home care</td>
<td>Class participation and discussion, role-playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
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* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.
V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation and discussion, role-playing, and exams.

VI. Topical Course Outline
A. Anesthesia
1. Patient preparation
2. Anesthetic agents and adjuncts
3. Fluid therapy
4. Anesthetic equipment
5. Anesthetic monitoring
6. Principles of endotracheal intubation
7. Anesthetic induction
8. Manual and mechanical ventilation
9. Recovery of anesthetic patient
10. Anesthetic problems and emergencies
11. Emergency medical supplies/crash cart
12. Hazards of waste anesthetic gas
B. Analgesia
1. Patient assessment
2. Pain management protocols
3. Post-operative pain management

VII. Suggested Text(s)


VIII. Bibliography


### Course Description (suggested length 20 to 50 words)
Applies anesthesia techniques, including identification and use of anesthetic-related drugs and equipment, for performing pre-anesthesia evaluations, administering and monitoring anesthesia, providing post-anesthesia care, recognizing and responding to anesthetic emergencies, evaluating patients, and implementing pain management protocols.

### Course Prerequisite(s) (list prefix and number or test code and score)
(VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C

### Co-requisite(s) (concurrent enrollment required)
VTCH A232

### Other Restriction(s)
College  
Major  
Class  
Level

### Registration Restriction(s) (non-codable)
Acceptance into AAS Veterinary Technology Program

### Justification for Action
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.
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</tr>
</thead>
</table>
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A232L
D. Credits/Contact Hours: 1.0 (0+3) Contact Hours
E. Course Title: Veterinary Anesthesia and Analgesia Laboratory
F. Grading: A-F (Must pass with a minimum grade of C to receive credit for VTCH A232)
G. Implementation Date: Fall 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description: Applies anesthesia techniques, including identification and use of anesthetic-related drugs and equipment, for performing pre-anesthesia evaluations, administering and monitoring anesthesia, providing post-anesthesia care, recognizing and responding to anesthetic emergencies, evaluating patients, and implementing pain management protocols.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
   ii. Co-requisites: VTCH A232
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This is the laboratory component of VTCH A232 and builds on the prerequisite pharmaceutical and nursing skills taught in VTCH A113, VTCH A120, and VTCH A122 and the associated laboratory courses.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Demonstrate using anesthesia-related drugs with dosages and routes of administration and performing calculations
   • Demonstrate placing endotracheal tubes and administering anesthesia
- Show delivery of anesthesia and operation and maintenance of associated instruments and equipment
- Exhibit patient monitoring during anesthetic procedures
- Demonstrate resuscitation procedures
- Show recording in and managing controlled substances logs
- Demonstrate evaluating patients and determining pain management protocols
- Show evaluating responses to post-operative analgesia
- Demonstrate providing client education for post-operative home care

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate dosages of anesthesia-related drugs and administer by correct route (injection, endotracheal tube, mask)</td>
<td>Class participation, written assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Place endotracheal tubes and deliver anesthesia</td>
<td>Class participation, role playing, assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Operate and maintain anesthetic delivery and monitoring instruments and equipment</td>
<td>Class participation, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Use clinical signs and equipment to monitor patient status during anesthetic procedures</td>
<td>Class participation and discussion, role playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Perform resuscitation procedures as needed for different scenarios</td>
<td>Class participation and discussion, role playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Manage controlled substances logs</td>
<td>Class participation and discussion, role playing, assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Evaluate patients and implement pain management protocols as directed</td>
<td>Class participation and discussion, role playing, assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Evaluate analgesic levels for post-operative patients</td>
<td>Class participation, role playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Educate client education regarding post-operative home care</td>
<td>Class participation and discussion, role playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
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</tbody>
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V. Guidelines for Evaluation or Assessment Methods
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VI. Topical Course Outline
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11. Emergency medical supplies/crash cart
12. Hazards of waste anesthetic gas
B. Analgesia
1. Patient assessment
2. Pain management protocols
3. Post-operative pain management

VII. Suggested Text(s)


VIII. Bibliography


## Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

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<th>3. Course Number</th>
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<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tbody>
<tr>
<td>VTCH</td>
<td>A233</td>
<td>None</td>
<td>3.0</td>
<td>(3+0)</td>
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### Complete Course Title
Veterinary Clinical Pathology

Veterinary Clinical Pathology

Abbreviated Title for Transcript (30 character)

<table>
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<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Veterinary Clinical Pathology</td>
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</table>

**Type of Course**

- \( \checkmark \) Academic
- \( \square \) Preparatory/Development
- \( \square \) Non-credit
- \( \square \) CEU
- \( \square \) Professional Development

**Type of Action:**

- \( \checkmark \) Add
- \( \square \) Change
- \( \square \) Delete

If a change, mark appropriate boxes:

- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Other Restrictions
- Class
- Major
- College
- Level
- Other (please specify)

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<th>7. Type of Course</th>
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<th>Max Credits</th>
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**Course Prefix**

- VTCH

**Course Number**

- A233

**Previous Course Prefix & Number**

- None

**Credits/CEUs**

- 3.0

**Contact Hours (Lecture + Lab)**

- (3+0)

**Complete Course Title**

Veterinary Clinical Pathology

**Abbreviated Title for Transcript (30 character)**

**Implementation Date**

- From: Fall/2015
- To: 9999

**Grading Basis**

- \( \checkmark \) A-F
- \( \square \) P/NP
- \( \square \) NG

**Course Description**

Covers hematology, cytology, blood chemistry, serology, and urinalysis. Describes in-depth procedures for performing diagnostic tests and collecting, handling, and evaluating specimens.

<table>
<thead>
<tr>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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<tr>
<td>Covers hematology, cytology, blood chemistry, serology, and urinalysis. Describes in-depth procedures for performing diagnostic tests and collecting, handling, and evaluating specimens.</td>
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</table>

**Course Prerequisite(s)**

- VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195 with a minimum grade of C

**Co-requisite(s)**

- VTCH A233L

**Other Restriction(s)**

- College
- Major
- Class
- Level

**Registration Restriction(s)**

- Acceptance into AAS Veterinary Technology Program

<table>
<thead>
<tr>
<th>19. Justification for Action</th>
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<tr>
<td>This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.</td>
</tr>
</tbody>
</table>

**Initiator Name (typed):**

Karen L. Carpenter, DVM

**Initiator Signed Initials:**

\( \square \) Approved

- \( \checkmark \) Approved

- \( \square \) Disapproved

- \( \checkmark \) Disapproved

- \( \square \) Proposed

- \( \checkmark \) Proposed

- \( \square \) Approved

- \( \checkmark \) Approved

- \( \square \) Disapproved

- \( \checkmark \) Disapproved

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- \( \checkmark \) Disapproved
UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A233
D. Credits/Contact Hours: 3.0 (3+0) Contact Hours
E. Course Title: Veterinary Clinical Pathology
F. Grading: A-F (Must pass VTCH A233L with a minimum grade of C to pass VTCH A233)
G. Implementation Date: Fall 2016
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Covers hematology, cytology, blood chemistry, serology, and urinalysis. Describes in-depth procedures for performing diagnostic tests and collecting, handling, and evaluating specimens.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195) with a minimum grade of C
   ii. Co-requisites: VTCH A233L
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course expands on information taught in VTCH A113.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Describe methods for collecting and handling blood samples
   • Discuss complete blood counts and components of automated hematology analyzers
   • Describe techniques for preparing and evaluating stained blood smears
   • Describe types of clinical chemistry profiles and their indications
   • Explain chemistry analyzers and indications for use
   • Describe principles and methods of serologic testing
   • Describe methods for collecting and handling cytology samples
• Explain procedures for evaluating cytology of solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids
• Describe necropsy procedures and purposes
• Describe preparation of necropsy specimens for cytology and histopathology
• Outline procedures for preparing blood, cytology, and histopathology specimens for reference laboratory submission
• Describe collecting and preparing optic cytological specimens
• Identify collecting, handling, and processing procedures for urine specimens
• Explain physical, biochemical, and microscopic techniques for evaluating urine
• Describe urine sediment elements and their clinical importance
• Differentiate between normal and abnormal hematology, blood chemistry, serology, cytology, histopathology, and urinalysis findings

### B. Student Learning Outcomes

Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
<tr>
<td>Explain methods for collecting and handling blood samples</td>
</tr>
<tr>
<td>Explain complete blood counts and components of automated hematology analyzers</td>
</tr>
<tr>
<td>Explain techniques for preparing and evaluating stained blood smears</td>
</tr>
<tr>
<td>Identify types of clinical chemistry profiles and their indications</td>
</tr>
<tr>
<td>Discuss chemistry analyzers and indications for use</td>
</tr>
<tr>
<td>Explain principles and methods of serologic testing</td>
</tr>
<tr>
<td>Discuss methods for collecting and handling cytology samples</td>
</tr>
<tr>
<td>Describe procedures for evaluating cytology of solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids</td>
</tr>
<tr>
<td>Explain necropsy procedures and purposes</td>
</tr>
<tr>
<td>Discuss preparation of necropsy specimens for cytology and histopathology</td>
</tr>
<tr>
<td>Describe procedures for preparing blood, cytology, and histopathology specimens for reference laboratory submission</td>
</tr>
<tr>
<td>Explain collecting and preparing optic cytological specimens</td>
</tr>
<tr>
<td>Describe collecting, handling, and processing</td>
</tr>
</tbody>
</table>
V. **Guidelines for Evaluation or Assessment Methods**

The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation and discussion, and exams.

VI. **Topical Course Outline**

A. **Hematology**

1. Complete blood count
   a. Specimen collecting and handling
   b. Automated hematology analyzers

2. Blood cells
   a. Packed cell volume, hematocrit
   b. Plasma protein
   c. White blood cell count

3. Blood smear
   a. Preparing and evaluating
   b. Normal and abnormal morphology
   c. Differential white blood cell count

4. Coagulation
   a. Bleeding time tests: ACT, APTT, PT
   b. Fibrinolysis tests

5. Clinical chemistry
   a. Purpose
   b. Factors that affect results
   c. Chemistry analyzers
   d. Serologic testing

B. **Cytology**

1. Specimen collection procedures: solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids

2. Specimen preparation for submission to reference laboratory

3. Necropsy procedures and sampling

4. Optic cytology specimen collection and preparation

C. **Urinalysis**

*“Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.*
1. Specimen collecting and handling
2. Physical evaluation
3. Biochemical evaluation
4. Microscopic evaluation
5. Normal and abnormal urine sediment

VII. Suggested Text(s)


VIII. Bibliography


### Course Action Request

**University of Alaska Anchorage**  
Proposal to Initiate, Add, Change, or Delete a Course

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<thead>
<tr>
<th>1a. School or College</th>
<th>MA Mat-SU</th>
</tr>
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<tr>
<td>1b. Division</td>
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<tr>
<td>1c. Department</td>
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<td>A233L</td>
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#### Complete Course Title
Veterinary Clinical Pathology Laboratory  
Vet Clinical Pathology Lab
Abbreviated Title for Transcript (30 character)

#### Type of Course
- [x] Academic  
- [ ] Preparatory/Development  
- [ ] Non-credit  
- [ ] CEU  
- [ ] Professional Development

#### Type of Action:
- [x] Add  
- [ ] Change  
- [ ] Delete

If a change, mark appropriate boxes:
- [ ] Prefix  
- [ ] Credits  
- [ ] Title  
- [ ] Grading Basis  
- [ ] Course Description  
- [ ] Test Score Prerequisites  
- [ ] Other Restrictions  
- [ ] Class  
- [ ] Level  
- [ ] Major  
- [ ] College  
- [ ] Other (please specify)

#### Repeat Status No
- [ ] Cross Listed with  
- [ ] Stacked with

#### Course Description
(suggested length 20 to 50 words)
Applies information covering hematology, cytology, blood chemistry, serology, and urinalysis. Prepares students to perform diagnostic tests and collect, handle, and evaluate specimens.

#### Course Prerequisite(s)
(list prefix and number or test code and score)
VTCH A233L, VTCH A195 (with a minimum grade of C)

#### Co-requisite(s)
(concurrent enrollment required)
VTCH A233L

#### Other Restriction(s)
Acceptance into AAS Veterinary Technology Program

#### Registration Restriction(s)
(non-codable)

#### Course Description
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

#### Justification for Action

**Initiator Name (typed):** Karen L. Carpenter, DVM  
**Initiator Signed Initials:** __________  
**Date:**

**Department Chair:** Date
**Approved**  
**Disapproved**

**College/School Curriculum Committee Chair:** Date
**Approved**  
**Disapproved**

**Undergraduate/Graduate Academic: Board Chair:** Date
**Approved**  
**Disapproved**

**Provost or Designee:** Date
**Approved**  
**Disapproved**
I. **Initiation Date:** June 2013

II. **Course Information**
   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A233L
   D. **Credits/Contact Hours:** 1.0 (0+3) Contact Hours
   E. **Course Title:** Veterinary Clinical Pathology Laboratory
   F. **Grading:** A-F (Must pass with minimum grade of C to receive credit for VTCH A233)
   G. **Implementation Date:** Fall 2016
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:**
      Applies information covering hematology, cytology, blood chemistry, serology, and urinalysis. Prepares students to perform diagnostic tests and collect, handle, and evaluate specimens.
   K. **Course Attributes:** Not applicable
   L. **Course Requirements:**
      i. **Prerequisites:** VTCH A120, VTCH A121, VTCH A122, VTCH A122L, VTCH A223, VTCH A223L, and VTCH A195 with a minimum grade of C
      ii. **Co-requisites:** VTCH A233
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
   M. **Course Fee:** Yes

III. **Course Level Justification**
   This course is the laboratory component of VTCH A233 and expands on information taught in VTCH A113L.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
   A. **Instructional Goals:**
      The instructor will:
      - Demonstrate methods for collecting and handling blood samples
      - Display complete blood counts and demonstrate operating automated hematology analyzers
      - Show techniques for preparing and evaluating stained blood smears
      - Demonstrate operating chemistry analyzers and performing serologic testing
      - Perform methods for collecting and handling cytology samples
      - Demonstrate evaluating cytology of solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids
• Perform necropsy procedures
• Demonstrate preparing necropsy specimens for cytology and histopathology
• Show procedures for preparing blood, cytology, and histopathology specimens for reference laboratory submission
• Demonstrate collecting and preparing optic cytological specimens
• Model procedures for collecting, handling, and processing urine specimens
• Demonstrate physical, biochemical, and microscopic techniques for evaluating urine
• Display urine sediment elements
• Contrast normal and abnormal hematology, blood chemistry, serology, cytology, histopathology, and urinalysis findings

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
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<td>Collect and handle blood samples</td>
</tr>
<tr>
<td>Identify complete blood counts and perform an automated hematology analysis</td>
</tr>
<tr>
<td>Prepare and evaluate a stained blood smears</td>
</tr>
<tr>
<td>Operate chemistry analyzers and perform serologic testing</td>
</tr>
<tr>
<td>Collect, handle, and evaluate cytology specimens of solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids</td>
</tr>
<tr>
<td>Assist with necropsy procedures</td>
</tr>
<tr>
<td>Prepare necropsy specimens for cytology and histopathology</td>
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<td>Prepare blood, cytology, and histopathology specimens for reference laboratory submission</td>
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<tr>
<td>Collect and prepare optic cytological specimens</td>
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<tr>
<td>Collect, handle, and process urine specimens</td>
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<td>Task</td>
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<tr>
<td>Perform physical, biochemical, and microscopic techniques for evaluating urine</td>
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<tr>
<td>Identify urine sediment elements</td>
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<tr>
<td>Distinguish between normal and abnormal hematology, blood chemistry, serology, cytology, histopathology, and urinalysis findings</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. **Guidelines for Evaluation or Assessment Methods**
   The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance; quizzes; written, laboratory, and oral assignments; class participation and discussion; and written and practical exams.

VI. **Topical Course Outline**

A. **Hematology**
   1. Complete blood count
      a. Specimen collecting and handling
      b. Automated hematology analyzers
   2. Blood cells
      a. Packed cell volume, hematocrit
      b. Plasma protein
      c. White blood cell count
   3. Blood smear
      a. Preparing and evaluating
      b. Normal and abnormal morphology
      c. Differential white blood cell count
   4. Coagulation
      a. Bleeding time tests: ACT, APTT, PT
      b. Fibrinolysis tests
   5. Clinical chemistry
      a. Purpose
      b. Factors that affect results
      c. Chemistry analyzers
      d. Serologic testing

B. **Cytology**
   1. Specimen collection procedures: solid tissue masses, organs, effusions, and synovial and cerebrospinal fluids
   2. Specimen preparation for submission to reference laboratory
   3. Necropsy procedures and sampling
4. Optic cytology specimen collection and preparation

C. Urinalysis
   1. Specimen collecting and handling
   2. Physical evaluation
   3. Biochemical evaluation
   4. Microscopic evaluation
   5. Normal and abnormal urine sediment

VII. Suggested Text(s)


VIII. Bibliography


### Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

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<th>1c. Department</th>
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<td>Test Score Prerequisites</td>
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<tr>
<td>List any programs or college requirements that require this course.</td>
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<tr>
<td>Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at <a href="http://www.uaa.alaska.edu/governance">www.uaa.alaska.edu/governance</a>.</td>
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<table>
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<th>Chair/Coordinator Contacted</th>
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Initiator Name (typed): __________________________ Initiator Signed Initials: __________ Date: __________

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<td>Expands on principles of learning theory and behavior modification techniques. Describes inappropriate elimination, disruptive behavior, separation anxiety, fear, and aggression in dogs and cats and situational and behavioral modifications used for addressing those problems. Discusses pharmacotherapy as an adjunct for behavior modification.</td>
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<th>19. Justification for Action</th>
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<tr>
<td>This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.</td>
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<td>------</td>
<td></td>
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<tr>
<td>Karen L. Carpenter, DVM</td>
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<table>
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<th>Dean/Director of School/College</th>
<th>Date</th>
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<th>Date</th>
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<th>Disapproved</th>
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</table>
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A240
D. Credits/Contact Hours: 1.0 (1+0) Contact Hours
E. Course Title: Applied Small Animal Behavior II
F. Grading: A-F
G. Implementation Date: Spring 2017
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Expands on principles of learning theory and behavior modification techniques. Describes inappropriate elimination, disruptive behavior, separation anxiety, fear, and aggression in dogs and cats and situational and behavioral modifications used for addressing those problems. Discusses pharmacotherapy as an adjunct for behavior modification.
K. Course Attributes: Not applicable
L. Course Requirements:
i. Prerequisites: (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
ii. Co-requisites: None
iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course expands and builds on the principles learned in VTCH A130.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
• Review principles and applications of learning theory for training and behavior modification in dogs and cats
• Discuss medical conditions associated with inappropriate elimination problems in dogs and cats
• Describe situational and behavioral concerns contributing to inappropriate elimination problems in dogs and cats and behavior modification techniques for addressing them
• Explain reasons for unruly and disruptive behaviors in dogs and cats and techniques for correcting them
• Discuss situational and behavioral underpinnings for separation, fear, and anxiety problems in dogs and cats and behavior modification techniques for dealing with them
• Describe problem aggression in dogs and cats, potential situational and behavioral causes, and techniques for handling them
• Provide opportunity for supervised behavior modification work with dogs and cats
• Describe development of client handouts for resolving common problem behaviors of dogs and cats
• Provide guidance and feedback on student-produced client-education handouts for resolving common problem behaviors of dogs and cats

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
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<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
</tr>
<tr>
<td>Explain principles and applications of learning theory for training and behavior modification in dogs and cats</td>
</tr>
<tr>
<td>Describe medical conditions associated with inappropriate elimination problems in dogs and cats</td>
</tr>
<tr>
<td>Discuss situational and behavioral concerns contributing to inappropriate elimination problems in dogs and cats and behavior modification techniques for addressing them</td>
</tr>
<tr>
<td>Discuss reasons for unruly and disruptive behaviors in dogs and cats and techniques for correcting them</td>
</tr>
<tr>
<td>Explain situational and behavioral underpinnings for separation, fear, and anxiety problems in dogs and cats and behavior modification techniques for dealing with them</td>
</tr>
<tr>
<td>Describe problem aggression in dogs and cats, potential situational and behavioral causes, and techniques for handling them</td>
</tr>
<tr>
<td>Apply behavior modification techniques to problem behaviors commonly encountered in dogs and cats</td>
</tr>
<tr>
<td>Develop client-education handouts for resolving common problem behaviors of dogs and cats</td>
</tr>
</tbody>
</table>
Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this program and possibly this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class discussion and participation, field trips, and exams.

Topical Course Outline
A. Review Principles of Learning Theory
   1. Classical conditioning
   2. Operant conditioning
   3. Instrumental learning
   4. Reinforcement vs. punishment
   5. Positive vs. aversive behavior control
B. Review Training Preparations
   1. Identify objectives and goals
   2. Select training technique
   3. Develop training schedule
   4. Evaluate progress
C. Review Practical Applications
   1. Selecting primary and secondary reinforcements
   2. Timing and scheduling reinforcement
   3. Shaping (successive approximation)
   4. Using behavior chains and the Premack principle
D. Inappropriate Elimination
   1. Medical conditions associated with inappropriate elimination problems
   2. Inappropriate elimination problems in dogs
   3. Inappropriate elimination problems in cats
   4. Situational and behavioral modifications addressing inappropriate elimination
   5. Pharmacotherapy for inappropriate elimination problems
E. Unruly and Disruptive Behavior
   1. Disruptive dog behaviors
   2. Disruptive cat behaviors
   3. Situational and behavioral modifications for eliminating unruly behaviors
F. Separation, Fear, and Anxiety Problems
   1. Separation anxiety in dogs
   2. Situational, behavioral, and pharmacotherapy treatments for addressing separation anxiety
   3. Fear-related behavior in dogs and cats
   4. Situational and behavioral modifications for addressing fear
G. Problem Aggression in Dogs and Cats
   1. Problem aggression in dogs
   2. Situational and behavioral modifications for addressing dog aggression
   3. Problem aggression in cats
   4. Situational and behavioral modifications for addressing cat aggression
H. Clinical Application for Veterinary Technicians
   1. Written communication through handout development
   2. Oral communication through role playing and volunteer work

VII. Suggested Text(s)


VIII. Bibliography


*Classic text
**Course Action Request**

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA Mat-SU</td>
<td>choose one</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTCH</td>
<td>A241</td>
<td>None</td>
<td>2.0</td>
<td>(2+0)</td>
</tr>
</tbody>
</table>

6. Complete Course Title

Laboratory and Exotic Animal Medicine

Laboratory & Exotic Animal Med

Abbreviated Title for Transcript (30 character)

7. Type of Course

- Academic
- Preparatory/Development
- Non-credit
- CEU
- Professional Development

8. Type of Action:

- Add
- Change
- Delete

If a change, mark appropriate boxes:

- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Other Restrictions
- Class
- Level
- College
- Major
- Other

9. Repeat Status No

<table>
<thead>
<tr>
<th># of Repeats</th>
<th>Max Credits</th>
</tr>
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</tr>
</tbody>
</table>

10. Grading Basis

- A-F
- P/NP
- NG

11. Implementation Date

- From: Fall/2015
- To: 9999

12. Cross Listed with

- Stacked with

13a. Impacted Courses or Programs:

List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Initiator Name (typed): __________

Initiator Signed Initials: __________

Date: __________

13b. Coordination Email

Date: 05/07/2014

submitted to Faculty Listserv: [uae-faculty@lists.uaa.alaska.edu](mailto:uae-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison

Date: 04/08/2014

14. General Education Requirement

Mark appropriate box:

- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description

(suggested length 20 to 50 words)

Discusses common laboratory and exotic animal species and their unique husbandry issues, handling and restraining, gender determination, reproduction, nutrition, common diseases, and clinical and surgical procedures.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

(VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

VTCH A241L

16c. Other Restriction(s)

- College
- Major
- Class
- Level

16d. Registration Restriction(s) (non-codable)

Acceptance into AAS Veterinary Technology Program

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only) __________

Date: __________

Initiator (TYPE NAME) __________

Initiator Signed Initials: __________

Date: __________

Approved

Dean/Director of School/College

Date: __________

Disapproved

Approved

Undergraduate/Graduate Academic

Date: __________

Disapproved

Approved

Board Chair

Approved

Disapproved

Provost or Designee

Date: __________

Disapproved

College/School Curriculum Committee Chair

Date: __________

Approved

Disapproved


I.  **Initiation Date:**  June 2013

II.  **Course Information**
A.  **College:**  Matanuska-Susitna College  
B.  **Course Prefix:**  VTCH – Veterinary Technology  
C.  **Course Number:**  A241  
D.  **Credits/Contact Hours:**  2.0 (2+0) Contact Hours  
E.  **Course Title:**  Laboratory and Exotic Animal Medicine  
F.  **Grading:**  A-F (Must pass VTCH A241L with a minimum grade of C to pass VTCH A241)  
G.  **Implementation Date:**  Spring 2017  
H.  **Cross Listing:**  Not applicable  
I.  **Stacking:**  Not applicable  
J.  **Course Description:**  Discusses common laboratory and exotic animal species and their unique husbandry issues, handling and restraining, gender determination, reproduction, nutrition, common diseases, and clinical and surgical procedures.  
K.  **Course Attributes:**  Not applicable  
L.  **Course Requirements:**
   i.  **Prerequisites:**  (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C  
   ii.  **Co-requisites:**  VTCH A241L  
   iii.  **Registration Restrictions:**  Acceptance into AAS Veterinary Technology Program  
M.  **Course Fee:**  Yes

III.  **Course Level Justification**
This course is based on knowledge and skills gained in all previous VTCH courses.

IV.  **Instructional Goals, Student Outcomes and Assessment Procedures**
A.  **Instructional Goals:**
The instructor will:
   - Describe the natural history and taxonomy of common laboratory and exotic animals (bird, reptile, rabbit, ferret, guinea pig, rodent, pocket pet, and other exotic species seen in veterinary practices)
   - Explain the unique husbandry and nutritional concerns of common laboratory and exotic animals
   - Describe gender determination and reproduction in common laboratory and exotic animals
   - Discuss potential zoonotic disease concerns of common laboratory and exotic animals
- Describe common diseases seen in common laboratory and exotic animals
- Describe restraining and handling techniques for common laboratory and exotic animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures
- Compare and contrast physical examination findings between common laboratory and exotic animals
- Discuss clinical and diagnostic procedures for common laboratory and exotic animals
- Describe surgical procedures and anesthesia used for common laboratory and exotic animals
- Compare and describe therapeutic procedures for common laboratory and exotic animals
- Explain how rabbits and rodents may be used for research

B. **Student Learning Outcomes.** Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the natural history and taxonomy of common laboratory and exotic animals (bird,</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>reptile, rabbit, ferret, guinea pig, rodent, pocket pet, and other exotic species seen in veterinary practices)</td>
<td></td>
</tr>
<tr>
<td>Describe the unique husbandry and nutritional concerns of common laboratory and exotic animals</td>
<td>Class discussion, written assignments, quizzes, exams, projects, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain gender determination and reproduction in common laboratory and exotic animals</td>
<td>Class discussion, written assignments, quizzes, exams, projects, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate understanding of potential zoonotic disease concerns of common laboratory and exotic animals</td>
<td>Written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Discuss common diseases seen in common laboratory and exotic animals</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain restraining and handling techniques for common laboratory and exotic animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures</td>
<td>Class participation, role playing, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Differentiate physical examination findings of common laboratory and exotic animals</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Describe clinical and diagnostic procedures for common laboratory and exotic animals</td>
<td>Class discussion, written assignments, role playing, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Explain surgical procedures and anesthesia used for common laboratory and exotic animals</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Contrast and explain therapeutic procedures for</td>
<td>Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks</td>
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</table>

common laboratory and exotic animals | exams, and completion of Skills List tasks
---|---
Discuss how rabbits and rodents may be used for research | Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. **Guidelines for Evaluation or Assessment Methods**
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation and discussion, role playing, and exams.

VI. **Topical Course Outline**
A. **Birds**
   1. Natural history and taxonomy of common species seen in veterinary practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures

B. **Reptiles**
   1. Natural history and taxonomy of common species seen in veterinary practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures

C. **Rabbits**
   1. Natural history and taxonomy of common species seen in veterinary practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures
   9. Use as research animals
D. Ferrets
1. Natural history and taxonomy of common species seen in veterinary practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

E. Guinea Pigs
1. Natural history and taxonomy of common species seen in veterinary practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

F. Rodents
1. Natural history and taxonomy of common species seen in veterinary practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures
9. Use as research animals

G. Pocket Pets
1. Natural history and taxonomy of common species seen in veterinary practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

H. Other Exotic Animal Species (Including Chinchillas, Hedgehogs, Fish, and Amphibians)
1. Natural history and taxonomy of common species seen in veterinary practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
1a. School or College  
MA Mat-SU  

1b. Division  
choose one  

1c. Department  

2. Course Prefix  
VTCH  

3. Course Number  
A241L  

4. Previous Course Prefix & Number  
None  

5a. Credits/CEUs  
1.0  

5b. Contact Hours  
(Lecture + Lab)  
(0+3)  

6. Complete Course Title  
Laboratory and Exotic Animal Medicine Laboratory  
Lab & Exotic Animal Med Lab  
Abbreviated Title for Transcript (30 character)  

7. Type of Course  
☒ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development  

8. Type of Action:  
☒ Add  ☐ Change  ☐ Delete  

If a change, mark appropriate boxes:  
☐ Prefix  ☐ Course Number  ☐ Contact Hours  ☐ Repeat Status  ☐ Cross-Listed/Stacked  
☐ Grading Basis  ☐ Course Prerequisites  ☐ Co-requisites  ☐ Registration Restrictions  ☐ General Education Requirement  
☐ Title  ☐ Test Score Prerequisites  ☐ Other Restrictions  ☐ Class  ☐ Level  ☐ College  ☐ Major  ☐ Other  (please specify)  

9. Repeat Status No  ☐ # of Repeats  ☐ Max Credits  

10. Grading Basis  
☒ A-F  ☐ P/NP  ☐ NG  

11. Implementation Date  
Semester/year  
From: Fall/2015  
To: /9999  

12. ☐ Cross Listed with  ☐ Stack with  
Cross-Listed Coordination Signature  

13a. Impacted Courses or Programs: List any programs or college requirements that require this course. 
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.  

<table>
<thead>
<tr>
<th>Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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</table>

Initiator Name (typed):  
Initiator Signed Initials:  
Date:  

13b. Coordination Email  
Date: 05/07/2014  
submitted to Faculty Listserv:  (uaa-faculty@lists.uaa.alaska.edu)  

13c. Coordination with Library Liaison  
Date: 04/10/2014  

14. General Education Requirement  
Mark appropriate box:  
☐ Oral Communication  ☐ Written Communication  ☐ Quantitative Skills  ☐ Humanities  
☐ Fine Arts  ☐ Social Sciences  ☐ Natural Sciences  ☐ Integrative Capstone  

15. Course Description  
(suggested length 20 to 50 words)  
Applies techniques for handling, restraining, care, feeding, determining gender, and performing clinical and surgical procedures of common laboratory and exotic animals.  

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
(VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C  

16b. Co-requisite(s) (concurrent enrollment required)  
VTCH A241  

16c. Other Restriction(s)  
☐ College  ☐ Major  ☐ Class  ☐ Level  

16d. Registration Restriction(s) (non-codable)  
Acceptance into AAS Veterinary Technology Program  

17. ☒ Mark if course has fees  

18. ☐ Mark if course is a selected topic course  

19. Justification for Action  
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.  

Initiator (faculty only)  
Karen L. Carpenter, DVM  
Initiator (TYPE NAME)  

☐ Approved  ☐ Disapproved  
Dean/Director of School/College  
Date  

☐ Approved  ☐ Disapproved  
Undergraduate/Graduate Academic  
Date  

☐ Approved  ☐ Disapproved  
Board Chair  
Date  

☐ Approved  ☐ Disapproved  
Provost or Designee  
Date  

Class Level General Education Requirement  
College Major  
Other (please specify)  
Initiator Name (typed):  
Initiator Signed Initials:  
Date:  

Karen L. Carpenter, DVM  
Initiator (TYPE NAME)  

☐ Approved  ☐ Disapproved  
Department Chair  
Date  

☐ Approved  ☐ Disapproved  
College/School Curriculum Committee Chair  
Date  

☐ Approved  ☐ Disapproved  
Provost or Designee  
Date  

104
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A241L
D. Credits/Contact Hours: 1.0 (0+3) Contact Hours
E. Course Title: Laboratory and Exotic Animal Medicine Laboratory
F. Grading: A-F (Must pass with a minimum grade of C to receive credit for VTCH A241)
G. Implementation Date: Spring 2017
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description:
Applies techniques for handling, restraining, care, feeding, determining gender, and performing clinical and surgical procedures of common laboratory and exotic animals.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
   ii. Co-requisites: VTCH A241
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course is the laboratory component of VTCH A241 and is based on knowledge and skills gained in all previous VTCH courses.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Introduce common laboratory and exotic animals (bird, reptile, rabbit, ferret, guinea pig, rodent, pocket pet, and other exotic species seen in veterinary practice)
   • Demonstrate care and feeding of common laboratory and exotic animals
   • Demonstrate determining gender of common laboratory and exotic animals
   • Reinforce safety procedures for preventing the transmission of potential zoonotic diseases from common laboratory and exotic animals
- Demonstrate nursing care for common laboratory and exotic animals
- Demonstrate restraining and handling techniques for common laboratory and exotic animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures
- Demonstrate physical examination of common laboratory and exotic animals
- Demonstrate clinical and diagnostic procedures for common laboratory and exotic animals
- Demonstrate surgical procedures and anesthesia used for common laboratory and exotic animals
- Demonstrate therapeutic procedures for common laboratory and exotic animals

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify common laboratory and exotic animals (bird, reptile, rabbit, ferret, guinea pig, rodent, pocket pet, and other exotic species seen in veterinary practice)</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List* tasks</td>
</tr>
<tr>
<td>Care for and feed common laboratory and exotic animals</td>
<td>Class participation, homework assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Determine gender of common laboratory and exotic animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate safety procedures for preventing the transmission of potential zoonotic diseases from common laboratory and exotic animals</td>
<td>Class participation, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Provide nursing care for common laboratory and exotic animals</td>
<td>Class participation, homework assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Restrain and handle common laboratory and exotic animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Assist with physical examination of common laboratory and exotic animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Perform clinical and diagnostic procedures for common laboratory and exotic animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Assist with surgical procedures and anesthesia in common laboratory and exotic animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Perform therapeutic procedures on common laboratory and exotic animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written, laboratory, and oral assignments, class participation and discussion, and exams.

VI. Topical Course Outline

A. Birds
   1. Natural history and taxonomy of common species seen in practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures

B. Reptiles
   1. Natural history and taxonomy of common species seen in practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures

C. Rabbits
   1. Natural history and taxonomy of common species seen in practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures
   9. Use as research animals

D. Ferrets
   1. Natural history and taxonomy of common species seen in practice
   2. Husbandry and nutrition
   3. Gender determination and reproduction
   4. Zoonotic diseases
   5. Restraint procedures and physical examination
   6. Clinical and diagnostic procedures
   7. Surgical and anesthetic procedures
   8. Therapeutic procedures

E. Guinea Pigs
   1. Natural history and taxonomy of common species seen in practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

F. Rodents
1. Natural history and taxonomy of common species seen in practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures
9. Use as research animals

G. Pocket Pets
1. Natural history and taxonomy of common species seen in practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

H. Other Exotic Animal Species (Including Chinchillas, Hedgehogs, and Amphibians)
1. Natural history and taxonomy of common species seen in practice
2. Husbandry and nutrition
3. Gender determination and reproduction
4. Zoonotic diseases
5. Restraint procedures and physical examination
6. Clinical and diagnostic procedures
7. Surgical and anesthetic procedures
8. Therapeutic procedures

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
## Course Action Request

**University of Alaska Anchorage**  
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<th>4. Previous Course Prefix &amp; Number</th>
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<th>5b. Contact Hours (Lecture + Lab)</th>
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<tr>
<td>VTCH</td>
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### 6. Complete Course Title

Large Animal Medicine and Clinical Procedures  
Lrg Animal Med & Clinical Proc  
Abbreviated Title for Transcript (30 character)

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<th>8. Type of Action:</th>
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### 10. Grading Basis

- A-F
- P/NP
- NG

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<tr>
<th>12. Cross Listed with</th>
<th>Stacked with</th>
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### 13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

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<th>Impacted Program/Course</th>
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<th>Chair/Coordinator Contacted</th>
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<td>3.</td>
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Initiator Name (typed): ___________________________  
Initiator Signed Initials: ____________________  
Date: __________________

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<tr>
<th>13b. Coordination Email</th>
<th>Date: 05/07/2014</th>
<th>submitted to Faculty Listserv: (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</th>
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<table>
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<tr>
<th>13c. Coordination with Library Liaison</th>
<th>Date: 04/08/2014</th>
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### 14. General Education Requirement

Mark appropriate box:

- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

<table>
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<tr>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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<td>Discusses common large animal species and their unique husbandry issues, handling and restraining, reproduction, nutrition, common diseases, and clinical and surgical procedures.</td>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<td>VTCH A242L</td>
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### 16c. Other Restriction(s)

- College  
- Major  
- Class  
- Level

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<td>Acceptance into AAS Veterinary Technology Program</td>
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<tr>
<th>17. Mark if course has fees</th>
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18. Mark if course is a selected topic course

### 19. Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only)  
Karen L. Carpenter, DVM  
Initiator (TYPE NAME)

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110
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A242
D. Credits/Contact Hours: 2.0 (2+0) Contact Hours
E. Course Title: Large Animal Medicine and Clinical Procedures
F. Grading: A-F (Must pass VTCH A242L with a minimum grade of C to pass VTCH A242)
G. Implementation Date: Spring 2017
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description: Discusses common large animal species and their unique husbandry issues, handling and restraining, reproduction, nutrition, common diseases, and clinical and surgical procedures.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
   ii. Co-requisites: VTCH A242L
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course is based on knowledge and skills gained in all previous VTCH courses.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Describe common large animal species (horse, cattle, sheep, goat, swine, and cameld breeds seen in veterinary practices)
   • Explain the unique husbandry and nutritional concerns of common large animals
   • Describe reproduction and breeding management practices in common large animals
   • Discuss potential zoonotic disease concerns and herd health issues of common large animals
- Describe common diseases of common large animals
- Describe restraining and handling techniques for common large animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures
- Explain physical examination techniques and findings of common large animals
- Discuss clinical and diagnostic procedures for common large animals
- Describe common surgical procedures and anesthesia used for large animals
- Discuss therapeutic procedures and their administration to common large animals
- Explain preventive medicine protocols for large animals including vaccine types and vaccination schedules
- Discuss drug withdrawal periods in food animals

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
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<tbody>
<tr>
<td><strong>Student Learning Outcomes</strong></td>
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<tr>
<td>Discuss common large animals (horse, cattle, sheep, goat, swine, and camelid breeds seen in veterinary practice)</td>
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<tr>
<td>Describe the unique husbandry and nutritional concerns of common large animals</td>
</tr>
<tr>
<td>Explain reproduction and breeding management practices in common large animals</td>
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<tr>
<td>Demonstrate understanding of potential zoonotic disease concerns and herd health issues of common large animals</td>
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<tr>
<td>Discuss common diseases of common large animals</td>
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<tr>
<td>Explain restraining and handling techniques for common large animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures</td>
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<tr>
<td>Discuss physical examination techniques and findings of common large animal species</td>
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<tr>
<td>Describe clinical and diagnostic procedures for common large animals</td>
</tr>
<tr>
<td>Explain common surgical procedures and anesthesia used for large animals</td>
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<tr>
<td>Discuss therapeutic procedures and their administration to common large animals</td>
</tr>
<tr>
<td>Describe preventive medicine protocols for large animals including vaccine types and</td>
</tr>
</tbody>
</table>
vaccination schedules

| Demonstrated knowledge of drug withdrawal periods in food animals | Class discussion, written assignments, quizzes, exams, and completion of Skills List tasks |

* "Skills List" refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

**V. Guidelines for Evaluation or Assessment Methods**

The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation and discussion, role playing, and exams.

**VI. Topical Course Outline**

A. Horses
   1. Common breeds seen in veterinary practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures

B. Cattle
   1. Common breeds seen in veterinary practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures
   10. Drug withdrawal periods

C. Sheep
   1. Common breeds seen in veterinary practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures
   10. Drug withdrawal periods
D. Goats
1. Common breeds seen in veterinary practice
2. Husbandry and nutrition
3. Reproduction and breeding management
4. Zoonotic diseases
5. Preventive medicine and herd health
6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures
10. Drug withdrawal periods

E. Swine
1. Common breeds seen in veterinary practice
2. Husbandry and nutrition
3. Reproduction and breeding management
4. Zoonotic diseases
5. Preventive medicine and herd health
6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures
10. Drug withdrawal periods

F. Camelids
1. Common breeds seen in veterinary practice
2. Husbandry and nutrition
3. Reproduction and breeding management
4. Zoonotic diseases
5. Preventive medicine and herd health
6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures

VII. Suggested Text(s)


VIII. Bibliography


### Course Action Request

**University of Alaska Anchorage**  
**Proposal to Initiate, Add, Change, or Delete a Course**

<table>
<thead>
<tr>
<th>1a. School or College</th>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<td>VTCH</td>
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<td>1.0</td>
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#### Complete Course Title

**Larg Animal Medicine and Clinical Procedures Laboratory**  
**Abbreviated Title for Transcript (30 character): Lrg Animal Med & Clin Proc Lab**

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<td>Add or Change or Delete</td>
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#### Course Description (suggested length 20 to 50 words)

Applies techniques for care, reproductive management, disease prevention, handling, restraining, feeding, and performing clinical and surgical procedures for common large animals.

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<td>List any programs or college requirements that require this course. Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at <a href="http://www.ualaska.edu/developers">www.ualaska.edu/developers</a>.</td>
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<td>Date: 04/11/2014</td>
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Initiator Name (typed): ___________  
Initiator Signed Initials: ___________  
Date: ___________

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<td>Mark appropriate box:</td>
<td>Applies techniques for care, reproductive management, disease prevention, handling, restraining, feeding, and performing clinical and surgical procedures for common large animals.</td>
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<td>(suggested length 20 to 50 words)</td>
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<td>Integrative Capstone</td>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
<th>16c. Other Restriction(s)</th>
<th>16d. Registration Restriction(s) (non-codable)</th>
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<td>VTCH A242</td>
<td>College, Major, Class, Level</td>
<td>Acceptance into AAS Veterinary Technology Program</td>
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<tr>
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<th>18. Mark if course is a selected topic course</th>
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#### Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

Initiator (faculty only)  
Karen L. Carpenter, DVM  
Initiator (TYPE NAME)  
Initiator Signed Initials: ___________  
Date: ___________

Approved: Dean/Director of School/College  
Date: ___________

Approved: Undergraduate/Graduate Academic  
Date: ___________

Approved: Provost or Designee  
Date: ___________

Disapproved: Department Chair  
Date: ___________

Disapproved: Board Chair  
Date: ___________

Disapproved: College/School Curriculum Committee Chair  
Date: ___________

Disapproved: Provost or Designee  
Date: ___________
I. Initiation Date: June 2013

II. Course Information
A. College: Matanuska-Susitna College
B. Course Prefix: VTCH – Veterinary Technology
C. Course Number: A242L
D. Credits/Contact Hours: 1.0 (0+3) Contact Hours
E. Course Title: Large Animal Medicine and Clinical Procedures Laboratory
F. Grading: A-F (Must pass with a minimum grade of C to receive credit for VTCH A242)
G. Implementation Date: Spring 2017
H. Cross Listing: Not applicable
I. Stacking: Not applicable
J. Course Description: Applies techniques for care, reproductive management, disease prevention, handling, restraining, feeding, and performing clinical and surgical procedures for common large animals.
K. Course Attributes: Not applicable
L. Course Requirements:
   i. Prerequisites: (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
   ii. Co-requisites: VTCH A242
   iii. Registration Restrictions: Acceptance into AAS Veterinary Technology Program
M. Course Fee: Yes

III. Course Level Justification
This course is the laboratory component of VTCH A242 and builds on knowledge and skills gained in all previous VTCH courses.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Present breeds of common large animals (horses, cattle, sheep, goats, swine, and camelids seen in veterinary practice)
   • Demonstrate care and feeding of common large animals
   • Demonstrate reproduction and breeding management practices in common large animals
   • Reinforce safety procedures for preventing the transmission of potential zoonotic diseases from common large animals
• Demonstrate nursing care for common large animals
• Demonstrate restraining and handling techniques for common large animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures
• Demonstrate physical examination of common large animals
• Demonstrate clinical and diagnostic procedures for common large animals
• Demonstrate surgical procedures and anesthesia used for common large animals
• Demonstrate therapeutic procedures for common large animals
• Demonstrate vaccination and deworming procedures for common large animals

B. Student Learning Outcomes. Student will be able to:

<table>
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<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
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<tbody>
<tr>
<td>Identify breeds of common large animals (horses, cattle, sheep, goats, swine, and camelids seen in veterinary practice)</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List* tasks</td>
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<tr>
<td>Care for and feed common large animals</td>
<td>Class participation, homework assignments, quizzes, exams, and completion of Skills List tasks</td>
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<tr>
<td>Assist with reproduction and breeding management practices in common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Demonstrate safety procedures for preventing the transmission of potential zoonotic diseases from common large animals</td>
<td>Class participation, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Provide nursing care for common large animals</td>
<td>Class participation, homework assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Restrain and handle common large animals during clinical, diagnostic, surgical, anesthetic, and therapeutic procedures</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
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<tr>
<td>Assist with physical examination of common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
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<td>Perform clinical and diagnostic procedures for common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
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<tr>
<td>Assist with surgical procedures and anesthesia in common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
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<tr>
<td>Administer therapeutics to common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
<tr>
<td>Assist with vaccination and deworming procedures for common large animals</td>
<td>Class participation, lab assignments, quizzes, exams, and completion of Skills List tasks</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance; quizzes; written, laboratory, and oral assignments; class participation and discussion; role playing; and exams.

VI. **Topical Course Outline**

A. **Horses**
   1. Common breeds seen in practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures

B. **Cattle**
   1. Common breeds seen in practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures
   10. Drug withdrawal periods

C. **Sheep**
   1. Common breeds seen in practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
   7. Clinical and diagnostic procedures
   8. Surgical and anesthetic procedures
   9. Therapeutic procedures
   10. Drug withdrawal periods

D. **Goats**
   1. Common breeds seen in practice
   2. Husbandry and nutrition
   3. Reproduction and breeding management
   4. Zoonotic diseases
   5. Preventive medicine and herd health
   6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures
10. Drug withdrawal periods

E. Swine
1. Common breeds seen in practice
2. Husbandry and nutrition
3. Reproduction and breeding management
4. Zoonotic diseases
5. Preventive medicine and herd health
6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures
10. Drug withdrawal periods

F. Camelids
1. Common breeds seen in practice
2. Husbandry and nutrition
3. Reproduction and breeding management
4. Zoonotic diseases
5. Preventive medicine and herd health
6. Restraint procedures and physical examination
7. Clinical and diagnostic procedures
8. Surgical and anesthetic procedures
9. Therapeutic procedures

VII. Suggested Text(s)


VIII. Bibliography


# Course Action Request

## University of Alaska Anchorage

**Proposal to Initiate, Add, Change, or Delete a Course**

<table>
<thead>
<tr>
<th>1a. School or College</th>
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<th>4. Previous Course Prefix &amp; Number</th>
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## Complete Course Title

Career Success for Veterinary Technicians
Career Success for Vet Techs

### Abbreviated Title for Transcript (30 character)

Career Success for Veterinary Technicians

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### Impacted Courses or Programs

List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

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Initiator Name (typed): ___________  Initiator Signed Initials: ________  Date: ___________

### Coordination with Library Liaison

Date: 04/10/2014

### General Education Requirement

Mark appropriate box:
- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

### Course Description (suggested length 20 to 50 words)

Emphasizes professionalism, critical thinking tools, interpersonal skills, and professional ethics for success as a veterinary technician. Teaches résumé writing and job interviewing techniques. Explores career options, professional development opportunities, and current and projected trends in veterinary technology.

### Course Prerequisite(s)

(see prefix and number or test code and score)

(VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C

### Co-requisite(s)

(None)

### Other Restriction(s)

College  Major  Class  Level

### Registration Restriction(s)

Acceptance into AAS Veterinary Technology Program

### Justification for Action

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.
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I. **Initiation Date:** June 2013

II. **Course Information**
   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A243
   D. **Credits/Contact Hours:** 1.0 (1+0) Contact Hours
   E. **Course Title:** Career Success for Veterinary Technicians
   F. **Grading:** A-F
   G. **Implementation Date:** Spring 2017
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:**
      Emphasizes professionalism, critical thinking tools, interpersonal skills, and professional ethics for success as a veterinary technician. Teaches résumé writing and job interviewing techniques. Explores career options, professional development opportunities, and current and projected trends in veterinary technology.
   K. **Course Attributes:** Not applicable
   L. **Course Requirements:**
      i. **Prerequisites:** (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
      ii. **Co-requisites:** None
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
   M. **Course Fee:** Yes

III. **Course Level Justification**
   This course focuses on skills learned in previous VTCH courses and applies them to professional success.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
   A. **Instructional Goals:**
      The instructor will:
      - Describe and demonstrate professional résumé and cover-letter writing skills
      - Outline successful interview techniques
      - Discuss personal and professional management skills required to work as a successful team member
      - Associate critical thinking and interpersonal skills with high-quality patient care and job performance
      - Identify career options and professional development opportunities
• Explain importance of lifelong learning and continuing medical education
• Review need for following and upholding applicable laws using the veterinary technology profession’s ethical codes

B. Student Learning Outcomes. Student will be able to:

<table>
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<tr>
<th>Student Learning Outcomes and Assessment Measures</th>
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<tr>
<td><strong>Student Learning Outcomes</strong></td>
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<tr>
<td>Write a professional résumé and cover letter</td>
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<tr>
<td>Give a successful interview in a role-playing exercise</td>
</tr>
<tr>
<td>Demonstrate personal and professional management skills required to work as a successful team member</td>
</tr>
<tr>
<td>Demonstrate critical thinking and interpersonal skills leading to high-quality patient care and job performance</td>
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<tr>
<td>Describe career options and professional development opportunities</td>
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<tr>
<td>Discuss importance of lifelong learning and continuing medical education</td>
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<tr>
<td>Explain importance of following and upholding applicable laws using the veterinary technology profession’s ethical codes</td>
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* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class participation and discussion, role playing, and exams.

VI. Topical Course Outline
A. Professional Résumé and Cover-Letter Writing
B. Effective Employee Interview Skills
C. Professionalism
   1. Clients and fellow staff members
   2. High-quality patient care
D. Career Choices for Veterinary Technicians
E. Professional Development and Lifelong Learning Opportunities
F. Critical Thinking
   1. Documentation and the veterinary technician practice model
c. Comprehensive SOAP (subjective, objective, assessment, plan) documentation skills
G. Application of Veterinary Technology Profession’s Ethical Code

VII. Suggested Text(s)


VIII. Bibliography


*Classic text*
### Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

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**Complete Course Title**
Veterinary Technician National Exam Preparation
Vet Tech National Exam Prep
Abbreviated Title for Transcript (30 character)

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**General Education Requirement**

- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

**Course Description** (suggested length 20 to 50 words)

Describes and applies study strategies and test-taking skills for successfully completing the Veterinary Technician National Exam (VTNE). Reviews all VTCH curricula content and related practice tests.

**Course Prerequisite(s) (list prefix and number or test code and score)**

(VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C

**Course Description**

Acceptance into AAS Veterinary Technology Program

**Justification for Action**

This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.

**Initiator Name (typed):**

Karen L. Carpenter, DVM

**Initiator Signed Initials:**

**Date:**

**Coordination Email:**

Date: 05/07/2014

submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

**Coordination with Library Liaison:**

Date: 04/10/2014

**Course Fees:**

Mark if course has fees

**Course is a selected topic course:**

**Registration Restriction(s) (non-codable):**

Acceptance into AAS Veterinary Technology Program

**Mark if course is required for certification:**

Approved

Disapproved

Dean/Director of School/College

Date

Undergraduate/Graduate Academic

Date

Provost or Designee

Date
I. Initiation Date:  June 2013

II. Course Information
A. College:  Matanuska-Susitna College
B. Course Prefix:  VTCH – Veterinary Technology
C. Course Number:  A244
D. Credits/Contact Hours:  1.0 (1+0) Contact Hours
E. Course Title:  Veterinary Technician National Exam Preparation
F. Grading:  A-F
G. Implementation Date:  Spring 2017
H. Cross Listing:  Not applicable
I. Stacking:  Not applicable
J. Course Description:
Describes and applies study strategies and test-taking skills for successfully completing the Veterinary Technician National Exam (VTNE). Reviews all VTCH curricula content and related practice tests.
K. Course Attributes:  Not applicable
L. Course Requirements:
   i. Prerequisites:  (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C
   ii. Co-requisites:  None
   iii. Registration Restrictions:  Acceptance into AAS Veterinary Technology Program
M. Course Fee:  Yes

III. Course Level Justification
This course is a review of all previously covered material in the VTCH curricula.

IV. Instructional Goals, Student Outcomes and Assessment Procedures
A. Instructional Goals:
The instructor will:
   • Outline study strategies for successful test taking
   • Discuss test-taking strategies including dealing with test anxiety
   • Assist students with applying study strategies for reviewing all topics covered in the program
   • Administer VTNE practice tests
   • Evaluate, review, and discuss practice test results based on test-taking strategies for improving future test performance

B. Student Learning Outcomes. Student will be able to:
<table>
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<tr>
<th>Student Learning Outcomes</th>
<th>Measures</th>
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<tr>
<td>Explain and demonstrate study strategies for successful test taking</td>
<td>Class discussion, written assignments, quizzes, and exams</td>
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<tr>
<td>Describe test-taking strategies including dealing with test anxiety</td>
<td>Class participation, quizzes, and exams</td>
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<tr>
<td>Apply study strategies for reviewing all topics covered in the program</td>
<td>Class participation, written assignments, quizzes, and exams</td>
</tr>
<tr>
<td>Apply test-taking strategies to VTNE practice tests</td>
<td>Class participation and exams</td>
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<tr>
<td>Improve future VTNE practice-test performance in preparation for actual exam</td>
<td>Class discussion, written assignments, and exams</td>
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</table>

V. **Guidelines for Evaluation or Assessment Methods**

The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for this program and possibly this course. Other assessment tools are at the instructor’s discretion and may include attendance, quizzes, written and oral assignments, class discussion and participation, and exams.

VI. **Topical Course Outline**

A. **Test-Taking Strategies**
   1. Study strategies
   2. Testing strategies
   3. Multiple-choice testing strategies
   4. Dealing with test anxiety

B. **Basic and Clinical Sciences**
   1. Veterinary anatomy and physiology
   2. Urinalysis and hematology
   3. Cytology
   4. Parasitology
   5. Microbiology
   6. Clinical chemistry

C. **Clinical Applications**
   1. Restraining and handling
   2. Facility maintenance
   3. Diagnostic imaging

D. **Patient Management and Nutrition**
   1. Life-stage patient care
   2. Behavior
   3. Large and small animal nutrition
   4. Laboratory and exotic animal medicine

E. **Anesthesia and Pharmacology**
   1. Anesthesia
   2. Pharmacology
   3. Calculations
F. Medical and Surgical Nursing
   1. Surgical preparation and instrument care
   2. Small animal nursing
   3. Large animal nursing
   4. Dentistry
   5. Emergency medicine

G. Practice Management
   1. Self-management
   2. Professional management
   3. Veterinary ethics

VII. Suggested Text(s)


VIII. Bibliography


*Classic text
### Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

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**6. Complete Course Title**
Clinical Externship II
Clinical Externship II
Abbreviated Title for Transcript (30 character)

| 7. Type of Course | Academic | Preparatory/Development | Non-credit | CEU | Professional Development |

| 8. Type of Action: | Add | Change | Delete |

**If a change, mark appropriate boxes:**
- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Other Restrictions
- Class
- Level
- College
- Major
- Other

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Cross-Listed Coordination Signature

**13a. Impacted Courses or Programs:** List any programs or college requirements that require this course.

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**13b. Coordination Email**

submitted to Faculty Listserv: [uae-faculty@lists.uaa.alaska.edu](mailto:uae-faculty@lists.uaa.alaska.edu)

**13c. Coordination with Library Liaison**

Date: 04/11/2014

**14. General Education Requirement**

Mark appropriate box:
- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

**15. Course Description** *(suggested length 20 to 50 words)*
Combines veterinary clinical skills with theoretical knowledge to complete student preparation for licensure and employment opportunities after graduation.

Special note: Requires 45 hours of work experience for each credit (135 approved hours).

**16a. Course Prerequisite(s) (list prefix and number or test code and score)**
(VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH A233, and VTCH A233L) with a minimum grade of C

**16b. Co-requisite(s) (concurrent enrollment required)**
None

**16c. Other Restriction(s)**

- College
- Major
- Class
- Level

**16d. Registration Restriction(s) (non-codeable)**
Acceptance into AAS Veterinary Technology Program

**17. Mark if course has fees**

**18. Mark if course is a selected topic course**

**19. Justification for Action**
This course is required as part of the curricula needed to obtain accreditation by the American Veterinary Medical Association (AVMA) for an Associates of Applied Science Degree in Veterinary Technology.
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133
I. **Initiation Date:** June 2013

II. **Course Information**
   A. **College:** Matanuska-Susitna College
   B. **Course Prefix:** VTCH – Veterinary Technology
   C. **Course Number:** A295
   D. **Credits/Contact Hours:** 3.0 (0+9) Contact Hours
   E. **Course Title:** Clinical Externship II
   F. **Grading:** A-F
   G. **Implementation Date:** Spring 2017
   H. **Cross Listing:** Not applicable
   I. **Stacking:** Not applicable
   J. **Course Description:** Combines veterinary clinical skills with theoretical knowledge to complete student preparation for licensure and employment opportunities after graduation. **Special note:** Requires 45 hours of work experience for each credit (135 approved hours).
   K. **Course Attributes:** Not applicable
   L. **Course Requirements:**
      i. **Prerequisites:** (VTCH A130, VTCH A231, VTCH A231L, VTCH A232, VTCH A232L, VTCH 233, and VTCH A233L) with a minimum grade of C
      ii. **Co-requisites:** None
      iii. **Registration Restrictions:** Acceptance into AAS Veterinary Technology Program
   M. **Course Fee:** Yes

III. **Course Level Justification**
   Knowledge and skills acquired throughout veterinary technology curricula culminate in this capstone course.

IV. **Instructional Goals, Student Outcomes and Assessment Procedures**
   A. **Instructional Goals:**
      The instructor will:
      - Explain course and faculty expectations including attendance, time-log maintenance, journaling, communication, professionalism, ambassadorship, dress, appearance, and confidentiality
      - Review student clinical skills self-assessment forms
      - Query students regarding externship expectations, concerns, and previous experiences
• Describe safety and risk-management procedures including incident report submission, insurance coverage, and medical-care protocol for externship incidents
• Provide additional opportunity for applying theoretical knowledge and acquired skills in a veterinary facility
• Coordinate with externship supervisor to ensure that student works out a learning agreement, is informed of externship supervisor expectations, and develops a work schedule
• Orchestrate ongoing communication among faculty, externship supervisors, and students concerning workplace performance and challenges
• Provide opportunity for students to share workplace experiences
• Provide opportunity for final work-performance evaluations and students’ evaluations of experiences and externship sites

B. Student Learning Outcomes. Student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe and model course and faculty expectations including attendance, time-log maintenance, journaling, communication, professionalism, ambassadorship, dress, appearance, and confidentiality</td>
<td>Written and oral assignments, quizzes, exams, and externship supervisor evaluation</td>
</tr>
<tr>
<td>Complete forms to assess their competency levels before and after externship</td>
<td>Written reports</td>
</tr>
<tr>
<td>Explain safety and risk-management procedures including incident report submission, insurance coverage, and medical-care protocol for externship incidents</td>
<td>Written and oral assignments, quizzes, and exams</td>
</tr>
<tr>
<td>Describe externship supervisor expectations</td>
<td>Class discussion</td>
</tr>
<tr>
<td>Observe and practice veterinary technician, management, and client relations skills in a veterinary facility setting</td>
<td>Class participation, journaling, externship supervisor evaluation, and possible completion of Skills List* tasks</td>
</tr>
<tr>
<td>Communicate workplace performance and challenges to faculty and externship supervisors</td>
<td>Journaling, oral assignments, and externship site evaluation</td>
</tr>
<tr>
<td>Discuss workplace experiences in a group setting</td>
<td>Class participation and written and oral assignments</td>
</tr>
<tr>
<td>Perform veterinary technician duties as assigned by externship supervisor</td>
<td>Externship supervisor evaluation and possible completion of Skills List tasks</td>
</tr>
<tr>
<td>Identify strengths, weaknesses, and lessons learned</td>
<td>Self-reflection</td>
</tr>
</tbody>
</table>

* “Skills List” refers to The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List.

V. Guidelines for Evaluation or Assessment Methods
The Committee on Veterinary Technician Education and Activities (CVTEA) Essential and Recommended Skills List, reviewed annually, is a required assessment tool for the program and a possible assessment tool for this course dependent on availability of program instructors for evaluation of skills. Other assessment tools are at the instructor’s discretion and may include class participation; attendance; written and oral assignments; quizzes; exams; student self-assessment; and externship supervisor evaluation of work habits, attitude, appearance, professionalism, demonstration, and competency of skills.

VI. **Topical Course Outline**

A. **Externship Orientation**
   1. Externship site selection and placement
   2. Course and faculty expectations
      a. Attendance and professionalism
      b. Ambassadorship
      c. Dress and appearance
      d. Confidentiality
      e. Student self-assessment of competence level before and after externship
      f. Time-log maintenance
      g. Journaling
      h. Communication with other students
   3. Communication essential to successful relationship between faculty, externship supervisors, and students
   4. Student concerns and expectations
   5. Safety and risk management

B. **Placement in a Veterinary Facility**
   1. Initial interview process
   2. Learning agreement
   3. Externship supervisor expectations
   4. Work schedule

C. **Continuing Communication among Faculty, Externship Supervisors, and Students Regarding Workplace Performances and Challenges**

D. **Student Sharing of Workplace Experiences**

E. **Student Observation and Practice of Fundamental Skills Learned to Date**
   1. Veterinary technician skills
      a. Pharmacy
      b. Imaging
      c. Nursing
      d. Anesthesia
      e. Surgical nursing
      f. Diagnostic imaging
      g. Dentistry
      h. Laboratory procedures
   2. Management skills
      a. Schedule appointments
      b. Triage, admit, and discharge procedures
c. Emergency situations
d. Medical records
e. Inventory control
f. Sanitation protocols
g. Regulatory agencies roles

3. Client relations
   a. Communication of patient and/or facility needs through phone and personal contact
   b. Relay drug information to clients
      1) Storage
      2) Handling
      3) Administration
      4) Side effects
      5) Drug interactions
      6) Safety
      7) Indications for drug use
      8) Disposal
   c. Client advice for diagnostic testing
      1) Value
      2) Procedures
      3) Results
   d. Billing and finances

F. Final Evaluation of Work Performance and Externship Experience
   1. Areas of strength
   2. Areas needing improvement
   3. Lessons learned

VII. Suggested Text(s)


VIII. Bibliography


To: Undergraduate Academic Board

From: Karen L. Carpenter, DVM, Term Assistant Professor of Science, Matanuska-Susitna College

Date: 13 June 2014

Subject: Proposal for an Associate of Applied Science Degree Program in Veterinary Technology

This proposal is to establish an Associate of Applied Science Degree Program in Veterinary Technology at Matanuska-Susitna College. Alaska is one of only two states that do not currently have at least one American Veterinary Medical Association (AVMA)-accredited veterinary technology degree program, and Alaska’s veterinary industry would like to fill that void. The proposed program follows the guidance established by the AVMA’s Committee on Veterinary Technician Education and Activities (CVTEA). Students admitted to the program will be required to complete the following courses, which include two externships, as part of the proposed degree. CGGs and CARs for each of these courses are included in this curriculum package.

*VTCH A101  Introduction to Veterinary Technology (1+0) 1 credit
*VTCH A102  Veterinary Medical Terminology (1+0) 1 credit
VTCH A110  Medical Calculations for Veterinary Technicians (1+0) 1 credit
VTCH A111  Veterinary Office Procedures and Hospital Management (3+0) 3 credits
VTCH A112  Veterinary Anatomy and Physiology (3+0) 3 credits
VTCH A112L Veterinary Anatomy and Physiology Laboratory (0+3) 1 credit
VTCH A113  Veterinary Nursing Skills (3+0) 3 credits
VTCH A113L Veterinary Nursing Skills Laboratory (0+3) 1 credit
VTCH A120  Pharmacology for Veterinary Technicians (2+0) 2 credits
VTCH A121  Small Animal Medicine (3+0) 3 credits
VTCH A122  Veterinary Surgical Nursing (3+0) 3 credits
VTCH A122L Veterinary Surgical Nursing Laboratory (0+3) 1 credit
VTCH A223  Veterinary Microbiology and Parasitology (3+0) 3 credits
VTCH A223L Veterinary Microbiology and Parasitology Laboratory (0+3) 1 credit
VTCH A195  Clinical Externship I (135 contact hours) (3+0) 3 credits
VTCH A130  Applied Small Animal Behavior I (1+0) 1 credit
VTCH A231  Veterinary Diagnostic Imaging and Dentistry (2+0) 2 credits
VTCH A231L Veterinary Diagnostic Imaging and Dentistry Laboratory (0+3) 1 credit
VTCH A232  Veterinary Anesthesia and Analgesia (3+0) 3 credits
VTCH A232L Veterinary Anesthesia and Analgesia Laboratory (0+3) 1 credit
VTCH A233  Veterinary Clinical Pathology (3+0) 3 credits
VTCH A233L Veterinary Clinical Pathology Laboratory (0+3) 1 credit
VTCH A240  Applied Small Animal Behavior II (1+0) 1 credit
VTCH A241  Laboratory and Exotic Animal Medicine (2+0) 2 credits
VTCH A241L Laboratory and Exotic Animal Medicine Laboratory (0+3) 1 credit
VTCH A242  Large Animal Medicine and Clinical Procedures (2+0) 2 credits
VTCH A242L Large Animal Medicine and Clinical Procedures Laboratory (0+3) 1 credit
VTCH A243  Career Success as a Veterinary Technician (1+0) 1 credit
VTCH A244  Veterinary Technician National Exam Preparation (1+0) 1 credit
VTCH A295  Clinical Externship II (135 contact hours) (3+0) 3 credits

TOTAL 54 CREDITS

*Admission prerequisites

Along with VTCH A101 and VTCH A102, students will also need COMM (3 credits), ENGL A111 (3 credits), BIOL (4 credits), MATH A105 (3 credits), and CHEM A055 or higher as prerequisites for acceptance into the program. They will also need 3 credits of PSY and a 3-credit, 200-level ENGL course before they graduate for a TOTAL of 73 CREDITS.

Please contact me at 907-745-9771 or klcarpenter@matsu.alaska.edu with any questions. Thank you for your consideration.
1a. School or College
MA Mat-SU

1b. Department

2. Complete Program Title/Prefix
Associate of Applied Science in Veterinary Technology

3. Type of Program
Choose one from the appropriate drop down menu:
Undergraduate: or Graduate: CHOOSE ONE

This program is a Gainful Employment Program: Yes or No

4. Type of Action:
PROGRAM
Add
Change
Delete

PREFIX
Add
Change
Inactivate

5. Implementation Date (semester/year)
From: Fall/2015 To: /9999

6a. Coordination with Affected Units
Initiator Name (typed): Karen L. Carpenter, DVM
Initiator Signed Initials: ___________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)
Date: 5/07/2014

6c. Coordination with Library Liaison
Date: 4/11/2014

7. Title and Program Description - Please attach the following:
Cover Memo Catalog Copy in Word using the track changes function

8. Justification for Action
The State of Alaska has no American Veterinary Medical Association (ACMA) accredited veterinary technician program. In 2010, veterinarians and veterinary technicians were surveyed at the Alaska Veterinary Medical Association conference; 98% of respondents supported developing an AVMA-accredited veterinary technology program and indicated they would hire our graduates. The Alaska veterinary community is required to hire licensed veterinary technicians to perform advanced procedures. Presently, trainees can receive licensure after on-the-job training and passing the Veterinary Technician National Exam (VTNE); however, veterinary technician licensing laws may soon require those wanting licensure to complete an accredited veterinary technician program before sitting for the VTNE. According to the Rochester Institute of Technology’s (RIT) report, “Job Outlook to 2018 For Today’s College Graduate,” employment prospects for veterinarians will increase by 33%. This increase in future jobs for veterinarians will mandate a need for more veterinary technicians to support them—both in Alaska and across the country. According to the United States Department of Labor Bureau of Labor Statistics, the job opportunities for veterinary technicians and technologists are excellent and are “expected to grow by 36 percent over the 2008-18 projection period, which is much faster than the average for all occupations” (http://www.bls.gov/oco/ocos183.htm). Furthermore, veterinary technicians not only support veterinarians in clinics, but they also have many other career options, such as conducting research or working in military service, food safety, teaching, zoos, and aquariums. An
AVMA-accredited veterinary technology program would provide its graduates a two-year associate of applied science degree in veterinary technology.

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Veterinary technicians are indispensable members of the professional veterinary medical team and provide animal health care and education to our community. They work in clinics, animal hospitals, animal shelters, zoos, and research facilities. In addition to being team members, they must also work independently and respond quickly in emergencies. Veterinary technicians are educated and trained to be contributing professionals supporting the needs of animals as patients and people as clients.

The program follows the educational guidelines of the American Veterinary Medical Association (AVMA) and is in the process of gaining accreditation. Upon accreditation, the program will prepare students to sit for the Veterinary Technician National Exam (VTNE) leading towards Veterinary Technician Licensure.

In the Veterinary Technology AAS program, students gain knowledge and technical skills for handling, treating, and providing nursing care necessary for effective patient management. Students will develop the skills essential for assisting veterinarians during treatment and surgery, including small, large, and exotic animal medicine; laboratory and clinical procedures; diagnostic imaging; dental hygiene; anesthesia and surgical nursing; pharmacology; proper positioning and restraint; nutritional management and husbandry; routine and emergency care; safety protocols; prevention of zoonotic diseases; grief management counseling; and applied animal behavior. Students also learn techniques for effective communication, both orally and in writing, with the veterinary team, clients, and the community.

Two primary requirements of the Veterinary Technology program are a mid-program clinical externship and a capstone clinical externship. Both clinical externships provide opportunities to apply learned skills in a clinical setting. These externships will be completed in clinics around the state and in other U.S. locations. Efforts are made to place students in geographic locations of their choice; however, externship positions may not be available at all approved sites.

**Associate of Applied Science, Veterinary Technology**

**Program Student Learning Outcomes**

MSC’s AAS Veterinary Technology program curricula follow the outcomes outlined in the Essential and Recommended Skills List of the American Veterinary Medical Association’s (AVMA’s) Committee on Veterinary Technician Education and Activities (CVTEA). The students and the program will be assessed by an external review team (AVMA’s CVTEA) on each of those specific skills.

Upon completion of the Associate of Applied Science degree program in Veterinary Technology, students will be prepared to:

1. Participate in facility management utilizing traditional and electronic media and appropriate veterinary medical terminology and abbreviations.
2. Communicate in a professional manner in all formats.
3. Follow and uphold applicable laws and the veterinary technology professional code of ethics to provide high quality care to patients.
4. Safely and effectively administer prescribed drugs to patients.
5. Accurately dispense and explain prescribed drugs to clients.
6. Demonstrate and perform patient assessment techniques in a variety of animal species.
7. Understand and demonstrate husbandry, nutrition, therapeutic, and dentistry techniques appropriate to various animal species.
8. Safely and effectively manage and maintain patients in all phases of anesthesia.
9. Safely and effectively select, utilize, and maintain anesthetic delivery and monitoring instruments and equipment.
10. Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.
11. Understand and provide the appropriate instruments, supplies, and environment to maintain asepsis during surgical procedures.
12. Properly package, handle, and store specimens for laboratory analysis.
13. Properly analyze laboratory specimens.
14. Safely and effectively produce diagnostic radiographic and non-radiographic images.
15. Safely and effectively handle common laboratory animals used in animal research.
16. Understand the approach to providing safe and effective care for small and large domestic animals and common laboratory and exotic animals.
17. Model professional behavior, including risk management, time management, and respect for patients, clients, and colleagues.
18. Seek, obtain, evaluate, and use scientific literature and professional development opportunities relevant to veterinary technology for engaging in lifelong learning.
19. Promote the profession of veterinary technology through professional organization service and affiliations.

**Admission Requirements**

**Matanuska-Susitna College - Admission Requirements**

*Advising for this Mat-Su College (MSC) program is only available from MSC Student Services. Please call (907) 745-9762 for more information.*

Admission to the MSC Veterinary Technology program is competitive and based on a ranking process. Program applications can be requested through the Veterinary Technology department or downloaded via the Internet. Application requirements must be completed prior to the published application deadline.

Students should consider applying for admission as a “pre-major” in Veterinary Technology while enrolled in Veterinary Technology degree prerequisite courses. While being a pre-major is not required, students may be eligible for financial aid as pre-majors are considered to be degree-seeking students.

Admission as a Veterinary Technology pre-major does not guarantee admission to the Veterinary Technology degree program. Applications for major status must be submitted by the published deadline. Formal admission requirements to the Veterinary Technology AAS degree program are listed below.

**Admission Requirements for Veterinary Technology Degree**

1. Student must attend an advising session with the MSC Veterinary Technology coordinator. Contact the campus for an appointment.
2. VTCH A101 with a grade of C or better; this class functions both as an introduction to the profession and as an application assessment tool.
3. VTCH A102 with a grade of C or better
4. CHEM A055 or any CHEM course for which CHEM A055 is in the prerequisite chain with a grade of C or better
5. Completion of the following General Course Requirements for Associate of Applied Science Degree with a C or better in each class:
   a. Biology with laboratory from Natural Science UAA GER list (BIOL A102 and BIOL A103 or BIOL A115 and BIOL A115L are preferred)
   b. Oral Communication Skills GER
   c. ENGL A111 or ENGL A1W-Written Communication GER
   d. MATH A105 or any MATH course for which MATH A105 is in the prerequisite chain
6. Cumulative GPA of 2.00 or better in all courses (all program requirements and all prior coursework)
7. Admission essay
8. Résumé with three letters of recommendation

Selection criteria change periodically in response to AVMA guidelines. Applicants must contact the program or MSC Student Services for selection criteria for the year they wish to apply. Completion of the admissions requirements does not guarantee
selection into the Veterinary Technology AAS degree program. Applicants transferring credits from another institution benefit by applying for admissions in the pre-major status a semester prior to the application deadline. This allows sufficient time for transcript evaluation processing.

Further details regarding the selection process can be found in the Veterinary Technology AAS Student Handbook.

**Admission Requirements before Beginning Coursework**

Upon admission to the Veterinary Technology program, students are required to provide the following before beginning course work:

1. Documentation from personal physician, PA-C, or NP affirming capability of performing the physical tasks required for the program as outlined in the Veterinary Technology AAS Student Handbook
2. Evidence of diphtheria/tetanus vaccination within the past 10 years (with booster required at the time of expiration)
3. Professional liability insurance in the amount of $1 million/$3 million (to be maintained throughout the duration of the student’s enrollment in the Veterinary Technology program. The policy will be paid out of student fees.
4. Accident insurance throughout the duration of the student’s enrollment in the Veterinary Technology program. The policy will be paid out of student fees.
5. Results of a state- and national-level criminal background check. Must be completed prior to the start of courses. This process can take several months to complete.
6. Test results documenting that the student is free of illegal drugs. Tests must be taken and results submitted to the Veterinary Technology coordinator between the student’s date of acceptance into the program and the first day of class.

Students enrolled in clinical courses must provide their own transportation to clinical assignments and will be required to purchase uniforms and specialized equipment. The college assumes no responsibility for illnesses and injuries experienced by students in conjunction with their clinical experiences; students who are injured while completing clinical assignments are responsible for all associated medical costs. No workers compensation will be awarded if injured on a clinical site or during the field internship. It is strongly recommended that students maintain personal medical insurance.

**Academic Progress**

1. Students are required to earn a grade of 2.00 C or higher in each VTCH course for all courses required. Failure to maintain a passing grade of C will result in dismissal from the program.
2. Students MUST complete all of the VTCH classes through VTCH A240, their 200-level English course, and their psychology course before they register for their final externship (VTCH A295). Students must have all of the VTCH classes through VTCH A244 completed before beginning the final externship (VTCH A295).
3. The veterinary technology program admits students into a program cohort. Thus, if a student leaves the program for any reason, the student will not be able to resume the program until the next cohort starts.

**General University Requirements**

Complete the General University and the General Course Requirements for Associate of Applied Science Degrees located at the beginning of this chapter.

**Communication Requirements (9 credits)**

- **Oral communication (3 credits)**
  Oral communication skills GER is a required prerequisite and fulfills the oral communication requirement (3)

- **Written communication (6 credits)**
  ENGL A111 or ENGL A1W-Written Communication GER is a required prerequisite and fulfills the 100-level written communication requirement (3)
  ENGL A211, ENGL A212 (preferred), ENGL A213, or ENGL A214 will fulfill the 200-level written communication requirement (3)
General Requirements (6 credits)

Natural Science Requirements (4 credits)

Biology with laboratory from the Natural Science UAA GER list (BIOL A102 and BIOL A103 or BIOL A115 and BIOL A115L are preferred) is a required prerequisite and fulfills part of the general requirements (4)

Math Requirements (3 credits)

MATH A105 or any MATH course for which MATH A105 is in the prerequisite chain is a required prerequisite and fulfills part of the general requirements (3)

Major Requirements (57 credits)

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<th>Course</th>
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<td>Veterinary Office Procedures and Hospital Management</td>
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A total of 73 credits is required for the degree.

FACULTY

Karen L. Carpenter, DVM, Coordinator/Assistant Professor of Science (MSC),
kicarpenter@matsu.alaska.edu
### Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

1a. **School or College**  
AS CAS  

1b. **Division**  
ASSC Division of Social Science  

1c. **Department**  
Anthropology  

2. **Course Prefix**  
ANTH  

3. **Course Number**  
A336  

4. **Previous Course Prefix & Number**  
NA  

5a. **Credits/CEUs**  
3  

5b. **Contact Hours**  
(Lecture + Lab) (3+0)  

---

6. **Complete Course Title**  
Peoples and Cultures of Scandinavia  

**Abbreviated Title for Transcript (30 character)**  

7. **Type of Course**  
- [x] Academic  
- [ ] Preparatory/Development  
- [ ] Non-credit  
- [ ] CEU  
- [ ] Professional Development  

8. **Type of Action:**  
- [ ] Add  
- [ ] Change  
- [x] Delete  

**If a change, mark appropriate boxes:**  
- Prefix  
- Credits  
- Course Number  
- Contact Hours  
- Grading Basis  
- Repeat Status  
- Course Prerequisites  
- Co-requisites  
- Registration Restrictions  
- General Education Requirement  
- Class  
- Level  
- College  
- Major  
- Other  

9. **Repeat Status**  
- choose one  
- # of Repeats  
- Max Credits  

10. **Grading Basis**  
- [x] A-F  
- [ ] P/NP  
- [ ] NG  

11. **Implementation Date**  
- semester/year  
- From: Fall/2014  
- To: Fall/9999  

12. **Cross Listed with**  
- [ ] NA  
- [ ] Stacked with  

**Cross-Listed Coordination Signature**  

13a. **Impacted Courses or Programs:**  
List any programs or college requirements that require this course.  

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

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<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tbody>
<tr>
<td>Anthropology BA</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>Anthropology BS</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
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---

**Initiator Name (typed):** Steve J. Langdon  
**Initiator Signed Initials:** ________  
**Date:** __________  

13b. **Coordination Email**  
- Date: 10/31/2013  
- submitted to Faculty Listserv: [uas-faculty@lists.uaa.alaska.edu](mailto:uas-faculty@lists.uaa.alaska.edu)  

13c. **Coordination with Library Liaison**  
- Date: __________  

14. **General Education Requirement**  

**Mark appropriate box:**  
- Oral Communication  
- Written Communication  
- Quantitative Skills  
- Humanities  
- Fine Arts  
- Social Sciences  
- Natural Sciences  
- Integrative Capstone  

15. **Course Description (suggested length 20 to 50 words)**  
Cultural history and variations of Scandinavian peoples including their origins, prehistory, biological affiliations, major migrations, and selected current issues.

16a. **Course Prerequisite(s) (list prefix and number or test code and score)**  

16b. **Co-requisite(s) (concurrent enrollment required)**  

16c. **Automatic Restriction(s)**  
- [ ] College  
- [ ] Major  
- [ ] Class  
- [ ] Level  

16d. **Registration Restriction(s) (non-codable)**  
- NA  

17. **Mark if course has fees**  

18. **Mark if course is a selected topic course**  

19. **Justification for Action**  
Program consolidation and revision, involving streamlining of course offerings for students.

---

**Initiator (faculty only)**  
**Steve J. Langdon**  
**Initiator (TYPE NAME)**  

**Initiator Signed Initials:** ________  
**Date:** __________  

**Initiator (faculty only)**  
**Date:** __________  

**Disapproved:** Dean/Director of School/College  
**Date:** __________  

**Approved:** Undergraduate/Graduate Academic  
**Date:** __________  

**Disapproved:** Board Chair  
**Date:** __________  

**Approved:** Provost or Designee  
**Date:** __________

---

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Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
AS CAS

1b. Division
ASSC Division of Social Science

1c. Department
Anthropology

2. Course Prefix
ANTH

3. Course Number
A415

4. Previous Course Prefix & Number
N/A

5a. Credits/CEUs
3

5b. Contact Hours (Lecture + Lab)
(3+0)

6. Complete Course Title
Applied Anthropology

Abbreviated Title for Transcript (30 character)

7. Type of Course
☑ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action:
☐ Add ☑ Change ☑ Delete

9. Repeat Status No
# of Repeats
Max Credits

10. Grading Basis
☐ A-F ☑ P/NC ☐ NG

11. Implementation Date
From: Fall/2014 To: Fall/2099

12. Cross Listed with
☐ Stacked with A615 Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
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<td>Paul White</td>
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<td>3.</td>
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Initiator Name (typed): Sally Carrahan Initiator Signed Initials: Date:

13b. Coordination Email
submitted to Faculty Listserv: faculty@lists.aaa.alaska.edu

13c. Coordination with Library Liaison
Date: 10/31/2013

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Applied anthropology, theory, methods, and the history of applied anthropology in the United States, with an emphasis on applying anthropology for social justice in Alaska. Students will conduct a local research project as a team through engagement with community institutions, thereby learning the methods of applying anthropology to solve contemporary sociocultural issues and problems.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
ANTH A202, minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☐ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
Updating course description and classroom approach to keep up with innovative teaching strategies being used for similar courses at other universities. Updating prerequisites to ensure students have taken Cultural Anthropology (ANTH A202).

Initiator (faculty only) Date
Sally Carrahan Initiator (TYPE NAME)

☑ Approved ☐ Disapproved Dean/Director of School/College Date

☑ Approved ☐ Disapproved Undergraduate/Graduate Academic Date

☑ Approved ☐ Disapproved Board Chair Date

☑ Approved ☐ Disapproved Provost or Designee Date
I. Date of initiation: October, 2013
II. A. College or school: CAS
   B. Course title: Applied Anthropology
   C. Course prefix: ANTH
   D. Course number: A415
   E. Credits and Contact hours: 3.0 credits, 3+0 contact hours
   F. Grading: A-F
   G. Stacking: ANTH A615
   H. Course description: Applied anthropology, theory, methods, and the history of applied anthropology in the United States, with an emphasis on applying anthropology for social justice in Alaska. Students will conduct a local research project as a team through engagement with community institutions, thereby learning the methods of applying anthropology to solve contemporary sociocultural issues and problems.
I. Course prerequisites: ANTH A202, with minimum grade of C
J. Registration restrictions: none
K. Course fee: No

III. Course activities/teaching methods:
 Course will be offered every other academic year. Each time course is offered, the instructor will have identified a local client and research project, and the main research focus/question for the class to work on as a team. Students work collaboratively with the client to identify specific research questions, project timeline, project data collection methods (i.e. open or structured interviews, focus groups, questionnaire surveys, oral histories, life histories, archival research), and develop project deliverables for the client (i.e. a final report, a web site, pamphlets, public presentation, community education materials). Through this approach, students learn through personal experience how to actually do applied anthropological research with an emphasis on promoting social justice in Alaska. In addition to providing educational materials about the theory, methods, and history of applied anthropology, the instructor serves as a facilitator and mediator for students and the project client.

IV. Instructional goals and student learning outcomes:
A. The instructor will:
   1. Explain the core concepts, historical developments, methods employed, and major results of applying anthropological theory and method to the understanding and amelioration of sociocultural problems or challenges in Alaska, the US, and worldwide.
   2. Identify and discuss the major subfields in applied anthropology, and the kinds of employment available in each related to one's educational achievement and experience.
3. Explain the ethical principles required of applied and practicing anthropologists, proving illustrations of both appropriate and unethical activity in the field.
4. Serve as a project facilitator and a mediator between students and the client.
5. Prior to the start of the semester, the instructor will identify a client (person, community group, or organization) in the Anchorage/Mat-Su area, and work with the client to identify the main research topic and people who will be involved in the project (i.e. interviewees).
6. Prior to the start of the semester, the instructor will obtain IRB and any other necessary approvals/licenses, as well as project funding (if needed).

B. The student will be able to:
1. Discuss the core concepts, historical developments, methods and results of applying anthropological theory and method to sociocultural problems.
2. Discuss the development, activities appropriate to, and notable results of applied anthropology.
3. Discuss the ethical principles adhered to in this field.
4. Demonstrate competency in types of methods commonly used in applied anthropology.
5. Demonstrate competency in designing, carrying out, and analyzing anthropological research with an applied focus; and in the development and dissemination of research deliverables to a client.
6. Work effectively as a part of team.

V. Topical course outline:
1. Introduction and overview; distinction between basic and applied anthropological research
2. History and kinds of applied anthropology, globally, in the US, and with a special emphasis on Alaska
3. Ethics in applied research and practice
4. Method and theory in applied anthropology:
   a. Ethnography, participant observation, key-informant interviewing, oral and life histories, qualitative analyses
   b. Focus groups, questionnaire surveys, quantitative analyses
5. Research design and process:
   a. Identifying core research problem and developing specific research questions to answer the problem
   b. Time management and troubleshooting
   c. Population sampling techniques
   d. Designing research instruments (surveys, interviews)
   e. Storing, organizing, coding, and analyzing data
f. Writing research dissemination materials for clients and public audiences

VI. Suggested texts:


VII. Bibliography:


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College: AS CAS
1b. Division: ASSC Division of Social Science
1c. Department: Anthropology

2. Course Prefix: ANTH
3. Course Number: A615
4. Previous Course Prefix & Number: N/A
5a. Credits/CEUs: 3
5b. Contact Hours (Lecture + Lab): (3+0)

6. Complete Course Title: Advanced Applied Anthropology
Abbreviated Title for Transcript (30 character):

7. Type of Course: ☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action: ☒ Add ☐ Change ☐ Delete
If a change, mark appropriate boxes:

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<th>Prefix</th>
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<th>Course Description</th>
<th>Test Score Prerequisites</th>
<th>Co-requisites</th>
<th>Registration Restrictions</th>
<th>Contact Hours</th>
<th>Repeat Status</th>
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</table>

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis: ☒ A-F ☐ P/NP ☐ NG

11. Implementation Date: From: Fall/2014 To: Fall/9999

12. ☐ Cross Listed with ☒ Stacked with A415
Cross-Listed Coordination Signature:

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
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<td>10/31/2013</td>
<td>Paul White</td>
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</table>

Initiator Name (typed): Sally Carraher Initiator Signed Initials: ___________ Date: ___________

13b. Coordination Email: Date: 10/31/2013 submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison Date: 10/31/2013

14. General Education Requirement
Mark appropriate box:

<table>
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<tr>
<th>Oral Communication</th>
<th>Written Communication</th>
<th>Quantitative Skills</th>
<th>Humanities</th>
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</table>

15. Course Description (suggested length 20 to 50 words)
Advanced applied anthropology, theory, methods, and the history of applied anthropology in the United States, with an emphasis on applying anthropology for social justice in Alaska. Students will conduct a local research project as a team through engagement with community institutions, thereby learning the methods of applying anthropology to solve contemporary sociocultural issues and problems.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
Anth 202 completed with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

16d. Registration Restriction(s) (non-codable)
Graduate standing

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
Updating course description and classroom approach to keep up with innovative teaching strategies being used for similar courses at other universities. Updating prerequisites to ensure students have taken Cultural Anthropology (ANTH202).

Initiator (faculty only) Sally Carraher Initiator (TYPE NAME)
Initiator Signature: __________________ Date: ___________

Approved ☐ Disapproved ☐
Dean/Director of School/College Date: ___________

Approved ☐ Disapproved ☐
Undergraduate/Graduate Academic Board Chair Date: ___________

Approved ☐ Disapproved ☐
Provost or Designee Date: ___________

Approved ☐ Disapproved ☐
Department Chair Date: ___________

Approved ☐ Disapproved ☐
College/School Curriculum Committee Chair Date: ___________

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I. Date of initiation: October, 2013
II. A. College or school: CAS  
B. Course title: Applied Anthropology  
C. Course prefix: ANTH  
D. Course number: A615  
E. Credits and Contact hours: 3.0 credits, 3+0 contact hours  
F. Grading: A-F  
G. Stacking: ANTH A415  
H. Course description: Advanced applied anthropology, theory, methods, and the history of applied anthropology in the United States, with an emphasis on applying anthropology for social justice in Alaska. Students will conduct a local research project as a team through engagement with community institutions, thereby learning the methods of applying anthropology to solve contemporary sociocultural issues and problems.  
I. Registration restrictions: Graduate standing  
J. Course fee: No  

III. Course activities/teaching methods:  
Course will be offered every other academic year. Each time course is offered, the instructor will have identified a local client and research project, and the main research focus/question for the class to work on as a team. Students work collaboratively with the client to identify specific research questions, project timeline, project data collection methods (i.e. open or structured interviews, focus groups, questionnaire surveys, oral histories, life histories, archival research), and develop project deliverables for the client (i.e. a final report, a website, pamphlets, public presentation, community education materials). Through this approach, students learn through personal experience how to actually do applied anthropological research with an emphasis on promoting social justice in Alaska. In addition to providing educational materials about the theory, methods, and history of applied anthropology, the instructor serves as a facilitator and mediator for students and the project client.  

IV. Instructional goals and student outcomes:  
A. The instructor will:  
1. Explain the core concepts, historical developments, methods employed, and major results of applying anthropological theory and method to the understanding and amelioration of sociocultural problems or challenges in Alaska, the US, and worldwide.  
2. Identify and discuss the major subfields in applied anthropology, and the kinds of employment available in each related to one’s educational achievement and experience.
3. Explain the ethical principles required of applied and practicing anthropologists, proving illustrations of both appropriate and unethical activity in the field.

4. Serve as a project facilitator and a mediator between students and the client.

5. Prior to the start of the semester, the instructor will identify a client (person, community group, or organization) in the Anchorage/Mat-Su area, and work with the client to identify the main research topic and people who will be involved in the project (i.e. interviewees).

6. Prior to the start of the semester, the instructor will obtain IRB and any other necessary approvals/licenses, as well as project funding (if needed).

B. The student will be able to:

1. Discuss the core concepts, historical developments, methods and results of applying anthropological theory and method to sociocultural problems.

2. Discuss the development, activities appropriate to, and notable results of applied anthropology.

3. Discuss the ethical principles adhered to in this field.

4. Gain experience and competency in types of methods commonly used in applied anthropology.

5. Gain experience in designing, carrying out, and analyzing anthropological research with an applied focus; and in the development and dissemination of research deliverables to a client.

6. Work effectively as a part of a team.

7. Work as project managers to assist the instructor with mentoring undergraduate student research and writing; and oversee particular aspects of project completion.

V. Assessment:

1. Graduate students will receive a final grade for the course (A-F). Graduate students will maintain research journals cataloguing their progress and accounting for individual contributions and activities related to the class research project. Graduate students will be assessed based on the quality, rigor, completion, and collegiality reflected in their journals, in-class activities, and the final database and project reports developed for delivery to the class client. The journal also provides the instructor with information about student participation and success outside of the classroom – thus highlighting contributions to the class project that may not be readily observable in the classroom or the final report to the client.

2. Graduate students will be assessed, in addition to the above, based on their performance as mentors to the undergraduates, as reflected in their own journal entries and the instructor’s observations during class activities. Graduate students are expected to contribute to class research, analysis,
and writing at a higher level – and will work as project managers under the instructor to guide undergraduate student work.

VI. Topical course outline:
1. Introduction and overview; distinction between basic and applied anthropological research
2. History and kinds of applied anthropology, globally, in the US, and with a special emphasis on Alaska
3. Ethics in applied research and practice
4. Method and theory in applied anthropology:
   a. Ethnography, participant observation, key-informant interviewing, oral and life histories, qualitative analyses
   b. Focus groups, questionnaire surveys, quantitative analyses
5. Research design and process:
   a. Identifying core research problem and developing specific research questions to answer the problem
   b. Time management and troubleshooting
   c. Population sampling techniques
   d. Designing research instruments (surveys, interviews)
   e. Storing, organizing, coding, and analyzing data
   f. Writing research dissemination materials for clients and public audiences

VII. Suggested texts:

VIII. Bibliography:


# University of Alaska Anchorage
## Course Action Request
### Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
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<tbody>
<tr>
<td>1b. Division</td>
<td>ASSC Division of Social Science</td>
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<tr>
<td>1c. Department</td>
<td>Anthropology</td>
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<table>
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<tr>
<th>2. Course Prefix</th>
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<td>A435</td>
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<td>4. Previous Course Prefix &amp; Number</td>
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<tr>
<td>5a. Credits/CEUs</td>
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<tr>
<td>5b. Contact Hours (Lecture + Lab)</td>
<td>(3+0)</td>
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## Type of Course
- **Academic**
- **Preparatory/Development**
- **Non-credit**
- **CEU**
- **Professional Development**

<table>
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<th>7. Type of Course Action</th>
<th><strong>Add</strong> or <strong>Change</strong> or <strong>Delete</strong></th>
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</table>

- Prefix
- Credits
- Title
- Grading Basis
- Contact Hours
- Repeat Status
- Course
- Number
- Cross-Listed/Stacked
- Course Prerequisites
- Co-requisites
- Registration Restrictions
- General Education Requirement
- Class
- Level
- College
- Major
- Other (please specify)

## Repeat Status
- **Choose one**
- # of Repeats
- Max Credits

## Grading Basis
- **A-F**
- **P/NP**
- **NG**

## Implementation Date
- From: Fall/2014
- To: Fall/9999

## Cross Listed
- **Cross Listed with**
- **Stacked with**

## Course Description
- Indigenous peoples and cultures of the Northwest Coast including prehistory, regional variations, key institutions (potlatch, art, slavery, spirituality, warfare), culture history, ethnographic change and contemporary issues such as cultural revitalization, land and resource rights and self-determination.

## Co-requisite(s) (concurrent enrollment required)

## Automatic Restrictions (list prefix and number or test code and score)

## Registration Restriction(s) (non-codable)

## Mark if course has fees

## Mark if course is a selected topic course

## Justification for Action
- Program consolidation and revision, involving streamlining of course offerings for students.

---

### Impacted Courses or Programs:

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<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology BA/BS</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>Anthropology MA</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>Alaska Native Studies Minor</td>
<td>10/31/2013</td>
<td>Maria Williams</td>
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</table>

Initiator Name (typed): Steve J. Langdon  
Initiator Signed Initials: __________  
Date: __________

### Coordination Email
- Date: 10/31/2013  
- submitted to Faculty Listserv: uaa-faculty@lists.uaa.alaska.edu

### Coordination with Library Liaison
- Date: 10/31/2013

### General Education Requirement
- Mark appropriate box:
  - Oral Communication
  - Written Communication
  - Quantitative Skills
  - Humanities
  - Fine Arts
  - Social Sciences
  - Natural Sciences
  - Integrative Capstone

###Course Description (suggested length 20 to 50 words)

Indigenous peoples and cultures of the Northwest Coast including prehistory, regional variations, key institutions (potlatch, art, slavery, spirituality, warfare), culture history, ethnographic change and contemporary issues such as cultural revitalization, land and resource rights and self-determination.

---

### Initiator (faculty only)

Initiator: Steve J. Langdon  
Initiator (TYPE NAME): __________  
Date: __________

---

### Approved
- Dean/Director of School/College  
- Date: __________

### Disapproved
- Undergraduate/Graduate Academic  
- Date: __________

### Approved
- Board Chair  
- Date: __________

### Disapproved
- Provost or Designee  
- Date: __________
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<th>1a. School or College</th>
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<td>ASSC Division of Social Science</td>
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6. Complete Course Title
Culture and Ecology

Abbreviated Title for Transcript (30 character)

7. Type of Course
☐ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development

8. Type of Action:
☐ Add  ☐ Change  ☐ Delete

If a change, mark appropriate boxes:

- Prefix
- Credits
- Title
- Grading Basis
- Contact Hours
- Cross-Listed/Stacked
- Course Description
- Course Prerequisites
- Test Score Prerequisites
- Co-requisites
- Registration Restrictions
- General Education Requirement
- Class
- Level
- College
- Major
- Other
  (please specify)

9. Repeat Status No  # of Repeats  Max Credits

10. Grading Basis
☐ A-F  ☐ P/NP  ☐ NG

11. Implementation Date
From: Spring/2014  To: Fall/9999

12. ☐ Cross Listed with
Stacked with ANTH A654

Cross-Listed Coordination

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Steve J. Langdon
Initiator Signed Initials: ____________  Date: ______________

13b. Coordination Email
Date: 10/31/2013
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 10/31/2013

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication  ☐ Written Communication  ☐ Quantitative Skills  ☐ Humanities
☐ Fine Arts  ☐ Social Sciences  ☐ Natural Sciences  ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Anthropological approaches to the relationships between cultural and ecological systems. Culture as an adaptive system and the role of various cultural subsystems in different adaptations. Application of ecological concepts to human societies; impacts of environmental change on human societies, and impacts of human societies on environments; ethnecology and traditional ecological knowledge of indigenous communities; values of nature among Western and non-Western societies; and political ecology in relation to the juxtaposition of indigenous peoples within contemporary nation-states.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
ANTH A202 minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Other Restriction(s)
☐ College  ☐ Major  ☐ Class  ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
This capstone course has been taught at the advanced undergraduate level for the past several years, and its movement to the 400 level reflects its content level as a capstone course in Anthropology.
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UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Date of Initiation Date:  Fall 2013

II. Course Information

A. College:  College of Arts and Sciences
B. Course Prefix  ANTH
C. Course Number  A454
D. Number of Credits  3
E. Contact Hours  3+0
F. Course Title:  Culture and Ecology
G. Grading Basis:  A-F
H. Implementation Date  Fall 2014
I. Course Description:  Anthropological approaches to the relationships between cultural and ecological systems. Culture as an adaptive system and the role of various cultural subsystems in different adaptations. Application of ecological concepts to human societies; impacts of environmental change on human societies, and impacts of human societies on environments; ethnoecology and traditional ecological knowledge of indigenous communities; values of nature among Western and non-Western societies; and political ecology in relation to the juxtaposition of indigenous peoples within contemporary nation-states.

J. Status of Course Relative to a GER Integrative Capstone Degree or Certificate Program:
   BA Anthropology capstone
   BS Anthropology capstone
   BS Environment and Society, Society and Environment emphasis
   Minor, Environmental Studies, List B
   BS Natural Sciences, Environmental Sciences option, Social Sciences list

K. Course Fees:  No
L. Course Prerequisite:  ANTH A202, minimum grade of C
M. Stacking  ANTH A654

III. Course Activities

In a lecture and discussion format, information will be presented concerning the diversity of ways in which human societies adapt and have adapted to their natural environments and have transformed those environments, from prehistory to the present, in global perspective.

IV. Course Evaluation
Evaluation procedures are at the discretion of the instructor and will be discussed at the first class meeting of the semester. Students will be evaluated on all class content and assigned readings. Evaluation vehicles will include (but are not limited to) examinations, student journals/reflections, student questions on readings, and class discussions.

A. Student Learning Outcomes and Assessment Measures

<table>
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<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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<tbody>
<tr>
<td>1. Apply fundamental ecological concepts to human societies</td>
<td>Examinations, student journals/reflections, daily questions, and/or class discussion</td>
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<tr>
<td>2. Analyze environmental changes during human prehistory and history, and their impacts on human societies</td>
<td>Examinations, student journals/reflections, daily questions, and/or class discussion</td>
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<tr>
<td>3. Analyze long-term impacts of human societies on their environments, from prehistory to the present</td>
<td>Examinations, student journals/reflections, daily questions, and/or class discussion</td>
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<tr>
<td>4. Interpret different approaches of societies to nature, and the differences and similarities between indigenous environmental knowledge and that of contemporary Western societies</td>
<td>Examinations, student journals/reflections, daily questions, and/or class discussion</td>
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V. Course Justifications:

A. Justification of course level: This course contains advanced content; it is a synthetic course requiring specialized knowledge

B. Justification for capstone status: This course integrates general knowledge about human cultural adaptations to produce a synthetic but detailed understanding of the long-term history of human-environmental relations, including both environmental impacts on human societies and vice versa, as well as an understanding of distinctions between Western and non-Western approaches to ecological knowledge and values of nature, and a consideration of the ecological circumstances of indigenous peoples embedded within contemporary nation-states.

C. Justification for stacking: Presence of graduate students in the course will enhance the course experience; graduate students will serve as mentors

VI. Instructional Goals and Defined Outcomes

A. Instructional Goals. The Instructor will:
1. Present fundamental ecological concepts and their relationship to human societies

2. Discuss human adaptations from a variety of cultural perspectives

3. Describe the impacts of environmental changes on human societies, and of human societies on their environments

4. Present Western and Non-western (indigenous) perspectives on ecological knowledge

B. Defined Student Learning Outcomes. The Student will be able to:

1. Apply fundamental ecological concepts to human societies

2. Analyze environmental changes during human prehistory and history, and their impacts on human societies

3. Analyze long-term impacts of human societies on their environments, from prehistory to the present

4. Interpret different approaches of societies to nature, and the differences and similarities between indigenous environmental knowledge and that of contemporary Western societies

C. Student assessment: based on examinations, student journals/reflections, daily questions, and class discussion

VII. Topical Outline:

1. History of Human Ecological Thought

2. Application of Ecological Concepts to Human Societies: Ecosystems and Communities; Species and Populations; Niches and Habitats; Ecotones and Boundaries; Limiting Factors

3. Global Environmental Change and Human Societies

4. Concepts of Adaptation, Resilience, and Sustainability as Applied to Human Societies

5. Biomes and Energetics

6. Human Bioenergetics; human food chains and food webs in ecological perspective; energy flow in human populations; energy and cultural evolution

7. Modeling Human Resource Utilization: bioeconomic optimization models; efficiency and risk in Human Adaptation; environment and technology; human subsistence patterns in spatiotemporal perspective

8. Ethnoecology, ethnoscience, and ethnotaxonomy
9. Traditional Ecological Knowledge (TEK); cognitive models and decision-making processes of indigenous communities

10. Gender and Ecology


12. Nutrient Cycles and Human Populations; Adaptation and Malnutrition


14. Cooperation and Competition for Resources; Ecology of Territoriality and Warfare

15. Human Resource Management Strategies: Notions of the Commons; Resource Redistribution, Reciprocity, Exchange, and Trade; Storage and Conservation of Resources

16. Concepts of Resilience and Sustainability

17. Valuing Nature - Spiritual and Ritual Ecology

18. Political Ecology of Economic “Development” and Globalization

19. Political Ecology and the Sustainability of Indigenous Communities in Contemporary Nation-states

20. Humans and Climate Change


VIII. Suggested Textbooks:


IX. Bibliography:


## Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

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Abbreviated Title for Transcript (30 character)

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- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Other Restrictions
- Class Level College Major (please specify)

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Cross-Listed Coordination

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

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Initiator Name (typed): Steve J. Langdon  
Initiator Signed Initials: __________  
Date: __________

13b. Coordination Email  
submitted to Faculty Listserv: [uaa-faculty@lists.uaa.alaska.edu](mailto:uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 10/31/2013

14. General Education Requirement

Mark appropriate box:

- Oral Communication
- Written Communication
- Quantitative Skills
- Fine Arts
- Social Sciences
- Natural Sciences
- Humanities
- Integrative Capstone

15. Course Description *(suggested length 20 to 50 words)*

Advanced anthropological approaches to the relationships between cultural and ecological systems. Culture as an adaptive system and the role of various cultural subsystems in different adaptations. Application of ecological concepts to human societies; impacts of environmental change on human societies, and impacts of human societies on environments; ethnoecology and traditional ecological knowledge of indigenous communities; values of nature among Western and non-Western societies; and political ecology in relation to the juxtaposition of indigenous peoples within contemporary nation-states. Research paper required.

16a. Course Prerequisite(s) *(list prefix and number or test code and score)*

- Anth 202 completed with minimum C grade

16b. Co-requisite(s) *(concurrent enrollment required)*

16c. Other Restriction(s)

- College
- Major
- Class
- Level

16d. Registration Restriction(s) *(non-codable)*

Graduate standing

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

Graduate students have need for a course in ecological anthropology that reflects both Western and non-Western (indigenous) approaches to human-environment interaction.
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UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Date of Initiation Date: Fall 2013

II. Course Information

A. College: College of Arts and Sciences
B. Course Prefix: ANTH
C. Course Number: A654
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Advanced Studies in Culture and Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2014
I. Course Description: Advanced anthropological approaches to the relationships between cultural and ecological systems. Culture as an adaptive system and the role of various cultural subsystems in different adaptations. Application of ecological concepts to human societies; impacts of environmental change on human societies, and impacts of human societies on environments; ethnoecology and traditional ecological knowledge of indigenous communities; values of nature among Western and non-Western societies; and political ecology in relation to the juxtaposition of indigenous peoples within contemporary nation-states.

J. Status of Course Relative to a Degree or Certificate Program: Elective in the MA Anthropology
K. Course Fees: No
L. Registration Restrictions: Graduate Standing
M. Stacking: ANTH A454

III. Course Activities

In a lecture and discussion format, information will be presented concerning the diversity of ways in which human societies adapt and have adapted to their natural environments and have transformed those environments, from prehistory to the present, in global perspective.

IV. Course Evaluation

Evaluation procedures are at the discretion of the instructor and will be discussed at the first class meeting of the semester. Students will be evaluated on all class content and assigned readings. Evaluation vehicles will include (but are not limited to) examinations, research papers, student journals/reflections, student questions on readings, and class discussions. The requirement for research papers differentiates the undergraduate (A454) and graduate (A654) versions of this course.

V. Course Justifications:
A. Justification for new course: this course will provide graduate students with information on human-environmental relationships, including key concepts of resilience and sustainability, as well as traditional ecological knowledge and indigenous environmental perspectives, that are critical to graduate education in anthropology.

B. Justification for stacking: achieves goal of providing information on human-environmental relationships to graduate students in an efficient delivery vehicle; allows graduate students to mentor undergraduates; will be differentiated by requirement for research papers.

VI. Instructional Goals and Defined Outcomes

A. Instructional Goals. The Instructor will:

1. Present fundamental ecological concepts and their relationship to human societies

2. Discuss human adaptations from a variety of cultural perspectives

3. Describe the impacts of environmental changes on human societies, and of human societies on their environments

4. Present Western and Non-western (indigenous) perspectives on ecological knowledge

B. Defined Outcomes. The Student will be able to:

1. Apply fundamental ecological concepts to human societies

2. Analyze environmental changes during human prehistory and history, and their impacts on human societies

3. Analyze long-term impacts of human societies on their environments, from prehistory to the present

4. Articulate in detail a specific aspect of human-environmental relationships resulting from individual research

C. Student assessment: based on examinations, research papers, student journals/reflections, daily questions, and class discussion

VII. Topical Outline:

1. History of Human Ecological Thought

2. Application of Ecological Concepts to Human Societies: Ecosystems and Communities; Species and Populations; Niches and Habitats; Ecotones and Boundaries; Limiting Factors

3. Global Environmental Change and Human Societies
4. Concepts of Adaptation, Resilience, and Sustainability as Applied to Human Societies

5. Biomes and Energetics

6. Human Bioenergetics; human food chains and food webs in ecological perspective; energy flow in human populations; energy and cultural evolution

7. Modeling Human Resource Utilization: bioeconomic optimization models; efficiency and risk in Human Adaptation; environment and technology; human subsistence patterns in spatiotemporal perspective

8. Ethnoecology, ethnoscience, and ethnotaxonomy

9. Traditional Ecological Knowledge (TEK); cognitive models and decision-making processes of indigenous communities

10. Gender and Ecology


12. Nutrient Cycles and Human Populations; Adaptation and Malnutrition


14. Cooperation and Competition for Resources; Ecology of Territoriality and Warfare

15. Human Resource Management Strategies: Notions of the Commons; Resource Redistribution, Reciprocity, Exchange, and Trade; Storage and Conservation of Resources

16. Concepts of Resilience and Sustainability

17. Valuing Nature - Spiritual and Ritual Ecology

18. Political Ecology of Economic “Development” and Globalization

19. Political Ecology and the Sustainability of Indigenous Communities in Contemporary Nation-states

20. Humans and Climate Change


Suggested Textbooks:


VIII. Bibliography:


Course Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

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<th>1c. Department</th>
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<td>A-F</td>
<td>From: Fall/2014 To: Fall/9999</td>
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<th>12. Cross Listed</th>
<th>ANTH A665</th>
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<th>13a. Impacted Courses or Programs:</th>
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<tr>
<td>Anthropology BA/BS</td>
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<td>International Studies</td>
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<tr>
<td>Oral Communication</td>
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<td>Fine Arts</td>
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<td>Natural Sciences</td>
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<tr>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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<tr>
<td>Exploration of the relationship between culture and globalization through an examination of global capitalism and ethnographic experiences in the workplace, in the context of transnational migration and diasporas, and through the influence of new information technologies and media on values, beliefs, and practices.</td>
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<th>16a. Course Prerequisite(s)</th>
<th>16b. Co-requisite(s)</th>
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<td>ANTH A101 or ANTH A202 or ANTH A250 completed with a minimum grade of C.</td>
<td>(concurrent enrollment required)</td>
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<td>College</td>
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<tr>
<th>19. Justification for Action</th>
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<tr>
<td>The class has been taught three times as a special topics course. A permanent upper division anthropology course is needed to expose students to contemporary ethnographic studies about the relationship between globalization and sociocultural change. It would fill an ethnography course requirement for department majors and it is also proposed as a capstone option for ANTH and IS majors.</td>
</tr>
<tr>
<td>Initiator (faculty only)</td>
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<tr>
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<tr>
<td>Dr. Marie E. Lowe</td>
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Initiator (TYPE NAME)

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<th>Department Chair</th>
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<th>Undergraduate/Graduate Academic</th>
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<th>College/School Curriculum Committee Chair</th>
<th>Date</th>
<th>Provost or Designee</th>
<th>Date</th>
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177
I. **Initiation Date:** October 2013

II. **Course Information**
   A. **College:** College of Arts and Sciences
   B. **Course Title:** Culture and Globalization
   C. **Course Subject/Number:** ANTH A465
   D. **Credit Hours:** 3.0 Credits
   E. **Contact Time:** 3+0 Contact Time
   F. **Grading Information:** A-F
   G. **Course Description:**
      Exploration of the relationship between culture and globalization through an examination of global capitalism and ethnographic experiences in the workplace, in the context of transnational migration and diasporas, and through the influence of new information technologies and media on values, beliefs, and practices.
   
   **Special Note:** Graduate section may be taken if undergraduate section taken. May be stacked with ANTH A665

   H. **Status of course relative to degree or certificate program:**
      Positioned as a capstone option and specified in the BA degree in International Studies as a capstone option. An International Studies program revision is currently in process as of Fall Semester 2013.

   I. **Lab Fees:** No
   J. **Coordination:** International Studies
   K. **Course Prerequisites:** ANTH A101 or ANTH A202 or ANTH A250
   L. **Registration Restrictions:** Junior Standing

III. **Course Activities**

   Discussions, readings, videos, research paper formulation.

IV. **Evaluation**

   This is a discussion-based course utilizing theoretical and ethnographic readings with a final term paper project. The grading structure is as follows:

   A. Attendance (10%), Preparedness/Participation (10%) 20%
   B. Assignments (10@2%) 20%
   C. Mid-Term Paper 20%
   D. Final Term Paper 40%
   E.  100%
A. Attendance, Preparedness/Participation (20%)

For each reading assignment, students will be given questions to use as a discussion guide. They will be expected to take notes on the discussion guide in addition to participating in the class discussion.

B. Assignments (20%)

The students will be required to formulate a research topic and paper related to the course material. The topic will be chosen early in the semester after some preliminary theoretical readings followed by ethnographic examples of the course’s main subject material. Subsequent assignments will encompass the construction of a literature review and bibliography (which will include a guest lecture by the anthropology department’s research librarian from the UAA Consortium Library), a paper outline, a paper expansion plan (see below), and short presentations on the term paper topic.

C. Mid-Term Paper (20%)

At mid-term, the students will write a 5-page version of their term papers which will include the full bibliography.

D. Final Research Term Paper (40%)

For the rest of the semester, students will work on expanding that 5-page paper into a respectable 20-page term paper. The instructor will walk the students through the research paper process step by step.

V. Course Level Justification

This course will build on and refine student understanding of historical processes, cultural diversity, and human adaptation to change introduced in lower division anthropology courses. A permanent upper division anthropology course is needed to expose students to contemporary ethnographic studies that investigate and examine the relationship between globalization processes and sociocultural change. For department majors, this course would fill an ethnography course requirement for subject material outside the domain of Alaska/Arctic anthropology. For students within the anthropology department and outside the anthropology department (such as INTL Studies), this course will provide them with a cross-cultural perspective on contemporary economic, political, and social issues in our increasingly interconnected world. All students will be required to produce a 20 page formal research paper on a topic of their choosing related to the course material. The instructor will mentor students on this assignment in a step-by-step and semester-long reflection and writing process. The goal is to help students develop their writing skills to be ready for graduate school or post-graduate professional positions.
VI. Course Outline

A. Introductions

1. What is globalization? What is culture? How has anthropology changed within the context of a globalized world?
2. Overview of course subtopics: Development, Mobility, Media.
3. Globalization as Neoliberalism, Cosmopolitanism and Consumption, the Rise of Fundamentalisms, Nationalisms, and Identity Politics.
4. Literature Review Workshop, Consortium Library
5. *Term Paper Topic Selection Decision*

B. Development, Devolution, Discourse

1. Development Theory
4. *Assignment 1: Paper Topic Description*
5. *Assignment 2: Thesis Statement*
6. *Assignment 3: Paper Sections and Title*
7. *Assignment 4: Paper Bibliography Draft Due*

C. Mobility: Migration, Transnationalism, Diasporas

1. Migration Theory.
2. Ethnographic Reading on Migration.
3. *Assignment 5: Full Paper Outline*
4. *Assignment 6: Final Draft Paper Bibliography*
5. *Mid-Term Paper*
6. *Assignment 7: Expansion Plan for Paper Due*
7. *Assignment 8 & 9: Rough Draft of Paper Due*

D. Media, Technology, and Identity

1. Segue from Mobility Component: Identity Theory.
3. Ethnographic reading on Media and Identity: Media and Hegemony; Media and Resistance.
4. Videos “Nanook of the North” and excerpts from “The Fast Runner.”
5. *Assignment 10: Mini Paper Presentations*

E. Conclusions

1. Wrap-up: Cultural Homogenization vs. Cultural Adaptation.
2. *Final Term Paper*
VII. Instructional Goals and Defined Outcomes

<table>
<thead>
<tr>
<th>Instructional Goal</th>
<th>Student Outcomes</th>
<th>Assessment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student engagement with course material through spirited and intellectual discussion of course readings; emphasis on rhetorical argument skills.</td>
<td>Rhetorical argument, Socratic reasoning skills.</td>
<td>Class attendance, preparedness, participation.</td>
</tr>
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<td>Student familiarity with cultural dimensions of globalization and modernity.</td>
<td>Critical thinking and informed understandings and positions on the history and effects of large drivers of sociocultural change like globalization, what culture is, and the logic of cultural relativism.</td>
<td>Class attendance, preparedness, participation.</td>
</tr>
<tr>
<td>Help students learn the research process.</td>
<td>Ability to construct a literature review, formulate a research question and argument, locate references, build a bibliography, and write by way of drafts.</td>
<td>Ten assignments devoted to a step-by-step process for constructing a formal research paper.</td>
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<tr>
<td>Help students produce a formal piece of academic writing.</td>
<td>Academic writing skills.</td>
<td>Term paper.</td>
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<tr>
<td>Prepare students for graduate school or professional positions.</td>
<td>Argumentation, speaking, and writing skills.</td>
<td>Success in completion of the above assignments.</td>
</tr>
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</table>

VIII. Suggested Texts

A. Theoretical Foundations:


B. Ethnographies/Ethnographic Writings (Instructor will update periodically and choose three main works per semester):


C. Videos:


Flaherty, Robert J. 1922. *Nanook of the North*.

Kunuk, Zacharias. 2002. *The Fast Runner*. (Excerpts in class; full-length on reserve)

IX. Bibliography and Resources


Barber, Benjamin 1995 *Introduction to Jihad vs. McWorld*. Times Books.


Miller, Mark Crispin 2002 “What’s Wrong With This Picture”. The Nation, January 7-14:333-8536.


### Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<tbody>
<tr>
<td>AS CAS</td>
<td>ASSC Division of Social Science</td>
<td>Anthropology</td>
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<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tbody>
<tr>
<td>ANTH</td>
<td>A665</td>
<td>None</td>
<td>3</td>
<td>(3+0)</td>
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<tr>
<th>6. Complete Course Title</th>
<th>Abbreviated Title for Transcript (30 character)</th>
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<tr>
<td>Advanced Culture and Globalization</td>
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<tr>
<th>7. Type of Course</th>
<th>8. Type of Action:  Add  or  Change  or  Delete</th>
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<td>Grading Basis</td>
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<td>Course Description</td>
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<td>Test Score Prerequisites</td>
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<th>13a. Impacted Courses or Programs: List any programs or college requirements that require this course.</th>
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<td>Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at <a href="http://www.uaa.alaska.edu/governance">www.uaa.alaska.edu/governance</a>.</td>
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**Initiator Name (typed):** Marie Lowe **Initiator Signed Initials:** __________  **Date:** __________

**13b. Coordination Email**  
Date: 04-02-13  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

**13c. Coordination with Library Liaison**  
Date: 04-02-13  
**13c. Coordination with Library Liaison**  
Date: 04-02-13

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<th>14. General Education Requirement</th>
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<th>15. Course Description (suggested length 20 to 50 words)</th>
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<td>Advanced exploration of the relationship between culture and globalization through an examination of global capitalism and ethnographic experiences in the workplace, in the context of transnational migration and diasporas, and through the influence of new information technologies and media on values, beliefs, and practices.</td>
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<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<td>This class has been taught three times as a special topics undergraduate course. A permanent, graduate anthropology course is needed to expose students to contemporary ethnographic studies on the relationship between globalization and sociocultural change. This course will provide graduate students with an ethnography course on subject material outside the domain of Alaska/Arctic anthropology.</td>
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<tr>
<td>Initiator (faculty only)</td>
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<tr>
<td>Marie E. Lowe</td>
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Initiator (TYPE NAME)

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<th>Date</th>
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I. **Initiation Date:** March 2013

II. **Course Information**
   A. **College:** College of Arts and Sciences
   B. **Course Title:** Culture and Globalization
   C. **Course Subject/Number:** ANTH A665
   D. **Credit Hours:** 3.0 Credits
   E. **Contact Time:** 3+0 Contact Time
   F. **Grading Information:** A-F
   G. **Course Description:**

   The term, *globalization*, has economic, political, technological, environmental, and sociocultural implications. At a very basic conceptual level, the term describes transnational flows of products, people, and ideas. It is in this context the course situates the culture concept and its evolution in a changing world in conjunction with changes in the discipline and perspective of anthropology. The class will investigate the relationship between culture and globalization by examining global capitalism and ethnographic experiences in the workplace, in the context of transnational migration and diasporas, and through the influence of new information technologies and media on values, beliefs, and practices. Through individual research papers developed over the course of the semester, students will demonstrate both a theoretical and a real world understanding of how people are culturally affected by globalization and how globalization is in turn affected by culture.

May be stacked with ANTH A465

H. **Status of course relative to degree or certificate program:**

Applies to the MA in Anthropology.

I. **Lab Fees:** No
J. **Coordination:** None
K. **Course Prerequisites:** None
L. **Registration Restrictions:** Student must be enrolled in the UAA MA program

III. **Course Activities**

Discussions, readings, videos, research paper formulation.
IV. Evaluation

This is a discussion-based course utilizing theoretical and ethnographic readings with a final term paper project. The grading structure is as follows:

A. Attendance (10%), Preparedness/Participation (10%)  
B. Short Position Paper Delivered to Class  
C. Writing Assignments (5@2%)  
D. Mid-Term Paper  
E. Final Term Paper  

A. Attendance, Preparedness/Participation (20%)

For each reading assignment, students will be given questions to use as a discussion guide. They will be expected to take notes on the discussion guide in addition to participating in the class discussion. Graduate students will be assigned three additional theoretical readings.

B. Assignments (20%)

Position Paper (10%): Each graduate student will be assigned a short position paper to present to the class on one of the three additional theory readings. The student must demonstrate the use of rhetorical argumentation in this paper and will read it to the class to stimulate discussion for that day.

Research Topic (10%): The students will be required to formulate a research topic and paper related to the course material. The topic will be chosen early in the semester after some preliminary theoretical readings followed by ethnographic examples of the course’s main subject material. Subsequent assignments will encompass the construction of a literature review and bibliography (which will include a guest lecture by the anthropology department’s research librarian from the UAA Consortium Library), a paper outline, a paper expansion plan (see below), and short presentations on the term paper topic.

C. Mid-Term Paper (20%)

At mid-term, the students will write a 5-page version of their term papers which will include the full bibliography.

D. Final Research Term Paper (40%)

For the rest of the semester, students will work on expanding that 5-page paper into a respectable 20-page term paper. The instructor will walk the students through the research paper process step by step.
V. Course Level Justification

This course will build on and refine student understanding of historical processes, cultural diversity, and human adaptation to change introduced in lower division anthropology courses. A permanent upper division anthropology course is needed to expose students to contemporary ethnographic studies that investigate and describe the relationship between globalization processes and sociocultural change. This course will provide graduate students with an ethnography course on subject material outside the domain of Alaska/Arctic anthropology. All students will be required to produce a 20 page formal research paper on a topic of their choosing related to the course material. The instructor will mentor students on this assignment in a step-by-step and semester-long reflection and writing process. The goal is to help students develop their writing skills to be ready for thesis projects and post-graduate professional positions.

VI. Course Outline

A. Introductions

1. What is globalization? What is culture? How has anthropology changed within the context of a globalized world?
2. Overview of course subtopics: Development, Mobility, Media.
3. Globalization as Neoliberalism, Cosmopolitanism and Consumption, the Rise of Fundamentalisms, Nationalisms, and Identity Politics.
4. Literature Review Workshop, Consortium Library
5. *Term Paper Topic Selection Decision*

B. Development, Devolution, Discourse

1. Development Theory
4. *Assignment 1: Paper Topic Description*
5. *Assignment 2: Thesis Statement*
6. *Assignment 3: Paper Sections and Title*
7. *Assignment 4: Paper Bibliography Draft Due*

C. Mobility: Migration, Transnationalism, Diasporas

1. Migration Theory.
2. Ethnographic Reading on Migration.
3. *Assignment 5: Full Paper Outline*
4. *Assignment 6: Final Draft Paper Bibliography*
5. *Mid-Term Paper*
6. *Assignment 7: Expansion Plan for Paper Due*
7. *Assignment 8 & 9: Rough Draft of Paper Due*
D. **Media, Technology, and Identity**

1. Segue from Mobility Component: Identity Theory.
3. Ethnographic reading on Media and Identity: Media and Hegemony; Media and Resistance.
4. Videos “Nanook of the North” and excerpts from “The Fast Runner.”
5. *Assignment 10: Mini Paper Presentations*

E. **Conclusions**

1. Wrap-up: Cultural Homogenization vs. Cultural Adaptation.
2. *Final Term Paper*

**VII. Instructional Goals and Defined Outcomes**

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<th>Instructional Goal</th>
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<td>Student familiarity with cultural dimensions of globalization and modernity.</td>
<td>Critical thinking and informed understandings and positions on the history and effects of large drivers of sociocultural change like globalization, what culture is, and the logic of cultural relativism.</td>
<td>Class attendance, preparedness, participation, position paper on theory reading.</td>
</tr>
<tr>
<td>Help students learn the research process.</td>
<td>Ability to construct a literature review, formulate a research question and argument, locate references, build a bibliography, and write by way of drafts.</td>
<td>Five assignments devoted to a step-by-step process for constructing a formal research paper.</td>
</tr>
<tr>
<td>Help students produce a formal piece of academic writing.</td>
<td>Academic writing skills.</td>
<td>Term paper.</td>
</tr>
<tr>
<td>Prepare students for thesis, professional report writing, and public presentations.</td>
<td>Argumentation, speaking, and writing skills.</td>
<td>Success in completion of the above assignments.</td>
</tr>
</tbody>
</table>
VIII. Suggested Texts

A. Theoretical Foundations:


Additional readings for the graduate students (excerpts from the following):


B. Under Review (UAA Book of the Year):


C. Ethnographies/Ethnographic Writings (Instructor will update periodically and choose three main works per semester):


**D. Videos:**


Flaherty, Robert J. 1922. *Nanook of the North*.

Kunuk, Zacharias. 2002. *The Fast Runner*. (Excerpts in class; full-length on reserve)

**IX. Bibliography and Resources**


Barber, Benjamin 1995  Introduction to *Jihad vs. McWorld*. Times Books.


Miller, Mark Crispin  2002 “What’s Wrong With This Picture”. The Nation, January 7-14:333-8536.


1a. School or College
   AS CAS
1b. Division
   ASSC Division of Social Science
1c. Department
   Anthropology

2. Course Prefix
   ANTH
3. Course Number
   A483
4. Previous Course Prefix & Number
   NA
5a. Credits/CEUs
   4
5b. Contact Hours
   (Lecture + Lab)
   (3+2)

6. Complete Course Title
   Archaeology of Animals

7. Type of Course
   □ Academic  □ Preparatory/Development  □ Non-credit  □ CEU  □ Professional Development

8. Type of Action:
   □ Add  □ Change  □ Delete
   If a change, mark appropriate boxes:
   □ Prefix
   □ Credits
   □ Title
   □ Grading Basis
   □ Course Description
   □ Test Score Prerequisites
   □ Automatic Restrictions
   □ Other
   □ Course Number
   □ Contact Hours
   □ Repeat Status
   □ Cross-Listed/Stacked
   □ Registration Restrictions
   □ General Education Requirement

9. Repeat Status
   choose one
   □ of Repeats
   □ Max Credits

10. Grading Basis
    □ A-F  □ P/NP  □ NG

11. Implementation Date
    semester/year
    From: Fall/2014  To: Fall/9999

12. □ Cross Listed with
    □ Stacked with ANTH A683
    Cross-Listed Coordination
    Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
    Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.
    Impacted Program/Course  Date of Coordination  Chair/Coordinator Contacted
    1. Anthropology BA/BS  10/31/2013  Paul White
    2. Anthropology MA  10/31/2013  Paul White

    Initiator Name (typed): Steve J. Langdon  Initiator Signed Initials: _________  Date:________________

    13b. Coordination Email  Date: 10/31/2013  submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

    13c. Coordination with Library Liaison  Date: 10/31/2013

14. General Education Requirement
    Mark appropriate box:
    □ Oral Communication  □ Written Communication  □ Quantitative Skills  □ Humanities
    □ Fine Arts  □ Social Sciences  □ Natural Sciences  □ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
    Methods and techniques for, and theoretical approaches to, the description, analysis, and interpretation of animal bone assemblages from archaeological sites. Includes identification and quantification of animal remains, paleoenvironmental and dietary reconstruction, seasonality of site occupation, hunting and herding strategies, and the role of animals in the economy and ideology of human societies.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
    ANTH A211
16b. Co-requisite(s) (concurrent enrollment required)
16c. Automatic Restriction(s)
16d. Registration Restriction(s) (non-codable)
17. □ Mark if course has fees
18. □ Mark if course is a selected topic course

19. Justification for Action
    Program consolidation and revision, involving streamlining of course offerings for students. Content of course will be taught on a rotating basis with other archaeological artifact analyses under A480 Analytical Techniques

Initiator (faculty only)
Steve J. Langdon  Initiator (TYPE NAME)

Approved  Disapproved
Dean/Director of School/College  Date

Approved  Disapproved
Undergraduate/Graduate Academic  Date

Approved  Disapproved
Provost or Designee  Date
1. **School or College**
   - AS CAS

2. **Course Prefix**
   - ANTH

3. **Course Number**
   - A683

4. **Previous Course Prefix & Number**
   - NA

5. **Credits/CEUs**
   - 4

6. **Complete Course Title**
   - Zooarchaeology

7. **Type of Course**
   - Academic

8. **Type of Action:**
   - Add

9. **Repeat Status choose one**
   - # of Repeats
   - Max Credits

10. **Grading Basis**
    - A-F
    - P/NP
    - NG

11. **Implementation Date**
    - From: Fall/2014
    - To: Fall/9999

12. **Cross Listed with**
    - A483

13a. **Impact Courses or Programs:**
    - List any programs or college requirements that require this course.

14. **General Education Requirement**
    - Oral Communication
    - Written Communication
    - Quantitative Skills
    - Humanities
    - Fine Arts
    - Social Sciences
    - Natural Sciences
    - Integrative Capstone

15. **Course Description**
    - Methods and techniques for, and theoretical approaches to the description, analysis, and interpretation of animal bone assemblages from archaeological sites....Independent research in zooarchaeology involving preparation of comparative osteological materials and/or analysis of an assemblage of archaeological faunal materials.

16a. **Course Prerequisite(s)**
    - (list prefix and number or test code and score)

16b. **Co-requisite(s)**
    - (concurrent enrollment required)

16c. **Automatic Restriction(s)**
    - College
    - Major
    - Class
    - Level

16d. **Registration Restriction(s)**
    - (non-codable)
    - Graduate standing

17. **Mark if course has fees**

18. **Mark if course is a selected topic course**

19. **Justification for Action**
    - Program consolidation and revision, involving streamlining of course offerings for students. The course materials will be taught on a rotating, as needed basis under Anth A680 Analytical Techniques.
# Course Action Request

## University of Alaska Anchorage

**Proposal to Initiate, Add, Change, or Delete a Course**

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>ASSC Division of Social Science</td>
<td>Anthropology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH</td>
<td>A484</td>
<td>NA</td>
<td>3</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

### Complete Course Title

**Lithic Technology**

**Abbreviated Title for Transcript (30 character)**

### Type of Course

- [x] Academic
- [ ] Preparatory/Development
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

### Type of Action

- [ ] Add
- [ ] Change
- [x] Delete

**If a change, mark appropriate boxes:**

- [ ] Prefix
- [ ] Credits
- [ ] Grading Basis
- [ ] Title
- [ ] Course Description
- [ ] Contact Hours
- [ ] Repeat Status
- [ ] Cross-Listed/Stacked
- [ ] Course Prerequisites
- [ ] Co-requisites
- [ ] Registration Restrictions
- [ ] General Education Requirement
- [ ] Class
- [ ] Level
- [ ] College
- [ ] Major
- [ ] Other
- (please specify)

### Repeat Status

- [ ] choose one
- [ ] # of Repeats
- [ ] Max Credits

### Grading Basis

- [ ] A-F
- [x] P/NP
- [ ] NG

### Implementation Date

- From: Fall 2014
- To: Fall 1999

### Cross Listed with

- [ ] Stacked with

### Coordination Email

- [ ] Cross Listed with
- [ ] Stacked with

### Coordination with Library Liaison

- [ ] Date: 10/31/2013

### General Education Requirement

Mark appropriate box:

- [ ] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [ ] Humanities
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [ ] Integrative Capstone

### Course Description

(suggested length 20 to 50 words)

Analysis of stone tool assemblages from archaeological sites, focusing on tool manufacture, use, and discard processes. Includes tool replication as part of learning the manufacturing process.

### Course Prerequisite(s)

- [ ] (list prefix and number or test code and score)

### Co-requisite(s)

(concurrent enrollment required)

### Automatic Restriction(s)

- [ ] College
- [ ] Major
- [ ] Class
- [ ] Level

### Registration Restriction(s)

(non-codable)

### Mark if course has fees

### Mark if course is a selected topic course

### Justification for Action

Program consolidation and revision, involving streamlining of course offerings for students. Content of course will be taught on a rotating basis with other archaeological artifact analyses under A480 Analytical Techniques.

---

**Initiator Name (typed):** Steve J. Langdon

**Initiator Signed Initials:** __________

**Date:** __________

**Initiator (faculty only):**

**Initiator (TYPE NAME):**

**Approved**

**Disapproved**

**Dean/Director of School/College**

**Date:** __________

**Approved**

**Disapproved**

**Undergraduate/Graduate Academic**

**Date:** __________

**Approved**

**Disapproved**

**Board Chair**

**Approved**

**Disapproved**

**Provost or Designee**

**Date:** __________
<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
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<td>AS CAS</td>
<td>ASSC Division of Social Science</td>
<td>Anthropology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH</td>
<td>A485</td>
<td>NA</td>
<td>4</td>
<td>(3+2)</td>
</tr>
</tbody>
</table>

6. Complete Course Title

Human Osteology

Abbreviated Title for Transcript (30 character)

7. Type of Course

- [ ] Academic
- [ ] Preparatory/Development
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

8. Type of Action:

- [ ] Add
- [ ] Change
- [ ] Delete

If a change, mark appropriate boxes:

- [ ] Prefix
- [ ] Credits
- [ ] Title
- [ ] Grading Basis
- [ ] Course Description
- [ ] Test Score Prerequisites
- [ ] Automatic Restrictions
- [ ] Other

9. Repeat Status

Choose one

- [ ] # of Repeats
- [ ] Max Credits

10. Grading Basis

- [ ] A-F
- [ ] P/NP
- [ ] NG

11. Implementation Date

- From: Fall/2014
- To: Fall/9999

12. Cross Listed with

- [ ] Stacked with A685

Cross-Listed Coordination Signature

13a. Impacted Courses or Programs:

List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anth BA/BS</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>2. Anth MA</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>3. Pre-Health Sciences Major</td>
<td>10/31/2013</td>
<td>Quentin Reuer</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Steve J. Langdon
Initiator Signed Initials: _________ Date: __________

13b. Coordination Email

Date: 10/31/2013

submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison

Date: 10/31/2013

14. General Education Requirement

Mark appropriate box:

- [ ] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [ ] Humanities
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [ ] Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

Methods of human skeletal identification, description, and analysis. Includes identification of age and sex attributes. Lecture and laboratory format.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

ANTH A205

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

- [ ] College
- [ ] Major
- [ ] Class
- [ ] Level

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

Program consolidation and revision, involving streamlining of course offerings for students. Content will taught in new format under new course.

Initiator (faculty only)

Steve J. Langdon
Initiator (TYPE NAME)

Date

[ ] Approved

[ ] Disapproved

Dean/Director of School/College Date

[ ] Approved

[ ] Disapproved

Undergraduate/Graduate Academic Date

Board Chair

[ ] Approved

[ ] Disapproved

Provost or Designee Date

College/School Curriculum Committee Chair

Date

[ ] Approved

[ ] Disapproved
### Course Action Request

University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

#### 1a. School or College
AS CAS

#### 1b. Division
ASSC Division of Social Science

#### 1c. Department
Anthropology

#### 2. Course Prefix
ANTH

#### 3. Course Number
A486

#### 4. Previous Course Prefix & Number
NA

#### 5a. Credits/CEUs
3

#### 5b. Contact Hours (Lecture + Lab)
(3+0)

#### 6. Complete Course Title
Applied Human Osteology

#### 7. Type of Course
☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

#### 8. Type of Action:
☐ Add ☐ Change ☒ Delete

If a change, mark appropriate boxes:

- ☐ Prefix
- ☐ Credits
- ☐ Title
- ☐ Grading Basis
- ☐ Course Description
- ☐ Test Score Prerequisites
- ☐ Automatic Restrictions
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions
- ☐ General Education Requirement
- ☐ Class
- ☐ Level
- ☐ Major
- ☐ College
- ☐ Other

(please specify)

#### 9. Repeat Status
.choose one

- # of Repeats
- Max Credits

#### 10. Grading Basis
☒ A-F ☐ P/NP ☐ NG

#### 11. Implementation Date
From: Fall 2014 To: Fall/9999

#### 12. Cross Listed with
☒ Stacked with ANTH A686

Cross-Listed Coordination

#### 13a. Impacted Courses or Programs:
List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anthropology BA/BS</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>2. Anthropology MA</td>
<td>10/31/2013</td>
<td>Paul White</td>
</tr>
<tr>
<td>3. Pre-Health Sciences Approved Courses Social Science</td>
<td>10/31/2013</td>
<td>Quentin Reuer</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Steve J. Langdon
Initiator Signed Initials: ____________________________ Date: __________________

#### 13b. Coordination Email
Date: 10/13/31
submitted to Faculty Listserv: [uaa-faculty@lists.uaa.alaska.edu](mailto:uaa-faculty@lists.uaa.alaska.edu)

#### 13c. Coordination with Library Liaison
Date: 10/31/2013

#### 14. General Education Requirement
Mark appropriate box:

- ☐ Oral Communication
- ☐ Written Communication
- ☐ Quantitative Skills
- ☐ Humanities
- ☐ Fine Arts
- ☐ Social Sciences
- ☐ Natural Sciences
- ☐ Integrative Capstone

#### 15. Course Description
(suggested length 20 to 50 words)

Methods and techniques of the applications of human osteology, including palaeopathology, bioarchaeology, and forensic anthropology. Includes identification and analysis of age, sex, and population attributes from human skeletal remains.

#### 16a. Course Prerequisite(s)
(list prefix and number or test code and score)

ANTH A485

#### 16b. Co-requisite(s)
(concurrent enrollment required)

#### 16c. Automatic Restriction(s)

☐ College ☐ Major ☐ Class ☐ Level

#### 16d. Registration Restriction(s)
(non-codable)

#### 17. Mark if course has fees
☐

#### 18. Mark if course is a selected topic course
☐

#### 19. Justification for Action

Program consolidation and revision, involving streamlining of course offerings for students.

---

Initiator (faculty only)

Steve J. Langdon
Initiator (TYPE NAME)

Approved ☒ Disapproved ☐

Dean/Director of School/College Date

Approved ☒ Disapproved ☐

Undergraduate/Graduate Academic Board Chair Date

Approved ☒ Disapproved ☐

Provost or Designee Date
## Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

### 1. School or College
1a. AS CAS

### 2. Course Prefix
- **ANTH**

### 3. Course Number
- **A686**

### 4. Previous Course Prefix & Number
- **NA**

### 5. Credits/CEUs
- **3**

### 6. Contact Hours
- **(Lecture + Lab)**
  - **(3+0)**

### 7. Complete Course Title
- **Advanced Applied Human Osteology**

### 8. Type of Course
- **Academic**

### 9. Repeat Status
- **# of Repeats**
- **Max Credits**

### 10. Grading Basis
- **A-F**
- **P/NP**
- **NG**

### 11. Implementation Date
- **From:** Fall/2014
- **To:** Fall/9999

### 12. Cross Listed with
- **ANTH A486**
- **Cross-Listed Coordination**

### 13a. Impacted Courses or Programs

<table>
<thead>
<tr>
<th>Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<td>Anthropology MA</td>
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<td>Paul White</td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
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</table>

Initiator Name (typed): **Steve J. Langdon**

Initiator Signed Initials: __________ Date: __________

### 13b. Coordination Email
- **Date:** 10/31/2013
- **submitted to Faculty Listserv:** (uaa-faculty@lists.uaa.alaska.edu)

### 13c. Coordination with Library Liaison
- **Date:** 10/31/2013

### 14. General Education Requirement
- **Mark appropriate box:**
  - Oral Communication
  - Written Communication
  - Quantitative Skills
  - Humanities
  - Fine Arts
  - Social Sciences
  - Natural Sciences
  - Integrative Capstone

### 15. Course Description
(suggested length 20 to 50 words)

Methods, techniques, and theory of the applications of human osteology, including paleopathology, bioarchaeology, and forensic anthropology. Includes identification and analysis of age, sex, and population attributes from human skeletal remains, and the methods and theory of statistical interpretation of human skeletal data.

### 16a. Course Prerequisite(s)
- **(list prefix and number or test code and score)**
  - ANTH A485 or ANTH A685

### 16b. Co-requisite(s)
(concurrent enrollment required)

### 16c. Automatic Restriction(s)
- **College**
- **Major**
- **Class**
- **Level**

### 16d. Registration Restriction(s)
(non-codable)
- **Graduate standing**

### 17. Mark if course has fees
- **18. Mark if course is a selected topic course**

### 19. Justification for Action
Program consolidation and revision, involving streamlining of course offerings for students. Course content will be taught with new format under different course.

---

Initiator (faculty only)

Initiator (TYPE NAME)

Approved

Disapproved

Dean/Director of School/College

Date

Approved

Disapproved

Undergraduate/Graduate Academic

Date

Approved

Disapproved

Board Chair

Date

Approved

Disapproved

Provost or Designee

Date
# Program/PREFIX Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Program of Study or PREFIX

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Department</th>
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<tr>
<td>AS CAS</td>
<td>Anthropology</td>
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<table>
<thead>
<tr>
<th>2. Complete Program Title/PREFIX</th>
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<tbody>
<tr>
<td>Bachelor of Arts, Anthropology</td>
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</table>

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<th>3. Type of Program</th>
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<tbody>
<tr>
<td>Choose one from the appropriate drop down menu:</td>
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<tr>
<td>Undergraduate: or Graduate:</td>
</tr>
<tr>
<td>Bachelor of Arts or CHOOSE ONE</td>
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This program is a Gainful Employment Program:  
[ ] Yes or [ ] No

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<th>4. Type of Action:</th>
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<tr>
<td>PROGRAM</td>
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<td>[ ] Change</td>
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<td>□ Inactivate</td>
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<th>5. Implementation Date (semester/year)</th>
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<td>From: Fall/2014</td>
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<th>6a. Coordination with Affected Units</th>
</tr>
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<tr>
<td>Department, School, or College: CAS</td>
</tr>
<tr>
<td>Initiator Name (typed): Steve J. Langdon</td>
</tr>
<tr>
<td>Initiator Signed Initials: ________</td>
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<tr>
<td>Date: ____________________________</td>
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<table>
<thead>
<tr>
<th>6b. Coordination Email submitted to Faculty Listserv (<a href="mailto:uaa-faculty@lists.ualaska.edu">uaa-faculty@lists.ualaska.edu</a>)</th>
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<tbody>
<tr>
<td>Date: 10/31/2013</td>
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</table>

<table>
<thead>
<tr>
<th>6c. Coordination with Library Liaison</th>
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</thead>
<tbody>
<tr>
<td>Date: 10/31/2013</td>
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</table>

<table>
<thead>
<tr>
<th>7. Title and Program Description - Please attach the following:</th>
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</thead>
<tbody>
<tr>
<td>☑ Cover Memo    ☑ Catalog Copy in Word using the track changes function</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>8. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revisions of courses to streamline offerings to make more efficient for students.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>________________________</td>
</tr>
<tr>
<td>Steve J. Langdon</td>
</tr>
<tr>
<td>________________________</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Approved</th>
<th>Disapproved</th>
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Program/Prefix Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix

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<tr>
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<td>Anthropology</td>
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2. Complete Program Title/Prefix
Bachelor of Sciences, Anthropology

3. Type of Program
Choose one from the appropriate drop down menu:
- Undergraduate: Bachelor of Science
- Graduate: CHOOSE ONE

This program is a Gainful Employment Program:  
☐ Yes or  ☒ No

4. Type of Action:
- PROGRAM
  - ☐ Add
  - ☒ Change
  - ☐ Delete
- PREFIX
  - ☐ Add
  - □ Change
  - ☐ Inactivate

5. Implementation Date (semester/year)
From: Fall/2014  To: Fall/9999

6a. Coordination with Affected Units
Department, School, or College: CAS
Initiator Name (typed): Steve J. Langdon
Initiator Signed Initials: _______
Date: ________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)  Date: 10/31/2013

6c. Coordination with Library Liaison  Date: 10/31/2013

7. Title and Program Description - Please attach the following:
- ☒ Cover Memo
- ☒ Catalog Copy in Word using the track changes function

8. Justification for Action
Revisions of courses to streamline offerings to make more efficient for students

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Anthropology is the study of human diversity on a cross-cultural basis, aimed at achieving both scientific and humanistic education goals. Anthropology is comprised of four sub-fields: sociocultural anthropology, biological anthropology, archaeology and anthropological linguistics. The BA/BS degrees are designed to provide the student with a solid general foundation in the discipline by emphasizing understanding of different cultures and peoples as well as different theories and methodologies. Although there is some opportunity for limited specialization in either archaeology or sociocultural anthropology and in Alaska studies, the department believes that such specialization should be deferred until graduate work.

Honors in Anthropology

The award of honors in Anthropology recognizes outstanding achievement by undergraduate majors in the study of anthropology. To be eligible for departmental honors, a student must satisfy the following requirements:

1. Be a declared Anthropology major.
2. Satisfy all of the requirements for a BA or BS degree in Anthropology.
3. Meet the requirements for Graduation with Honors, as listed in Chapter 7.
4. Earn a grade point average of 3.50 or above in courses specific to the Anthropology major.
5. Complete a senior thesis project (taken as ANTH A499), based on library, laboratory or field research resulting in a substantial, thesis-quality paper defended before the Anthropology faculty. Note: the course may be taken on a one-semester (3-credit) or two-semester (6-credit) basis.

Bachelor of Arts, Anthropology

Bachelor of Science, Anthropology

Program Student Learning Outcomes

Students graduating with a Bachelor of Arts in Anthropology or a Bachelor of Science in Anthropology will be able to:

- Explain current understandings about human beings and behavior including the evolution of humans, the nature of culture and cultural processes, the features of language and characteristics of linguistic use, the forms of biological diversity and the significant trajectories of change which have led to the current status of humanity.
- Demonstrate an understanding of different scientific and theoretical approaches in anthropology, their epistemological and conceptual foundations, their strengths and limitations, and the types of topics, issues and problems they are designed to address.
- Apply liberal educational skills, such as independent knowledge acquisition, problem identification, critical thinking, formation and evaluation of hypotheses, and organized and effective presentation of information, to anthropological materials demonstrated through various types of presentation including scientific and technical writing, effective public speaking and electronic media presentation.
- Demonstrate ability to apply anthropological concepts and perspectives to understanding local social and cultural practices occurring outside the classroom in the community.

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Graduation Requirements

Students must complete the following graduation requirements:
A. **General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

B. **General Education Requirements**

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

C. **College of Arts and Sciences Requirements**

Complete the College of Arts and Sciences Requirements for either a BA or BS degree listed at the beginning of the CAS section.

D. **Major Requirements**

**Bachelor of Arts, Anthropology**

1. Complete 36 credits from items 2 through 6, 18 of which must be upper division credits.
2. Complete three of the following core courses (9 credits):
   - ANTH A202 Cultural Anthropology (3)
   - ANTH A205 Biological Anthropology (3)
   - ANTH A210 Introduction to Linguistic Anthropology (3)
   - ANTH A211 Fundamentals of Archaeology (3)

3. Complete the following courses (6 credits):
   - ANTH A250 Rise of Civilization (3)
   - ANTH A410 History of Anthropology (3)

4. Complete three ethnographic area courses from the following (9 credits):
   - ANTH A200 Natives of Alaska (3)
   - ANTH A325 Cook Inlet Anthropology (3)
   - ANTH A335 Native North Americans (3)
   - ANTH A336 Peoples and Cultures of South America (3)
   - ANTH A427 Ethnohistory of Alaska Natives (3)
   - ANTH A429 Contemporary Alaska Native Societies (3)
   - ANTH A434 Peoples and Cultures of Northeast Asia (3)
   - ANTH A436 Aleut Adaptations (3)
   - ANTH A437 Eskimo Adaptations (3)
   - ANTH A438 Tlingit and Haida Adaptations
   - ANTH A439 Athabaskan Adaptations (3)

   *Of the following ethnographic area courses which emphasize archaeology, no more than 6 credits can be used to satisfy the ethnographic area requirement:*
   - ANTH A312 North American Archaeology (3)
   - ANTH A413 Peopling of the Americas (3)
   - ANTH A416 Arctic Archaeology (3)

5. Complete two courses (6 credits) from the following topical/theoretical courses:
   - ANTH A270 Women in Cross-cultural Perspective (3)
   - ANTH A324 Psychological Anthropology (3)
   - ANTH A360 Anthropology of Art (3)
   - ANTH A361 Language and Culture (3)
   - ANTH A365 Modern Human Biological Diversity (3)
ANTH A375 Introduction to Cultural Resource Management (3)
ANTH A400 Anthropology of Religion (3)
ANTH A415 Applied Anthropology (3)
ANTH A425 Archaeology of Identity (3)
ANTH A432 Hunting and Gathering Societies (3)
ANTH A445 Evolution of Humans and Disease (3)
ANTH A454 Culture and Ecology (3)
ANTH A455 Medical Anthropology (3)
ANTH A457 Food and Nutrition: An Anthropological Perspective (3)
ANTH A460 Peace, War, and Violence: An Anthropological Perspective (3)
ANTH A465 Culture and Globalization
ANTH A476 Ethical Issues in Archaeology (3)
ANTH A480 Analytical Techniques in Archaeology (3)
ANTH A481 Museum Studies in Anthropology (3)
ANTH A482 Historical Archaeology (3)

Note: The upper division special topics course (ANTH A490) or independent study courses (ANTH A397, ANTH A497) may be petitioned to satisfy ethnographic area or topical/theoretical course requirements, depending on course content.

6. Anthropology electives: Any 6 credits in Anthropology 6
7. Complete one statistics course from the following: 3-4
   STAT A252 Elementary Statistics (3)
   STAT A253 Applied Statistics for the Sciences (4)
   STAT A307 Probability and Statistics (4)

8. A minimum of 120 credits is required for the degree, of which 42 credits must be upper division to satisfy General Education Requirements.

Bachelor of Science, Anthropology

1. Complete 36 credits from items 2 through 6, 18 of which must be upper division credits.
2. Complete three of the following core courses: 9
   ANTH A202 Cultural Anthropology (3)
   ANTH A205 Biological Anthropology (3)
   ANTH A210 Introduction to Linguistic Anthropology (3)
   ANTH A211 Fundamentals of Archaeology (3)
3. Complete the following courses: 6
   ANTH A250 Rise of Civilization (3)
   ANTH A410 History of Anthropology (3)
4. Complete three ethnographic area courses from the following: 9
   ANTH A200 Natives of Alaska (3)
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   ANTH A427 Ethnohistory of Alaska Natives (3)
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   ANTH A434 Peoples and Cultures of Northeast Asia (3)
ANTH A436  Aleut Adaptations (3)
ANTH A437  Eskimo Adaptations (3)
ANTH A438  Tlingit and Haida Adaptations (3)
ANTH A439  Athabaskan Adaptations (3)

Of the following ethnographic area courses which emphasize archaeology, no more than 6 credits can be used to satisfy the ethnographic area requirement:

ANTH A312  North American Archaeology (3)
ANTH A413  Peopling of the Americas (3)
ANTH A416  Arctic Archaeology (3)

5. Complete two courses from the following topical/theoretical courses: 6

ANTH A270  Women in Cross-cultural Perspective (3)
ANTH A324  Psychological Anthropology (3)
ANTH A350  Survey of the Primates (3)
ANTH A360  Anthropology of Art (3)
ANTH A361  Language and Culture (3)
ANTH A365  Modern Human Biological Diversity (3)
ANTH A375  Introduction to Cultural Resource Management (3)
ANTH A400  Anthropology of Religion (3)
ANTH A415  Applied Anthropology (3)
ANTH A425  Archaeology of Identity (3)
ANTH A432  Hunting and Gathering Societies (3)
ANTH A445  Evolution of Humans and Disease (3)
ANTH A450  Human Evolution (3)
ANTH A454  Culture and Ecology (3)
ANTH A455  Medical Anthropology (3)
ANTH A457  Food and Nutrition: An Anthropological Perspective (3)
ANTH A460  Peace, War, and Violence: An Anthropological Perspective (3)
ANTH A465  Culture and Globalization (3)
ANTH A475  Ethical Issues in Archaeology (3)
ANTH A480  Analytical Techniques in Archaeology (3)
ANTH A481  Museum Studies in Anthropology (3)
ANTH A482  Historical Archaeology (3)

Note: The upper division special topics course (ANTH A490) or independent study courses (ANTH A397, ANTH A497) may be petitioned to satisfy ethnographic area or topical/theoretical course requirements, depending on course content.

6. Anthropology Electives: 6
Any six courses in Anthropology

7. Complete one statistics course from the following: 4

STAT A253  Applied Statistics for the Sciences (4)
or
STAT A307  Probability and Statistics (4)
8. A minimum of 120 credits is required for the degree, of which 42 credits must be upper division to satisfy General Education Requirements.

**Minor, Anthropology**

Students majoring in another subject who wish to minor in Anthropology must complete the following requirements. A total of 18 credits is required for the minor, 6 of which must be upper division.

1. Select two courses (6 credits) from the following:
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   - ANTH A202 Cultural Anthropology (3)
   - ANTH A205 Biological Anthropology (3)
   - ANTH A210 Introduction to Linguistic Anthropology (3)
   - ANTH A211 Fundamentals of Archaeology (3)
   - ANTH A250 Rise of Civilization (3)

2. Complete at least one course (3 credits) from either the ethnographic area or the topical/theoretical area, as specified above for majors in Anthropology.

3. Complete three courses (9 credits) of Anthropology electives.

**FACULTY**

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Clare Dannenberg, Assistant Professor, cjdannenberg@uaa.alaska.edu
Phyllis Fast, Professor Emeritus, pfast@uaa.alaska.edu
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Douglas Veltre, Professor Emeritus, duveltre@uaa.alaska.edu
William Workman, Professor Emeritus, AFWBW@uaa.alaska.edu
David Yesner, Professor, dryesner@uaa.alaska.edu
ANTHROPOLOGY

Beatrice McDonald Hall (BMH), Room 214, (907) 786-6840
www.uaa.alaska.edu/anthropology

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Bachelor of Science, Anthropology

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   - ANTH A210 Introduction to Linguistic Anthropology (3)
   - ANTH A211 Fundamentals of Archaeology (3)

3. Complete the following courses (6 credits):
   - ANTH A250 Rise of Civilization (3)
   - ANTH A410 History of Anthropology (3)

4. Complete three ethnographic area courses from the following:
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   - ANTH A325 Cook Inlet Anthropology (3)
   - ANTH A335 Native North Americans (3)
   - ANTH A336 Peoples and Cultures of South America (3)
   - ANTH A338 Peoples and Cultures of Scandinavia (3)
   - ANTH A427 Ethnohistory of Alaska Natives (3)
   - ANTH A429 Contemporary Alaska Native Societies (3)
   - ANTH A434 Peoples and Cultures of Northeast Asia (3)
   - ANTH A435 Northwest Coast Cultures (3)
   - ANTH A436 Aleut Adaptations (3)
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   - ANTH A354 Culture and Ecology (3)
   - ANTH A360 Anthropology of Art (3)
   - ANTH A361 Language and Culture (3)
   - ANTH A365 Modern Human Biological Diversity (3)
   - ANTH A375 Introduction to Cultural Resource Management (3)
   - ANTH A400 Anthropology of Religion (3)
   - ANTH A415 Applied Anthropology (3)
   - ANTH A425 Archaeology of Identity (3)
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   - ANTH A445 Evolution of Humans and Disease (3)
   - ANTH A455 Medical Anthropology (3)
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ANTH A484 Lithic Technology (3)
ANTH A485 Human Osteology (3)
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   ANTH A434 Peoples and Cultures of Northeast Asia (3)
   ANTH A435 Northwest Coast Cultures (3)
   ANTH A436 Aleut Adaptations (3)
   ANTH A437 Eskimo Adaptations (3)
   ANTH A438 Tlingit and Haida Adaptations
   ANTH A439 Athabaskan Adaptations (3)

   Of the following ethnographic area courses which emphasize archaeology, no more than 6 credits can be used to satisfy the ethnographic area requirement:
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   ANTH A413 Peopling of the Americas (3)
   ANTH A416 Arctic Archaeology (3)
5. Complete two courses from the following topical/theoretical courses: 6
   ANTH A270 Women in Cross-cultural Perspective (3)
   ANTH A324 Psychological Anthropology (3)
ANTH A350 Survey of the Primates (3)
ANTH A354 Culture and Ecology (3)
ANTH A360 Anthropology of Art (3)
ANTH A361 Language and Culture (3)
ANTH A365 Modern Human Biological Diversity (3)
ANTH A375 Introduction to Cultural Resource Management (3)
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Note: The upper division special topics course (ANTH A490) or independent study courses (ANTH A397, ANTH A497) may be petitioned to satisfy ethnographic area or topical/theoretical course requirements, depending on course content.

6. Anthropology Electives: 6
   Any six courses in Anthropology

7. Complete one statistics course from the following: 4
   STAT A253 Applied Statistics for the Sciences (4)
   or
   STAT A307 Probability and Statistics (4)

8. A minimum of 120 credits is required for the degree, of which 42 credits must be upper division to satisfy General Education Requirements.

**Minor, Anthropology**

Students majoring in another subject who wish to minor in Anthropology must complete the following requirements. A total of 18 credits is required for the minor, 6 of which must be upper division.

1. Select two courses (6 credits) from the following: 6
   ANTH A101 Introduction to Anthropology (3)
   ANTH A202 Cultural Anthropology (3)
   ANTH A205 Biological Anthropology (3)
   ANTH A210 Introduction to Linguistic Anthropology (3)
   ANTH A211 Fundamentals of Archaeology (3)
   ANTH A250 Rise of Civilization (3)

2. Complete at least one course (3 credits) from either the ethnographic area or the topical/theoretical area, as specified above for majors in Anthropology. 3

3. Complete three courses (9 credits) of Anthropology electives. 9
<table>
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<tbody>
<tr>
<td>Alan Boraas, Professor (KPC campus), <a href="mailto:IFASB@uaa.alaska.edu">IFASB@uaa.alaska.edu</a></td>
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<tr>
<td>Sarah Carraher, Assistant professor, <a href="mailto:scarrahe@uaa.alaska.edu">scarrahe@uaa.alaska.edu</a></td>
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<tr>
<td>Clare Dannenberg, Assistant Professor, <a href="mailto:cdannenberg@uaa.alaska.edu">cdannenberg@uaa.alaska.edu</a></td>
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<td>Phyllis Fast, Professor Emeritus, <a href="mailto:pafast@uaa.alaska.edu">pafast@uaa.alaska.edu</a></td>
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<td>Diane Hanson, Associate Professor, <a href="mailto:dhanson@uaa.alaska.edu">dhanson@uaa.alaska.edu</a></td>
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<tr>
<td>Ryan Harrod, Assistant Professor, <a href="mailto:rharrod@uaa.alaska.edu">rharrod@uaa.alaska.edu</a></td>
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<td>Steve J. Langdon, Professor Emeritus, <a href="mailto:slangdon@uaa.alaska.edu">slangdon@uaa.alaska.edu</a></td>
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<td>Marie Low, Assistant Professor (ISER), <a href="mailto:mlow@uaa.alaska.edu">mlow@uaa.alaska.edu</a></td>
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</tr>
<tr>
<td>David Yesner, Professor, <a href="mailto:dyesner@uaa.alaska.edu">dyesner@uaa.alaska.edu</a></td>
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</tbody>
</table>

Alan Boraas, Professor (KPC campus), IFASB@uaa.alaska.edu
Phyllis Fast, Assistant Professor, AFPAF@uaa.alaska.edu
Kerry Feldman, Professor Emeritus, AFKDF@uaa.alaska.edu
Christine Hanson, Professor, AFCLH@uaa.alaska.edu
Diane Hanson, Associate Professor, AFDKH@uaa.alaska.edu
Steve Langdon, Professor/Chair, AFJSJ@uaa.alaska.edu
Paul White, Assistant Professor, AFJW@uaa.alaska.edu
William Workman, Professor Emeritus, AFWBW@uaa.alaska.edu
David Yesner, Professor, AFDRY@uaa.alaska.edu
1a. School or College  
AS CAS
1b. Division  
AMSC Division of Math Science
1c. Department  
Biological Sciences

2. Course Prefix  
BIOL
3. Course Number  
A108
4. Previous Course Prefix & Number  
N/A
5a. Credits/CEUs  
6
5b. Contact Hours  
(Lecture + Lab) (3+9)

6. Complete Course Title  
Principles and Methods in Biology
Abbreviated Title for Transcript (30 character)  
Principles & Methods Biology

7. Type of Course  
☑ Academic  
☐ Preparatory/Development  
☐ Non-credit  
☐ CEU  
☐ Professional Development

8. Type of Action:  
☐ Add  
☐ Change  
☐ Delete
If a change, mark appropriate boxes:
- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Automatic Restrictions
- Other (please specify)
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Registration Restrictions
- General Education Requirement
- Class  
- Level
- College  
- Major

9. Repeat Status No  
# of Repeats  
Max Credits

10. Grading Basis  
☑ A-F  
☐ P/NP  
☐ NG

11. Implementation Date  
semester/year  
From: Fall/2015  
To: Fall/9999

12. ☐ Cross Listed with  
☐ Stacked with  
Cross-Listed Coordination Signature

13a. Impacted Courses or Programs:  
List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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1. See separate table    |                      |                             |
2.                      |                      |                             |
3.                      |                      |                             |

Initiator Name (typed):  Khrys Duddleston  
Initiator Signed Initials:  
Date:  

13b. Coordination Email  
Date: 6Jan14  
submitted to Faculty Listserv:  (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 6Jan14

14. General Education Requirement  
Mark appropriate box:  
☐ Oral Communication  
☐ Written Communication  
☐ Quantitative Skills  
☐ Humanities  
☐ Fine Arts  
☐ Social Sciences  
☐ Natural Sciences  
☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)  
Introduces the biological sciences through an exploration of core themes and fundamental skills. Exposes students to biological theory and laboratory practice through integrated lecture and experiential learning modules.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
CHEM A105 with minimum grade of C or concurrent enrollment

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)  
☐ College  
☐ Major  
☐ Class  
☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action  
This is a new introductory biology course meant to replace our traditional 2-semester intro series (BIOL A115 and BIOL A116). This change is part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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<thead>
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<th>Position</th>
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<tr>
<td>College/School Curriculum Committee Chair</td>
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</table>
I. Initiation Date: Spring 2014

II. Course Information
A. College: College of Arts and Sciences
B. Course prefix: BIOL
C. Course Number: A108
D. Number of credits: 6
E. Contact Hours: 3+9
F. Course Title: Principles and Methods in Biology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Introduces the biological sciences through an exploration of core themes and fundamental skills. Exposes students to biological theory and laboratory practice through integrated lecture and experiential learning modules.
K. Course Prerequisites: CHEM A105 with minimum grade of C or concurrent enrollment
L. Course Co-requisites: N/A
M. Other restrictions: N/A
O. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. In each module, assign and lead discussions of relevant and essential background literature in experimental design and critical thinking skills relevant to the module’s theme.
   2. Guide the students in learning exercises and demonstrate appropriate skills
   3. Provide feedback and criticism on student writing, presentation, and critical thinking processes to help develop student skills in these areas.

B. Student Learning Outcomes and Assessment Measures:

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate scientific writing and presentation skills</td>
<td>In class presentations, written assignments, peer evaluation and feedback</td>
</tr>
<tr>
<td>2. Demonstrate ability to generate and present scientific data</td>
<td>In class presentations, written assignments, and/or examinations</td>
</tr>
<tr>
<td>3. Demonstrate competency in and understanding of core concepts in biological sciences</td>
<td>In class presentations, written assignments, and/or examinations</td>
</tr>
</tbody>
</table>

IV. Course Level Justification
Introducing students to core themes and skills foundational to further learning in the biological and natural sciences.
V. **Topical Course Outline**
The course will be organized into three major sections, each with closely linked lecture and experiential learning materials and activities. The specific examples used within each module will vary by semester, but modules will be constructed around core biological concepts and competencies.

A. Core biological concepts: Each module will focus on one or two of the following core concepts in the biological sciences such that all four are incorporated into a single semester.
   a. Evolutionary theory (focus of module 1; underlies all additional concepts)
      i. Inheritance
      ii. Change
      iii. Adaptation
   b. Transformation of energy and matter
      i. Principles of thermodynamics
      ii. Energy flow through systems
   c. Structure and function: basic units of structure define functions of all living things
      i. Structure
         1. Within organisms
         2. Among organisms
      ii. Function
         1. Metabolic processes
         2. Population processes
   d. Informational theory (information flow, exchange, storage)
      i. Genetic information
      ii. Information storage, control, usage and transmission

B. Core biological competencies: Specified learning objectives for each module will ensure that all students achieve the necessary skills to progress to 200 level courses in the field.
   a. Module 1: Introduction to basic biological processes and skills
      i. Diversity of scientific ways of knowing
      ii. Structure of scientific literature and writing
      iii. Basic laboratory skills for the sciences
      iv. Hypothesis testing
      v. Experimental design
   b. Module 2: Data gathering, assessment, understanding and presentation
      i. Design and conduct experiments
      ii. Basic statistical skills common across the sciences
      iii. Generating tables and figures from data
      iv. Present quantifiable data
      v. Organizing short presentations
   c. Module 3: Scientific writing and presentation skills, demonstrating competence in core skills
      i. Organization of papers and presentations
      ii. Comparing “good” vs. “bad” writing in the sciences
      iii. Produce and present complete experimental report
      iv. Drawing conclusions from data – facts vs. theories
      v. Presenting convincing scientific cases

VI. **Suggested Texts**

Cummings. 2010.


VII. Bibliography

Selected articles from journals such as:
# Course Action Request

## University of Alaska Anchorage

Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tbody>
<tr>
<td>BIOL</td>
<td>A442</td>
<td>N/A</td>
<td>3</td>
<td>(1+4)</td>
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<tr>
<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Experiential Learning: Animal Behavior</td>
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<thead>
<tr>
<th>7. Type of Course</th>
<th>8. Type of Action:</th>
<th>9. Repeat Status No</th>
<th># of Repeats</th>
<th>Max Credits</th>
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<th>10. Grading Basis</th>
<th>11. Implementation Date</th>
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<tr>
<td>A-F</td>
<td>semester/year</td>
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<tr>
<th>12. Cross Listed with</th>
<th>Stacked with</th>
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</table>

| 13a. Impacted Courses or Programs: List any programs or college requirements that require this course. Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at <www.uaa.alaska.edu/governance>. |

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<th>13b. Coordination Email</th>
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<thead>
<tr>
<th>14. General Education Requirement</th>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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<tbody>
<tr>
<td>Oral Communication</td>
<td>Theory and practice in research methods and analysis in animal behavior. Students conduct research in areas such as foraging behavior, communication, predator avoidance, sensory systems and social behaviors</td>
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<td>Written Communication</td>
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<td>Quantitative Skills</td>
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<td>Natural Sciences</td>
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<tr>
<td>Integrative Capstone</td>
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</tbody>
</table>

16a. Course Prerequisite(s) (list prefix and number or test code and score) BIOL A273 with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required) BIOL A441

16c. Automatic Restriction(s) |

16d. Registration Restriction(s) (non-codable)

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

This course replaces the laboratory component of BIOL A441, which is being removed. This change is part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science)

| Initiator (faculty only) | Initiator (TYPE NAME) |  |  |
|--------------------------|-----------------------|  |  |
| Khrys Duddleston         |                       |  |  |

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| 20. Justification for Action (continued) |

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<th>Provost or Designee</th>
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<tr>
<td>College/School Curriculum Committee Chair</td>
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<tr>
<td>Date</td>
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</tbody>
</table>

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University of Alaska Anchorage
College of Arts and Sciences
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A442
D. Number of Credits: 3
E. Contact Hours: 1+4
F. Course Title: Experiential Learning: Animal Behavior
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Theory and practice in research methods and analysis in animal behavior. Students conduct research in areas such as foraging behavior, communication, predator avoidance, sensory systems and social behaviors.
K. Course Prerequisites: BIOL A273 with minimum grade of C
L. Course Co-requisites: BIOL A441
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide an introduction to the scientific exploration of animal behavior including the history, theory, and methods.
   2. Offer the opportunity to watch animals in the wild with a scientist’s eyes and mind by thinking about their behavior in the context of natural selection and evolution.
   3. Give students hands on experiences collecting data using appropriate behavioral sampling techniques and interpreting data using appropriate statistical methods.
   4. Explain the components of effective communication, and provide assignments that allow the students to practice these skills.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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</thead>
<tbody>
<tr>
<td>1. Apply the scientific process to formulate a question of interest in behavior to be tested in the field and/or laboratory.</td>
<td>Written assignments or oral presentations</td>
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<tr>
<td>2. Design and conduct an independent investigation to test hypotheses relating to animal behavior.</td>
<td>Written assignments and/or media assignments</td>
</tr>
<tr>
<td>3. Use relevant evidence gathered through</td>
<td>Written assignments</td>
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</table>
accepted scholarly methods and properly acknowledge sources of information

| 4. Use statistical analyses appropriate to the independent investigation. | Written assignments |
| 5. Effectively communicate one’s findings both verbally and in writing. | Written assignments and oral presentations |
| 6. Demonstrate critical thinking in the evaluation of scientific findings. | Written assignments, oral presentations, and classroom discussions |

IV. Course Level Justification
Designed for Biology and Natural Sciences majors as an elective undergraduate course comparable to 400-level animal behavior or behavioral ecology courses offered at other universities. This course covers the principle concepts essential to the student’s ability to succeed in graduate programs and career pathways relevant to the discipline of animal behavior.

V. Topical Course Outline
A. Introduction to methods of behavioral observation
   1. Scan sampling
   2. Focal animal sampling
   3. Ad lib sampling
   4. All occurrences sampling
B. Experimental design
C. Literature review
D. Pilot data collection
E. Project proposal
F. Data collection
G. Data analysis and statistics
H. Writing the scientific paper
I. Presenting the Results

VI. Suggested Texts

VII. Bibliography


## Course Action Request

University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

### 1a. School or College
- AS CAS

### 1b. Division
- AMSC Division of Math Science

### 1c. Department
- Biological Sciences

### 2. Course Prefix
- BIOL

### 3. Course Number
- A451

### 4. Previous Course Prefix & Number
- N/A

### 5a. Credits/CEUs
- 3

### 5b. Contact Hours (Lecture + Lab)
- (3+0)

### 6. Complete Course Title
- Microbial Biotechnology

### 7. Type of Course
- Academic

### 8. Type of Action:
- Add

### 9. Repeat Status No
- # of Repeats
- Max Credits

### 10. Grading Basis
- A-F

### 11. Implementation Date
- From: Fall/2015
- To: Fall/9999

### 12. Cross Listed with
- [ ]

### 13a. Impacted Courses or Programs
- List any programs or college requirements that require this course.

### 14. General Education Requirement
- Mark appropriate box:
  - Oral Communication
  - Written Communication
  - Quantitative Skills
  - Humanities
  - Fine Arts
  - Social Sciences
  - Natural Sciences
  - Integrative Capstone

### 15. Course Description (suggested length 20 to 50 words)
- Application of microbiology for improvement of human kind, including genetic engineering of microorganisms to produced products of importance to human health, microbe-based foods and beverages, microbe-based bio-control, biofuels and bioremediation

### 16a. Course Prerequisite(s) (list prefix and number or test code and score)
- BIOL A340 with minimum grade of C

### 16b. Co-requisite(s) (concurrent enrollment required)

### 16c. Automatic Restriction(s)
- [ ] College
- [ ] Major
- [ ] Class
- [ ] Level

### 16d. Registration Restriction(s) (non-codable)

### 17. Mark if course has fees

### 18. Mark if course is a selected topic course

### 19. Justification for Action
- This course is part of an overall revision of the Biological Sciences curriculum. The course description is being updated and the name is being change to better reflect the content of the course. Stacking with BIOL A651 is being removed (BIOL A651 is being deleted).

### 20. Approval Process

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Date</th>
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<td>Khrys Duddleston</td>
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University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A451
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Microbial Biotechnology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Application of microbiology for improvement of human kind, including genetic engineering of microorganisms to produce products of importance to human health, microbe-based foods and beverages, microbe-based bio-control, biofuels and bioremediation

K. Course Prerequisites: BIOL A340 with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present the principle concepts behind the applied use of microorganisms in a variety of fields
   2. Provide examples of the design, growth, and processing of microorganisms for human benefit
   3. Describe the production of microbial-based foods and beverages on a large scale
   4. Describe the use of microorganisms in agriculture and in reclamation of contaminated sites.
   5. Discuss the latest research findings relevant to the use of microorganism for improvement of human

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Demonstrate understanding of the use of traditional and molecular techniques to manipulate the genetic make-up of microorganisms</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2) Propose the construction of a genetically modified microorganism for release into the</td>
<td>Project, paper, oral presentation and in class discussions</td>
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</tbody>
</table>
environment and defend that proposal on
scientific, ethical and economic means

| 3) Evaluate the factors affecting the use of microorganisms in agriculture and bioremediation | Written assignments, in class discussions, examinations |
| 4) Demonstrate understanding of the production of microbially-based foods and beverages | Written assignments, examinations |
| 5) Evaluate the primary literature in applied microbiology and microbial biotechnology | Written assignments, examinations |

IV. Course Level Justification
This course builds upon knowledge of microbiology, cell biology and genetics. It is equivalent to other 400-level courses in applied microbiology and microbial biotechnology at other universities.

V. Topical Course Outline
A. Molecular Microbial Biotechnology
   1. Methods of strain development
      a. pre-recombinant DNA technology
      b. post-recombinant DNA technology
   2. Cloning
      a. bacteria
      b. yeast
   3. Expression of foreign DNA
   4. Growth of modified microbes
   5. Downstream processing
B. Microbes as Living Factories
   1. Biocatalysis of useful products
   2. Large-scale production of proteins
   3. Organic synthesis
   4. Synthesis of optically pure drugs
   5. Antibiotics
   6. Polysaccharides and polyesters
   7. Food additives
C. Microbial Enzymes
   1. Production and application
D. Microbial-based foods and beverages
   1. Fermented foods
      a. Yogurt
      b. Cheese
      c. Sauerkraut
      d. Kimchi
      e. Chocolate
   2. Fermented beverages
      a. Beer
      b. Wine
      c. Distilled liquors
E. Plant-Microbe Interactions
   1. Protection of plants from frost
   2. Improvement of crop yields,
   3. *A. tumefaciens* in the production of transgenic plants

F. Microbes and Energy
   1. Biomass to fuels
      a. Ethanol
      b. Methane
   2. Bacterial batteries

G. Environmental Applications
   1. Biodegradation and bioremediation
   2. Sewage and wastewater treatment

VI. Suggested Texts

VII. Bibliography
   Primary literature from journals such as: Applied and Environmental Microbiology, Applied Microbiology and Biotechnology, Journal of Applied Microbiology


Course Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

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<tr>
<th>1a. School or College</th>
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<td>Theory and application of laboratory techniques in microbial ecology, diversity and evolution with an emphasis on experimental design, scientific writing and oral presentation skills.</td>
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<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
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<td>BIOL A342 with minimum grade of C and [BIOL A450 or concurrent enrollment]</td>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<th>18.</th>
<th>Mark if course is a selected topic course</th>
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<th>19.</th>
<th>Justification for Action</th>
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<tr>
<td>The course prepares students for graduate school or careers in the environmental and/or microbial sciences. It is a companion laboratory-based course to BIOL A450 (Microbial Ecology). This change is part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).</td>
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University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A453
D. Number of Credits: 4
E. Contact Hours: 2+4
F. Course Title: Experiential Learning: Microbial Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A

Course Description: Theory and application of laboratory techniques in microbial ecology, diversity and evolution with an emphasis on experimental design, scientific writing and oral presentation skills

J. Course Prerequisites: BIOL A342 with minimum grade of C and [BIOL A450 or concurrent enrollment]
K. Course Co-requisites: N/A
L. Other Restrictions: N/A
M. Registration Restrictions: N/A
N. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Guide students in selecting, comparing and interpreting scientific literature, synthesizing information and maintenance of a professional/field lab notebook.
   2. Train and guide students in microbial ecology and microbial evolution laboratory techniques.
   3. Support student-development of group projects to characterize microbial diversity and diversity changes in experimentally altered environments using culture and/or sequence based methods by facilitating discussion of research topics and providing guidance in experimental design, and data collection and analysis
   4. Provide review and critical analysis of student proposals and guide students in student-to-student peer review.

A. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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</thead>
<tbody>
<tr>
<td>1. Perform and interpret laboratory techniques in microbial ecology.</td>
<td>Written assignments and examinations, projects</td>
</tr>
<tr>
<td>2. Develop an experimental research plan, including research aims, experimental design</td>
<td>Project work, group discussion and/or written assignments.</td>
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<tr>
<td>3. Demonstrate competency in quantitative analysis and interpretation of scientific data in microbial ecology.</td>
<td>Written assignments, examinations and/or projects.</td>
</tr>
<tr>
<td>4. Communicate the results of scientific inquiry to an audience of scientific peers.</td>
<td>Oral Presentation, primary research paper, and/or written presentation materials.</td>
</tr>
</tbody>
</table>

**IV. Course Level Justification**

This experiential learning course is designed for Biological and Natural Science majors as a selective undergraduate course comparable to 400-level Microbial Ecology/Environmental Microbiology laboratory courses offered at other universities.

**V. Topical Course Outline**

A. Research Project Proposals

1. Questions and Methods in Microbial Ecology
   a. Developing a project in Microbial Ecology and/or Microbial Evolution.
   b. Comparing different experimental systems in microbial ecology.

2. Experimental Design
   a. Develop research aims.
   b. Develop hypothesis and experimental design.
   c. Generate and elaborate experimental protocols.

B. Experimentation – Microbial Ecology and Evolution

1. Practical Skills
   a. Biological and Chemical Safety
   b. Examples of methods in community organism diversity
      1. Fluorescence *in-situ* hybridization
      2. Flow Cytometry
      3. 16S/23S/5S Pyrosequencing
   c. Examples of methods in genetic diversity
      1. Amplicon sequencing and community metabolic diversity
      2. Metabolic analysis
   d. Examples of methods in microcosms
      1. Microbial interactions
      2. Microbiology of the biomes
      3. Microbial evolution

2. Data analysis
   a. Qualitative data analysis
   b. Quantitative data analysis
   c. Critical analysis and troubleshooting

C. Research communication

1. In-lab journal article discussion/annotation
2. In-lab biotechnology project discussion/presentation
3. Primary research paper
   a. Peer Review
4. Oral presentation to a scientific audience – In-class presentation

**VI. Suggested Texts**

VII. Bibliography

Journal Articles from primary literature (Science, Nature, Journal of Bacteriology, Microbial Ecology, Cell, EMBO, PNAS, etc.) relateed to student investigative projects.

Web-based resources for project development and data analysis, including (but not limited to) DNA sequence analysis (EZ-Taxon, NCBI BLAST toolkit, NCBI genomic data information), Microbial ID analysis tools (API online resources), image analysis platforms (Image J) and genomics.

Reference books related to student research topics and the identification and description of diverse microbial organisms, including but not limited to:

Bergery’s Manual of Systematic Bacteriology. Volumes 1 through 5:


1a. School or College
AS CAS

1b. Division
AMSC Division of Math Science

1c. Department
Biological Sciences

2. Course Prefix
BIOL

3. Course Number
A454

4. Previous Course Prefix & Number
N/A

5a. Credits/CEUs
4

5b. Contact Hours
(Lecture + Lab)
(2+4)

6. Complete Course Title
Experiential Learning: Microbial Biotechnology

Abbreviated Title for Transcript (30 character)
EL: Microbial Biotechnology

7. Type of Course
☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action:
☒ Add ☐ Change ☐ Delete

If a change, mark appropriate boxes:
☐ Prefix ☐ Course Number ☐ Credits ☐ Contact Hours ☐ Title ☐ Repeat Status ☐ Grading Basis ☐ Cross-Listed/Stacked ☐ Course Description ☐ Course Prerequisites ☐ Test Score Prerequisites ☐ Co-requisites ☐ Automatic Restrictions ☐ Registration Restrictions ☐ General Education Requirement ☐ Repeat Status ☐ Grading Basis ☐ Cross-Listed/Stacked ☐ Course Description ☐ Course Prerequisites ☐ Test Score Prerequisites ☐ Co-requisites ☐ Automatic Restrictions ☐ Registration Restrictions ☐ General Education Requirement

9. Repeat Status No

No ☐ # of Repeats ☐ Max Credits

10. Grading Basis
☒ A-F ☐ P/NP ☐ NG

11. Implementation Date
From: Fall/2015 ☐ ☐ To: Fall/9999

12. Cross Listed with
☐ Stacked with
☐ Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
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Initiator Name (typed): Khrys Duddleston Initiator Signed Initials: ____________________ Date: ____________________

13b. Coordination Email
Date: 6Jan14
submit to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Theory and application of laboratory techniques in microbial biotechnology, genetic engineering of microorganisms, and applied microbiology with an emphasis on experimental design, data collection and analysis and scientific writing and oral presentation skills.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
BIOL A342 with minimum grade of C and [BIOL A451 or concurrent enrollment or Instructor Permission]

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☒ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
The course prepares students for graduate school or careers in molecular biology, biotechnology and the microbial sciences. It is a companion laboratory-based course to BIOL A451 (Microbial Biotechnology). This change is part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science)
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University of Alaska Anchorage
College of Arts and Sciences
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A454
D. Number of Credits: 4
E. Contact Hours: 2+4
F. Course Title: Experiential Learning: Applied Microbiology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Theory and application of laboratory techniques in microbial biotechnology, genetic engineering of microorganisms, and applied microbiology with an emphasis on experimental design, data collection and analysis and scientific writing and oral presentation skills.
K. Course Prerequisites: BIOL A342 with minimum grade of C and [BIOL A451 or concurrent enrollment or Instructor Permission]
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Guide student in selecting, comparing and interpreting scientific literature, synthesizing information and the maintenance of a professional lab notebook.
   2. Train and guide students in techniques used in microbial biotechnology and applied microbiology.
   3. Support the development of student-led group projects in microbial biotechnology and genetic engineering of microorganisms by facilitating discussion of research topics and providing guidance in experimental design, and data collection and analysis.
   4. Provide review and critical analysis of student proposals and guide students in student-to-student peer review.

B. Student Learning Outcomes and Assessment Measures

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<td>1. Develop an experimental research plan, including research aims, experimental design</td>
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<tr>
<td>2. Demonstrate competency in molecular methods commonly used in biotechnology including (but not limited to) plasmid manipulation, recombinant DNA production, bacterial amplification and protein isolation and characterization.</td>
<td>Written assignments and/or projects.</td>
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<td>3. Communicate the results of scientific inquiry to an audience of scientific peers.</td>
<td>Oral presentation, primary research paper, and/or written presentation materials.</td>
</tr>
<tr>
<td>4. Demonstrate competency in applied microbiology techniques, including (but not limited to) bioremediation, surfactant production, protein production in bacterial systems, generation of foods and beverages by microbial action.</td>
<td>Written assignments, laboratory exercises and group discussion.</td>
</tr>
</tbody>
</table>

**IV. Course Level Justification**

This experiential learning course is designed for Biological and Natural Sciences majors as a selective undergraduate course comparable to 400-level biotechnology/applied microbiology laboratory courses offered at other universities.

**V. Topical Course Outline**

A. Research Project Proposals
   1. Biotechnology questions methods
      a. Developing a project in recombinant DNA and bacterial expression.
      b. Comparing different model systems for production of recombinant proteins.
   2. Experimental Design
      a. Develop research aims.
      b. Develop hypothesis and experimental design.
      c. Generate and elaborate experimental protocols.

B. Experimentation – Biotechnology and recombinant DNA
   1. Examples of practical skills in applied microbiology
      a. Biological and Chemical Safety
      b. *In-vitro* Recombinant DNA techniques
      c. Generation of unique plasmids for the project aims.
      d. Model organism production of chosen protein
      e. Biological assays and molecular techniques
      f. Protein purification strategies and isolation methods.
   2. Data analysis
      a. Qualitative data analysis
      b. Quantitative data analysis
      c. Critical analysis and troubleshooting

C. Experimentation – Applied Microbiology
   1. Examples of practical skills in applied microbiology
      a. Biological assays and molecular techniques
      b. Methods in Microbial Disinfection
      c. Bioremediation
      d. Biosurfactant Production
      e. Production of fermented foods and beverages using microorganisms
Methods in wastewater treatment

2. Data analysis
   a. Qualitative data analysis
   b. Quantitative data analysis

D. Research communication
   1. In-lab journal article discussion/annotation
   2. In-lab biotechnology project discussion/presentation
   3. Primary research paper
      a. Peer Review
   4. Oral presentation to a scientific audience

VI. Suggested Texts


A selection of journal articles relevant to course content chosen from primary literature (Science, Nature, Journal of Bacteriology, Biotechnology, Cell, EMBO, PNAS, etc.).

VII. Bibliography
Journal Articles from primary literature (Science, Nature, Journal of Bacteriology, Microbial Ecology, Cell, EMBO, PNAS, etc.) relates to student investigative projects.

Web-based resources for project development and data analysis, including (but not limited to) DNA sequence analysis (NCBI BLAST toolkit, NCBI genomic data information) and image analysis platforms (Image J).

Reference books related to student research topics and the identification and description of diverse microbial organisms, including but not limited to:


### Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

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<td>N/A</td>
<td>4</td>
<td>(Lecture + Lab) (2+4)</td>
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#### 6. Complete Course Title

**Experiential Learning: Bioinformatics**

*Abbreviated Title for Transcript (30 character)*

**EL: Bioinformatics**

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#### 8. Type of Action:

- □ Add
- □ Change
- □ Delete

**If a change, mark appropriate boxes:**

- □ Prefix
- □ Credits
- □ Title
- □ Grading Basis
- □ Course Description
- □ Test Score Prerequisites
- □ Automatic Restrictions
- □ Class
- □ Level
- □ College
- □ Major
- □ Other

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- Cross-Listed Coordination Signature

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<tbody>
<tr>
<td>Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at <a href="https://www.uaa.alaska.edu/governance">https://www.uaa.alaska.edu/governance</a>.</td>
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<th>Chair/Coordinator Contacted</th>
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<td>3.</td>
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Initiator Name (typed): Krhs Duddleston

Initiator Signed Initials: _________

Date:________________

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<th>14. General Education Requirement</th>
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<tr>
<td>Computational theory and methods for analyses of biological phenomena. Applied laboratory for learning algorithms and databases used in sequence alignment, sequence searching, metagenomics, phylogenetics, analysis of next-generation sequencing data, protein structures, and molecular pathways. Genomics approaches for understanding complex biological systems in model organisms and human disease will be presented.</td>
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<tr>
<td>BIOL A252 and [MATH A200 or MATH A272] and [STAT A253 or STAT A307] with minimum grade of C and one computer science course [CS A109, CS A110, CS A111, CSCE A201, or CSCE A202]</td>
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<table>
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<thead>
<tr>
<th>18. Mark if course is a selected topic course</th>
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</thead>
</table>

<table>
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<tr>
<th>19. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>This course prepares students for graduate school or careers in molecular biology and microbiology. This change is part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).</td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Initiator (faculty only)</td>
</tr>
<tr>
<td>Khrys Duddleston</td>
</tr>
<tr>
<td>Initiator (TYPE NAME)</td>
</tr>
<tr>
<td>Dean/Director of School/College</td>
</tr>
<tr>
<td>Department Chair</td>
</tr>
<tr>
<td>College/School Curriculum Committee Chair</td>
</tr>
<tr>
<td>Undergraduate/Graduate Academic Board Chair</td>
</tr>
<tr>
<td>Provost or Designee</td>
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</table>
I. Date of Initiation
   Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A455
D. Number of Credits: 4
E. Contact Hours: 2+4
F. Course Title: Experiential Learning: Bioinformatics
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Computational theory and methods for analyses of biological phenomena. Applied laboratory for learning algorithms and databases used in sequence alignment, sequence searching, metagenomics, phylogenetics, analysis of next-generation sequencing data, protein structures, and molecular pathways. Genomics approaches for understanding complex biological systems in model organisms and human disease will be presented.
K. Course Prerequisites: {BIOL A252, and [MATH A200 or MATH A272] and [STAT A253 or STAT A307]} with minimum grade of C and one computer science course [CS A109, CS A110, CS A111, CSCE A201, or CSCE A202]
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present a synthesis of basic principles of mathematics, computer science, statistics and genetics used to develop algorithms for analyzing biological sequence data, including sequence alignment, sequence searching, metagenomics, phylogenetics, and next-generation sequencing data analysis.
   2. Discuss how to implement and critically deconstruct computational methods to understand genomics data, molecular pathways, protein structures, and complex biological systems, with reference to model organisms and human disease.
   3. Introduce databases and software for bioinformatics analyses, and explain how to implement sequence analyses programs using computer programming tools.
   4. Facilitate student learning of current, prescient topics in bioinformatics by guided discussion of select scientific literature and recent biotechnological advancements that impact understanding of immune responses.

B. Student Learning Outcomes and Assessment Measures
Student Learning Outcomes: Upon completion of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Integrate basic principles of mathematics, computer science, statistics and genetics to develop and apply algorithms for analyzing biological sequence data.</td>
<td>Written assignments, examinations, computational laboratory exercises, and bioinformatics laboratory reports.</td>
</tr>
<tr>
<td>2. Implement, interpret, and critically discuss computational methods to understand genomics data, metagenomics, protein structures, molecular pathways, and complex biological systems.</td>
<td>Written assignments, examinations, computational laboratory exercises, and bioinformatics laboratory reports.</td>
</tr>
<tr>
<td>3. Use software for bioinformatics analyses, and implement sequence analyses programs using computer programming tools.</td>
<td>Computational laboratory exercises, and bioinformatics laboratory reports.</td>
</tr>
<tr>
<td>4. Develop scientific communication skills by participating in class discussion and presenting bioinformatics laboratory reports.</td>
<td>Computational laboratory exercises, and bioinformatics laboratory reports.</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

Experiential Learning: Bioinformatics is an advanced laboratory course synthesizing computational, mathematical, and statistical methods for analyzing and interpreting biological data, such as genetic sequences. As such, it requires in-depth preparation in genetics and quantitative sciences, including mathematics, statistics, and computer science, to understand, interpret, and implement algorithms for bioinformatics analyses; to access databases and learn bioinformatics software tools for biological data analysis; and to describe the implications of analyses for complex biological systems.

V. Topical Course Outline

A. Introduction to bioinformatics
   1. What is bioinformatics?
   2. Molecular basis of sequencing
      a. Nucleic acids
      b. Proteins
      c. Next-generation sequencing
   3. The genome revolution
      a. Genomics
      b. Functional genomics
      c. Metagenomics
   4. Computational resources for biologists
      a. Databases
      b. Algorithms
      c. Coding languages
      d. Introductory computational laboratory exercises

B. Theoretical bases of bioinformatics
   1. Search and sort algorithms for nucleic acid sequence analysis
      a. Pairwise alignment
      b. Multiple sequence alignment
   2. Protein sequence analysis algorithms
3. Phylogenetics algorithms
4. Probabilistic sequence analysis algorithms
   a. Bayesian
   b. Hidden Markov models
   c. Maximizing likelihood
   d. Sampling algorithms
C. Applications of bioinformatics algorithms for sequence analysis
   1. Multiple sequence alignment
      a. BLAST variations
      b. Sequence alignment code
      c. Computational laboratory exercises
   2. Building phylogenetic trees for understanding evolution
   3. Next-generation sequencing
      a. Technological platforms
      b. Sequence data formats
      c. Gene and genome assembly
      d. Metagenomics of populations
      e. Computational laboratory exercises
   4. Gene families
      a. Mapping gene duplication events
      b. Gene annotation
      c. Computational laboratory exercises
   5. Whole genome sequence analysis
      a. Genome alignment algorithms
      b. Polymorphisms and ESTs
      c. Genome organization
      d. Inferring evolution from phylogeny
      e. Computational laboratory exercises
D. Applications of bioinformatics algorithms in molecular systems biology
   1. Protein structure
      a. Protein Database
      b. De novo protein structure prediction algorithms
      c. Computational laboratory exercises
   2. Functional genomics technologies used in systems biology
   3. Functional genomics networks and data analysis
      a. Transcriptional networks
      b. Protein interaction networks
      c. Metabolomics networks
      d. Systems biology data types
      e. Clustering and principal component algorithms
      f. Computational exercises in genomics data analyses
E. From model organisms to human disease
   1. Systems biology analysis of molecular pathways
      a. Genomics data sets
      b. Bioinformatics algorithms
      c. Computational exercises in systems biology
   2. Systems biology of model organisms
   3. Integrated genomics of human disease

VI. Suggested Texts

Excerpts from primary literature and review articles from scientific journals, for example:
*PLoS Computational Biology*
*PLoS One*
*Nucleic Acids Research*

**VII. Bibliography**


# Course Action Request

**University of Alaska Anchorage**  
Proposal to Initiate, Add, Change, or Delete a Course

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<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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| 10. Grading Basis | A-F | P/NP | NG |

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Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials: _________  
Date: __________________

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<th>15. Course Description (suggested length 20 to 50 words)</th>
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<tr>
<td>Concepts in human virology, with an introduction to cell and molecular biology of virus structures, viral life cycles, interactions with host cells, immune responses and disease pathogenesis. Viral genomics, evolution, emergence, and advanced experimental methods for analyzing virus genome sequences will be discussed.</td>
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<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<td>[BIOL A242 and BIOL A252] with minimum grade of C</td>
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| 17. | 18. |
| Mark if course has fees      | Mark if course is a selected topic course      |

| 19. | Justification for Action |
| Changing pre-requisites to better reflect need for course. |

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Initiator (faculty only): Khrys Duddleston  
Initiator Signed Initials: _________  
Date: __________________

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Approved

Disapproved

Dean/Director of School/College  
Date: __________________

Approved

Disapproved

Undergraduate/Graduate Academic  
Date: __________________

Approved

Disapproved

Board Chair  
Date: __________________

Approved

Disapproved

Provost or Designee  
Date: __________________

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241
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A462
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Virology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: BIOL A662
J. Course Description: Concepts in human virology, with an introduction to cell and molecular biology of virus structures, viral life cycles, interactions with host cells, immune responses and disease pathogenesis. Viral genomics, evolution, emergence, and advanced experimental methods for analyzing virus genome sequences will be discussed.
K. Course Prerequisites: [BIOL A242 and BIOL A252] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present a synthesis of concepts in modern virology, focused on molecular analyses of virus genomes, proteins, virion structures, virus-host interactions, viral life cycles, and experimental methods in virology.
   2. Discuss how genetics, molecular and cell biology of virus replication facilitates understanding of pathogenesis of viral diseases in humans, including disease processes on the cellular level, immune responses, viral evasion of immunity, and the development of vaccines.
   3. Conceptualize virus genomes and how they contribute to evolution and emergence of viruses, and facilitate student use of analytical and bioinformatics methods to understand virus genome sequences.
   4. Facilitate student learning of current, prescient topics in virology by guided discussion of select scientific literature and recent biotechnological advancements that impact understanding of viruses.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply basic principles of cell biology, molecular biology, and genetics to describe virus genomes, structures, replication, gene expression, host cell interactions, and life cycles at molecular and cellular levels.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>2. Analyze and critically discuss virus genes, virus genomes, virulence factors, immune responses to viruses, and pathogenesis of viral diseases in humans.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>3. Synthesize biological concepts involved in virus emergence and evolution, and describe molecular methods for characterizing viral genomes and disease processes.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>4. Develop scientific analytical skills by molecular analysis of virus genomes and protein structures, including bioinformatics approaches, and by analyzing select primary and secondary scientific literature.</td>
<td>Written assignments, research paper assignment, multimedia assignment, group discussion, and examinations</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

This course is designed for Biological and Natural Sciences majors as an elective undergraduate course comparable to 400-level virology courses offered at other universities. This course requires students to synthesize concepts across disciplines.

V. Topical Course Outline

A. Introduction to virology
   1. Virology is an interdisciplinary study
   2. Virology is an experimental science
   3. Virology is the study of biological systems

B. Case study: group discussion on emergence of a novel virus

C. Integrated biological concepts needed in virology
   1. Genome organization
   2. Molecular biology of eukaryotic DNA replication
   3. Molecular biology of gene expression
   4. Eukaryotic cell cycle
   5. Compartmentalized subcellular structures
   6. Cellular signal transduction
   7. Protein structure and function

D. Virus life cycle
   1. Production of progeny virus
   2. Bacteriophage growth kinetics
   3. Experimental methods for measuring viruses during life cycle

E. Virus structures
   1. Virion structures, composition, and functional compartments
2. Electron microscopy methods for studying virion structures
3. Virion entry and egress
4. Structure and function of virion proteins
   a. Receptor-binding proteins
   b. Fusion proteins

F. Virus genomes and replication
   1. Virus classification and families
   2. RNA virus genomes and genes
   3. DNA virus genomes and genes
   4. Virus gene expression
   5. Virus replication strategies
      a. Acute RNA virus infection
      b. Chronic DNA virus infection
      c. Retrovirus infection

G. Immune response to viruses
   1. Innate immune response
   2. Adaptive immune response
   3. Viral evasion of innate and adaptive immune responses
   4. Virus accessory genes in virulence
   5. Molecular basis of vaccination

H. Pathogenesis of viral diseases
   1. Acute respiratory infections
   2. Hemorrhagic fever viruses
   3. HIV/AIDS
   4. Hepatitis viruses and cancer
   5. DNA tumor viruses

I. Viral bioinformatics and genomics
   1. Molecular basis of information flow in biological systems
   2. Bioinformatics for virus sequence analysis
   3. Genomics methods for virus sequencing
   4. Systems biology of virus-host interactions

J. Emerging viruses
   1. Ecology of outbreaks
   2. Vector-borne viruses
   3. Zoonoses – species jumping across the animal:human interface
   4. Epidemiology of emerging infections

K. Current topics in virology
   1. *This Week in Virology*
      1. Multimedia assignment
      2. Group discussion
   2. Biosecurity of highly pathogenic viruses
   3. Vaccines
      a. Antigenicity
      b. Efficacy
      c. Vaccination controversies
   4. Antiviral drugs
      a. Mechanisms of action
      b. Drug resistance
   5. Synthetic viruses in biotechnology
VI. Suggested Texts


Excerpts from primary literature and review articles from scientific journals, for example:
New England Journal of Medicine
Nature
The Lancet
PLoS Pathogens
mBio

VII. Bibliography


Course Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College  
AS CAS  
1b. Division  
AMSC Division of Math Science  
1c. Department  
Biological Sciences  

2. Course Prefix  
BIOL  
3. Course Number  
A662  
4. Previous Course Prefix & Number  
N/A  
5a. Credits/CEUs  
3  
5b. Contact Hours  
(Lecture + Lab)  
(3+0)  

6. Complete Course Title  
Advanced Virology  

7. Type of Course  
☑ Academic  
☐ Preparatory/Development  
☐ Non-credit  
☐ CEU  
☐ Professional Development  

8. Type of Action:  
☐ Add  
☐ Change  
☐ Delete  

If a change, mark appropriate boxes:  
☐ Prefix  
☐ Credits  
☐ Title  
☐ Grading Basis  
☑ Course Description  
☐ Cross-Listed/Stacked  
☐ Test Score Prerequisites  
☐ Co-requisites  
☐ Automatic Restrictions  
☐ General Education Requirement  
☐ Repeat Status  
☐ Registration Restrictions  
☐ Class  
☐ Level  
☐ College  
☐ Major  
☐ Other CCG (please specify)  

9. Repeat Status No  
# of Repeats  
Max Credits  

10. Grading Basis  
☐ A-F  
☐ P/NP  
☐ NG  

11. Implementation Date  
From: Fall/2015  
To: Fall/9999  

12. ☐ Cross Listed with  
BIOL A662  

13a. Impacted Courses or Programs:  
List any programs or college requirements that require this course.  
Please type into fields provided in table. If more than three entries, submit a separate table.  
A template is available at www.uaa.alaska.edu/governance.  

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Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials: __________  
Date: __________  

13b. Coordination Email  
Date: 6Jan14  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)  

13c. Coordination with Library Liaison  
Date: 6Jan14  

14. General Education Requirement  
Mark appropriate box:  
☐ Oral Communication  
☐ Written Communication  
☐ Quantitative Skills  
☐ Humanities  
☐ Fine Arts  
☐ Social Sciences  
☐ Natural Sciences  
☐ Integrative Capstone  

15. Course Description (suggested length 20 to 50 words)  
Advanced concepts in human virology, an in-depth focus on cell and molecular biology of virus structures, viral life cycles, interactions with host cells, immune responses and disease pathogenesis. Viral genomics, evolution, emergence, and advanced experimental methods for analyzing virus genome sequences will be discussed.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
16b. Co-requisite(s) (concurrent enrollment required)  
16c. Automatic Restriction(s)  
☐ College  ☐ Major  ☐ Class  ☑ Level  
16d. Registration Restriction(s) (non-codable)  
Graduate Standing  

17. ☐ Mark if course has fees  
18. ☐ Mark if course is a selected topic course  
19. Justification for Action  
Update of CAR and CCG, change in pre-requisites  

Initiator (faculty only)  
Khrys Duddleston  
Initiator (TYPE NAME)  

☑ Approved  
☐ Disapproved  
Dean/Director of School/College  
Date  

☑ Approved  
☐ Disapproved  
Undergraduate/Graduate Academic  
Date  

☑ Approved  
☐ Disapproved  
Board Chair  
Date  

☑ Approved  
☐ Disapproved  
Provost or Designee  
Date  

Initiator Signed Initials: _________  
Date: __________________  

Approved  
Disapproved  
Date  

University of Alaska Anchorage  
College of Health  
Course Content Guide

I. Date of Initiation:  
Spring 2014

II. Curriculum Action Request  
A. College: College of Arts and Sciences  
B. Course Prefix: BIOL  
C. Course Number: A662  
D. Number of Credits: 3  
E. Contact Hours: 3+0  
F. Course Title: Advanced Virology  
G. Grading Basis: A-F  
H. Implementation Date: Fall 2015  
I. Cross-listed/Stacked: BIOL A462  
J. Course Description: Advanced concepts in human virology, an in-depth focus on cell and molecular biology of virus structures, viral life cycles, interactions with host cells, immune responses and disease pathogenesis. Viral genomics, evolution, emergence, and advanced experimental methods for analyzing virus genome sequences will be discussed.

K. Course Prerequisites: N/A  
L. Course Co-requisites: N/A  
M. Other Restrictions: N/A  
N. Registration Restrictions: Graduate Standing  
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes  
A. Instructional Goals. The instructor will:  
1. Present an integrated synthesis of concepts in modern virology, focused on molecular analyses of virus genomes, proteins, virion structures, virus-host interactions, viral life cycles, and experimental methods in virology.  
2. Discuss how genetics, molecular and cell biology of virus replication is critical for understanding of pathogenesis of viral diseases in humans, including disease processes on the cellular level, immune responses, viral evasion of immunity, and the development of vaccines.  
3. Conceptualize virus genomes and how they contribute to evolution and emergence of viruses, and facilitate student use of analytical and bioinformatics methods to understand virus genome sequences.  
4. Facilitate student learning of current, prescient topics in virology by guided discussion of select scientific literature and recent biotechnological advancements that impact understanding of viruses.  
5. Guide graduate student learning of advanced concepts from recent virology research modeled from the primary scientific literature.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply basic principles of cell biology, molecular biology, and genetics to describe virus genomes, structures, replication, gene expression, host cell interactions, and life cycles at molecular and cellular levels.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>2. Analyze, summarize and critically discuss virus genes, virus genomes, virulence factors, immune responses to viruses, and pathogenesis of viral diseases in humans.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>3. Synthesize biological concepts involved in virus emergence and evolution, and describe molecular methods for characterizing viral genomes and disease processes.</td>
<td>Written assignments, quizzes, and examinations</td>
</tr>
<tr>
<td>4. Develop scientific analytical skills by molecular analysis of virus genomes and protein structures, including bioinformatics approaches, and by analyzing select primary and secondary scientific literature.</td>
<td>Written assignments, research paper assignment, multimedia assignment, group discussion, and examinations</td>
</tr>
<tr>
<td>5. Integrate and model advanced concepts in virology derived from scientific literature, and develop hypotheses for new research.</td>
<td>Written assignments, research proposal, and literature discussions</td>
</tr>
</tbody>
</table>

IV. Course Level Justification
This course is an advanced interdisciplinary course comparable to graduate level virology courses offered at other universities. Students must synthesize concepts from the scientific literature across disciplines.

V. Topical Course Outline
A. Introduction to virology
   1. Virology is an interdisciplinary study
   2. Virology is an experimental science
   3. Virology is the study of biological systems
B. Case study: group discussion on emergence of a novel virus
C. Integrated biological concepts needed in virology
   1. Genome organization
   2. Molecular biology of eukaryotic DNA replication
   3. Molecular biology of gene expression
   4. Eukaryotic cell cycle
   5. Compartmentalized subcellular structures
   6. Cellular signal transduction
   7. Protein structure and function
D. Virus life cycle
   1. Production of progeny virus
   2. Bacteriophage growth kinetics
3. Experimental methods for measuring viruses during life cycle

E. Virus structures
   1. Virion structures, composition, and functional compartments
   2. Electron microscopy methods for studying virion structures
   3. Virion entry and egress
   4. Structure and function of virion proteins
      a. Receptor-binding proteins
      b. Fusion proteins

F. Virus genomes and replication
   1. Virus classification and families
   2. RNA virus genomes and genes
   3. DNA virus genomes and genes
   4. Virus gene expression
   5. Virus replication strategies
      a. Acute RNA virus infection
      b. Chronic DNA virus infection
      c. Retrovirus infection

G. Immune response to viruses
   1. Innate immune response
   2. Adaptive immune response
   3. Viral evasion of innate and adaptive immune responses
   4. Virus accessory genes in virulence
   5. Molecular basis of vaccination

H. Pathogenesis of viral diseases
   1. Acute respiratory infections
   2. Hemorrhagic fever viruses
   3. HIV/AIDS
   4. Hepatitis viruses and cancer
   5. DNA tumor viruses

I. Viral bioinformatics and genomics
   1. Molecular basis of information flow in biological systems
   2. Bioinformatics for virus sequence analysis
   3. Genomics methods for virus sequencing
   4. Systems biology of virus-host interactions

J. Emerging viruses
   1. Ecology of outbreaks
   2. Vector-borne viruses
   3. Zoonoses – species jumping across the animal:human interface
   4. Epidemiology of emerging infections

K. Current topics in virology
   1. This Week in Virology
      a. Multimedia assignment
      b. Group discussion
   2. Biosecurity of highly pathogenic viruses
   3. Vaccines
      a. Antigenicity
      b. Efficacy
      c. Vaccination controversies
   4. Antiviral drugs
      a. Mechanisms of action
      b. Drug resistance
5. Synthetic viruses in biotechnology
L. Graduate level synthesis and modeling of advanced concepts in virology
   1. Discussion of primary scientific literature
      a. Multimedia assignment
      b. Group discussion
      c. Graduate student journal article discussion
   2. Research proposal to address gap in knowledge in virology

VI. Suggested Texts


Readings from primary literature and review articles from scientific journals, for example:
New England Journal of Medicine
Nature
The Lancet
PLoS Pathogens
mBio
Science
Emerging Infectious Diseases

VII. Bibliography


**Course Action Request**  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>AS CAS</th>
<th>1b. Division</th>
<th>AMSC Division of Math Science</th>
<th>1c. Department</th>
<th>Biological Sciences</th>
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<tbody>
<tr>
<td>2. Course Prefix</td>
<td>BIOL</td>
<td>3. Course Number</td>
<td>A463</td>
<td>4. Previous Course Prefix &amp; Number</td>
<td>N/A</td>
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<tr>
<td>5a. Credits/CEUs</td>
<td>3</td>
<td>5b. Contact Hours</td>
<td>(Lecture + Lab)</td>
<td>(3+0)</td>
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6. Complete Course Title  
Molecular Biology of Cancer  
Abbreviated Title for Transcript (30 character)

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<tr>
<th>7. Type of Course</th>
<th>Academic</th>
<th>Preparatory/Development</th>
<th>Non-credit</th>
<th>CEU</th>
<th>Professional Development</th>
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</table>

8. Type of Action:  
- Add  
- Change  
- Delete

9. Repeat Status No  
- # of Repeats  
- Max Credits

10. Grading Basis  
- A-F  
- P/np  
- NG

11. Implementation Date  
- semester/year
  - From: Fall/2015  
  - To: Fall/9999

12. Cross Listed with  
- Stacked with

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.  
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials: __________  
Date: __________________

13b. Coordination Email  
submitted to Faculty LIserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 6Jan14

14. General Education Requirement  
- Oral Communication  
- Written Communication  
- Quantitative Skills  
- Humanities  
- Fine Arts  
- Social Sciences  
- Natural Sciences  
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)  
A study of the molecular biology of cancer, with emphasis on the mechanisms by which a normal cell becomes a malignant cell, including the roles of chemicals, viruses, and other environmental insults in carcinogenesis. The orientation of the course will be toward a study of the fundamentals of cancer molecular biology and the current literature, through a combination of team-based learning (TBL), research, discussions, term papers, and seminars.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
BIOL A252 with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)  
- College  
- Major  
- Class  
- Level

16d. Registration Restriction(s) (non-codable)

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action  
As part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science), this course will become part of our rotation of upper division electives in molecular biology. This course has been offered at the graduate level (BIOL A663) and required graduate standing. Many students with a Natural Sciences or Biological Sciences major and an interest in the health care professions have expressed interest in this course as an elective for their B.S. or B.A. degree.
<table>
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I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A463
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Molecular Biology of Cancer
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: A study of the molecular biology of cancer, with emphasis on the mechanisms by which a normal cell becomes a malignant cell, including the roles of chemicals, viruses, and other environmental insults in carcinogenesis. The orientation of the course will be toward a study of the fundamentals of cancer molecular biology and the current literature, through a combination of team-based learning (TBL), research, discussions, term papers, and seminars.
K. Course Prerequisites: BIOL A252 with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Explain and provide a framework for understanding the fundamental changes in cell physiology that must occur for a cell to become cancerous.
   2. Provide examples by which environmental insults promote carcinogenesis and discuss cancer prevention.
   3. Discuss the latest research findings relevant to carcinogenesis and cancer treatment.

B. Student Learning Outcomes and Assessment Measures

<table>
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<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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<tbody>
<tr>
<td>1. Illustrate the classes of molecular defects that must occur in the progression of carcinogenesis, as well as specific examples of these molecular defects, and to understand how the relevant molecular pathways interact.</td>
<td>TBL exercises, written assignments, in class discussions</td>
</tr>
<tr>
<td>2. Demonstrate the mechanisms by which genetic and environmental factors promote or</td>
<td>Written assignments, presentations, in class discussions</td>
</tr>
</tbody>
</table>

255
inhibit carcinogenesis.

| 3. Analyze data presented in the primary literature on cancer molecular biology. | Presentations, in class discussions, written term paper |

IV. **Course Level Justification**
This course teaches the complex topic of the molecular bases of cancer and is similar in expectation and scope to 400-level courses in molecular biology offered at other universities.

V. **Topical Course Outline**
A. Biology of Cancer
B. Hallmarks of Cancer
C. Enabling Characteristics of Cancer
D. Growth Signaling and Oncogenes
E. Anti-Growth Signaling and Tumor Suppressors
F. Apoptosis
G. Tissue Invasion/Metastasis
H. Epigenetics and Cancer
I. Genome Stability and Cancer
   1. Genetics and Cancer Syndromes
   2. Carcinogens
J. Viruses and Cancer
K. Cancer and the Immune System

VI. **Suggested Texts**


Primary literature from journals such as Oncogene, Science, Cell, Nature, and similar titles.

VII. **Bibliography**

1a. School or College
AS CAS

1b. Division
AMSC Division of Math Science

1c. Department
Biological Sciences

2. Course Prefix
BIOL

3. Course Number
A464

4. Previous Course Prefix & Number
N/A

5a. Credits/CEUs
3

5b. Contact Hours (Lecture + Lab)
(3+0)

6. Complete Course Title
Metals in Biology

Abbreviated Title for Transcript (30 characters)
Metals in Biology

7. Type of Course
☒ Academic
☐ Preparatory/Development
☐ Non-credit
☐ CEU
☐ Professional Development

8. Type of Action: ☒ Add or ☐ Change or ☐ Delete

If a change, mark appropriate boxes:
☐ Prefix
☐ Credits
☐ Title
☐ Grading Basis
☐ Course Description
☐ Test Score Prerequisites
☐ Automatic Restrictions
☐ Other
☒ Course Number
☐ Contact Hours
☐ Repeat Status
☐ Cross-Listed/Stacked
☐ Course Prerequisites
☐ Co-requisites
☐ Registration Restrictions
☐ General Education Requirement

9. Repeat Status No
☐ # of Repeats
☐ Max Credits

10. Grading Basis
☒ A-F
☐ P/NP
☐ NG

11. Implementation Date
From: Fall/2015
To: Fall/9999

12. ☐ Cross Listed with
☐ Stacked with
☐ Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: _________ Date: __________________

13b. Coordination Email
Date: 6Jan14
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☑ Oral Communication
☐ Written Communication
☐ Quantitative Skills
☐ Humanities
☐ Fine Arts
☐ Social Sciences
☐ Natural Sciences
☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Investigation of the fundamental roles and actions of metals in biological systems. Major topics will include transition metals, catalysis of reactions, cellular and organismal homeostasis, evolutionary and ecological relevance, deficiency and toxicity. We will incorporate basic concepts of bioinorganic chemistry and structural biology.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
(Chem A106 and BIOL A242) with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☐ College
☐ Major
☐ Class
☒ Level

16d. Registration Restriction(s) (non-codable)
Junior Standing

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
This course contributes to the development of a comprehensive discipline specific area in cell, genetics and molecular biology. Part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science)
<table>
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<tr>
<td>Khrys Duddleston</td>
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<tr>
<td>Dean/Director of School/College</td>
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<td>Department Chair</td>
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<td>College/School Curriculum Committee Chair</td>
<td>Disapproved</td>
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<td>Provost or Designee</td>
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</table>
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A464
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Metals in Biology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Investigation of the fundamental roles and actions of metals in biological systems. Major topics will include transition metals, catalysis of reactions, cellular and organismal homeostasis, evolutionary and ecological relevance, deficiency and toxicity. We will incorporate basic concepts of bioinorganic chemistry and structural biology.
K. Course Prerequisites: [CHEM A106 and BIOL A242] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: Junior Standing
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide contemporary course content based in primary literature and key relevant reviews.
   2. Build a conceptual framework for the fundamental roles of metals in biological systems.
   3. Explain the concepts of essentiality vs. toxicity of metals in biological systems and strategies for how organisms have evolved to balance these opposing qualities.
   4. Discuss current research in the field and relevant outstanding questions.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summarize how metals are essential in biological systems and strategies for avoiding toxicity.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Illustrate potential metal toxicity mechanisms and current state-of-the-field knowledge in</td>
<td>Written assignments and examinations</td>
</tr>
</tbody>
</table>
IV. **Course Level Justification**
This course synthesizes critical roles of metal in maintenance of homeostasis in biological systems. The conceptual framework requires a working knowledge of basic cellular and molecular biology as well as integration of basic chemistry.

V. **Topical Course Outline**
A. Essential transition metals and theories of evolutionary history
B. Reading primary literature and basic experimental methods
C. Critical transition metals
   1. Iron
   2. Copper
   3. Zinc
D. Metal toxicity mechanisms
   1. Routes of exposure
   2. Movement in the environment
   3. Molecular responses
E. Metal analysis in biological materials
   1. ICP-MS
   2. X-Ray Fluorescence
   3. Chemical sensors
F. Human metabolic disorders
   1. Menkes Disease and Wilson’s Disease
   2. Acrodermatitis enteropathica
   3. Hemochromatosis
   4. Friedreich’s ataxia
G. Neurotoxicity and neurodegeneration
   1. Alzheimer’s Disease
   2. Parkinson’s and Manganism
   3. Mercury toxicity
H. Plants and metals
   1. Transport and homeostasis
   2. Herbivory defense
   3. Applications: Phytoremediation
I. Metals and nutrition
   1. Animal husbandry
   2. Human nutrition and metals
   3. Wildlife: exposure and deficiency

VI. **Suggested Texts**
Selected articles from the following journals:

Metallomics : integrated biometal science. Royal Society of Chemistry.


### Course Action Request

**University of Alaska Anchorage**

Proposal to Initiate, Add, Change, or Delete a Course

#### 1a. School or College
- **AS CAS**

#### 1b. Division
- **AMSC Division of Math Science**

#### 1c. Department
- **Biological Sciences**

#### 2. Course Prefix
- **BIOL**

#### 3. Course Number
- **A465**

#### 4. Previous Course Prefix & Number
- **A461L**

#### 5a. Credits/CEUs
- **4**

#### 5b. Contact Hours
- **(Lecture + Lab)**
  - **(2+4)**

#### 6. Complete Course Title
- **Experiential Learning: Molecular Biology**
- **EL: Molecular Biology**

#### Abbreviated Title for Transcript (30 character)
- **EL: Molecular Biology**

#### 7. Type of Course
- **Academic**

#### 8. Type of Action:
- **Add**

#### If a change, mark appropriate boxes:
- **Prefix**
- **Credits**
- **Title**
- **Grading Basis**
- **Course Description**
- **Test Score Prerequisites**
- **Automatic Restrictions**
- **Other CCG (please specify)**

#### 9. Repeat Status No
- **# of Repeats**
- **Max Credits**

#### 10. Grading Basis
- **A-F**
- **P/NP**
- **NG**

#### 11. Implementation Date
- **From:** Fall/2015
- **To:** Fall/9999

#### 12. Cross Listed with
- **BIOL A665**

#### 13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

#### Initator Name (typed): Khrys Duddleston

#### Initiator Signed Initials: _________

#### Date: __________________

#### 13b. Coordination Email
- **Date:** 6Jan14
- **submitted to Faculty Listserv:** (uaa-faculty@lists.uaa.alaska.edu)

#### 13c. Coordination with Library Liaison
- **Date:** 6Jan14

#### 14. General Education Requirement
- **Mark appropriate box:**
  - Oral Communication
  - Written Communication
  - Quantitative Skills
  - Humanities
  - Fine Arts
  - Social Sciences
  - Natural Sciences
  - Integrative Capstone

#### 15. Course Description (suggested length 20 to 50 words)

A practical implementation of the theory learned in BIOL A465, which includes in vitro DNA techniques, gene expression analysis, and genomics. Students will also learn experimental design, proposal writing, and oral and written presentation skills.

#### 16a. Course Prerequisite(s) (list prefix and number or test code and score)

BIOL A461 with minimum grade of C or concurrent enrollment

#### 16b. Co-requisite(s) (concurrent enrollment required)

#### 16c. Automatic Restriction(s)

- **College**
- **Major**
- **Class**
- **Level**

#### 16d. Registration Restriction(s) (non-codable)

#### 17. Mark if course has fees

#### 18. Mark if course is a selected topic course

#### 19. Justification for Action

Renumbering and renaming the course to comply with revision to BIOL undergraduate curriculum. Updating credits/contact hours to better reflect course content and student expectations. The course number, credits and description are being changed as part of an overall curriculum revision in which we are aligning our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
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<tr>
<th>College/School Curriculum Committee Chair</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
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</table>
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A465
D. Number of Credits: 4
E. Contact Hours: 2+4
F. Course Title: Experiential Learning: Molecular Biology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: BIOL A665
J. Course Description: A practical implementation of the theory learned in BIOL A461, which includes in vitro DNA techniques, gene expression analysis, and genomics. Students will also learn experimental design, proposal writing, and oral and written presentation skills.
K. Course Prerequisites: BIOL A461 with minimum grade of C or concurrent enrollment
L. Course Co-requisite: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
M. Course Fees Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Integrate the process of scientific investigation, including quantitative reasoning and analysis into the curriculum.
   2. Provide instruction on practical and theoretical aspects of molecular biology and related fields.
   3. Support the development of group projects aimed at investigating one or more biological phenomena using molecular approaches. This includes facilitating the discussion of research topics and the developments of research aims and experimental design. The instructor will provide review and critical analysis of student proposals in addition to the student-to-student peer review.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop an experimental research plan, including the elaboration of research aims and experimental strategies, and the evaluation of</td>
<td>Oral literature summary, written proposal, group discussion and peer review.</td>
</tr>
</tbody>
</table>
similar research proposals.

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<tbody>
<tr>
<td>2.</td>
<td>Demonstrate competency in molecular laboratory technique including, in vitro DNA/RNA protein methods, genomics and gene expression analysis.</td>
</tr>
<tr>
<td>3.</td>
<td>Demonstrate skills in data analysis, including use of, quantitative reasoning, statistics and graphical analysis</td>
</tr>
<tr>
<td>4.</td>
<td>Communicate, to an audience of scientific peers, their project as primary scientific research.</td>
</tr>
</tbody>
</table>

### IV. Course Level Justification
Designed for Biological and Natural Sciences majors as a selective undergraduate course comparable to 400-level molecular biology laboratory courses offered at other universities.

### V. Topical Course Outline

A. Research Project Proposals
   1. Choice of topic and experimental system
      a. Developing a research project from a topic of interest

B. Choosing an effective model organism or model system
   1. Experimental design
      a. Developing research aims
      b. Developing hypotheses and designing experiments to address them
      c. Elaborating experimental protocols

C. Experimentation
   1. Practical methodology
      a. Chemical safety
      b. Handling reagents and making solutions
      c. Biological media and organism care
      d. Biological assays and molecular techniques
      e. Data collection
   2. Data analysis

D. Qualitative data analysis
E. Quantitative data analysis
F. Critical analysis and troubleshooting
G. Research communication
   1. In-lab journal article presentation/discussion
   2. In-lab research project presentation/discussion
   3. Research Proposal
      a. Peer review
   4. Primary research manuscript
   5. Oral presentation to a scientific audience - In-class presentation
   6. Poster presentation

### VI. Suggested Text(s)


VII. Bibliography:

Web-based resources for project development and data analysis, including genomic analysis (NCBI), image analysis (Image J) and model organism databases, such as www.yeastgenome.org; www.wormbase.org; and www.uniprot.org

Reference books related to student research topics and model systems, including:


### Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours</th>
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<tbody>
<tr>
<td>BIOL</td>
<td>A665</td>
<td>A661L</td>
<td>4</td>
<td>(2+4)</td>
</tr>
</tbody>
</table>

**6. Complete Course Title**
Experiential Learning: Advanced Molecular Biology
EL: Adv. Mol. Biology
Abbreviated Title for Transcript (30 character)

**7. Type of Course**
- [x] Academic
- [ ] Preparatory/Development
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

**8. Type of Action:**
- [ ] Add
- [ ] Change
- [ ] Delete

If a change, mark appropriate boxes:
- [x] Prefix
- [ ] Credits
- [x] Course Number
- [ ] Contact Hours
- [ ] Title
- [x] Repeat Status
- [x] Grading Basis
- [ ] Cross-Listed/Stacked
- [x] Course Description
- [ ] Course Prerequisites
- [x] Co-requisites
- [ ] Test Score Prerequisites
- [x] Registration Restrictions
- [x] General Education Requirement
- [ ] Automatic Restrictions
- [ ] Class
- [ ] Level
- [ ] College
- [ ] Major
- [ ] Other CCG (please specify)

**9. Repeat Status No**
- [ ] # of Repeats
- [ ] Max Credits

**10. Grading Basis**
- [x] A-F
- [ ] P/NP
- [ ] NG

**11. Implementation Date**
- From: Fall/2015
- To: Fall/9999

**12. Cross Listed with**
- [x] Stacked with BIOL A465

**13a. Impacted Courses or Programs:** List any programs or college requirements that require this course.

**14. General Education Requirement**
Mark appropriate box:
- [ ] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [x] Humanities
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [ ] Integrative Capstone

**15. Course Description** *(suggested length 20 to 50 words)*
A practical implementation of the theory learned in BIOL A661, which includes in vitro DNA techniques, gene expression analysis, and genomics. Students will also learn experimental design, proposal writing, and oral and written presentation skills, along with mentorship and leadership skills.

**16a. Course Prerequisite(s)** *(list prefix and number or test code and score)*
BIOL A661 with minimum grade of C or concurrent enrollment

**16b. Co-requisite(s)** *(concurrent enrollment required)*

**16c. Automatic Restriction(s)**
- [x] College
- [ ] Major
- [ ] Class
- [x] Level

**16d. Registration Restriction(s)** *(non-codable)*
Graduate Standing

**17. Mark if course has fees**

**18. Mark if course is a selected topic course**

**19. Justification for Action**
The course number, credits and description are being changed to align with the BIOL A465, which was modified as part of an overall curriculum revision in which we are aligning our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences  
B. Course Prefix: BIOL  
C. Course Number: A665  
D. Number of Credits: 4  
E. Contact Hours: 2+4  
F. Course Title: Experiential Learning: Advanced Molecular Biology  
G. Grading Basis: A-F  
H. Implementation Date: Fall 2013  
I. Cross-listed/Stacked: BIOL A465  
J. Course Description: A practical implementation of the theory learned in BIOL A661, which includes in vitro DNA techniques, gene expression analysis, and genomics. Students will also learn experimental design, proposal writing, and oral and written presentation skills, along with mentorship and leadership skills.  
K. Course Prerequisites: BIOL A661 with minimum grade of C or concurrent enrollment  
L. Course Co-requisite: N/A  
M. Other Restrictions: N/A  
N. Registration Restrictions: Graduate Standing  
M. Course Fees Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Integrate the process of scientific investigation, including quantitative reasoning and analysis into the curriculum.  
   2. Provide instruction on practical and theoretical aspects of molecular biology and related fields.  
   3. Support the development of group projects aimed at investigating one or more biological phenomena using molecular approaches. This includes facilitating the discussion of research topics and the developments of research aims and experimental design. The instructor will provide review and critical analysis of student proposals in addition to the student-to-student peer review.  

B. Student Learning Outcomes and Assessment Measures

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<td>1. Develop an experimental research plan, including the elaboration of research aims and experimental</td>
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<tr>
<td>1.</td>
<td>Demonstrate competency in molecular laboratory technique including, in vitro DNA/RNA protein methods, genomics and gene expression analysis.</td>
</tr>
<tr>
<td>2.</td>
<td>Lead a small research team by coordinating group activity, maintaining communication and coordination of group efforts in written work and oral presentation.</td>
</tr>
<tr>
<td>3.</td>
<td>Demonstrate skills in data analysis, including use of, quantitative reasoning, statistics and graphical analysis.</td>
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<tr>
<td>4.</td>
<td>Communicate, to an audience of scientific peers, their project as primary scientific research.</td>
</tr>
</tbody>
</table>

**IV. Course Level Justification**

Designed for graduate students in the biological sciences as an elective graduate course comparable to 600-level molecular biology laboratory courses offered at other universities.

**V. Topical Course Outline**

A. Research Project Proposals
B. Choice of topic and experimental system
   1. Developing a research project from a topic of interest
   2. Choosing an effective model organism or model system
C. Experimental design
   1. Developing research aims
   2. Developing hypotheses and designing experiments to address them
   3. Elaborating experimental protocols
D. Experimentation
E. Practical methodology
   1. Chemical safety
   2. Handling reagents and making solutions
   3. Biological media and organism care
   4. Biological assays and molecular techniques
   5. Data collection
F. Data analysis
   1. Qualitative data analysis
   2. Quantitative data analysis
   3. Critical analysis and troubleshooting
G. Research communication
H. In-lab journal article presentation/discussion
I. In-lab research project presentation/discussion
J. Research Proposal
   1. Peer review
K. Primary research manuscript
L. Oral presentation to a scientific audience - In-class presentation
M. Poster presentation
N. Mentorship
   1. Lead group efforts in laboratory exercises
   2. Organize and edit a research proposal
   3. Organize and lead group presentations

VI. Suggested Text(s)


VII. Bibliography
Journal articles from the primary literature (Science, Nature, Cell, EMBO J, Cell and Molecular Biology, etc) related to student research projects.

Web-based resources for project development and data analysis, including genomic analysis (NCBI and model organism databases), microarray and image analysis platforms (Image J and MAGIC Tool), and DNA sequence analysis.

Reference books related to student research topics and model systems, including:


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
   AS CAS

1b. Division
   AMSC Division of Math Science

1c. Department
   Biological Sciences

2. Course Prefix
   BIOL

3. Course Number
   A471

4. Previous Course Prefix & Number
   N/A

5a. Credits/CEUs
   3

5b. Contact Hours
   (Lecture + Lab) (3+0)

6. Complete Course Title
   Immunology

7. Type of Course
   ☑ Academic
   ☐ Preparatory/Development
   ☐ Non-credit
   ☐ CEU
   ☐ Professional Development

8. Type of Action:
   ☑ Add
   ☐ Change
   ☐ Delete

If a change, mark appropriate boxes:
   ☑ Prefix
   ☑ Credits
   ☑ Title
   ☑ Grading Basis
   ☑ Cross-Listed/Stacked
   ☑ Course Prerequisites
   ☑ Co-requisites
   ☑ Registration Restrictions
   ☑ General Education Requirement
   ☐ Class
   ☐ Level
   ☐ College
   ☐ Major
   ☐ Other CCG (please specify)

9. Repeat Status No
   # of Repeats
   Max Credits

10. Grading Basis
    ☑ A-F
    ☐ P/NP
    ☐ NG

11. Implementation Date
    Semester/year
    From: Fall/2015
    To: Fall/9999

12. ☑ Cross listed with
    CHEM A471

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Course</th>
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<th>Chair/Coordinator Contacted</th>
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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: _________
Date: __________________

13b. Coordination Email
    Date: 6Jan14
    submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
    Date: 6Jan14

14. General Education Requirement
    Mark appropriate box:
    ☑ Oral Communication
    ☑ Written Communication
    ☑ Quantitative Skills
    ☐ Humanities
    ☑ Fine Arts
    ☑ Social Sciences
    ☑ Natural Sciences
    ☑ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
    Fundamental concepts of immunology, including cells and tissues of the immune system, innate immunity, lymphocyte development, antigenicity, cytokine signaling, antibody responses, immunotherapies and vaccines. Comparative immunological evolution of non-human species will be discussed. Immunological aspects of human disease, with particular emphasis on host-pathogen interactions, autoimmune diseases, immunodeficiencies, and cancer.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
    [BIOL A242 and BIOL A252] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
    ☐ College
    ☐ Major
    ☑ Class
    ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☑ Mark if course has fees

18. ☑ Mark if course is a selected topic course

19. Justification for Action
    We are removing laboratory from course, revising name and content.

Initiator (faculty only)
Khrys Duddleston
Initiator (TYPE NAME)

☑ Approved
☐ Disapproved

Dean/Director of School/College
Date

Undergraduate/Graduate Academic
Date

Board Chair
Date

Provost or Designee
Date
I. **Date of Initiation:** Spring 2014

II. **Curriculum Action Request**

A. **College:** College of Arts and Sciences  
B. **Course Prefix:** BIOL  
C. **Course Number:** A471  
D. **Number of Credits:** 3  
E. **Contact Hours:** 3+0  
F. **Course Title:** Immunology  
G. **Grading Basis:** A-F  
H. **Implementation Date:** Fall 2015  
I. **Cross-listed/Stacked:** CHEM A471  
J. **Course Description:** Fundamental concepts of immunology, including cells and tissues of the immune system, innate immunity, lymphocyte development, antigenicity, cytokine signaling, antibody responses, immunotherapies and vaccines. Comparative immunological evolution of non-human species will be discussed. Immunological aspects of human disease, with particular emphasis on host-pathogen interactions, autoimmune diseases, immunodeficiencies, and cancer.

K. **Course Prerequisites:** [BIOL A242 and BIOL A252] with minimum grade of C.  
L. **Course Co-requisites:** N/A  
M. **Other Restrictions:** N/A  
N. **Registration Restrictions:** N/A  
O. **Course Fees:** No

III. **Instructional Goals and Student Learning Outcomes**

A. **Instructional Goals.** The instructor will:

1. Present a synthesis of concepts in immunology, focused on cells and tissues of the immune system, innate immunity, innate immune effectors and antigen-presenting cells, lymphocyte development, the molecular bases of antigenicity and vaccines, and cytotoxic T-cell and antibody responses.

2. Discuss how experimental methods using non-human species (mice, primates, rabbits, birds, and model organisms) have contributed important concepts to immunology.

3. Conceptualize host-pathogen immune interactions, with case studies drawn from the literature, to include tuberculosis, HIV/AIDS, malaria, tumor viruses, and influenza, and the roles of the immune system in autoimmune diseases, immunodeficiencies, and cancer.

4. Facilitate student learning of current, prescient topics in virology by guided discussion of select scientific literature and recent biotechnological advancements that impact understanding of immune responses.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply basic principles of genetics, cell biology, molecular biology, and physiology to describe the development of both innate and adaptive immune responses with a particular emphasis on the human immune system.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Analyze and critically discuss advanced experimental methods, comparative animal models to understand immune system evolution, host-pathogen interactions, and vaccines.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>3. Synthesize and evaluate the role of the immune system in chronic diseases, including autoimmune diseases, immunodeficiencies, and cancer.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>4. Develop scientific communication skills by participating in class discussion and presenting an immunological case study.</td>
<td>Written assignments, research paper, and case study presentation</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

Immunology is an interdisciplinary science, requiring in-depth preparation in genetics and cell biology, to understand novel immunological concepts presented and experimental animal models for immunological research. Immunology requires prerequisites in cell biology and genetics.

V. Topical Course Outline

A. Introduction to immunology
   1. Self vs. non-self
   2. Cells and tissues of immune system
   3. Experimental methods in immunology
   4. Comparative immunology in animal models

B. Integrated biological concepts at work in the immune system
   1. Immune subcellular structure and function
   2. Immune cell DNA replication and cell cycle
   3. Immunological gene expression
   4. Immunological signal transduction
   5. Immune cell development
   6. Immune cell physiology
   7. Immune cell protein structure and function
   8. Evolution of immune system

C. Innate immune system
   1. Pattern recognition receptors (PRR)
   2. Innate signal transduction
   3. Innate immune responses in the cell
4. Innate immune effector cell responses
5. Intrinsic immune responses
6. Complement and defensins
7. Evolution of innate immune system
   a. Mammals
   b. Model organisms

D. Innate immune effector cells
   1. Macrophages
   2. Neutrophils
   3. Natural killer T cells
   4. Specialized innate effector cells
   5. Innate immune killing mechanisms in infection
      a. Bacteria
      b. Viruses
      c. Eukaryotic parasites
      d. Superantigens in autoimmunity

E. Innate immune cells in antigen presentation
   1. Molecular pathways of antigen presentation
      a. MHC I
      b. MHC II
      c. Cross-presentation
   2. Antigen repertoire
   3. Innate responses in somatic cells
   4. Specialized antigen-presenting cells
   5. Molecular structure and function of antigen presentation proteins

F. Adaptive immune responses
   1. Hematopoetic cell development
   2. Myeloid lineages
   3. Lymphoid lineages
   4. Generation of lymphoid cell responses
      a. Differential TH responses
      b. Cytotoxic T cells
      c. Helper T cells
      d. B cells
      e. Plasma cells
   5. Immune memory
   6. Vaccination
   7. Antibody responses
      a. Immunoglobulin isotype structures
      b. Thymic selection theory
      c. Generation of genomic antibody diversity
      d. Somatic hypermutation

G. Emerging paradigms in immunology from experimental model organisms
   1. Comparative immunological evolution
   2. Transgenic mouse models of innate immunity
   3. Mouse models of adaptive immunity

H. Pathogen evasion of immune responses
   1. Primer on host-pathogen interactions
   2. Evasion of innate immunity
   3. Evasion of adaptive immunity
   4. HIV/AIDS
5. DNA tumor viruses
6. Tuberculosis
7. Malaria

I. Immunology and human disease
   1. Autoimmune diseases
   2. Immunodeficiencies
   3. Aging and immune responses
   4. Immune aspect of malignancies (cancer)
   5. Immunological diseases of unknown etiology
   6. Antigen selection for vaccine design
   7. Immunotherapies

VI. Suggested Texts

Excerpts from primary literature and review articles from scientific journals, for example:
   Immunity
   FASEB Journal
   Current Opinion in Immunology
   Nature Reviews Immunology
   Immunological Reviews

VII. Bibliography


## Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Chemistry</td>
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</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tbody>
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<td>A471</td>
<td>N/A</td>
<td>3</td>
<td>(3+0)</td>
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6. Complete Course Title
- Immunology
  - Abbreviated Title for Transcript (30 character)

7. Type of Course
- Academic
- Preparatory/Development
- Non-credit
- CEU
- Professional Development

8. Type of Action:
- Add
- Change
- Delete

If a change, mark appropriate boxes:
- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Automatic Restrictions
- Other CCG (please specify)
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Registration Restrictions
- General Education Requirement

9. Repeat Status No
- # of Repeats
- Max Credits

10. Grading Basis
- A-F
- P/NP
- NG

11. Implementation Date
- semester/year
  - From: Fall/2015
  - To: Fall/9999

12. Cross Listed with
- BIOL A471

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tbody>
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</tbody>
</table>

Initiator Name (typed): Khrys Duddleston/Colin McGill

Initiator Signed Initials: ______ Date:____

13b. Coordination Email
- Date: 6Jan14
  - submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
- Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Fundamental concepts of immunology, including cells and tissues of the immune system, innate immunity, lymphocyte development, antigenicity, cytokine signaling, antibody responses, immunotherapies and vaccines. Comparative immunological evolution of non-human species will be discussed. Immunological aspects of human disease, with particular emphasis on host-pathogen interactions, autoimmune diseases, immunodeficiencies, and cancer.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
- [BIOL A242 and BIOL A252] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)
- N/A

16c. Automatic Restriction(s)
- College
- Major
- Class
- Level

16d. Registration Restriction(s) (non-codable)
- N/A

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action
We are removing laboratory from course, revising name and content.

Initiator (faculty only)
- Khrys Duddleston/Colin McGill
  - Initiator (TYPE NAME)

Initiator (faculty only)
- Date

Initiator (faculty only)
- Approved
- Disapproved

Dean/Director of School/College
- Date

Initiator (faculty only)
- Approved
- Disapproved

Undergraduate/Graduate Academic
- Date

Board Chair
- Approved
- Disapproved

Provost or Designee
- Date

Approved
- Disapproved
- Disapproved
- Disapproved
- Disapproved
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: CHEM
C. Course Number: A471
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Immunology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: BIOL A471
J. Course Description: Fundamental concepts of immunology, including cells and tissues of the immune system, innate immunity, lymphocyte development, antigenicity, cytokine signaling, antibody responses, immunotherapies and vaccines. Comparative immunological evolution of non-human species will be discussed. Immunological aspects of human disease, with particular emphasis on host-pathogen interactions, autoimmune diseases, immunodeficiencies, and cancer.
K. Course Prerequisites: [BIOL A242 and BIOL A252] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:

1. Present a synthesis of concepts in immunology, focused on cells and tissues of the immune system, innate immunity, innate immune effectors and antigen-presenting cells, lymphocyte development, the molecular bases of antigenicity and vaccines, and cytotoxic T-cell and antibody responses.
2. Discuss how experimental methods using non-human species (mice, primates, rabbits, birds, and model organisms) have contributed important concepts to immunology.
3. Conceptualize host-pathogen immune interactions, with case studies drawn from the literature, to include tuberculosis, HIV/AIDS, malaria, tumor viruses, and influenza, and the roles of the immune system in autoimmune diseases, immunodeficiencies, and cancer.
4. Facilitate student learning of current, prescient topics in virology by guided discussion of select scientific literature and recent biotechnological advancements that impact understanding of immune responses.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply basic principles of genetics, cell biology, molecular biology, and physiology to describe the development of both innate and adaptive immune responses with a particular emphasis on the human immune system.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Analyze and critically discuss advanced experimental methods, comparative animal models to understand immune system evolution, host-pathogen interactions, and vaccines.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>3. Synthesize and evaluate the role of the immune system in chronic diseases, including autoimmune diseases, immunodeficiencies, and cancer.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>4. Develop scientific communication skills by participating in class discussion and presenting an immunological case study.</td>
<td>Written assignments, research paper, and case study presentation</td>
</tr>
</tbody>
</table>

IV. Course Level Justification
Immunology is an interdisciplinary science, requiring in-depth preparation in genetics and cell biology, to understand novel immunological concepts presented and experimental animal models for immunological research. Immunology requires prerequisites in cell biology and genetics.

V. Topical Course Outline
A. Introduction to immunology
   1. Self vs. non-self
   2. Cells and tissues of immune system
   3. Experimental methods in immunology
   4. Comparative immunology in animal models
B. Integrated biological concepts at work in the immune system
   1. Immune subcellular structure and function
   2. Immune cell DNA replication and cell cycle
   3. Immunological gene expression
   4. Immunological signal transduction
   5. Immune cell development
   6. Immune cell physiology
   7. Immune cell protein structure and function
   8. Evolution of immune system
C. Innate immune system
   1. Pattern recognition receptors (PRR)
   2. Innate signal transduction
   3. Innate immune responses in the cell
4. Innate immune effector cell responses
5. Intrinsic immune responses
6. Complement and defensins
7. Evolution of innate immune system
   a. Mammals
   b. Model organisms
D. Innate immune effector cells
   1. Macrophages
   2. Neutrophils
   3. Natural killer T cells
   4. Specialized innate effector cells
   5. Innate immune killing mechanisms in infection
      a. Bacteria
      b. Viruses
      c. Eukaryotic parasites
      d. Superantigens in autoimmunity
E. Innate immune cells in antigen presentation
   1. Molecular pathways of antigen presentation
      a. MHC I
      b. MHC II
      c. Cross-presentation
   2. Antigen repertoire
   3. Innate responses in somatic cells
   4. Specialized antigen-presenting cells
   5. Molecular structure and function of antigen presentation proteins
F. Adaptive immune responses
   1. Hematopoetic cell development
   2. Myeloid lineages
   3. Lymphoid lineages
   4. Generation of lymphoid cell responses
      a. Differential TH responses
      b. Cytotoxic T cells
      c. Helper T cells
      d. B cells
      e. Plasma cells
   5. Immune memory
   6. Vaccination
   7. Antibody responses
      a. Immunoglobulin isotype structures
      b. Thymic selection theory
      c. Generation of genomic antibody diversity
      d. Somatic hypermutation
G. Emerging paradigms in immunology from experimental model organisms
   1. Comparative immunological evolution
   2. Transgenic mouse models of innate immunity
   3. Mouse models of adaptive immunity
H. Pathogen evasion of immune responses
   1. Primer on host-pathogen interactions
   2. Evasion of innate immunity
   3. Evasion of adaptive immunity
   4. HIV/AIDS
5. DNA tumor viruses
6. Tuberculosis
7. Malaria

I. Immunology and human disease
   1. Autoimmune diseases
   2. Immunodeficiencies
   3. Aging and immune responses
   4. Immune aspect of malignancies (cancer)
   5. Immunological diseases of unknown etiology
   6. Antigen selection for vaccine design
   7. Immunotherapies

VI. Suggested Texts
Abbas, A.K., A.H. Lichtman, S. Pillai. Cellular and Molecular Immunology, 7th ed.

Excerpts from primary literature and review articles from scientific journals, for example:
Immunity
FASEB Journal
Current Opinion in Immunology
Nature Reviews Immunology
Immunological Reviews

VII. Bibliography


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
AS CAS
1b. Division
AMSC Division of Math Science
1c. Department
Biological Sciences

2. Course Prefix
Biol
3. Course Number
A472
4. Previous Course Prefix & Number
A309
5a. Credits/CEUs
3
5b. Contact Hours
(Lecture + Lab)
(3+0)

6. Complete Course Title
Biogeography
Biogeography
Abbreviated Title for Transcript (30 character)

7. Type of Course
☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action:
☐ Add or ☒ Change or ☐ Delete
If a change, mark appropriate boxes:
☐ Prefix ☐ Credits ☐ Grading Basis ☐ Course Description ☐ Test Score Prerequisites ☐ Automatic Restrictions ☐ Other CCG (please specify)
☒ Course Number ☐ Contact Hours ☐ Repeat Status ☐ Cross-Listed/Stacked ☐ Course Prerequisites ☐ Registration Restrictions ☐ General Education Requirement

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis
☒ A-F ☐ P/NP ☐ NG

11. Implementation Date
From: Fall/2015 To: Fall/9999

12. ☐ Cross Listed with
☐ Stacked with
Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

13b. Coordination Email
Dorn V Dommelen, dvandommelen@uaa.alaska.edu

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Ecological basis and historical patterns of the distribution of organisms and ecosystems on a worldwide basis. Current theories regarding the origin of these distributions are examined.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
Biol A288 with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☐ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
The course number is being changed to be consistent with the level at which the course has been taught, and so that graduate students can take the course for credit. Also, this is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).

Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: _________ Date: __________

Approved
Disapproved
Dean/Director of School/College Date

Approved
Disapproved
Undergraduate/Graduate Academic Date

Approved
Disapproved
Board Chair Date

Approved
Disapproved
Provost or Designee Date
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A472
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Biogeography
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Ecological basis and historical patterns of the distribution of organisms and ecosystems on a worldwide basis. Current theories regarding the origin of these distributions are examined
K. Course Prerequisites: BIOL A288 with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Elucidate processes leading to the global distribution of biomes, ecosystems and the effects of ecological scaling from the global to the micro-topography level.
   2. Provide the tools for assessing biogeographic patterns and environmental degradation in the context of geomorphological, geological and ecological processes.
   3. Guide students to analyze biogeographic patterns and habitat degradation through the formulation and testing of hypotheses.
   4. Reinforce the application of the scientific method for independent research projects designed to understand biogeographic principles, including the collection and interpretation of data, modification of study designs, and writing of an original scientific paper.
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe the fundamental concepts of biogeographic patterns ranging from global to micro-geographic scales based on climate, plate tectonics, oceanic and atmospheric circulation, and other major processes.</td>
<td>Examinations, independent research project and research paper.</td>
</tr>
<tr>
<td>2. Demonstrate and apply knowledge of biogeography to describe integrative</td>
<td>Examinations, independent research project and research paper.</td>
</tr>
</tbody>
</table>
associations between the distribution and evolution of various taxa and their environmental adaptations.

3. Interpret and assess environmental degradation through biogeographic distribution patterns and human land use including the application of island biogeographic theory to the design of nature reserves.

4. Formulate and test hypotheses; collect, statistically analyze and interpret data from a research project that culminates in a standard scientific manuscript.

Examinations.

Examinations.

Independent research project and research paper.

IV. Course Level Justification
Designed for Biology and Natural Sciences majors as an elective undergraduate course comparable to 400-level biogeography courses offered at other universities.

V. Topical Course Outline
A. Endemism, dispersal and variance
B. Species distributions
C. Community distributions
D. Speciation and diversification
E. History of life
   1. Diversification of life
   2. Mass extinction events
   3. Patterns from the Pleistocene
F. Provincialism and disjunction
G. Phylogenetic analyses
H. Island biogeography and the design of nature reserves
   1. Case studies
   2. GIS applications
I. Latitudinal gradients in biodiversity
J. Interchange and barriers
K. Disturbance ecology
L. Human biogeography
M. Biomes
   1. Terrestrial systems
      a. Deserts
      b. Tropical rainforests
      c. Temperate forests
      d. Treelines and boundaries
      e. Arctic tundra
   2. Marine systems
      a. Oceanography, productivity and climate change
      b. Coral reefs
      c. Mangrove forests
   3. Freshwater systems
      a. Wetland conservation and mitigation
      b. The river continuum concept
VI. Suggested Texts

VII. Bibliography
The classic papers found in Foundations of Biogeography: Classic Papers with Commentaries, edited by Lomolino, Sax & Brown (2004), formed the basis of the field of biogeography.

The “Journal of Biogeography”, published by Blackwell Publishing, along with the sister journals "Global Ecology and Biogeography" and "Diversity and Distributions" contain many thousands of articles that extend those classic ideas using modern techniques and technologies.

The book Macroecology, by Brown, J.H. (1995, University of Chicago Press), provides an excellent integration of biogeography with other biological specialties, such as phylogenetics.


Proposal to Initiate, Add, Change, or Delete a Course

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<td>A373</td>
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<td>(Lecture + Lab)</td>
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<td># of Repeats</td>
<td>A-F</td>
<td>semester/year</td>
<td>Stacked</td>
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<td>Abbreviated Title for Transcript: Conservation Biology</td>
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| 13. Impacted Courses or Programs: List any programs or college requirements that require this course. |
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<tr>
<td>Environment and Society, BA</td>
<td>6Jan14</td>
<td>Dorn VanDommelen, <a href="mailto:dvandommelen@uaa.alaska.edu">dvandommelen@uaa.alaska.edu</a></td>
</tr>
<tr>
<td>Environment and Society, BS</td>
<td>6Jan14</td>
<td>Dorn VanDommelen, <a href="mailto:dvandommelen@uaa.alaska.edu">dvandommelen@uaa.alaska.edu</a></td>
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<tr>
<td>Environment and Society, Minor, Environmental Science</td>
<td>6Jan14</td>
<td>Dorn VanDommelen, <a href="mailto:dvandommelen@uaa.alaska.edu">dvandommelen@uaa.alaska.edu</a></td>
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<th>15. Course Description</th>
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<td>Review of the human drivers of global environmental change (human population growth and consumption of resources), the consequences of environmental degradation, and application of tools to address environmental change.</td>
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<tr>
<th>16. Course Prerequisite(s)</th>
<th>Co-requisite(s)</th>
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<td>(BIOL A271 or ENVI A211)</td>
<td>(concurrent enrollment required)</td>
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<tr>
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<tr>
<td>College</td>
<td>(non-codable)</td>
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<tr>
<td>Major</td>
<td>Completion of all GER Tier 1 courses is required</td>
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<th>17. Mark if course has fees</th>
<th>18. Mark if course is a selected topic course</th>
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| 19. Justification for Action |
| The course number is being changed to be consistent with the level at which the course has been taught, and so that graduate students can take the course for credit. Also, this is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science). |

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<td>Khrys Duddleston</td>
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<td>Dean/Director of School/College</td>
<td>Date</td>
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<th>Department Chair</th>
<th>Date</th>
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<tr>
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<th>Disapproved</th>
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</thead>
<tbody>
<tr>
<td>Board Chair</td>
<td>Date</td>
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<th>Disapproved</th>
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<tr>
<td>Provost or Designee</td>
<td>Date</td>
</tr>
</tbody>
</table>

288
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A473
D. Number of Credits: 3.0
E. Contact Hours: 3+0
F. Course Title: Conservation Biology
G. Grading Basis: A-F
H. Implementation Date: Spring 2014
I. Cross-listed/Stacked: N/A
J. Course Description: Review of the human drivers of global environmental change (human population growth and consumption of resources), the consequences of environmental degradation, and application of tools to address environmental change.
K. Course Prerequisites: [BIOL A271 or ENVI A211] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: Completion of all GER Tier 1 courses is required
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Guide students in understanding the roles of habitat preservation, population integrity, and application of conservation policy to maintain natural ecosystems and biota.
   2. Teach students to analyze conservation problems in a multidisciplinary manner with considerations of economics, law, policy and biological principles.
   3. Teach students to assess environmental degradation using standardized protocols and modern instruments, and analyze resulting data.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the drivers and consequences of environmental problems</td>
<td>Case studies, analysis of hypotheticals, examinations</td>
</tr>
<tr>
<td>2. Report and interpret major environmental problems</td>
<td>Examinations</td>
</tr>
<tr>
<td>3. Explain how problems interact in synergism</td>
<td>Examinations</td>
</tr>
<tr>
<td>4. Explain and apply tools for solving</td>
<td>Project Report</td>
</tr>
</tbody>
</table>
IV. Course Level Justification
Students are required to learn and integrate information from a variety of scientific disciplines; to read, to understand, and to apply ideas conveyed by primary scientific literature; to synthesize chemical, geological, ecological and biological knowledge and social considerations; and to apply course materials to this topic.

GER Integrative Capstone Justification:
Justifications for designating BIOL A473 Conservation Biology as a GER Integrative Capstone course include:

1. Knowledge Integration/Interrelationships and Synergy Among GER Disciplines: The overall theme of the course is understanding the relationship of biological conservation principles to other natural and social sciences. The course will focus on the interfaces among natural sciences (geochemistry, geology, geography, mathematics), biological sciences (biology, ecology, conservation, molecular biology, etc.), and the social sciences (particularly human biology, sociology, anthropology).

2. Effective Communication Skills: Course success demands effective communication through essay examinations, individual classroom presentations, brief reports (oral and written) on current controversies surrounding conservation biology, and a final research product.

3. Critical Thinking: Students will not be able to succeed in the course unless they are able to integrate information across disciplines, and critically evaluate the reliability of data and positions presented in lecture, texts, scientific, and popular viewpoints. Student ability to critically evaluate diverse material will be determined based on writing assignments, class presentations, and examinations.

4. Information Literacy: Students are expected to achieve and demonstrate computer and internet skills for acquiring information relevant to current topics in evolutionary biology. This will involve research in the primary scientific literature, and the collection of information from unpublished sources such as popular press and public statements. Students will be required to show that they can critically winnow facts and scientific content from diverse non-scientific sources.

5. Quantitative Perspectives: A critical understanding of basic conservation biology is grounded in many quantitative disciplines, including statistical analysis, applied maths (algebra, calculus, probability and combinatories, etc.), general and advanced ecology, and quantitative biology. In addition, students must be able to read and interpret scientific data in graphical and tabular form, and to generate appropriate graphical displays of their own results. Exams will specifically test on these skills.

5. Evolving Realities of the 21st Century: The growing understanding that conservation biology is a dynamic and ever present component of modern life, particularly in the context of climate change and anthropogenic change, touches many aspects of science, policy, and social attitudes. This course will help students understand the implication of the processes of conservation biology in a changing environment, and provide them with effective means to communicate its importance and relevance for individuals and society.
V. **Topical Course Outline**

A. **Impacts and Drivers**
   1. What is Conservation Biology?
   2. Status of Biodiversity
   3. Predicting Biodiversity
   4. Conservation Hotspots
   5. Extinctions and Its Consequences
   6. Rarity and Small Populations
   7. Habitat Change
   8. Environmental Change
   9. Climate Change
   10. Invasive Species

B. **Problems and Approaches**
   1. Metapopulations and Populations
   2. Conserving Metapopulations
   3. Habitat Fragmentation
   4. Landscape Analysis and Corridors
   5. Edges, Areas, and Reserves
   6. Habitat Mitigation and Environmental Reconstruction
   7. Conservation Management
   8. Risk Analysis and Decisions
   9. Complex Decision Making

C. **Issues and Controversies**
   1. Biodiversity and Human Health
   2. Sustainable Development
   3. Endangered Species Act
   4. Ecological Services and Ecosystem Functions
   5. Reserves and Ecological Justice
   6. Environmental Security

VI. **Suggested Texts**


VII. **Bibliography**


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<tr>
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<th>1b. Division</th>
<th>1c. Department</th>
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6. Complete Course Title
Ecotoxicology
Abbreviated Title for Transcript (30 character)
Ecotoxicology

7. Type of Course
☒ Academic
☐ Preparatory/Development
☐ Non-credit
☐ CEU
☐ Professional Development

8. Type of Action: ☒ Add
☐ Change
☐ Delete

If a change, mark appropriate boxes:
☐ Prefix
☐ Credits
☐ Title
☐ Grading Basis
☐ Course Description
☐ Test Score Prerequisites
☐ Automatic Restrictions
☐ Class
☐ Level
☐ College
☐ Repeat Status
☐ Contact Hours
☐ Registration Restrictions
☐ General Education Requirement
☐ Cross-Listed/Stacked
☐ Co-requisites

9. Repeat Status No
# of Repeats
Max Credits

10. Grading Basis
☒ A-F
☐ P/NP
☐ NG

11. Implementation Date
From: Fall/2015
To: Fall/9999

12. ☐ Cross Listed with
☐ Stacked with
Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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<th>Chair/Coordinator Contacted</th>
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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: _________
Date: __________________

13b. Coordination Email
Date: 6Jan14
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication
☐ Written Communication
☐ Quantitative Skills
☐ Humanities
☐ Fine Arts
☐ Social Sciences
☐ Natural Sciences
☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Examination of the chemical and ecological nature of pollution processes and the major classes and environmental fate of pollutants.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
BIOL A270 with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☐ College
☐ Major
☐ Class
☐ Level

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
Course is being created in response to student interest and to prepare students for graduate school or careers in the environmental sciences. Part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science)

Initiator (faculty only)
Khrys Duddleston
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved

[Signatures and dates for various approval tiers]
University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
   A. College: College of Arts and Sciences
   B. Course Prefix: BIOL
   C. Course Number: A474
   D. Number of Credits: 3
   E. Contact Hours: 3+0
   F. Course Title: Ecotoxicology
   G. Grading Basis: A-F
   H. Implementation Date: Fall 2015
   I. Cross-listed/Stacked: N/A
   J. Course Description: Examination of the chemical and ecological nature of pollution processes and the major classes and environmental fate of pollutants.
   K. Course Prerequisites: BIOL A271 with minimum grade of C.
   L. Course Co-requisites: N/A
   M. Other Restrictions: N/A
   N. Registration Restrictions: N/A
   O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
   A. Instructional Goals. The instructor will:
      1. Teach students about the major classes of pollutants, including their chemical structure, toxicological effects, and fate in the environment.
      2. Teach students about the routes by which pollutants enter ecosystems, including surface waters, land, and the atmosphere.
      3. Teach students about the global transport of pollutants and their fractionation into different environmental compartments.
      4. Teach students about the fate of pollutants in individual organisms and tissues and mechanisms of toxicity.
      5. Teach students about the effects of pollutants on populations and communities.
      6. Teach students about the evolution of resistance to contaminants in populations and community responses to contaminant exposure.
      7. Teach students about the use of biomarkers in ecotoxicology and various monitoring techniques.
      8. Teach students about remediation techniques and technologies.

   B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the chemistry, toxicological effects and environmental fate of the major classes of contaminants.</td>
<td>Examinations.</td>
</tr>
<tr>
<td>2. Explain the global transport, fractionation, and routing of contaminants on both global</td>
<td>Examinations.</td>
</tr>
</tbody>
</table>
3. Explain the fate of pollutants in individual organisms and their various compartment, as well as the biological mechanisms of toxicity. Examinations.

4. Extrapolate individual toxicity to understand effects of contaminants on populations and communities. Examinations.

5. Synthesize knowledge of toxicity mechanisms to understand both evolved responses in populations and emergent effects on community ecology. Examinations.

6. Explain on a mechanistic level the use of biomarkers and other monitoring techniques in studies of contaminants. Examinations.

7. Explain the latest science underlying remediation techniques and technologies. Examinations.

8. Synthesize knowledge across multiple course content areas in written format. Independent course paper.

### IV. Course Level Justification

Designed for Biology and Natural Sciences majors as an elective undergraduate course comparable to 400-level ecotoxicology course offered at other universities. This course covers the principle concepts essential to the student’s ability to succeed in graduate programs and career pathways relevant to the discipline of ecotoxicology.

### V. Topical Course Outline

#### A. Pollutants and their fate in ecosystems

1. Major classes of pollutants
   - a. Inorganic ions
   - b. Organic pollutants
   - c. Organometallic compounds
   - d. Radioactive isotopes
   - e. Gaseous pollutants

2. Routes by which pollutants enter ecosystems
   - a. Entry into surface waters
   - b. Contamination of land
   - c. Discharge into the atmosphere

3. Long range movements and global transport of pollutants
   - a. Factors determining movement and distribution of pollutants
   - b. Transport in water
   - c. Transport in air

4. The fate of metals and radioactive isotopes in contaminated ecosystems

5. The fate of organic pollutants in individuals and ecosystems
   - a. Fate within individuals
   - b. Fate in terrestrial ecosystems
   - c. Fate in aquatic ecosystems

#### B. Effects of pollutants on individual organisms

1. Toxicity testing
2. Biochemical effects of pollutants
3. Physiological effects of pollutants
4. Interactive effects of pollutants
5. Biomarkers
6. *In situ* biological monitoring

C. Effects of pollutants on populations and communities
   1. Population dynamics
   2. Evolution of resistance to pollution
   3. Changes in communities and ecosystems

D. Remediation techniques and technologies

VI. **Suggested Texts**


VII. **Bibliography**


Course Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

1. **School or College**  
   AS CAS  

2. **Course Prefix**  
   BIOL  

3. **Course Number**  
   A475  

4. **Previous Course Prefix & Number**  
   N/A  

5. **Credits/CEUs**  
   3  

6. **Complete Course Title**  
   Fish Ecology  

7. **Type of Course**  
   - Academic  
   - Preparatory/Development  
   - Non-credit  
   - CEU  
   - Professional Development  

8. **Type of Action**  
   - Add  
   - Change  
   - Delete  

9. **Repeat Status No**  
   # of Repeats  
   Max Credits  

10. **Grading Basis**  
   - A-F  
   - P/NP  
   - NG  

11. **Implementation Date**  
   Semester/year  
   From: Fall/2015  
   To: Fall/9999  

12. **Cross Listed with**  
   - Stacked with  
   - Cross-Listed Coordination Signature  

13. **Impacted Courses or Programs**  
   List any programs or college requirements that require this course.  
   Please type into fields provided in table, if more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).  

14. **General Education Requirement**  
   Mark appropriate box:  
   - Oral Communication  
   - Written Communication  
   - Quantitative Skills  
   - Humanities  
   - Fine Arts  
   - Social Sciences  
   - Natural Sciences  
   - Integrative Capstone  

16. **Course Prerequisite(s)**  
   (list prefix and number or test code and score)  
   BIOL A271 and BIOL A320 with minimum grade of C.  

18. **Mark if course is a selected topic course**  

19. **Justification for Action**  
   This course has been taught as a selected topics and meets a curricular need for students interested in careers in fisheries. This change is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).  

---  

Initiator (faculty only)  
Khrys Duddleston  
Initiator (TYPE NAME)  

---  

Approved  
Disapproved  

Dean/Director of School/College  
Date  

Undergraduate/Graduate Academic  
Date  

Board Chair  
Date  

Provost or Designee  
Date  

---
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A475
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Fish Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: This course provides a broad survey of fish habitats and the ecological processes that govern the performance of individuals, abundance and productivity of populations, and structure of communities, with an emphasis on Alaska’s salmon populations.
K. Course Prerequisites: [BIOL A271 and BIOL A320] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Describe key attributes of fish habitats including the physical and chemical features that regulate ecosystem productivity
   2. Introduce the food webs that support fish production in marine, lotic, and lentic systems.
   3. Introduce fish bioenergetics models and examine the environmental factors that regulate fish growth, condition, and reproduction
   4. Compare and contrast life history strategies and discuss the role of evolution in shaping life history patterns
   5. Discuss the factors that regulate fish biodiversity, current threats to fish biodiversity, and the consequences of biodiversity loss.
   6. Cover the basics of population dynamics in the fishery management context
   7. Introduce basic field, lab, and statistical methods used by fishery managers and researchers
B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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<tbody>
<tr>
<td>1. Outline the key process, materials, and organisms that constitute aquatic food webs and map the flow of energy and materials that lead to fish production in representative habitats</td>
<td>Quizzes, group application exercises, writing assignments, and/or examinations</td>
</tr>
<tr>
<td>2. Demonstrate and apply knowledge of fish ecology to describe linkages among habitat quality, the growth and condition of individuals, the abundance and productivity of populations, and the structure of communities.</td>
<td>Quizzes, group application exercises, writing assignments, and/or examinations</td>
</tr>
<tr>
<td>3. Describe the role of evolution in shaping the morphological, physiological, and behavioral adaptations that adapt fishes to their characteristic habitats and enable competition and partitioning of resources among and within species</td>
<td>Quizzes, group application exercises, writing assignments, and/or examinations</td>
</tr>
<tr>
<td>4. Discuss the importance of fish biodiversity within populations and communities; characterize important threats to fish biodiversity both regionally and globally; and analyze the ecological and sociological ramifications of diminished biodiversity</td>
<td>Quizzes, group application exercises, writing assignments, and/or examinations</td>
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<tr>
<td>5. Design standardized sampling regimes for specific habitats and apply bioenergetics models, stable isotope analyses, life history models, measures of growth and fitness, population estimates, and stock-recruit models in management and research contexts</td>
<td>Quizzes, group application exercises, writing assignments, and/or examinations</td>
</tr>
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</table>

IV. Course Level Justification

This course builds on concepts presented in 200- and 300-level courses and is comparable to 400-level fish ecology courses offered at other universities.

V. Topical Course Outline

A. Food webs and the structure of aquatic ecosystems
   1. The physical environment
   2. The chemical environment
   3. Energy sources and feeding roles

B. Individuals
   1. Bioenergetics
   2. Growth
   3. Reproduction

C. Populations
   1. Survival in the freshwater environment
2. Survival in the marine environment
3. Life history, evolution, and adaptation
4. Population dynamics

D. Communities
1. Predation and competition

E. Conservation
1. Abundance and diversity, past, present and future
2. Biodiversity loss and the consequences thereof

F. Tools for fishery management and research

VI. Suggested Texts


Selected articles from the primary literature

VII. Bibliography


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If a change, mark appropriate boxes:
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- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Automatic Restrictions
- Class Level
- College Major
- Other (please specify)

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13a. Impacted Courses or Programs: List any programs or college requirements that require this course. Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: __________ Date: __________

13b. Coordination Email: (uaa-faculty@lists.uaa.alaska.edu) submitted to Faculty Listserv: 6Jan14

13c. Coordination with Library Liaison: Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

History and ecological principles underlying fish and wildlife management, including key theories of population ecology, methods for estimating population size, survival, and recruitment, and discussions of how theory is applied in contemporary population management in the face of uncertainty and habitat changes.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

(BIOL A271 and [MATH A107 or MATH A109 or MATH A200] with minimum grade of C).

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

- College
- Major
- Class
- Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action

Creating new, permanent course, for content that has previously been covered in special topics course and meets needs of students interested in careers or graduate school in wildlife biology. This is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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<td></td>
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<td>Undergraduate/Graduate Academic Board Chair</td>
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- **Approved**
- **Disapproved**

**Checkboxes:**

- Approved
- Disapproved
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A476
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Wildlife Population Dynamics and Management
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: History and ecological principles underlying fish and wildlife management, including key theories of population ecology, methods for estimating population size, survival, and recruitment, and discussions of how theory is applied in contemporary population management in the face of uncertainty and habitat changes.

K. Course Prerequisites: {BIOL A271 and [MATH A107 or MATH A109 or MATH A200]} with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide a basic description of the goals of, and need for wildlife management
   2. Introduce the philosophy and history of the North American model of wildlife management, including comparison with the European model and government funding mechanisms.
   3. Introduce and develop core concepts in population biology and ecology, including population demographic models
   4. Emphasize the extent and historical/geographic patterns of human impacts on the wildlife populations, and on how humans have designed and implemented management programs.
   5. Provide detailed examples of how the vital rates of populations are influenced by both intrinsic and extrinsic factors, and of how changes in that habitat may
influence species diversity and abundance through impacts on population growth rates and interactions among species.

6. Relate all of the above to current issues in wildlife management and case studies that demonstrate management successes and failures - with a focus on Alaskan issues where possible. The need for balancing different perspectives and needs will be covered - including economic value (eg fisheries, hunting), cultural value (subsistence use), conservation value (wildlife in wildlands, resilience within ecosystems), and future values, and expose students to discussions on these topics from local experts.

7. Teach students how to evaluate and integrate information from a variety of different sources and perspectives.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify and assess the linkages between wildlife population ecology, management approaches, and conservation strategies.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Integrate information from scientific articles with that provided in lecture and textbook assignments, and use this information to evaluate the scientific accuracy of popular press (TV, newspaper, magazine, web) reports on wildlife management issues</td>
<td>Exams, written assignments, in class reports</td>
</tr>
<tr>
<td>3. Communicate their understanding of vertebrate population ecology, and the impacts that humans are having on the system directly and indirectly to peers</td>
<td>In-class presentation, exams, and writing assignment</td>
</tr>
<tr>
<td>4. Analyze, assess, and evaluate the impact that humans are having on the vertebrate populations through in depth study of current 'hot topics' such as global warming, habitat loss, disease, etc.</td>
<td>Presentations, exams, and written assignments</td>
</tr>
<tr>
<td>5. Analyze the range of options available for addressing specific wildlife management scenarios and identify the consequences (intended and unintended) of each on both wildlife and human populations.</td>
<td>Exams, written assignments, in class reports</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

This course builds on concepts presented in 200 level courses. Students are required to learn and integrate information from a variety of scientific disciplines as it relates to wildlife management, to read, understand, and apply ideas conveyed by primary scientific literature, to synthesize biological knowledge and social considerations; and to apply course materials to current problems.
V. **Topical Course Outline**

A. Introduction to Wildlife Population Biology and the need for conservation & management
   1. History and philosophy of Wildlife Management
   2. Population ecology methods and approaches

B. Defining a population for management
   1. Species concepts
   2. Distinct Population Segments
   3. The role of genetics

C. Estimating population vital rates
   1. Essential parameters
   2. Methodological approaches
   3. Variation among and within populations
   4. Individual variation in ‘quality’

D. Models of population growth
   1. Geometric, exponential, logistic and others
   2. Stage-structured population models
   3. Density dependent models

E. The impact of predation & disease on populations

F. Management of populations
   1. Harvest rates and quotas
   2. Population viability models
   3. Conservation of small and endangered species

G. Case studies demonstrating wildlife management successes and failures

VI. **Suggested Texts**


VII. **Bibliography**


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

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<th>1a. School or College</th>
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<td>Course changes reflect the level at which the course is taught and allow stacking with graduate level course. The laboratory component of the course is being removed.</td>
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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: ____________________
Date: ____________________

Initiator (faculty only) Date
Khrys Duddleston
Initiator (TYPE NAME)

Approved
Disapproved

Dean/Director of School/College Date
Undergraduate/Graduate Academic Date
Board Chair

Approved
Disapproved

Provost or Designee Date
University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Initiation Date: Spring 2014

II. Course Information
A. College: College of Arts and Sciences
B. Course prefix: BIOL
C. Course Number: A478
D. Number of credits: 3
E. Contact Hours: 3+0
F. Course Title: Biological Oceanography
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: BIOL A678
J. Course Description: Principles of biological oceanography with an emphasis on biological, chemical and physical processes in the world’s oceans and linkages between biological ocean processes and carbon transport.

K. Course Prerequisites: N/A
L. Course Co-requisites: N/A
M. Other restrictions: N/A
N. Registration Restrictions: Junior standing
O. Lab Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present the concepts and organisms important to the study of biological oceanography.
   2. Emphasize the reciprocal effects of biological processes in the oceans and atmosphere.
   3. Lead students to consider the biological processes in the oceans in the context of global systems

B. Student Learning Outcomes and Assessment Measures:

<table>
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<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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<td>1. Identify major planktonic organisms, their ecology, global distributions and contributions to nutrient and chemical dynamics</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Identify major benthic organisms, their ecology, global distributions and contributions to sediment/water chemical dynamics</td>
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<td>3. Communicate their understanding of the ocean environment with reference to organisms to peers</td>
<td>Written assignments, in class presentation</td>
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IV. Course Level Justification
This course builds on concepts presented in 200 level courses. Students are required to learn and integrate information from a variety of scientific disciplines as it relates to biological oceanography.

V. **Topical Course Outline**

A. History of biological oceanography
B. Primary production
   1. Phytoplankton diversity
   2. Phytoplankton growth
   3. Blooms and toxic blooms
   4. Microbial primary production
C. Secondary production
   1. Zooplankton diversity
   2. Zooplankton growth
   3. Zooplankton population biology and models
D. Benthic environments
   1. Organismal diversity
   2. Community ecology
   3. Special environments: Hydrothermal vents, hydrocarbon seeps, methane ice, cold water corals, seamounts
E. Biogeography
   1. Pelagic biogeography
   2. Bioluminescence
   3. Biomes and provinces
   4. Benthic biogeography
F. Atmospheric impacts of biological processes
G. Fisheries

VI. **Suggested Texts**


VII. **Bibliography**


Review articles from the following journals:
Science, American Association for the Advancement of Science
Nature, Nature Publishing Group
Deep Sea Research, Elsevier
Marine Ecology Progress Series, Inter-Research
Course Action Request  
University of Alaska Anchorage 
Proposal to Initiate, Add, Change, or Delete a Course

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6. Complete Course Title  
Advanced Biological Oceanography  
Abbreviated Title for Transcript (30 character)

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11. Implementation Date  
From: Fall/2015  
To: Fall/9999

12. Cross Listed with  
BIOL A478  
Cross-Listed Coordination

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.  
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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<tr>
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Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials:  
Date:

13b. Coordination Email  
Date: 6Jan14  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 6Jan14

14. General Education Requirement  
Mark appropriate box:

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15. Course Description (suggested length 20 to 50 words)
Principles of biological oceanography with an emphasis on biological, chemical and physical processes in the world’s oceans and linkages between biological ocean processes and carbon transport.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)  
16d. Registration Restriction(s) (non-codable)  
Graduate Standing

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action
This course addition meets a need for graduate students in the Dept. of Biological Sciences, particularly those with research foci in Marine Biology.

Initiator (faculty only)  
Khrys Duddleston  
Initiator Signed Initials:  
Date:

Initiator (TYPE NAME)

Approved  
Disapproved  
Dean/Director of School/College  
Date

Approved  
Disapproved  
Undergraduate/Graduate Academic  
Board Chair  
Date

Approved  
Disapproved  
Provost or Designee  
Date

Department Chair  
Date

College/School Curriculum Committee Chair  
Date
I. Initiation Date: Spring 2014

II. Course Information
A. College: College of Arts and Sciences
B. Course prefix: BIOL
C. Course Subject/Number: A678
D. Number of credits: 4
E. Contact Hours: 4+0
F. Course Title: Advanced Biological Oceanography
G. Grading Information: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: BIOL A478
J. Course Description: Principles of biological oceanography with an emphasis on biological, chemical and physical processes in the world’s oceans and linkages between biological ocean processes and carbon transport.

K. Course Prerequisites: N/A
L. Course Co-requisites: N/A
M. Other restrictions: N/A
N. Registration Restrictions: Graduate Standing
O. Lab Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present the concepts and organisms important to the study of biological oceanography.
   2. Emphasize the reciprocal effects of biological processes in the oceans and atmosphere.
   3. Lead students to consider the biological processes in the oceans in the context of global systems

B. Student Learning Outcomes and Assessment Measures

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<td>3. Communicate their understanding of the ocean environment with reference to organisms to peers</td>
<td>Written assignments, in class presentation</td>
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<tr>
<td>4. Synthesize and analyze primary literature</td>
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<tr>
<td>5. Create and present a novel hypothesis as a</td>
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IV. Course Level Justification
This course is similar to other graduate level courses in biological oceanography offered at other universities.

V. Topical Course Outline
A. History of biological oceanography
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   1. Phytoplankton diversity
   2. Phytoplankton growth
   3. Blooms and toxic blooms
   4. Microbial primary production
C. Secondary production
   1. Zooplankton diversity
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   3. Special environments: Hydrothermal vents, hydrocarbon seeps, methane ice, cold
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   1. Pelagic biogeography
   2. Bioluminescence
   3. Biomes and provinces
   4. Benthic biogeography
F. Atmospheric impacts of biological processes
G. Fisheries

VI. Suggested Texts

VII. Bibliography
Gage, J.D. and P.A. Tyler. Deep-Sea Biology: A natural history of the organisms at the deep-sea
Van Dover, C.L. The Ecology of Deep-sea Hydrothermal Vents. Princeton University

Articles from the following journals:
Science, American Association for the Advancement of Science
Nature, Nature Publishing Group
Deep Sea Research, Elsevier
Marine Ecology Progress Series, Inter-Research
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Ecological and Conservation Genetics  
Ecological Conservation Gen.

Abbreviated Title for Transcript (30 character)

7. Type of Course  
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8. Type of Action:  
[ ] Add  [ ] Change  [ ] Delete

If a change, mark appropriate boxes:

- [ ] Prefix  [ ] Course Number  [ ] Contact Hours  [ ] Repeat Status
- [ ] Grading Basis  [ ] Cross-Listed/Stacked  [ ] Title  [ ] General Education Requirement
- [ ] Course Description  [ ] Course Prerequisites  [ ] Credits  [ ] Other (please specify)
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- [ ] Automatic Restrictions  [ ] Registration Restrictions  [ ] Credits  [ ] Other (please specify)
- [ ] Class  [ ] Level  [ ] Contact Hours  [ ] Registration Restrictions
- [ ] College  [ ] Major  [ ] Contact Hours  [ ] Registration Restrictions
- [ ] Prefix  [ ] Course Number  [ ] Contact Hours  [ ] Repeat Status

9. Repeat Status No  
[ ] # of Repeats  [ ] Max Credits

10. Grading Basis  
[ ] A-F  [ ] P/NP  [ ] NG

11. Implementation Date  
[ ] semester/year

From: Fall/2015  
To: Fall/9999

12. [ ] Cross Listed  
with

Stacked  
with

Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

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Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials: _________  
Date: ________________

13b. Coordination Email  
submitted to Faculty Listserv: (uai-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 6Jan14

14. General Education Requirement  
Mark appropriate box:  
[ ] Oral Communication  [ ] Written Communication  [ ] Quantitative Skills  [ ] Humanities
[ ] Fine Arts  [ ] Social Sciences  [ ] Natural Sciences  [ ] Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

An in-depth examination of the primary forces and processes involved in shaping genetic variation in natural populations (mutation, drift, selection, migration, recombination, mating patterns, population size, and population subdivision), methods of measuring genetic variation in nature, and experimental tests of important ideas in population genetics and microevolution theory.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
[Biol A252 or BIOL A288] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)  
[ ] College  [ ] Major  [ ] Class  [ ] Level

16d. Registration Restriction(s) (non-codable)

17. [ ] Mark if course has fees  
[ ] Mark if course is a selected topic course

19. Justification for Action

The course is needed to provide majors in Biological Sciences and Natural Sciences with an upper division course in applied genetics. This is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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I. Date of Initiation:    Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A480
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Ecological and Conservation Genetics
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: An in-depth examination of the primary forces and processes involved in shaping genetic variation in natural populations (mutation, drift, selection, migration, recombination, mating patterns, population size, and population subdivision), methods of measuring genetic variation in nature, and experimental tests of important ideas in population genetics and microevolution theory.
K. Course Prerequisites: [BIOL A252 or BIOL A288] with minimum grade of C
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
1. Provide the basis for advanced analysis of evolutionary theory and concepts
2. Build on a theoretical framework to describe how evolutionary process results in evolutionary pattern
3. Link current research on how microevolutionary processes relate to observed responses to environmental and climate change
4. Enable students to undertake analyses and conceptualization of quantitative evolutionary mechanisms
5. Provide detailed examples of modern evolutionary analysis and theory as mechanisms of biotic change and diversification
6. Provide expert assistance in use and interpretation of current analytical software developed for quantitative evolutionary analysis

B. Student Learning Outcomes and Assessment Measures

<table>
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<th>Student Learning Outcomes</th>
<th>Assessment Procedures</th>
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<tr>
<td>1. Gain in-depth understanding of evolutionary process, microevolution mechanisms, and macroevolutionary</td>
<td>Exams and conceptual paper</td>
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</table>
IV. **Course Level Justification**
This course is similar to 400-level courses in conservation genetics offered at other universities. Students are required to learn and integrate information at an upper-division level from a variety of scientific disciplines as it relates to applied genetics, advanced evolutionary and ecological analysis, and microevolutionary processes; to read, understand, and apply ideas conveyed by primary scientific literature; and to synthesize current biological knowledge, ecological and evolutionary theory.

V. **Topical Course Outline**
- A. Genetic and statistical background
- B. Genetic and phenotypic variation
- C. Organization of genetic variation
- D. Population substructure
- E. Sources of variation
- F. Darwinian Selection
- G. Complex Selection, Sexual Selection
- H. Random genetic drift
- I. Coalescence
- J. Molecular population genetics
- K. Mutation and Recombination
- L. Stochastic Combinatorics
- M. Neutral theory
- N. Non-Darwinian dynamics

V. **Suggested Texts**


VII. **Bibliography**


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<td>AMSC Division of Math Science</td>
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<td>BIOL A378</td>
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If a change, mark appropriate boxes:

- [ ] Prefix
- [ ] Credits
- [ ] Title
- [ ] Grading Basis
- [ ] Course Description
- [ ] Test Score Prerequisites
- [ ] Automatic Restrictions
- [ ] Other CCG (please specify)
- [ ] Course Number
- [ ] Contact Hours
- [ ] Repeat Status
- [ ] Cross-Listed/Stacked
- [ ] Course Prerequisites
- [ ] Co-requisites
- [ ] Registration Restrictions
- [ ] General Education Requirement

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Cross-Listed Coordination Signature: [ ]

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

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<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tr>
<td>1. Environment and Society, BA</td>
<td>6Jan14</td>
<td>Dorn VanDommelen, <a href="mailto:dvandommelen@uaa.alaska.edu">dvandommelen@uaa.alaska.edu</a></td>
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<tr>
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<td>6Jan14</td>
<td>Dorn VanDommelen, <a href="mailto:dvandommelen@uaa.alaska.edu">dvandommelen@uaa.alaska.edu</a></td>
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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: ________ Date: __________

13b. Coordination Email: [ ]

submitted to Faculty Listserv: [ ]

13c. Coordination with Library Liaison Date: 6Jan14

14. General Education Requirement Mark appropriate box:

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<th>Oral Communication</th>
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15. Course Description (suggested length 20 to 50 words)

An examination of marine biology, with a focus on understanding the pathways and transformation of energy and matter in coastal, pelagic, and benthic, waters, particularly those in Alaska. Students will gain an appreciation of the influence of the physical environment, climate change, and human activities on marine species diversity, food webs, and trophodynamics

16a. Course Prerequisite(s) (list prefix and number or test code and score)

[BIOL A271 or ENVI A211] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

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16d. Registration Restriction(s) (non-codable)

Completion of all GER Tier 1 courses is required

17. [ ] Mark if course has fees

18. [ ] Mark if course is a selected topic course

19. Justification for Action

Renumbering course to comply with revision to BIOL undergraduate curricula; prerequisites revised to reflect changes to ENVI curricula (ENVI 202 no longer exists)

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I. Date of Initiation:
Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A481
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Marine Biology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: An examination of marine biology, with a focus on understanding the pathways and transformation of energy and matter in coastal, pelagic, and benthic waters, particularly those in Alaska. Students will gain an appreciation of the influence of the physical environment, climate change, and human activities on marine species diversity, food webs, and trophodynamics.
K. Course Prerequisites: [BIOL A271 or ENVI A211] with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: Completion of all GER Tier 1 courses is required.
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
1. Provide a basic description of the physical, chemical, and geological properties of the ocean, and the different ocean habitats
2. Build on this conceptual framework to describe how physical and biological ocean systems are impacted by changing climate and human activities
3. Link physical features of the ocean habitat (pre- and post-human impact) to ocean trophic dynamics and food webs.
4. Emphasize the extent and historical/geographic patterns of human impacts on the marine environment, and describe how these impacts are mediated by and through biological and physical processes.
5. Provide detailed examples of how the physiological traits of organisms are unique linked to their habitat, and of how changes in that habitat may influence species diversity and abundance through impacts on physiological properties
6. Relate all of the above to current issues in Alaskan marine ecosystems and resources - with a focus on balancing the many values represented in our environment. Such values include economic value (fisheries, oil exploitation, mining), cultural value (subsistence use, coastal villages and their impact), conservation value (nursery ground habitats, marine protected areas), and future values (arctic exploration with...
shrinking ice etc), and expose students to discussions on these topics from local experts.

7. Teach students how to evaluate and integrate information from a variety of different sources and perspectives.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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</thead>
<tbody>
<tr>
<td>1. Identify and assess the linkages between the chemistry and physiology of living organisms and the physical and biological aspects of the marine environment.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Integrate information from scientific articles with that provided in lecture and textbook assignments, and use this information to evaluate the scientific accuracy of popular press (TV, newspaper, magazine, web) reports on marine issues</td>
<td>Exams, written assignments, in class reports</td>
</tr>
<tr>
<td>3. Communicate their understanding of the marine ecosystem, and the impacts that humans are having on the system directly and indirectly to peers</td>
<td>In-class presentation, exams, and writing assignment</td>
</tr>
<tr>
<td>4. Analyze, assess, and evaluate the impact that humans are having on the marine system through in depth study of current 'hot topics' such as global warming, fisheries collapse etc.</td>
<td>Presentations, exams, and written assignments</td>
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</table>

IV. Course Level Justification

This course builds on concepts presented in 200 level courses. Students are required to learn and integrate information from a variety of scientific disciplines as it relates to marine ecosystems, to read, understand, and apply ideas conveyed by primary scientific literature, to synthesize biological knowledge and social considerations; and to apply course materials to current problems.

V. Topical Course Outline

A. Basic Principles of Physical Oceanography
   1. Properties of water, salt, temperature, light
   2. Coriolis effect and tides
   3. Wind-driven and thermohaline circulation

B. Major Ocean Currents and Domains
   1. Global circulation patterns
   2. Alaskan circulation patterns
   3. Thermoclines, fronts, gyres, eddies

C. Ocean Climates & Impact of Global Warming
   1. Seasonal patterns of heat flux
   2. Impact of ice on currents
   3. Feedback loops
D. Ecology of the Open Ocean
   1. Sources of organic and inorganic nutrients
   2. Phytoplankton diversity & adaptations
   3. Factors influencing primary productivity

E. Pelagic food webs
   1. Zooplankton and methods for exploiting phytoplankton
   2. Necton and foraging adaptations

F. Trophic dynamics and foods webs
   1. Fisheries and their ecological and social impacts
   2. Major fisheries species & locations

G. Methods of resource exploitation
   1. Impact of overfishing on ecosystem
   2. Management methods and legislation
   3. Impact of different management regimes on fishers

H. Ecology of the coastal zones
   1. Physical challenges and adaptations
   2. Nutrients and tropho-dynamics in various marine environments

I. Coastal polar ecosystems

J. Impacts of coastal development and use
   1. On physical habitat
   2. On biological habitats
   3. On health of the ecosystem
   4. Potential solutions / remediation

VI. Suggested Texts


VII. Bibliography


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
AS CAS

1b. Division
AMSC Division of Math Science

1c. Department
Biological Sciences

2. Course Prefix
BIOL

3. Course Number
A482

4. Previous Course Prefix & Number
N/A

5a. Credits/CEUs
3

5b. Contact Hours
(Lecture + Lab)
(3+0)

6. Complete Course Title
Spatial Ecology

7. Type of Course
☐ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action: ☒ Add ☐ Change ☐ Delete
If a change, mark appropriate boxes:
☐ Prefix ☐ Credits ☐ Course Number
☐ Title ☐ Contact Hours ☐ Repeat Status
☐ Grading Basis ☐ Cross-Listed/Stacked ☐ Course Prerequisites
☐ Course Description ☐ Co-requisites ☐ Registration Restrictions
☐ Test Score Prerequisites ☐ General Education Requirement
☐ Automatic Restrictions ☐ Other
☐ Class ☐ Level ☐ Major (please specify)

9. Repeat Status No
☐ # of Repeats ☐ Max Credits

10. Grading Basis
☐ A-F ☐ P/NP ☐ NG

11. Implementation Date
From: Fall/2015 To: Fall/9999

12. ☐ Cross Listed with
☐ Stacked with
☐ Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Khrys Duddleston Initiator Signed Initials:__________ Date:____________

13b. Coordination Email
Date: 6Jan14
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
An examination of spatial ecology including: 1) the physical and ecological nature of landscapes, 2) the use of GIS tools to map and understand patterns in physical and biological properties and 3) the use of case studies that apply GIS tools to ecological and abiotic processes such as migration of ungulates and birds; local-regional-continental and global patterns of precipitation chemistry and associations of societal practices and spatial patterns in the water and carbon cycles.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
BIOL A271 with minimum grade of C.

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☐ College ☐ Major ☐ Class ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
New course which meets the needs of students interested in graduate work or careers in ecology. This is part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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<td>College/School Curriculum Committee Chair</td>
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I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A482
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Spatial Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: An examination of spatial ecology including: 1) the physical and ecological nature of landscapes, 2) the use of GIS tools to map and understand patterns in physical and biological properties and 3) the use of case studies that apply GIS tools to ecological and abiotic processes such as migration of ungulates and birds; local-regional-continental and global patterns of precipitation chemistry and associations of societal practices and spatial patterns in the water and carbon cycles.
K. Course Prerequisites: BIOL A271 with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide a description of the abiotic and biotic environments from the micro to the global scale.
   2. Discuss the role of key abiotic processes that vary spatially and temporally that have major effects on organisms, ecosystems and landscapes.
   3. Provide advanced information on food web ecology, atmospheric processes, land use patterns and migration ecology.
   4. Introduce the vocabulary of Geographic Information Systems.
   5. Introduce GIS concepts through discussion of spatial patterns in abiotic traits, animal distributions and migration dynamics.
   6. Conduct class exercises in ArcGIS.
   7. Encourage class discussion of spatial issues that are of relevance to Alaska, the Arctic and the global community.
   8. Help students understand GIS applications to research and resource management.

B. Student Learning Outcomes and Assessment Measures:

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of</th>
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324
this course, the student will be able to:

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<table>
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<tbody>
<tr>
<td>1. Describe traits of the abiotic and biotic environment that have important spatial and temporal patterns.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Describe key migration and food web traits in northern systems and key spatial patterns.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>3. Explain and use the key facets of GIS tools and their application to spatial ecology</td>
<td>Written assignments, examinations and classroom exercises</td>
</tr>
<tr>
<td>4. Explain some of the causes of spatial and temporal patterns of animal distributions, atmospheric chemistry, the water and the carbon cycles.</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>5. Describe how important societal processes-land use change- is being manifested spatially in Arctic and Temperate systems.</td>
<td>Written assignments and examinations, classroom discussions</td>
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<tr>
<td>6. Interpret the causes of spatial and temporal patterns in abiotic and biotic traits.</td>
<td>Written assignments and examinations, classroom discussions</td>
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</tbody>
</table>

IV. Course Level Justification
The class builds upon a foundation of basic biological, ecological and environmental knowledge. It assumes some proficiency with the vocabulary of biology and environmental sciences. It is similar to other senior level courses in ecology at other universities.

V. Topical Course Outline
A. Overview of Landscape Ecology
   1. Facets of Abiotic Traits-micro to global scales
      a. Precipitation
      b. Temperature
   2. Properties of Key Biotic traits
      a. Animal Abundances
      b. Species Distributions
   3. Watershed and Ecosystem Processes
      a. Biogeochemical Cycles
      b. Linkages between system components
   4. Food web Ecology
      a. Land
      b. Aquatic
      c. Marine
   5. Migration Ecology
      a. Birds
      b. Fish
      c. Mammals
B. Spatial and temporal patterns in Landscapes
   1. Spatial and temporal variation in Abiotic traits
      a. Precipitation
      b. Atmospheric Chemistry
      c. Temperature
   2. Spatial and temporal variation in biotic traits
      a. Birds
      b. Fish
c. Mammals
d. Insects
e. Human activities

C. Geographic Information Systems
1. ArcGIS Introduction
2. Data Collection
3. Data Management
4. Types of GIS files
   a. Shapefiles/geodata bases
5. Retrieval of data-bases
6. Development of Data layers
7. Modeling techniques for GIS data

D. Application exercises in GIS and Spatial Ecology
1. Compare existing techniques for modeling species distribution, habitat use, and niche selection
2. Apply advanced spatial analysis techniques to real-world migration ecology, conservation biology, precipitation and biogeochemistry, food web ecology, and case examples based on Alaska, Arctic, Boreal and Global ecology.

VI. Suggested Texts
Gorr, W and K. Kurland. GIS Tutorial 1: Basic Workbook. 2010

VII. Bibliography
Journals that feature Spatial Ecology:

Ecological Monographs. Ecological Society of America. Ithaca, NY
Functional Ecology. Journals of the British Ecological Society
Oecologica. International Association for Ecology. Berlin
Landscape Ecology. Springer Verlag, NY
1a. School or College
   AS CAS
1b. Division
   AMSC Division of Math Science
1c. Department
   Biological Sciences

2. Course Prefix
   BIOL
3. Course Number
   A483
4. Previous Course Prefix & Number
   N/A
5a. Credits/CEUs
   2
5b. Contact Hours
   (Lecture + Lab) (2+0)

6. Complete Course Title
   Exploration Ecology
   Abbreviated Title for Transcript (30 character)
   Exploration Ecology

7. Type of Course
   ☒ Academic ☐ Preparatory/Development ☐ Non-credit ☐ CEU ☐ Professional Development

8. Type of Action:
   ☒ Add ☐ Change ☐ Delete
   If a change, mark appropriate boxes:
   ☐ Prefix ☐ Credits ☐ Title ☐ Grading Basis ☐ Course Description
   ☐ Contact Hours ☐ Repeat Status ☐ Cross-Listed/Stacked ☐ Course Prerequisites
   ☐ Other (please specify)
   ☐ Repeatability No ☐ # of Repeats ☐ Max Credits
   ☐ Prefix ☐ Credits ☐ Title ☐ Grading Basis ☐ Course Description
   ☐ Contact Hours ☐ Repeat Status ☐ Cross-Listed/Stacked ☐ Course Prerequisites
   ☐ Other (please specify)

9. Repeat Status No ☐ # of Repeats ☐ Max Credits
   ☐ Grading Basis ☒ A-F ☐ P/NP ☐ NG

10. Implementation Date
    From: Fall/2015 To: Fall/9999

11. Cross Listed with
    ☐ Stacked with
    Cross-Listed Coordination Signature

12. Coordination with Library Liaison
    Date: 6Jan14

13a. Impacted Courses or Programs:
List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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Initiator Name (typed): Khrys Duddleston
Initiator Signed Initials: _________
Date: ______________

13b. Coordination Email
    Date: 6Jan14
    submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
    Date: 6Jan14

14. General Education Requirement
    Mark appropriate box:
    ☐ Oral Communication ☐ Written Communication ☐ Quantitative Skills ☐ Humanities
    ☐ Fine Arts ☐ Social Sciences ☐ Natural Sciences ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
An exploration of the principles and techniques used for study and collection of baseline ecological data in remote landscapes.
Course activities will focus on survey and analytical resources, and design of simple ecological projects as well as those with complex and multidisciplinary components

16a. Course Prerequisite(s) (list prefix and number or test code and score)
    BIOL A271 with minimum grade of C.
16b. Co-requisite(s) (concurrent enrollment required)
    BIOL A484

16c. Automatic Restriction(s)
    ☐ College ☐ Major ☐ Class ☐ Level
16d. Registration Restriction(s) (non-codable)
    Instructor Approval

17. ☐ Mark if course has fees
18. ☐ Mark if course is a selected topic course

19. Justification for Action
    The course is needed to provide majors in Biological Sciences and Natural Sciences with an upper division course in advanced ecological techniques. The addition is part of an overall curriculum revision in the Biological Sciences in which we aim to align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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328
University of Alaska Anchorage
College of Arts and Sciences
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A483
D. Number of Credits: 2
E. Contact Hours: 2+0
F. Course Title: Exploration Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: An exploration of the principles and techniques used for study and collection of baseline ecological data in remote landscapes. Course activities will focus on survey and analytical resources, and design of simple ecological projects as well as those with complex and multidisciplinary components.
K. Course Prerequisites: BIOL A271 with minimum grade of C
L. Course Co-requisites: BIOL A484
M. Other Restrictions: N/A
N. Registration Restrictions: Instructor Approval
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide a basic understanding of ecological survey and analysis
   2. Enable students to apply theory to field-based settings.
   3. Assist students in acquiring skills needed for acquisition and analysis of data, interpretation of results, and preparation of reports and publication.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate understanding of critical aspects of ecological theory relating to acquisition of baseline data and information.</td>
<td>Exams and written assignments</td>
</tr>
<tr>
<td>2. Read, understand, and integrate information from scientific articles with that provided in lecture and textbook assignments, and to use this information to evaluate the scientific accuracy of reports from the popular press or public science.</td>
<td>Exams, written assignments, in-class presentations.</td>
</tr>
<tr>
<td>3. Communicate to others the results of original research they have conducted</td>
<td>Written reports, in-class presentations.</td>
</tr>
</tbody>
</table>
IV. **Course Level Justification** This course is proposed to build field course offerings in the department and greater course depth in advanced ecology and environmental biology.

V. **Topical Course Outline**
A. Introduction
   1. Field Safety
   2. Planning a Research Program
B. Research Design
   1. Principles of Sampling
   2. Data Acquisition
   3. General Census Methods
   4. Data Mining
   5. General Survey Methods
   6. Data Reduction
   7. Introduction to Analysis
C. Introduction to Analysis
   1. Using R For Analysis
   2. Free-ware Software Programs
   3. Data Screening
D. Statistical Analysis
   1. Univariate Statistics
   2. Multivariate Statistics
   3. Group Analysis
E. Testing and Discrimination
   1. Multivariate Gradient Analysis
   2. Ordination
F. Photogrammetry and Image Analysis
G. Time Series Analysis
H. Reporting and Results Selection

VI. **Suggested Texts**


VII. **Bibliography**


Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

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<th>1b. Division</th>
<th>1c. Department</th>
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<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
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<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<td>BIOL</td>
<td>A484</td>
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6. Complete Course Title
Experiential Learning: Exploration Ecology Field Study
EL: Exploration Ecology Field
Abbreviated Title for Transcript (30 character)

7. Type of Course
[ ] Academic [ ] Preparatory/Development [ ] Non-credit [ ] CEU [ ] Professional Development

8. Type of Action: [ ] Add [ ] Change [ ] Delete
If a change, mark appropriate boxes:
[ ] Prefix [ ] Credits [ ] Title [ ] Grading Basis [ ] Course Description [ ] Test Score Prerequisites [ ] Automatic Restrictions [ ] Other
[ ] Course Number [ ] Contact Hours [ ] Repeat Status [ ] Cross-Listed/Stacked [ ] Course Prerequisites [ ] Co-requisites [ ] Level [ ] College Major [ ] (please specify)
[ ] Repeat Status No [ ] # of Repeats [ ] Max Credits

9. Repeat Status No

10. Grading Basis
[ ] A-F [ ] P/NP [ ] NG

11. Implementation Date
From: Fall/2015 To: Fall/9999

12. Cross Listed with
[ ] Stacked with

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

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13b. Coordination Email
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
[ ] Oral Communication [ ] Written Communication [ ] Quantitative Skills [ ] Humanities
[ ] Social Sciences [ ] Natural Sciences [ ] Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Field exploration of the principles and techniques used for study and collection of baseline ecological data in remote landscapes.
Course activities will focus on field survey and methodology, and design of simple ecological projects as well as those with complex and multidisciplinary components

16a. Course Prerequisite(s) (list prefix and number or test code and score)
16b. Co-requisite(s) (concurrent enrollment required)
BIOL A483

16c. Automatic Restriction(s)
[ ] College [ ] Major [ ] Class [ ] Level

16d. Registration Restriction(s) (non-codable)
[ ] Instructor Approval

17. [ ] Mark if course has fees

18. [ ] Mark if course is a selected topic course

19. Justification for Action
The course is needed to provide majors in Biological Sciences and Natural Sciences with an upper division course in advanced ecological techniques. The addition is part of an overall curriculum revision in the Biological Sciences in which we aim to align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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</table>
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A484
D. Number of Credits: 4
E. Contact Hours: 0+8
F. Course Title: Experiential Learning: Exploration Ecology Field Study
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Field exploration of the principles and techniques used for study and collection of baseline ecological data in remote landscapes. Course activities will focus on field survey and methodology, and design of simple ecological projects as well as those with complex and multidisciplinary components
K. Course Prerequisites: N/A
L. Course Co-requisites: BIOL A483
M. Other Restrictions: N/A
N. Registration Restrictions: Instructor Approval
O. Course Fees: Yes

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
1. Provide a basic understanding of ecological survey and analysis
2. Enable students to apply theory to field-based settings.
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B. Student Learning Outcomes and Assessment Measures

<table>
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<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
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<tbody>
<tr>
<td>1. Design and conduct field based ecological research</td>
<td>Written assignments and data logs.</td>
</tr>
<tr>
<td>2. Utilize field-collected data in scientific analysis</td>
<td>Written assignments and reports</td>
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<tr>
<td>3. Initiate, understand, and follow appropriate safety, collection, landuse, and other regulations</td>
<td>Permits, forms, and reports</td>
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IV. **Course Level Justification**
This course builds field course offerings in the department and greater course depth in advanced ecology and environmental biology.

V. **Topical Course Outline**
- Lab 1: Lab and Field Safety
- Lab 2: Techniques of Sample Counts (Mark-Recapture, N-mixture Models)
- Lab 3: Techniques of Sample Counts 2
- Lab 4: Field Survey Techniques
- Lab 5: Distance Sampling, Indices, and Metrics
- Lab 6: Indirect Sampling by Proxy
- Lab 7: Indirect Sampling by Proxy 2
- Lab 8: Introduction to R Programming
- Lab 9: Multivariate Analysis, Groups
- Lab 10: Multivariate Analysis, Gradients
- Lab 11: Multivariate Analysis, Higher-order and Discrete
- Lab 12: Meta-Analysis.

VI. **Suggested Texts**

VII. **Bibliography**

**Course Action Request**

University of Alaska Anchorage

Proposal to Initiate, Add, Change, or Delete a Course

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13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

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Initiator Name (typed): Khrys Duddleston

Initiator Signed Initials: ___________ Date: ___________

13b. Coordination Email | Date: 6Jan14

submitted to Faculty Listserv: [uaa-faculty@lists.uaa.alaska.edu](mailto:uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison | Date: 6Jan14

14. General Education Requirement

Mark appropriate box:

- Oral Communication  
- Written Communication  
- Quantitative Skills  
- Humanities  
- Fine Arts  
- Social Sciences  
- Natural Sciences  
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

Explores conceptual issues in the evolution of life histories and species interactions, as well as foundational and contemporary research in topics such as quantitative genetics, natural selection, and the evolution of sex. The course includes collection, interpretation, and integration of data into papers and presentations. Themes, including readings and case studies, will change with instructor.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

[BIOL A271 and BIOL A288] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

- College  
- Major  
- Class  
- Level

16d. Registration Restriction(s) (non-codable)

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

The course is needed to provide majors in Biological Sciences and Natural Sciences with an upper division course in evolutionary ecology. Creating new, permanent course as part of our overall curriculum revision, which seeks to streamline completion of the B.S. in Biological Sciences degree and align our degree with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).
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II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A486
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Evolutionary Ecology
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Explores conceptual issues in the evolution of life histories and species interactions, as well as foundational and contemporary research in topics such as quantitative genetics, natural selection, and the evolution of sex. The course includes collection, interpretation, and integration of data into papers and presentations.
K. Course Prerequisites: [BIOL A271 and BIOL A288] with minimum grade of C
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: None

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Provide a basis for understanding the principles of the evolution.
   2. Explain common themes in the evolution of life histories
   3. Present foundational and contemporary studies for discussion.
   4. Contrast a range of approaches in the study of evolutionary ecology.
   5. Present important themes and primary literature in evolutionary ecology in the instructor’s area of expertise (e.g., vertebrate evolution, plant-animal interactions, etc.)

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contrast the ecological contexts that result in the evolution of various life history traits.</td>
<td>Examinations and/or written assignments</td>
</tr>
<tr>
<td>2. Synthesize the relationships of trait variation, heritability, and phenotypic selection to explain responses to evolution.</td>
<td>Examinations and/or written assignments</td>
</tr>
<tr>
<td>3. Evaluate foundational and contemporary research in evolutionary ecology.</td>
<td>Discussions and/or student presentations</td>
</tr>
</tbody>
</table>
4. Discuss key elements of evolutionary ecology in the focus area

5. Compose and present a review paper that includes synthesis of multiple scientific papers and/or data.

<table>
<thead>
<tr>
<th>IV. Course Level Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>This course employs fundamental elements in evolution, genetics, and ecology in a synthetic approach to explore contemporary research questions in the field and is similar to other 400-level ecology courses offered at other universities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V. Topical Course Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Introduction and Basic Principles</td>
</tr>
<tr>
<td>B. Fundamental Patterns in Evolution</td>
</tr>
<tr>
<td>1. Macroevolutionary perspective: Speciation, Extinction, and Diversification Rates</td>
</tr>
<tr>
<td>C. Trait Variation and Natural Selection</td>
</tr>
<tr>
<td>1. Phenotypic, Genotypic, Environmental Sources of Variation</td>
</tr>
<tr>
<td>2. Changes in Trait Distribution Within Generations</td>
</tr>
<tr>
<td>D. Phenotypic Plasticity</td>
</tr>
<tr>
<td>1. Genotype by Environmental Interactions</td>
</tr>
<tr>
<td>E. Fitness and Evolutionarily Stable Strategies</td>
</tr>
<tr>
<td>F. Quantitative Genetics and Heritability</td>
</tr>
<tr>
<td>1. Additive and Non-Additive sources of Phenotypic Variation</td>
</tr>
<tr>
<td>2. Measuring Trait Heritability</td>
</tr>
<tr>
<td>3. Response to Selection</td>
</tr>
<tr>
<td>4. Correlated Trait Evolution</td>
</tr>
<tr>
<td>G. Allocation and Trade-Offs</td>
</tr>
<tr>
<td>H. Evolution of Sex and Mating Systems</td>
</tr>
<tr>
<td>1. Costs and Benefits of Gene Exchange</td>
</tr>
<tr>
<td>2. Patterns of Outcrossing, Mixed Mating, and Self-fertilization</td>
</tr>
<tr>
<td>I. Sexual Selection</td>
</tr>
<tr>
<td>J. Evolutionary Patterns in Birth, Growth, and Death</td>
</tr>
<tr>
<td>1. Offspring Number and Size</td>
</tr>
<tr>
<td>2. Growth Rates</td>
</tr>
<tr>
<td>3. Timing of Reproduction</td>
</tr>
<tr>
<td>4. Senescence</td>
</tr>
<tr>
<td>K. Evolution of Species Interactions</td>
</tr>
<tr>
<td>1. Coevolution</td>
</tr>
<tr>
<td>2. Character Displacement</td>
</tr>
<tr>
<td>3. Defense</td>
</tr>
<tr>
<td>4. Mutualism</td>
</tr>
<tr>
<td>L. Patterns Specialization and Generalization</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VI. Suggested Texts</th>
</tr>
</thead>
</table>


VII. Bibliography

Additional reference books in thematic areas, for example:


Course Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College  
AS CAS

1b. Division  
AMSC Division of Math Science

1c. Department  
Biological Sciences

2. Course Prefix  
BIOL

3. Course Number  
A487

4. Previous Course Prefix & Number  
N/A

5a. Credits/CEUs  
3.0

5b. Contact Hours  
(Lecture + Lab) (3+0)

6. Complete Course Title  
Comparative Anatomy of Vertebrates  
Comp. Anatomy of Vertebrates  
Abbreviated Title for Transcript (30 character)

7. Type of Course  
☒ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development

8. Type of Action:  ☐ Add or ☒ Change or ☐ Delete

If a change, mark appropriate boxes:
☐ Prefix  ☐ Credits  ☐ Title  ☐ Grading Basis  ☐ Course Description  ☐ Test Score Prerequisites  ☐ Automatic Restrictions  ☒ Other CCG (please specify)
☐ Course Number  ☐ Contact Hours  ☐ Repeat Status  ☐ Cross-Listed/Stacked  ☐ Course Prerequisites  ☐ Co-requisites  ☐ Registration Restrictions
☐ General Education Requirement

9. Repeat Status No  ☐ # of Repeats  ☐ Max Credits

10. Grading Basis  
☒ A-F  ☐ P/NP  ☐ NG

11. Implementation Date  
semester/year

From: Fall/2015  
To: Fall/9999

12. ☐ Cross Listed with  ☐ Stacked with

Cross-Listed Coordination Signature

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.

Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<td></td>
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</tr>
</tbody>
</table>

Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials: _________  
Date: __________________

13b. Coordination Email  
Date: 6Jan14

submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 6Jan14

14. General Education Requirement  
Mark appropriate box:
☐ Oral Communication  ☐ Written Communication  ☐ Quantitative Skills  ☐ Humanities  
☐ Fine Arts  ☐ Social Sciences  ☐ Natural Sciences  ☐ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)

A comparative exploration of vertebrate anatomy. The aim of the course is to investigate the links between the forms and functions of shared organ systems and to discuss their evolutionary, ecological and physiological implications.

16a. Course Prerequisite(s) (list prefix and number or test code and score)

BIOL A288 with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)

☐ College  ☐ Major  ☐ Class  ☐ Level

16d. Registration Restriction(s) (non-codable)

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action

We are removing the laboratory portion of the course. The course has been modified as part of our overall curriculum revision in which we aim to streamline the B.S. in Biological Sciences degree and align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science).

Initiator (faculty only)  
Khrys Duddleston  
Initiator (TYPE NAME)

☐ Approved  ☐ Disapproved  
Date  Dean/Director of School/College  Date

☐ Approved  ☐ Disapproved  
Date  Undergraduate/Graduate Academic  Date

☐ Approved  ☐ Disapproved  
Date  Board Chair  Date

☐ Approved  ☐ Disapproved  
Date  Provost or Designee  Date
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A487
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Comparative Anatomy of Vertebrates
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: A comparative exploration of vertebrate anatomy. The aim of the course is to investigate the links between the forms and functions of shared organ systems and to discuss their evolutionary, ecological and physiological implications
K. Course Prerequisites: BIOL A288 with minimum grade of C.
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: N/A
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Present the principles of comparative vertebrate anatomy and integrate biological principles of chordate (particularly vertebrate) structure, function and ecology.
   2. Characterize how organ systems within the vertebrates are related phylogenetically and evolutionarily.
   3. Describe important anatomical features and phylogenetic relationships within the vertebrates, including the comprehension of phylogenetic relationships.

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe principles of comparative vertebrate anatomy mirrored by evolutionary associations between the structure, function and ecology of chordate phyla (particularly vertebrates).</td>
<td>Written assignments and examinations</td>
</tr>
<tr>
<td>2. Master and apply the necessary background knowledge and intellectual skills required to discuss and critically evaluate the fundamental features associated with vertebrate functional morphology and its evolution.</td>
<td>Written assignments and examinations</td>
</tr>
</tbody>
</table>
IV. Course Level Justification
This course is designed for Biological and Natural Sciences majors as an elective undergraduate course comparable to 400-level comparative anatomy of vertebrates courses offered at other universities. This course covers the principle concepts and processes of comparative vertebrate anatomy in the context of evolution and is essential to the student’s ability to succeed and integrate content with other 400-level courses in biological sciences.

V. Topical Course Outline
A. Evolution and Morphology
B. Origins of the Chordates
C. Vertebrate Diversity
   1. Aquatic vertebrates: Jawless fish, Cartilagenous fish, Bony fish
   2. Terrestrial vertebrates: Amphibians and Amniotes
D. Biological Design
   1. Size and shape
   2. Biomechanics
E. Life History and Vertebrate Development
F. Integumentary system (the skin)
G. Skeletal system
   1. Skull
   2. Axial skeleton
   3. Appendicular skeleton
H. Muscular system
I. Respiratory system
J. Circulatory system
K. Digestive system

VI. Suggested Texts

VII. Bibliography
### Course Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Course**

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<td>BIOL</td>
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<td>4</td>
<td>(2+4)</td>
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<table>
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<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Experiential Learning: Developmental Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>7. Type of Course</th>
<th>8. Type of Action:</th>
<th>9. Repeat Status No</th>
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<tbody>
<tr>
<td>☑ Academic</td>
<td>☐ Add or ☑ Change or ☐ Delete</td>
<td># of Repeats</td>
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<th>11. Implementation Date</th>
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<tbody>
<tr>
<td>☑ A-F</td>
<td>semester/year</td>
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<tr>
<th>11a. From:</th>
<th>11b. To:</th>
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<tr>
<td>Fall/2015</td>
<td>Fall/9999</td>
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<table>
<thead>
<tr>
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<th>13. Coordination Email</th>
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<tr>
<td>☐ Stacked with</td>
<td>Date: 6Jan14 submitted to Faculty Listserv: (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</td>
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<table>
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<tr>
<th>14. General Education Requirement</th>
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<tr>
<td>Mark appropriate box:</td>
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<td>☐ Oral Communication</td>
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<tr>
<td>☐ Integrative Capstone</td>
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<tr>
<th>15. Course Description</th>
<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
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<tbody>
<tr>
<td>(suggested length 20 to 50 words)</td>
<td>BIOL A252 with minimum grade of C</td>
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<tr>
<th>16c. Automatic Restriction(s)</th>
<th>16d. Registration Restriction(s) (non-codable)</th>
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<tbody>
<tr>
<td>☐ College</td>
<td>☐ Class Level</td>
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</table>

| 17. ☑ Mark if course has fees | 18. ☐ Mark if course is a selected topic course |

<table>
<thead>
<tr>
<th>19. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The title, description and contact hours are being updated to reflect course design and content. As part of our overall curriculum revision, which seeks to align our degree with the core concepts and competencies in Vision and Change in Undergraduate Biology Education (National Science Foundation and American Association for the Advancement of Science), this course will become part of our rotation of upper division electives in molecular biology. It is being revised as an experiential learning course which combines conceptual theory and an authentic laboratory experience into a single course.</td>
</tr>
</tbody>
</table>

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**Initiator Name (typed): Khrys Duddleston**

**Initiator Signed Initials:________**

**Date:________**

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<table>
<thead>
<tr>
<th>13a. Impacted Courses or Programs: List any programs or college requirements that require this course.</th>
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<thead>
<tr>
<th>13b. Coordination Email</th>
<th>13c. Coordination with Library Liaison</th>
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<tbody>
<tr>
<td>Date: 6Jan14</td>
<td>Date: 6Jan14</td>
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<tr>
<td>submitted to Faculty Listserv: (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</td>
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<tr>
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<tr>
<td>☐ Integrative Capstone</td>
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</tbody>
</table>

<table>
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<tr>
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<th>16a. Course Prerequisite(s) (list prefix and number or test code and score)</th>
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</thead>
<tbody>
<tr>
<td>(suggested length 20 to 50 words)</td>
<td>BIOL A252 with minimum grade of C</td>
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<tr>
<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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</table>

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<th>16d. Registration Restriction(s) (non-codable)</th>
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<tr>
<td>☐ College</td>
<td>☐ Class Level</td>
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| 17. ☑ Mark if course has fees | 18. ☐ Mark if course is a selected topic course |

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**345**
<table>
<thead>
<tr>
<th>Role</th>
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<th>Disapproved</th>
<th>Date</th>
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<tbody>
<tr>
<td>Initiator (faculty only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khrys Duddleston</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Initator (TYPE NAME)</td>
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<tr>
<td>Dean/Director of School/College</td>
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<td>Department Chair</td>
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<td>Undergraduate/Graduate Academic Board Chair</td>
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<td>College/School Curriculum Committee Chair</td>
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<tr>
<td>Provost or Designee</td>
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</table>
I.  Date of Initiation:  Spring 2014

II.  Curriculum Action Request
A.  College:  College of Arts and Sciences
B.  Course Prefix:  BIOL
C.  Course Number:  A488
D.  Number of Credits:  4
E.  Contact Hours:  2+4
F.  Course Title:  Experiential Learning: Developmental Biology
G.  Grading Basis:  A-F
H.  Implementation Date:  Fall 2015
I.  Cross-listed/Stacked:  N/A
J.  Course Description:  An in depth study of the molecular and cellular principles which underlie the development of tissues and organ systems in animals, including classical embryology through utilization of numerous laboratory techniques within an authentic experiential learning environment.

K.  Course Prerequisites:  BIOL A252 with minimum grade of C.
L.  Course Co-requisites:  N/A
M.  Other Restrictions:  N/A
N.  Registration Restrictions:  None
O.  Course Fees:  Yes

III. Instructional Goals and Student Learning Outcomes
A.  Instructional Goals.  The instructor will:
   1.  Explain and provide a framework for understanding the principles and key concepts of development, and describe the process.
   2.  Provide hands-on examples by which genes in the fertilized egg control cell behavior in the embryo to determine its pattern, form and behavior.
   3.  Discuss the latest research findings relevant to embryogenesis and how genes and epigenetics control cell behavior and development.
   4.  Train students in classical histology and in the latest research techniques in developmental biology.

B.  Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Student Learning Outcomes: Upon completion of this course, the student will be able to:</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Illustrate the fundamental concepts of development in animals.</td>
<td>In class discussions, written assignments</td>
</tr>
<tr>
<td>2. Evaluate the mechanisms by which gene expression controls specific aspects of development in different model organisms.</td>
<td>Hands-on experiential learning including mating/fertilization, developmental staging, and RNA interference and analysis; written lab reports; in-class discussions</td>
</tr>
<tr>
<td>3. Analyze data presented in the primary literature on developmental biology.</td>
<td>Presentations, in class discussions</td>
</tr>
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</table>
IV. Course Level Justification
This course is designed for Biological and Natural Sciences majors as an elective undergraduate course comparable to 400-level developmental biology courses offered at other universities.

V. Topical Course Outline
A. Basic concepts of development
B. Model organisms
   1. *Xenopus*, axolotls, *Drosophila*, sea urchin, chick, pig
C. Developmental genes
D. Vertebrate body axes
E. Specification of vertebrate germ layers
F. Gastrulation
G. Somite formation and patterning
H. Organizer region and neural induction
I. Maternal and early embryonic genes
J. Segmentation and homeotic genes
K. Neural tube formation, neural crest migration and other cell movements
L. Epigenetics and gene expression in development
M. Inheritance of patterns of gene expression
N. Control of gene expression
O. Organogenesis and limb formation
P. Axonal guidance and synapse formation
Q. Sex determination
R. Germ cells and fertilization
S. Regeneration
T. Growth, metamorphosis, aging
U. Evolution and development

VI. Suggested Texts

VII. Bibliography

Primary literature from journals such as Development, Mechanisms of Development, Science, Cell, Nature, and similar titles.
**Course Action Request**
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tbody>
<tr>
<td>BIOL</td>
<td>A489</td>
<td>N/A</td>
<td>3</td>
<td>(3+0)</td>
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</table>

6. Complete Course Title
Population Genetics and Evolutionary Processes
Popn Genetics Evol Processes
Abbreviated Title for Transcript (30 character)

7. Type of Course
☒ Academic  ☐ Preparatory/Development  ☐ Non-credit  ☐ CEU  ☐ Professional Development

8. Type of Action: ☐ Add  ☒ Change  ☐ Delete

If a change, mark appropriate boxes:
☒ Prefix  ☐ Course Number  ☒ Contact Hours  ☒ Repeat Status  ☐ Grading Basis  ☒ Cross-Listed/Stacked
☒ Course Description  ☒ Co-requisites  ☒ Test Score Prerequisites  ☒ Course Prerequisites
☒ Automatic Restrictions  ☒ Registration Restrictions  ☒ General Education Requirement
☒ Class  ☒ Level  ☒ College  ☒ Major  ☐ Other CCG (please specify)

9. Repeat Status No  # of Repeats  Max Credits

10. Grading Basis  ☒ A-F  ☐ P/NP  ☐ NG

11. Implementation Date  semester/year
   From: Fall/2015  To: Fall /9999

12. ☐ Cross Listed with  ☒ Stacked with
   Cross-Listed Coordination Signature  ___________

13a. Impacted Courses or Programs: List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at [www.uaa.alaska.edu/governance](http://www.uaa.alaska.edu/governance).

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<tr>
<td>3.</td>
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</tbody>
</table>

Initiator Name (typed): Khrys Duddleston  Initiator Signed Initials: __________  Date: __________

13b. Coordination Email  Date: 6Jan14  submitted to Faculty Listserv: [uaa-faculty@lists.uaa.alaska.edu](mailto:uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  Date: 6Jan14

14. General Education Requirement
Mark appropriate box:
☒ Oral Communication  ☐ Written Communication  ☒ Quantitative Skills  ☐ Humanities
☐ Fine Arts  ☒ Social Sciences  ☒ Natural Sciences  ☒ Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
A comprehensive examination of the primary forces and processes involved in shaping genetic variation in natural populations (mutation, drift, selection, migration, recombination, mating patterns, population size and population subdivision), methods of measuring genetic variation in nature, and experimental tests of important ideas in population genetics.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
[BIOL A252 or BIOL A288] with minimum grade of C

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
☒ College  ☐ Major  ☒ Class  ☐ Level

16d. Registration Restriction(s) (non-codable)
Completion of all GER Tier 1 courses is required.

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
One of the prerequisites (BIOL A288) has been renumbered through departmental curriculum revisions.

Initiator (faculty only)  Khrys Duddleston  Initiator (TYPE NAME) __________  Date __________

[Approved]  [Disapproved]  Dean/Director of School/College  Date __________

[Approved]  [Disapproved]  Undergraduate/Graduate Academic Board Chair  Date __________

[Approved]  [Disapproved]  Provost or Designee  Date __________
University of Alaska Anchorage  
College of Arts and Sciences  
Course Content Guide

I. Date of Initiation: Spring 2014

II. Curriculum Action Request
   A. College: College of Arts and Sciences
   B. Course Prefix: BIOL
   C. Course Number: A489
   D. Number of Credits: 3
   E. Contact Hours: 3+0
   F. Course Title: Population Genetics and Evolutionary Processes
   G. Grading Basis: A-F
   H. Implementation Date: Fall 2015
   I. Cross-listed/Stacked: N/A
   J. Course Description: A comprehensive examination of the primary forces and processes involved in shaping genetic variation in natural populations (mutation, drift, selection, migration, recombination, mating patterns, population size and population subdivision), methods of measuring genetic variation in nature, and experimental tests of important ideas in population genetics
   K. Course Prerequisites: BIOL A252 or BIOL A288 with minimum grade of C.
   L. Course Co-requisites: N/A
   M. Other Restrictions: N/A
   N. Registration Restrictions: Senior Standing
   O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
   A. Instructional Goals. The instructor will:
      1. Provide a basic description of evolutionary theory and concepts
      2. Build on the conceptual framework to describe how evolutionary process results in evolutionary pattern
      3. Link current research on microevolutionary processes relate to observed responses to environmental and climate change
      4. Emphasize the underlying quantitative processes that structure the living world, and enable students to undertake analyses and conceptualization of processes on their own
      5. Provide detailed examples of modern evolutionary analysis and theory as mechanisms of biotic change and diversification
      6. Relate all of the above to current issues in local and national debate on endangered populations, relevance of evolution thought to modern life (evolutionary medicine, emerging disease and virulence, endangered species, etc.)
      7. Assist students to learn how to evaluate and integrate information from a variety of sources and perspectives.
   B. Student Learning Outcomes and Assessment Measures
Students will be able to:

<table>
<thead>
<tr>
<th>Assessment Method:</th>
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</thead>
<tbody>
<tr>
<td>Exams, written assignments, in-class presentations.</td>
</tr>
<tr>
<td>Exams and written assignments</td>
</tr>
<tr>
<td>Written assignments, in-class presentations.</td>
</tr>
</tbody>
</table>

IV. Course Level Justification

Students are required to learn and integrate information from a variety of scientific disciplines as it relates to applied genetics, advanced evolutionary analysis, and microevolutionary processes; to read, understand, and apply ideas conveyed by primary scientific literature; to synthesize current biological knowledge and evolutionary theory; and to apply course materials to current problems

GER Integrative Capstone Justification:
Justifications for designating BIOL A489 Population Genetics and Evolutionary Theory as a GER Integrative Capstone course include:

1. Knowledge Integration/Interrelationships and synergy among GER disciplines: The overall theme of the course is understanding the relationship of evolutionary processes to other natural and social sciences. The course will focus on the interfaces among physical sciences (biochemistry, geological history, mathematics), biological sciences (biology, ecology, conservation, molecular biology, etc.), and the social sciences (particularly human biology, sociology, anthropology).

2. Effective Communication Skills: Course success demands effective communication through essay examinations, individual classroom presentations, brief reports (oral and written) on current controversies surrounding evolution and evolutionary processes, and a final research product.

3. Critical Thinking: Students will not be able to succeed in the course unless they are able to integrate information across disciplines, and critically evaluate the reliability of data and positions presented in lecture, texts, scientific, and popular viewpoints. Student ability to critically evaluate diverse material will be determined based on writing assignments, class presentations, and examinations.

4. Information Literacy: Students are expected to achieve and demonstrate computer and internet skills for acquiring information relevant to current topics in evolutionary biology. This will involve research in the primary scientific literature, and the collection of information from unpublished sources such as popular press and public statements. Students will be required to show that they can critically winnow facts and scientific content from diverse non-scientific sources.
5. Quantitative Perspectives: A critical understanding of evolutionary processes is grounded in many quantitative disciplines, including statistical analysis, applied maths (algebra, calculus, probability and combinatorics, etc.), general and advanced genetics, molecular biology. In addition, students must be able to read and interpret scientific data in graphical and tabular form, and to generate appropriate graphical displays of their own results. Microevolutionary analysis is only possible using sophisticated computer-based analytical techniques including: Bayesian analysis, Monte Carlo simulation, maximum likelihood analysis, and discrete graph analysis. Exams will specifically test on these skills.

6. Evolving realities of the 21st century: The growing understanding that evolution is a dynamic and everpresent component of modern life, particularly in the context of climate change and anthropogenic change, touches many aspects of science, policy, and social attitudes. This course will help students understand the implication of evolutionary process in a changing environment, and provide them with effective means to communicate its important and relevance for individuals and society.

V. Topical Course Outline
   A. Population Structure
      1. Hardy Weinberg Equilibrium
      2. Systems of Mating
      3. Demographics
      4. Genetic Drift
      5. Neutrality and Molecular Evolution
      6. Coalescence
      7. Gene Flow & Subdivision
      8. Founders and Survivors
      9. mtDNA, Y-DNA: Separating History From Gene Flow
   B. Genotype and Phenotype
      1. Quantitative Genetics: Means
      2. Quantitative Genetics: Variances
      3. The Unmeasured Genotype Approach
      4. The Measured Genotype Approach
   C. Selection
      1. Measures of Fitness
      2. Constant Fitness Models
      3. Selection on Quantitative Traits and FFTNS
      4. Pleiotropy and Developmental Constraints
      5. The Shifting Balance Theory
   D. Units and Targets of Selection
      1. The Unit of Selection
      2. Meiotic and Molecular Drive
      3. Sexual, Frequency and Density Dependent Selection I
      4. Asexual selection, lateral gene transfer
   E. Ecological Genetics
      1. Environmental Heterogeneity
      2. Niche and Mimicry
      3. Coevolution and Host-parasite Systems
      4. Life History Evolution
   F. Human Evolution and Sociobiology
      1. Hominid Evolution
      2. Altruism and Group Selection
3. Cultural Evolution

VI. Suggested Texts

VII. Bibliography
<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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</table>

<table>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours</th>
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<tr>
<td>BIOL</td>
<td>A495</td>
<td>N/A</td>
<td>1.0</td>
<td>(Lecture + Lab)</td>
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<td></td>
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<td>(0+3)</td>
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</table>

6. Complete Course Title
Instructional Practicum: Laboratory
Instructional Practicum: Lab
Abbreviated Title for Transcript (30 character)

7. Type of Course
- Academic
- Preparatory/Development
- Non-credit
- CEU
- Professional Development

8. Type of Action:
- Add
- Change
- Delete

If a change, mark appropriate boxes:
- Prefix
- Credits
- Title
- Grading Basis
- Course Description
- Test Score Prerequisites
- Automatic Restrictions
- Other CCG (please specify)
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Co-requisites
- Registration Restrictions
- General Education Requirement
- Class
- Level
- College
- Major

9. Repeat Status
- Yes
- No

# of Repeats
- 1

Max Credits
- 2

10. Grading Basis
- A-F
- P/NP
- NG

11. Implementation Date
- From: Fall/2015
- To: Fall/9999

12. Cross Listed with
- Stacked with

Cross-Listed Coordination Signature

13a. Impacted Courses or Programs:
List any programs or college requirements that require this course.
Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance.

13b. Coordination Email
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 6Jan14

14. General Education Requirement
- Oral Communication
- Written Communication
- Quantitative Skills
- Humanities
- Fine Arts
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Supervised instructional experience in a 2-hr, 3-hr or 4-hr biology laboratory or experiential learning course. Planning, presentation of material, achievement testing and correlation with lecture under the direct supervision of department faculty. Add Special Note about Repeat and mimic original description.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
- N/A

16b. Co-requisite(s) (concurrent enrollment required)

16c. Automatic Restriction(s)
- College
- Major
- Class
- Level

16d. Registration Restriction(s) (non-codable)
- Minimum 20 credits in BIOL

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action
Update of CCG: modifying instructional goals and student expectations

Initiator (faculty only)
Khrys Duddleston
Initiator Signed Initials: __________________________ Date: __________________

Approved: Dean/Director of School/College
Disapproved: __________________________ Date: __________________

Approved: Undergraduate/Graduate Academic
Disapproved: __________________________ Date: __________________

Approved: Board Chair
Disapproved: __________________________ Date: __________________

Approved: Provost or Designee
Disapproved: __________________________ Date: __________________
I. Date of Initiation: Spring 2014

II. Curriculum Action Request
A. College: College of Arts and Sciences
B. Course Prefix: BIOL
C. Course Number: A495
D. Number of Credits: 1
E. Contact Hours: 0+3
F. Course Title: Instructional Practicum: Laboratory
G. Grading Basis: A-F
H. Implementation Date: Fall 2015
I. Cross-listed/Stacked: N/A
J. Course Description: Supervised instructional experience in a 2-hr, 3-hr or 4-hr biology laboratory or experiential learning course. Planning, presentation of material, achievement testing and correlation with lecture under the direct supervision of department faculty. Special Note: May be repeated once for credit.

K. Course Prerequisites: N/A
L. Course Co-requisites: N/A
M. Other Restrictions: N/A
N. Registration Restrictions: Minimum 20 credits in BIOL
O. Course Fees: No

III. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The instructor will:
   1. Mentor students in learning how to teach effectively
   2. Model appropriate instructor/student relationship and instructor ethics in and out of the classroom
   3. Actively guide students in pedagogical methods and techniques to assist and answer student questions
   4. Provide supervisory coordination to maintain the coordinated delivery of practical and lecture materials and presentations

B. Student Learning Outcomes and Assessment Measures

<table>
<thead>
<tr>
<th>Students will be able to:</th>
<th>Assessment Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply basic pedagogical skills by delivering instructional presentations in an experiential learning or laboratory setting.</td>
<td>Presentations, assisting instructor and students</td>
</tr>
<tr>
<td>2. Apply theoretical and practical teaching tools to organize, plan, present, demonstrate, assess and nurture student learning in an experiential learning or laboratory setting.</td>
<td>Presentations, assisting instructor and students</td>
</tr>
</tbody>
</table>
3. Effectively communicate skills in an experiential learning or laboratory setting.

Presentations, assisting instructor and students

IV. Course Level Justification
Designed for Biological and Natural Sciences majors and as elective undergraduate course comparable to 400-level teaching practica offered at other universities. Enables students to plan and present materials, conduct exams and quizzes, and correlate laboratory presentations with lecture material under direct supervision and mentoring of department faculty.

V. Topical Course Outline
A. Student will attend all weekly laboratory sessions for the course assigned
B. Student will attend all weekly planning meetings
C. Student will assist course enrollees with experiments and answer questions during class
D. Student will prepare and deliver 2 separate laboratory/experiential learning lead-ins
   1. Student will help prepare quizzes, exam questions and homework questions associated with the 2 laboratory lead-ins they prepare
   2. Student will help grade quizzes, exam questions and homework questions associated with the 2 laboratory lead-ins they prepare

VI. Suggested Texts
The text will vary depending on the assigned class for instructor practicum.

VII. Bibliography

8Jan14

To: CAS Course and Curriculum Committee
Undergraduate Academic Board

From: Khrys Duddleston, Chair
Department of Biological Sciences Curriculum Committee

RE: Changes to the B.A. in Biological Sciences Degree

The Department of Biological Sciences proposes the following changes to the B.A. in Biological Sciences Degree:

1. Changes to the core course requirements
2. Organize upper division electives into five areas
3. Updating upper division course offerings

These changes are intended to ensure that core course requirements prepare students for upper division electives as well as improve the depth and breadth of exposure to sub disciplines within the biological sciences. The purpose for making these changes is to improve the time to completion of the degree and align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education: A Call to Action (2013), a report of a national conference organized by the American Association for the Advancement of Science with support from the National Science Foundation.

Please contact me if you have any additional questions.
Program/Prefix Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix

1a. School or College
   AS CAS

1b. Department
   Biological Sciences

2. Complete Program Title/Prefix
   Bachelor of Arts, Biological Sciences

3. Type of Program
   Choose one from the appropriate drop down menu:
   Undergraduate: Bachelor of Arts or Graduate: CHOOSE ONE

   This program is a Gainful Employment Program: ☐ Yes or ☑ No

4. Type of Action:
   PROGRAM
   ☐ Add
   ☑ Change
   ☐ Delete

   PREFIX
   ☐ Add
   ☐ Change
   ☐ Inactivate

5. Implementation Date (semester/year)
   From: Fall/2015 To: Fall/9999

6a. Coordination with Affected Units
   Department, School, or College: CAS
   Initiator Name (typed): Khrys Duddleston
   Initiator Signed Initials: _________
   Date:________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)
   Date: 6Jan14

6c. Coordination with Library Liaison
   Date: 6Jan14

7. Title and Program Description - Please attach the following:
   ☑ Cover Memo ☑ Catalog Copy in Word using the track changes function

8. Justification for Action
   The purpose for making these changes is to improve the time to completion of the degree and align our
   curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology
   Education: A Call to Action (2013), a report of a national conference organized by the American Association
   for the Advancement of Science with support from the National Science Foundation.

   ____________________________________     ___________
   Initiator (faculty only)         Date

   Khrys Duddleston
   Initiator (TYPE NAME)

   ☐ Approved              ☐ Disapproved
   Date

   Dean/Director of School/College
   Date

   ☐ Approved              ☐ Disapproved
   Date

   Undergraduate/Graduate Academic Board Chair
   Date

   ☐ Approved              ☐ Disapproved
   Date

   Provost or Designee
   Date

   ☐ Approved              ☐ Disapproved
   Date

   Department Chair
   Date

   ☐ Approved              ☐ Disapproved
   Date

   College/School Curriculum Committee Chair
   Date

   ☐ Approved              ☐ Disapproved
   Date
To: CAS Course and Curriculum Committee  
Undergraduate Academic Board

From: Khrys Duddleston, Chair  
Department of Biological Sciences Curriculum Committee

RE: Changes to the B.S. in Biological Sciences Degree

The Department of Biological Sciences proposes the following changes to the B.S. in Biological Sciences Degree

1. Changes to the core course requirements  
2. Organize upper division electives into five areas  
3. Require students to take a minimum of three credits in four of the five areas, and a minimum of six experiential learning credits from 2 of the five areas

These changes are intended to ensure that core course requirements prepare students for upper division electives as well as improve the depth and breadth of exposure to sub disciplines within the biological sciences. The purpose for making these changes is to improve the time to completion of the degree and align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education: A Call to Action (2013), a report of a national conference organized by the American Association for the Advancement of Science with support from the National Science Foundation.

Please contact me if you have any additional questions.
1a. School or College  
AS CAS

1b. Department  
Biological Sciences

2. Complete Program Title/Prefix  
Bachelor of Science, Biological Sciences

3. Type of Program  
Choose one from the appropriate drop down menu: Undergraduate: or Graduate:  
Bachelor of Science or CHOOSE ONE

This program is a Gainful Employment Program:  
☐ Yes or ☒ No

4. Type of Action:  
□ PROGRAM  
☑ Change  
□ Delete

□ PREFIX  
□ Add  
□ Change  
□ Inactivate

5. Implementation Date (semester/year)  
From: Fall/2015 To: Fall/9999

6a. Coordination with Affected Units  
Department, School, or College: CAS  
Initiator Name (typed): Khrys Duddleston  
Initiator Signed Initials:  
Date: ___________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)  
Date: 6Jan14

6c. Coordination with Library Liaison  
Date: 6Jan14

7. Title and Program Description - Please attach the following:  
☑ Cover Memo  
☑ Catalog Copy in Word using the track changes function

8. Justification for Action  
The purpose for making these changes is to improve the time to completion of the degree and align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education: A Call to Action (2013), a report of a national conference organized by the American Association for the Advancement of Science with support from the National Science Foundation.

Initiator (faculty only)  
Khrys Duddleston  
Initiator (TYPE NAME)  
Date

☐ Approved  
☐ Disapproved  
Dean/Director of School/College  
Date

Undergraduate/Graduate Academic Board Chair  
Date

Provost or Designee  
Date
BIOLOGICAL SCIENCES

ConocoPhillips Integrated Sciences Building (CPSB), Room 101P, (907) 786-4770
www.uaa.alaska.edu/biology

Biology is the science concerned with the study of living organisms. It encompasses a vast range of biological disciplines, from the study of microbes and molecular biology to the study of plants, animals and the environment. The undergraduate program in the Biological Sciences includes courses that provide students with a broad understanding of both traditional and modern biological sciences. These courses are suitable as preparation for professional degrees, teaching, or careers in government or industry. Both the Bachelor of Arts and the Bachelor of Science degrees are available for undergraduates. A Master of Science degree program in Biological Sciences as well as a joint UAA-UAF Doctor of Science degree program is available for students already holding a baccalaureate degree.

A program of study in the biological sciences requires completion of a basic science core curriculum in the chemical, physical and mathematical sciences as well as required and elective courses in the biological sciences. A degree in the biological sciences prepares students who wish to pursue careers in medicine, dentistry, veterinary medicine, ecology and the environmental sciences in the private or public sector, or who wish to attend graduate school. Students are strongly encouraged to consult with their academic advisors within the Department of Biological Sciences to determine which electives best suit their programmatic needs and career requirements.

The Bachelor of Arts and the Bachelor of Science degree programs require a total of 120-125 credits for graduation and can be completed in four years by students who have had adequate high school preparation in math and sciences. Refer to the beginning of this chapter for recommended high school courses.

Program Student Learning Outcomes

It is expected that graduates of the Biological Sciences program will:

1. Demonstrate an understanding of the core concepts in the biological sciences: evolution; structure and function relationships; information flow, exchange and storage; transformation of energy and matter
2. Apply the process of science and construct knowledge through observations, experimentation, quantitative reasoning and hypothesis testing
3. Read, analyze and synthesize primary literature, and communicate scientific concepts and data in written and oral form

Community Service Courses

The department offers a wide range of community service courses as a service to the people in the Anchorage area and extended campuses who wish to become more knowledgeable about the science of biology and how it relates to them. Unless noted otherwise in the course description, community service courses do not satisfy either core requirements or elective credit toward any degree programs in the biological sciences. All are offered as demand warrants.

- BIOL A074  Field Natural History
- BIOL A075  Local Flora
- BIOL A100  Human Biology
- BIOL A124  Biota of Alaska: Selected Topics
- BIOL A126  Birds in Field and Laboratory

Departmental Honors in Biology

Undergraduate Biological Science majors may be recognized for exceptional performance by earning departmental honors in Biology. In order to receive honors in biology, a student must meet each of the following requirements:

1. Meet the requirements for Graduation with Honors as listed in Chapter 7.
2. Meet the requirements for a BA/BS degree in Biological Sciences.
3. Earn a grade point average of 3.50 or above in the major requirements.
During the senior year of their academic program, the student must gain faculty approval for and complete, with a grade of B or better, a senior thesis research project, with enrollment in BIOL A499 Senior Thesis. Biological Science faculty members must approve the project proposal and final written report.

**Bachelor of Arts, Biological Sciences**

**Admission Requirements**

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

**Academic Progress**

To graduate with a BA in Biological Sciences, the student must complete all courses covered under Major Requirements for a BA in Biological Sciences with a grade of C or better. All prerequisites for Biology courses must be completed with a grade of C or better. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a linked lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory or Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

**Graduation Requirements**

Students must complete the following graduation requirements:

**A. General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

**B. General Education Requirements**

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

**C. College of Arts and Sciences Requirements**

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

**D. Major Requirements**

1. Complete these required core courses (34-35 credits):

   - BIOL A108 Principles and Methods in Biology 6
   - BIOL A242 Fundamentals of Cell Biology 3
   - BIOL A252 Principles of Genetics 3
   - BIOL A271 Principles of Ecology 3
   - BIOL A288 Principles of Evolution 3
   - BIOL A243 Experiential Learning: Genetics and Cell Biology 4
     or
   - BIOL A273 Experiential Learning: Ecology and Evolution 4
   - BIOL A492 Undergraduate Seminar 1
   - CHEM A105 General Chemistry I 3
   - CHEM A105L General Chemistry I Laboratory 1
   - CHEM A106 General Chemistry II 3
   - CHEM A106L General Chemistry II Laboratory 1
   - STAT A252 Elementary Statistics (3) 3-4
or
STAT A253  Applied Statistics for the Sciences (4)

or
STAT A307  Probability and Statistics (4)

2. Complete 18-19 credits of upper division program electives from the following areas.
   a. A minimum of 3 credits must come from each of 4 of the 5 areas.*
   b. A minimum of 6 credits must be Experiential Learning from 2 areas**.  18-19

**Genetics, Cellular and Molecular Biology**

- BIOL A340  Microbial Biology (3)
- BIOL A451  Microbial Biotechnology (3)
- BIOL A452  Human Genome (3)
- BIOL A461  Molecular Biology (3)
- BIOL A462  Virology (3)
- BIOL A463  Molecular Biology of Cancer (3)
- BIOL A464  Metals in Biology (3)
- BIOL A471  Immunology (3)

- BIOL A342  Experiential Learning: Microbial Biology (4)
- BIOL A403  Experiential Learning: Microscopical Tissue Techniques (6)
- BIOL A454  Experiential Learning: Microbial Biotechnology (4)
- BIOL A455  Experiential Learning: Bioinformatics (4)
- BIOL A465  Experiential Learning: Molecular Biology (4)
- BIOL A488  Experiential Learning: Developmental Biology (4)

**Ecology and Evolution**

- BIOL A365  Astrobiology (3)
- BIOL A430  Marine Mammals and Seabirds (3)
- BIOL A441  Animal Behavior (3)
- BIOL A445  Plant-Herbivore Ecology (4)
- BIOL A450  Microbial Ecology (3)
- BIOL A472  Biogeography (3)
- BIOL A473  Conservation Biology (3)
- BIOL A474  Ecotoxicology (3)
- BIOL A475  Fish Ecology (3)
- BIOL A476  Wildlife Population Dynamics and Management (3)
- BIOL A477  Tundra and Taiga Ecosystems (3)
- BIOL A478  Biological Oceanography (3)
- BIOL A479  Physiological Plant Ecology (3)
- BIOL A480  Ecological and Conservation Genetics (3)
- BIOL A481  Marine Biology (3)
- BIOL A482  Spatial Ecology (3)
- BIOL A483  Exploration Ecology (2)
- BIOL A486  Evolutionary Ecology (3)
- BIOL A489  Population Genetics and Evolutionary Processes (3)

- BIOL A442  Experiential Learning: Animal Behavior (3)
- BIOL A453  Experiential Learning: Microbial Ecology (4)
- BIOL A484  Experiential Learning: Exploration Ecology Field Study (4)
## Diversity and Organismal Biology

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL A320</td>
<td>Vertebrate Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A330</td>
<td>Plant Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A340</td>
<td>Microbial Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A423</td>
<td>Ichthyology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A427</td>
<td>Marine Invertebrate Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A430</td>
<td>Marine Mammals and Seabirds</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A431</td>
<td>Plant Diversity and Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A487</td>
<td>Comparative Anatomy of Vertebrates</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A321</td>
<td>Experiential Learning: Vertebrate Biology</td>
<td>(2)</td>
</tr>
<tr>
<td>BIOL A332</td>
<td>Experiential Learning: Plant Biology</td>
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</tr>
<tr>
<td>BIOL A342</td>
<td>Experiential Learning: Microbial Biology</td>
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</tr>
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## Physiology

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>BIOL A310</td>
<td>Principles of Animal Physiology</td>
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<tr>
<td>BIOL A316</td>
<td>Principles of Plant Physiology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A412</td>
<td>Behavioral Endocrinology</td>
<td>(3)</td>
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<td>BIOL A413</td>
<td>Neurophysiology</td>
<td>(3)</td>
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<td>BIOL A414</td>
<td>Chronobiology</td>
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<td>BIOL A415</td>
<td>Comparative Animal Physiology</td>
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</tr>
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<td>BIOL A416</td>
<td>Exercise Physiology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A418</td>
<td>Fish Physiology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A479</td>
<td>Physiological Plant Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A487</td>
<td>Comparative Anatomy of Vertebrates</td>
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</tr>
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</table>

## Additional Upper Division Electives

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BIOL A456</td>
<td>Nonlinear Dynamics and Chaos</td>
<td>(3)</td>
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<tr>
<td>BIOL A490</td>
<td>Selected Lecture Topics in Biology</td>
<td>(1-3)</td>
</tr>
<tr>
<td>BIOL A495</td>
<td>Instructional Practicum: Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>BIOL A497</td>
<td>Independent Study in Biology</td>
<td>(1-12)</td>
</tr>
<tr>
<td>BIOL A498</td>
<td>Individual Research</td>
<td>(1-6)</td>
</tr>
<tr>
<td>BIOL A499</td>
<td>Senior Thesis</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A490L</td>
<td>Selected Laboratory Topics in Biology</td>
<td>(1-3)</td>
</tr>
<tr>
<td>BIOL A406</td>
<td>Experiential Learning: Biostatistics</td>
<td>(4)</td>
</tr>
<tr>
<td>BIOL A408</td>
<td>Experiential Learning: Scanning Electron Microscopy</td>
<td>(SEM)</td>
</tr>
</tbody>
</table>

*Several courses are listed under more than one area. Each course can only count toward the credit requirement in one area.

**BIOL A498 credits may not be counted toward the Experiential Learning minimum requirement

**BIOL A490L credits may be counted toward the Experiential Learning minimum requirement

It is recommended that students complete 8 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL A111</td>
<td>Physical Geology</td>
<td>(4)</td>
</tr>
<tr>
<td>GEOL A221</td>
<td>Historical Geology</td>
<td>(4)</td>
</tr>
<tr>
<td>PHYS A123</td>
<td>Basic Physics I</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS A123L</td>
<td>Basic Physics I Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>PHYS A124</td>
<td>Basic Physics II</td>
<td>(3)</td>
</tr>
</tbody>
</table>
and
PHYS A124L  Basic Physics II Laboratory (1)
or
PHYS A211  General Physics I (3)
and
PHYS A211L General Physics I Laboratory (1)
PHYS A212  General Physics II (3)
and
PHYS A212L General Physics II Laboratory (1)

4. A total of 124 credits is required for the degree, 42 credits of which must be upper division.

Bachelor of Science, Biological Sciences

The Bachelor of Science degree includes a single core program of coursework with electives selected from 4 sub-disciplines within the biological sciences. A wide selection of electives is available to all students, including courses offered under BIOL A490, which is a selected topics course. It is imperative that students consult their academic advisors within the Department of Biological Sciences to determine which electives are most appropriate to their career interests. Some of these elective courses are offered periodically, depending on demand. Refer to course descriptions to identify these courses.

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Academic Progress

To graduate with a BS in Biological Sciences, the student must complete all courses covered under Major Requirements for a BS in Biological Sciences with a grade of C or better. All prerequisites for Biology courses must be completed with a grade of C or better. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a linked lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory or Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

Graduation Requirements

Students must complete the following graduation requirements:

A. General University Requirements

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

B. General Education Requirements

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

D. Major Requirements

1. Some major requirements may also be used to satisfy the College of Arts and Sciences BS requirements.
2. Complete these required support courses (36 credits):
   
   CHEM A105  General Chemistry I  3
   CHEM A105L General Chemistry I Laboratory  1
   CHEM A106  General Chemistry II  3
CHEM A106L  General Chemistry II Laboratory 1
CHEM A321  Organic Chemistry I 3
CHEM A322  Organic Chemistry II 3
CHEM A323L  Organic Chemistry Laboratory 2
MATH A200  Calculus I 4
MATH A201  Calculus II 4
PHYS A123  Basic Physics I (3) 8
PHYS A123L  Basic Physics I Laboratory (1) and
PHYS A124  Basic Physics II (3)
PHYS A124L  Basic Physics II Laboratory (1)
or
PHYS A211  General Physics I (3)
PHYS A211L  General Physics I Laboratory (1) and
PHYS A212  General Physics II (3)
PHYS A212L  General Physics II Laboratory (1)
STAT A253  Applied Statistics for the Sciences (4)
or
STAT A307  Probability and Statistics (4)

3. Complete Biological Sciences core courses (22 credits):
   BIOL A108  Principles and Methods in Biology 6
   BIOL A242  Fundamentals of Cell Biology 3
   BIOL A252  Principles of Genetics 3
   BIOL A271  Principles of Ecology 3
   BIOL A288  Principles of Evolution 3
   BIOL A243  Experiential Learning: Genetics and Cell Biology 4
   or
   BIOL A273  Experiential Learning: Ecology and Evolution 4
   BIOL A492  Undergraduate Seminar 1

4. Complete at least 24 credits of upper division program electives from the following areas.
   a. A minimum of 3 credits must come from each of the five 5 areas*.
   b. A minimum of 6 credits must be Experiential Learning from 2 areas**. 24

Genetics, Cellular and Molecular Biology
   BIOL A340  Microbial Biology (3)
   BIOL A451  Microbial Biotechnology (3)
   BIOL A452  Human Genome (3)
   BIOL A461  Molecular Biology (3)
   BIOL A462  Virology (3)
   BIOL A463  Molecular Biology of Cancer (3)
   BIOL A464  Metals in Biology (3)
   BIOL A471  Immunology (3)
   BIOL A342  Experiential Learning: Microbial Biology (4)
   BIOL A403  Experiential Learning: Microscopical Tissue Techniques (6)
BIOL A454  Experiential Learning: Microbial Biotechnology (4)
BIOL A455  Experiential Learning: Bioinformatics (4)
BIOL A465  Experiential Learning: Molecular Biology (4)
BIOL A488  Experiential Learning: Developmental Biology (4)

Ecology and Evolution

BIOL A365  Astrobiology (3)
BIOL A430  Marine Mammals and Seabirds (3)
BIOL A441  Animal Behavior (3)
BIOL A445  Plant-Herbivore Ecology (4)
BIOL A450  Microbial Ecology (3)
BIOL A472  Biogeography (3)
BIOL A473  Conservation Biology (3)
BIOL A474  Ecotoxicology (3)
BIOL A475  Fish Ecology (3)
BIOL A476  Wildlife Population Dynamics and Management (3)
BIOL A477  Tundra and Taiga Ecosystems (3)
BIOL A478  Biological Oceanography (3)
BIOL A479  Physiological Plant Ecology (3)
BIOL A480  Ecological and Conservation Genetics (3)
BIOL A481  Marine Biology (3)
BIOL A482  Spatial Ecology (3)
BIOL A483  Exploration Ecology (2)
BIOL A486  Evolutionary Ecology (3)
BIOL A489  Population Genetics and Evolutionary Processes (3)
BIOL A442  Experiential Learning: Animal Behavior (3)
BIOL A453  Experiential Learning: Microbial Ecology (4)
BIOL A484  Experiential Learning: Exploration Ecology Field Study (4)

Diversity and Organismal Biology

BIOL A320  Vertebrate Biology (3)
BIOL A330  Plant Biology (3)
BIOL A340  Microbial Biology (3)
BIOL A423  Ichthyology (3)
BIOL A427  Marine Invertebrate Biology (3)
BIOL A430  Marine Mammals and Seabirds (3)
BIOL A431  Plant Diversity and Evolution (3)
BIOL A487  Comparative Anatomy of Vertebrates (3)

BIOL A321  Experiential Learning: Vertebrate Biology (2)
BIOL A332  Experiential Learning: Plant Biology (2)
BIOL A342  Experiential Learning: Microbial Biology (4)

Physiology

BIOL A310  Principles of Animal Physiology (3)
BIOL A316  Principles of Plant Physiology (3)
BIOL A412  Behavioral Endocrinology (3)
BIOL A413  Neurophysiology (3)
BIOL A414  Chronobiology (3)
BIOL A415 Comparative Animal Physiology (3)
BIOL A416 Exercise Physiology (3)
BIOL A418 Fish Physiology (3)
BIOL A479 Physiological Plant Ecology (3)
BIOL A487 Comparative Anatomy of Vertebrates (3)

Additional Upper Division Electives

BIOL A456 Nonlinear Dynamics and Chaos (3)
BIOL A490 Selected Lecture Topics in Biology (1-3)
BIOL A495 Instructional Practicum: Laboratory (1)
BIOL A497 Independent Study in Biology (1-12)
BIOL A498 Individual Research (1-6)
BIOL A499 Senior Thesis (3)
BIOL A490L Selected Laboratory Topics in Biology (1-3)
CHEM A441 Principles of Biochemistry I (3)
CHEM A442 Principles of Biochemistry II (3)
CHEM A443 Biochemistry Laboratory (2)

BIOL A406 Experiential Learning: Biostatistics (4)
BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM)

*Several courses are listed under more than one area. Each course can only count toward the credit requirement in one area.

**BIOL A498 credits may not be counted toward the Experiential Learning minimum requirement

**BIOL A490L credits may be counted toward the Experiential Learning minimum requirement

5. A total of 122-125 credits is required for the degree, 42 credits of which must be upper division.

Bachelor of Science, Natural Sciences

The Department of Biological Sciences also oversees the Bachelor of Science in Natural Sciences. This curriculum emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree, and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation. Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

For a complete program description see the Natural Sciences section of this chapter.

Minor, Biological Sciences

Students majoring in another subject who wish to minor in Biological Sciences must complete the following requirements. A total of 28 credits is required for the minor, 12 of which must be upper division.

BIOL A108 Principles and Methods in Biology 6
BIOL A242 Fundamentals of Cell Biology 3
BIOL A252 Principles of Genetics 3
BIOL A288 Principles of Evolution 3
Upper division Biological Sciences electives 12

FACULTY

Eric Bortz, Assistant Professor, ebortz@uaa.alaska.edu
C. Loren Buck, Professor, clbuck@uaa.alaska.edu
Biology is the science concerned with the study of living organisms. It encompasses a vast range of biological disciplines, from the study of microbes and molecular biology to the study of plants, animals and the environment. The undergraduate program in the Biological Sciences includes courses that provide students with a broad understanding of both traditional and modern biological sciences. These courses are suitable as preparation for professional degrees, teaching, or careers in government or industry. Both the Bachelor of Arts and the Bachelor of Science degrees are available for undergraduates. A Master of Science degree program in Biological Sciences as well as a joint UAA-UAF Doctor of Science degree program is available for students already holding a baccalaureate degree.

A program of study in the biological sciences requires completion of a basic science core curriculum in the chemical, physical and mathematical sciences as well as required and elective courses in the biological sciences. A degree in the biological sciences prepares students who wish to pursue professional sciences for students wishing to pursue careers in medicine, dentistry, veterinary medicine, ecology and the environmental sciences in the private or public sector, or who wish to attend graduate school. The organismal-ecology-evolution area is a more diversified curriculum emphasizing environmental, organismal, evolutionary and general biological sciences preparatory for graduate school or for employment in the private or public sector.

Students are strongly encouraged to consult with their academic advisors within the Department of Biological Sciences to determine which electives best suit their programmatic needs and career requirements.

The Bachelor of Arts and the Bachelor of Science degree programs require a total of 124-125 credits for graduation and can be completed in four years by students who have had adequate high school preparation in math and sciences. Refer to the beginning of this chapter for recommended high school courses.

Program Student Learning Outcomes

It is expected that graduates of the Biological Sciences program will have the ability to:

1. Demonstrate an understanding of evolution; structure and function relationships; information flow, exchange and storage; transformation of energy and matter
2. Design and conduct projects that include fieldwork, laboratory analyses, and interpretation in the discipline, the core concepts in the biological sciences: evolution; structure and function relationships; information flow, exchange and storage; transformation of energy and matter
2.3 Apply the process of science and construct knowledge through observations, experimentation, quantitative reasoning and hypothesis testing
2.4 Read, analyze and synthesize primary literature, and communicate scientific concepts and data in written and oral form

Community Service Courses

The department offers a wide range of community service courses as a service to the people in the Anchorage area and extended campuses who wish to become more knowledgeable about the science of biology and how it relates to them. Unless noted otherwise in the course description, community service courses do not satisfy either core requirements or elective credit toward any degree programs in the biological sciences. All are offered as demand warrants.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL A104</td>
<td>Field Natural History</td>
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<tr>
<td>BIOL A105</td>
<td>Local Flora</td>
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<td>BIOL A106</td>
<td>Human Biology</td>
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<td>BIOL A124</td>
<td>Biota of Alaska: Selected Topics</td>
</tr>
<tr>
<td>BIOL A126</td>
<td>Birds in Field and Laboratory</td>
</tr>
</tbody>
</table>
Departmental Honors in Biology

Undergraduate Biological Science majors may be recognized for exceptional performance by earning departmental honors in Biology. In order to receive honors in biology, a student must meet each of the following requirements:

1. Meet the requirements for Graduation with Honors as listed in Chapter 7.
2. Meet the requirements for a BA/BS degree in Biological Sciences.
3. Earn a grade point average of 3.50 or above in the major requirements.
4. During the senior year of their academic program, the student must gain faculty approval for and complete, with a grade of B or better, a senior thesis research project, with enrollment in BIOL A499 Senior Thesis. Biological Science faculty members must approve the project proposal and final written report.

Bachelor of Arts, Biological Sciences

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Academic Progress

To graduate with a BA in Biological Sciences, the student must complete all courses covered under Major Requirements for a BA in Biological Sciences with a grade of C or better. All prerequisites for Biology courses must be completed with a grade of C or better. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a linked lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

Graduation Requirements

Students must complete the following graduation requirements:

A. General University Requirements

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

B. General Education Requirements

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

D. Major Requirements

1. Complete these required core courses (35-36-35 credits):

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<td>BIOL A115</td>
<td>Fundamentals of Biology I</td>
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<td>BIOL A116</td>
<td>Fundamentals of Biology II</td>
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</tr>
<tr>
<td>BIOL A108</td>
<td>Principles and Methods in Biology</td>
<td>6</td>
</tr>
<tr>
<td>BIOL A242</td>
<td>Fundamentals of Cell Biology</td>
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</tr>
<tr>
<td>BIOL A252</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL A271</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL A288</td>
<td>Principles of Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOL A243</td>
<td>Experiential Learning: Genetics and Cell Biology</td>
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</table>

or
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL A273</td>
<td>Experiential Learning: Ecology and Evolution</td>
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</tr>
<tr>
<td>BIOL A492</td>
<td>Undergraduate Seminar</td>
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<tr>
<td>CHEM A105</td>
<td>General Chemistry I</td>
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<tr>
<td>CHEM A105L</td>
<td>General Chemistry I Laboratory</td>
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<tr>
<td>CHEM A106</td>
<td>General Chemistry II</td>
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<tr>
<td>CHEM A106L</td>
<td>General Chemistry II Laboratory</td>
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<tr>
<td>STAT A252</td>
<td>Elementary Statistics (3)</td>
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<td>or</td>
<td>STAT A253</td>
<td>Applied Statistics for the Sciences (4)</td>
</tr>
<tr>
<td>or</td>
<td>STAT A307</td>
<td>Probability and Statistics (4)</td>
</tr>
</tbody>
</table>

2. Complete 15-17 credits of upper division program electives from the following four areas.

- At least 3 credits must come from each of 4 of the 5 areas.*
- A minimum of 6 credits must be Experiential Learning from 2 areas**. 18-19

### Genetics, Cellular and Molecular Biology
- BIOL A340 General Microbiology/ Microbial Biology (3)
- BIOL A451 Applied Microbiology/ Microbial Biotechnology (3)
- BIOL A452 Human Genome (3)
- BIOL A452 Human Genome (3)
- BIOL A461 Molecular Biology (3)
- BIOL A462 Virology (3)
- BIOL A463 Molecular Biology of Cancer (3)
- BIOL A464 Metals in Biology (3)
- BIOL A461 Molecular Biology Laboratory (3)

### Ecology and Evolution
- BIOL A365 Astrobiology (3)
- BIOL A430 Marine Mammals and Seabirds (3)
- BIOL A441 Animal Behavior (3)
- BIOL A445 Plant-Herbivore Ecology (4)
- BIOL A450 Microbial Ecology (3)
- BIOL A309 A472 Biogeography (3)
- BIOL A327 A473 Conservation Biology (3)
- BIOL A474 Ecotoxicology (3)
- BIOL A475 Fish Ecology (3)
- BIOL A476 Wildlife Population Dynamics and Management (3)
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL A477</td>
<td>Tundra and Taiga Ecosystems</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A478</td>
<td>Biological Oceanography</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A479</td>
<td>Physiological Plant Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A480</td>
<td>Ecological and Conservation Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A481</td>
<td>Marine Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A482</td>
<td>Spatial Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A483</td>
<td>Exploration Ecology</td>
<td>(2)</td>
</tr>
<tr>
<td>BIOL A486</td>
<td>Evolutionary Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A490</td>
<td>Marine Mammal Biology</td>
<td>(4)</td>
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<tr>
<td>BIOL A491</td>
<td>Animal Behavior</td>
<td>(4)</td>
</tr>
<tr>
<td>BIOL A495</td>
<td>Plant- Herbivore Ecology</td>
<td>(4)</td>
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<tr>
<td>BIOL A490</td>
<td>Microbial Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL A497</td>
<td>Tundra and Taiga Ecosystem</td>
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<td>BIOL A498</td>
<td>Biological Oceanography</td>
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<tr>
<td>BIOL A499</td>
<td>Physiological Plant Ecology</td>
<td>(3)</td>
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<tr>
<td>BIOL A500</td>
<td>Population Genetics and Evolutionary Processes</td>
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<td>BIOL A501</td>
<td>Experiential Learning: Animal Behavior</td>
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<td>BIOL A502</td>
<td>Experiential Learning: Microbial Ecology</td>
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<tr>
<td>BIOL A503</td>
<td>Experiential Learning: Exploration Ecology Field Study</td>
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</table>

**Diversity and Organismal Biology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL A320</td>
<td>Vertebrate Biology</td>
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<td>BIOL A427</td>
<td>Marine Invertebrate Biology</td>
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<td>BIOL A430</td>
<td>Marine Mammals and Seabirds</td>
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<td>BIOL A431</td>
<td>Systematic Botany</td>
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<td>BIOL A432</td>
<td>Plant Diversity and Evolution</td>
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<td>Biology of Non-Vascular Plants</td>
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<td>BIOL A437</td>
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<td>BIOL A476</td>
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<td>BIOL A497</td>
<td>Invertebrate Zoology</td>
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<tr>
<td>BIOL A490</td>
<td>Marine Mammal Biology</td>
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**Physiology**

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<td>BIOL A316</td>
<td>Introduction: Principles of Plant Physiology</td>
<td>(3)</td>
</tr>
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<td>BIOL A412</td>
<td>Behavioral Endocrinology</td>
<td>(3)</td>
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<td>BIOL A413</td>
<td>Neurophysiology</td>
<td>(3)</td>
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373
BIOL A414 Chronobiology (3)
BIOL A415 Comparative Animal Physiology (3)
BIOL A416 Exercise Physiology (3)
BIOL A418 Fish Physiology (3)
BIOL A479 Physiological Plant Ecology (3)

BIOL A487 Comparative Anatomy of Vertebrates (3)

**Additional Upper Division Electives**

ASTR/
BIOL A365 Astrobiology (3)
BIOL/CHEM/PHYS A456 Nonlinear Dynamics and Chaos (3)
BIOL A480 Selected Lecture Topics in Biology (1-3)
BIOL A480L Selected Laboratory Topics in Biology (1-3)
BIOL A495 Instructional Practicum: Laboratory (1)
BIOL A497 Independent Study in Biology (1-12)
BIOL A498 Individual Research (1-6)
BIOL A499 Senior Thesis (3)
BIOL A490L Selected Laboratory Topics in Biology (1-3)

BIOL A406 Experiential Learning: Biostatistics (4)
BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM) (6)

*Several courses are listed under more than one area. Each course can only count toward the credit requirement in one area.

**BIOL A498 credits may not be counted toward the Experiential Learning minimum requirement

**BIOL A490L credits may be counted toward the Experiential Learning minimum requirement

3. The following may be taken for upper division elective credit in addition to the 15-17 credits required as stated in 2 above:

ASTR/
BIOL A365 Astrobiology (3)
BIOL/CHEM/PHYS A456 Nonlinear Dynamics and Chaos (3)
BIOL A480 Selected Lecture Topics in Biology (1-3)
BIOL A480L Selected Laboratory Topics in Biology (1-3)
BIOL A495 Instructional Practicum: Laboratory (1)
BIOL A497 Independent Study in Biology (1-12)
BIOL A498 Individual Research (1-6)
BIOL A499 Senior Thesis (3)

4. It is recommended that students complete 8 credits from the following:

   GEOL A111 Physical Geology (4)
   GEOL A221 Historical Geology (4)
   or
   PHYS A123 Basic Physics I (3)
   and
   PHYS A122L Basic Physics I Laboratory (1)
   PHYS A124 Basic Physics II (3)
A total of 124 credits is required for the degree, 42 credits of which must be upper division.

**Bachelor of Science, Biological Sciences**

The Bachelor of Science degree includes a single core program of coursework with electives selected from 4 sub-disciplines within the biological sciences with two areas of study. Completing courses from the cellular and molecular biology area prepares students for professional careers in areas such as medicine, dentistry, and veterinary science. Completing courses from the organismal, ecology, and evolutionary area prepares students for careers in environmental, organismal, and evolutionary biology. A wide selection of electives is available to all students, including courses offered under BIOL A490, which is a selected topics course. It is imperative that students consult their academic advisors within the Department of Biological Sciences to determine which electives are most appropriate to their career interests. Some of these elective courses are offered periodically, depending on demand. Refer to course descriptions to identify these courses.

**Admission Requirements**

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

**Academic Progress**

To graduate with a BS in Biological Sciences, the student must complete all courses covered under Major Requirements for a BS in Biological Sciences with a grade of C or better. All prerequisites for Biology courses must be completed with a grade of C or better. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a linked lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory or Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

**Graduation Requirements**

Students must complete the following graduation requirements:

**A. General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

**B. General Education Requirements**

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

**C. College of Arts and Sciences Requirements**

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

**D. Major Requirements**

1. Some major requirements may also be used to satisfy the College of Arts and Sciences BS requirements.
2. Complete these required support courses (36 credits):

   **PHYS A124L** Basic Physics II Laboratory (1)
   **or**
   **PHYS A211** General Physics I (3)
   **and**
   **PHYS A211L** General Physics I Laboratory (1)
   **and**
   **PHYS A212** General Physics II (3)
   **and**
   **PHYS A212L** General Physics II Laboratory (1)
3. Complete Biological Sciences core courses (32-33 credits):

- **BIOL A115**: Fundamentals of Biology I with **4**
- **BIOL A116**: Fundamentals of Biology II **4**
- **BIOL A108**: Principles and Methods in Biology **6**
- **BIOL A242**: Fundamentals of Cell Biology **4**
- **BIOL A252**: Principles of Genetics **4**
- **BIOL A271**: Principles of Ecology **4**
- **BIOL A298**: Principles of Evolution **3**
- **BIOL A243**: Experiential Learning: Genetics and Cell Biology **4**
- **BIOL A273**: Experiential Learning: Ecology and Evolution **4**
- **BIOL A215**: Principles of Physiology **4**
- **BIOL A216**: Introduction to Plant Physiology **2**
- **BIOL A340**: General Microbiology **5**
- **BIOL A492**: Undergraduate Seminar **1**
4. Complete at least 11-1224 credits of upper division program electives from the following areas.

   a. A minimum of 3 credits must come from each of 4 of the five 5 areas*.

4. b. A minimum of 6 credits must be Experiential Learning from 2 areas** from the following list.

   Recommended electives in cellular and molecular biology:

   Genetics, Cellular and Molecular Biology
   - BIOL A340 Microbial Biology (3)
   - BIOL A451 Microbial Biotechnology (3)
   - BIOL A452 Human Genome (3)
   - BIOL A461 Molecular Biology (3)
   - BIOL A462 Virology (3)
   - BIOL A463 Molecular Biology of Cancer (3)
   - BIOL A464 Metals in Biology (3)
   - BIOL A471 Immunology (3)
   - BIOL A342 Experiential Learning: Microbial Biology (4)
   - BIOL A403 Experiential Learning: Microscopical Tissue Techniques (6)
   - BIOL A454 Experiential Learning: Microbial Biotechnology (4)
   - BIOL A455 Experiential Learning: Bioinformatics (4)
   - BIOL A465 Experiential Learning: Molecular Biology (4)
   - BIOL A488 Experiential Learning: Developmental Biology (4)

   Ecology and Evolution
   - BIOL A365 Astrobiology (3)
   - BIOL A430 Marine Mammals and Seabirds (3)
   - BIOL A441 Animal Behavior (3)
   - BIOL A445 Plant-Herbivore Ecology (4)
   - BIOL A450 Microbial Ecology (3)
   - BIOL A472 Biogeography (3)
   - BIOL A473 Conservation Biology (3)
   - BIOL A474 Ecotoxicology (2)
   - BIOL A475 Fish Ecology (2)
   - BIOL A476 Wildlife Population Dynamics and Management (3)
   - BIOL A477 Tundra and Taiga Ecosystems (3)
   - BIOL A478 Biological Oceanography (3)
   - BIOL A479 Physiological Plant Ecology (3)
   - BIOL A480 Ecological and Conservation Genetics (3)
   - BIOL A481 Marine Biology (3)
   - BIOL A482 Spatial Ecology (3)
   - BIOL A483 Exploration Ecology (3)
   - BIOL A486 Evolutionary Ecology (3)
   - BIOL A489 Population Genetics and Evolutionary Processes (3)
   - BIOL A442 Experiential Learning: Animal Behavior (2)
   - BIOL A453 Experiential Learning: Microbial Ecology (4)
   - BIOL A484 Experiential Learning: Exploration Ecology Field Study (4)

Diversity and Organismal Biology
BIOL A320 Vertebrate Biology (3)
BIOL A330 Plant Biology (3)
BIOL A340 Microbial Biology (3)
BIOL A423 Ichthyology (3)
BIOL A427 Marine Invertebrate Biology (2)
BIOL A430 Marine Mammals and Seabirds (3)
BIOL A431 Plant Diversity and Evolution (3)
BIOL A487 Comparative Anatomy of Vertebrates (3)

BIOL A321 Experiential Learning: Vertebrate Biology (2)
BIOL A332 Experiential Learning: Plant Biology (2)
BIOL A342 Experiential Learning: Microbial Biology (4)

Physiology
BIOL A310 Principles of Animal Physiology (3)
BIOL A316 Principles of Plant Physiology (3)
BIOL A412 Behavioral Endocrinology (3)
BIOL A413 Neurophysiology (3)
BIOL A414 Chronobiology (3)
BIOL A415 Comparative Animal Physiology (3)
BIOL A416 Exercise Physiology (3)
BIOL A418 Fish Physiology (3)
BIOL A479 Physiological Plant Ecology (3)
BIOL A487 Comparative Anatomy of Vertebrates (3)

Additional Upper Division Electives
BIOL A456 Nonlinear Dynamics and Chaos (3)
BIOL A490 Selected Lecture Topics in Biology (1-3)
BIOL A495 Instructional Practicum: Laboratory (1)
BIOL A497 Independent Study in Biology (1-12)
BIOL A498 Individual Research (1-6)
BIOL A499 Senior Thesis (3)
BIOL A490L Selected Laboratory Topics in Biology (1-3)
CHEM A441 Principles of Biochemistry I (3)
CHEM A442 Principles of Biochemistry II (3)
CHEM A443 Biochemistry Laboratory (2)

BIOL A406 Experiential Learning: Biostatistics (4)
BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM) (6)

*Several courses are listed under more than one area. Each course can only count toward the credit requirement in one area.
**BIOL A498 credits may not be counted toward the Experiential Learning minimum requirement
**BIOL A490L credits may be counted toward the Experiential Learning minimum requirement

CHEM A441 Principles of Biochemistry I (3)
CHEM A442 Principles of Biochemistry II (3)
CHEM A443 Biochemistry Laboratory (2)

Cellular-Molecular
BIOL A451 Applied Microbiology (3)
BIOL A452 Human Genome (3)
Recommended elective courses in organismal, ecology and evolutionary biology:

**Botany**

- BIOL A316 Introduction to Plant Physiology (3)
- BIOL A331 Systematic Botany (4)
- BIOL A333 Biology of Non-Vascular Plants (4)
- BIOL A334 Biology of Vascular Plants (4)
- BIOL A479 Physiological Plant Ecology (3)

**Zoology**

- BIOL A415 Comparative Animal Physiology (3)
- BIOL A423 Ichthyology (4)
- BIOL A425 Mammalogy (3)
- BIOL A426 Ornithology (4)
- BIOL A427 Invertebrate Zoology (4)
- BIOL A487 Comparative Anatomy of Vertebrates (4)

**Ecology-Systems**

- BIOL A309 Biogeography (3)
- BIOL A373 Conservation Biology (3)
- BIOL A378 Marine Biology (3)
- BIOL A430 Marine Mammal Biology (4)
- BIOL A441 Animal Behavior (4)
- BIOL A415 Plant-Herbivore Ecology (4)
- BIOL A450 Microbial Ecology (3)
- BIOL A477 Tundra and Taiga Ecosystems (3)
- BIOL A478 Biological Oceanography (3)
5. A total of 122-125 credits is required for the degree, 42 credits of which must be upper division.

**Bachelor of Science, Natural Sciences**

The Department of Biological Sciences also oversees the Bachelor of Science in Natural Sciences. This curriculum emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree, and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation. Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

For a complete program description see the Natural Sciences section of this chapter.
Minor, Biological Sciences

Students majoring in another subject who wish to minor in Biological Sciences must complete the following requirements. A total of 28 credits is required for the minor, 12 of which must be upper division.

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<td>Fundamentals of Biology II</td>
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<td>BIOL A108</td>
<td>Principles and Methods in Biology</td>
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<td>BIOL A242</td>
<td>Fundamentals of Cell Biology</td>
<td>4</td>
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<td>BIOL A252</td>
<td>Principles of Genetics</td>
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<tr>
<td>BIOL A288</td>
<td>Principles of Evolution</td>
<td>3</td>
</tr>
</tbody>
</table>

Upper division Biological Sciences electives 12

FACULTY

Lilian Alessa, Professor, lalessa@uaa.alaska.edu
Eric Bortz, Assistant Professor, ebortz@uaa.alaska.edu
C. Loren Buck, Professor, clbuck@uaa.alaska.edu
Jamon Burkhead, Assistant Professor, jlburkhead@uaa.alaska.edu
Jennifer Moss Burns, Professor, jmburns@uaa.alaska.edu
Douglas Causey, Professor, dcausey@uaa.alaska.edu
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Khrus Duddleston, Associate Professor, kduddleston@uaa.alaska.edu
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Jocelyn Krebs, Professor, jkrebs@uaa.alaska.edu
Jerry Kudens, Professor, jdkudens@uaa.alaska.edu
Richard Kullberg, Professor Emeritus, rikk@uaa.alaska.edu
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Ian van Tets, Associate Professor, igvantets@uaa.alaska.edu
Frank von Hippel, Professor, favonhippel@uaa.alaska.edu
8Jan14

To: CAS Course and Curriculum Committee
   Undergraduate Academic Board

From: Khrys Duddleston, Chair
       Department of Biological Sciences Curriculum Committee

RE: Changes to the B.S. in Natural Sciences Degree

The Department of Biological Sciences proposes the following changes to the B.S. in Natural Sciences Degree:

1. Changes to the core course requirements
2. Updating upper division course offerings

These changes are being made to update the course requirements and course lists in light of changes the Dept. is making to the B.S. in Biological Sciences curriculum.

Please contact me if you have any additional questions.
## Program/Prefix Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix**

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Department</th>
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<table>
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<th>2. Complete Program Title/Prefix</th>
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<tr>
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<td>PREFIX Add Change Inactivate</td>
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<tr>
<td>Initiator Name (typed): Khrys Duddleston</td>
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<tr>
<td>Initiator Signed Initials: [ ]</td>
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<th>6b. Coordination Email submitted to Faculty Listserv (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</th>
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<tr>
<th>8. Justification for Action</th>
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<tr>
<td>The purpose for making these changes is to improve the time to completion of the degree and align our curriculum with the core concepts and competencies outlined in Vision and Change in Undergraduate Biology Education: A Call to Action (2013), a report of a national conference organized by the American Association for the Advancement of Science with support from the National Science Foundation.</td>
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<th>Initator (faculty only)</th>
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<tbody>
<tr>
<td>Khrys Duddleston</td>
</tr>
<tr>
<td>[ ] Approved [ ] Disapproved</td>
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<th>Dean/Director of School/College</th>
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<th>Undergraduate/Graduate Academic Board Chair</th>
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<td>[ ] Approved [ ] Disapproved</td>
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<td>Date</td>
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The undergraduate program in Natural Sciences is founded on a curriculum that emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation.

Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

The Natural Sciences program is administered by the Department of Biological Sciences. Upon acceptance to the major the student will be assigned an academic advisor from the Department of Biological Sciences in accordance with the student’s declared option, and students are strongly encouraged to consult with their academic advisors to determine which electives best suit their career requirements.

**Bachelor of Science, Natural Sciences**

**Admission Requirements**

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7. Declare the major (see Major Requirements) and select one of three options: General Sciences, Pre-Health Professions or Environmental Sciences.

**Program Student Learning Outcomes**

It is expected that graduates of the Natural Sciences program will:

1. Demonstrate their knowledge of central conceptual models used in the major thematic areas of natural sciences.
2. Identify problems, devise solutions and communicate solutions effectively.

**Academic Progress**

To graduate with a BS in Natural Sciences, the student must complete all courses covered under Major Requirements for a BS in Natural Sciences with a grade of C or better. All prerequisites for courses used to meet the Natural Sciences degree requirements must be completed with a grade of C or better. Students who audit a course intended to meet the Natural Sciences degree requirements or who are unable to earn a grade of C or better in the course may repeat the course. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory or Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

**Graduation Requirements**

Students must complete the following graduation requirements:

**A. General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.
B. General Education Requirements

Complete the General Education Requirements for Baccalaureate Degrees (GERs) listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements

Complete the College of Arts and Sciences (CAS) Requirements listed at the beginning of the CAS section. It is recommended that MATH A200 or MATH A272, STAT A253 or STAT A307, and the computer programming requirements be completed in the first two years of study.

D. Major Requirements

1. To declare the Bachelor of Science in Natural Sciences as their major, students must meet with an advisor and then apply to be accepted into the major. To schedule your advising session, contact the Department of Biological Sciences. At the advising session students are required to:
   a. choose one of the three options and
   b. file a preliminary program of study with the Department of Biological Sciences.

2. It is strongly recommended that any changes to the preliminary program be reviewed by an advisor to ensure that the final program of study will meet all requirements for graduation.

3. Students must submit a final Program of Study-Natural Sciences Degree form signed by their advisor to both the Office of the Registrar and the Department of Biological Sciences during the semester prior to the semester in which they plan to graduate. All courses listed in the Program of Study-Natural Sciences Degree form must be approved by the formal advisor before submitting the form to the Office of the Registrar and the Department of Biological Sciences.

4. No more than 6 credits may come from courses designated as A495, A498 and A499 combined, with no more than 2 credits from A495.

5. No more than 4 credits may be A492, with no more than 2 from the same discipline.

6. Courses not listed as approved for the Natural Sciences degree may be considered by petition, which should be signed by an advisor.

7. A total of 120-124 credits is required for the degree, of which 42 credits must be upper division.

Note 1: It is suggested that the required science sequences for any option be completed in the first two years of study.

Note 2: Students are encouraged to pay careful attention to prerequisite requirements when designing their program of study.

Note 3: Some courses meet more than one of the requirements (GER, CAS, Major). Consult the beginning of this chapter for information about GERs and the beginning of the CAS section for information about CAS requirements.

Environmental Sciences Option (80 credits)

1. Complete the following required courses (28 credits):
   - BIOL A108 Principles and Methods in Biology 6
   - CHEM A105 General Chemistry I 3
   - CHEM A105L General Chemistry I Laboratory 1
   - CHEM A106 General Chemistry II 3
   - CHEM A106L General Chemistry II Laboratory 1
   - GEOL A111 Physical Geology 4
   - GEOL A221 Historical Geology 4
   - ENVI A211 Environmental Science: Systems and Processes 3
   - ENVI A212 Living on Earth: People and the Environment 3

2. Complete an additional 52 credits of degree electives from the approved course lists for the Environmental Sciences Option.
   a. A minimum of 32 credits must be upper division.
A minimum of 20 credits must come from the following Natural and Physical Sciences Course List for the Environmental Sciences Option:

20

- ASTR/
- BIOL A365 Astrobiology (3)
- BIOL/
- GEOL A178 Fundamentals of Oceanography (3)
- GEOL A179 Fundamentals of Oceanography Laboratory (1)
- BIOL/
- CPLX A200 Introduction to Complexity (3)
- BIOL A242 Fundamentals of Cell Biology (3)
- BIOL A243 Experiential Learning: Genetics and Cell Biology (4)
- BIOL A252 Principles of Genetics (3)
- BIOL A271 Principles of Ecology (3)
- BIOL A273 Experiential Learning: Ecology and Evolution (4)
- BIOL A288 Principles of Evolution (3)
- BIOL A310 Principles of Animal Physiology (3)
- BIOL A316 Principles of Plant Physiology (3)
- BIOL A340 Microbial Biology (3)
- BIOL A342 Experiential Learning: Microbial Biology (4)
- BIOL A403 Experiential Learning: Microscopical Tissue Techniques (6)
- BIOL A406 Experiential Learning: Biostatistics (4)
- BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM) (6)
- BIOL A415 Comparative Animal Physiology (3)
- BIOL A418 Fish Physiology (3)
- BIOL A423 Ichthyology (3)
- BIOL A427 Marine Invertebrate Biology (3)
- BIOL A430 Marine Mammals and Seabirds (3)
- BIOL A431 Plant Diversity and Evolution (3)
- BIOL A441 Animal Behavior (3)
- BIOL A442 Experiential Learning: Animal Behavior (3)
- BIOL A445 Plant-Herbivore Ecology (4)
- BIOL A450 Microbial Ecology (3)
- BIOL A451 Microbial Biotechnology (3)
- BIOL A453 Experiential Learning: Microbial Ecology (4)
- BIOL A454 Experiential Learning: Microbial Biotechnology (4)
- BIOL/CHEM/
- PHYS A456 Nonlinear Dynamics and Chaos (3)
- BIOL A472 Biogeography (3)
- BIOL A473 Conservation Biology (3)
- BIOL A474 Ecotoxicology (3)
- BIOL A475 Fish Ecology
- BIOL A476 Wildlife Population Dynamics and Management (3)
- BIOL A477 Tundra and Taiga Ecosystems (3)
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>BIOL A479</td>
<td>Physiological Plant Ecology</td>
<td>3</td>
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<tr>
<td>BIOL A480</td>
<td>Ecological and Conservation Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL A481</td>
<td>Marine Biology</td>
<td>3</td>
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<tr>
<td>BIOL A482</td>
<td>Spatial Ecology</td>
<td>3</td>
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<td>BIOL A483</td>
<td>Exploration Ecology</td>
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<td>BIOL A484</td>
<td>Experiential Learning: Exploration Ecology Field Study</td>
<td>4</td>
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<tr>
<td>BIOL A486</td>
<td>Evolutionary Ecology</td>
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<tr>
<td>BIOL A487</td>
<td>Comparative Anatomy of Vertebrates</td>
<td>4</td>
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<tr>
<td>BIOL A489</td>
<td>Population Genetics and Evolutionary Processes</td>
<td>3</td>
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<tr>
<td>BIOL A490</td>
<td>Selected Lecture Topics in Biology</td>
<td>1-3</td>
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<tr>
<td>BIOL A490L</td>
<td>Selected Laboratory Topics in Biology</td>
<td>1-3</td>
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<td>BIOL A492</td>
<td>Undergraduate Seminar</td>
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<td>BIOL A495A</td>
<td>Internship in the Biological Sciences</td>
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<td>BIOL A498</td>
<td>Individual Research</td>
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<td>BIOL A499</td>
<td>Senior Thesis</td>
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<tr>
<td>CHEM A253</td>
<td>Principles of Inorganic Chemistry</td>
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<td>CHEM A311</td>
<td>Physical Chemistry: A Biological Orientation</td>
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<td>CHEM A312</td>
<td>Quantitative Analysis</td>
<td>5</td>
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<td>CHEM A321</td>
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<td>CHEM A322</td>
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<td>CHEM A331</td>
<td>Physical Chemistry I</td>
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<td>CHEM A441</td>
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<td>CHEM A453</td>
<td>Advanced Inorganic Chemistry</td>
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<td>CHEM A460</td>
<td>Chemical Ecotoxicology</td>
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<td>CHEM A492</td>
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<td>CHEM A498</td>
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<td>GEOL A115</td>
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<td>GEOL A190</td>
<td>Introductory Topics in Geology</td>
<td>1-3</td>
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<tr>
<td>GEOL A320</td>
<td>Volcanology</td>
<td>3</td>
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<tr>
<td>GEOL A321</td>
<td>Mineralogy</td>
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<tr>
<td>GEOL A322</td>
<td>Igneous and Metamorphic Petrology</td>
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<td>GEOL A325</td>
<td>Geology of Ore Deposits</td>
<td>3</td>
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<tr>
<td>GEOL A335</td>
<td>Structural Geology</td>
<td>4</td>
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<td>GEOL A340</td>
<td>Hydrogeology</td>
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<td>GEOL A350</td>
<td>Geomorphology</td>
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<tr>
<td>GEOL A360</td>
<td>Geochemistry</td>
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GEOL A380  Anchorage Field Studies (3)  
GEOL A381  Kenai Peninsula Field Studies (3)  
GEOL A382  Geological Field Studies (3)  
GEOL A450  Paleoclimatology and Global Change (3)  
GEOL A452  Sedimentology and Stratigraphy (4)  
GEOL A454  Glacial and Quaternary Geology (3)  
GEOL A455  Permafrost (3)  
GEOL A456  Geoaarcheology (3)  
GEOL A460  Environmental Geochemistry (3)  
GEOL A475  Environmental Geophysics (3)  
GEOL A480  Geological Field Methods (3)  
GEOL A481  Alaskan Field Investigations (3)  
GEOL A482  Geological Field Investigations (3)  
GEOL A490  Advanced Topics in Geology (1-4)  
GEOL A492  Geology Seminar (1)  
GEOL A495  Geology Internship (1-3)  
GEOL A498  Student Research (1-3)  
GEOL A499  Senior Thesis (3)  
LSIS A201  Life on Earth (5)  
LSIS A202  Concepts and Processes: Natural Sciences (5)  
PHYS A123  Basic Physics I* (3)  
PHYS A123L  Basic Physics I Laboratory* (1)  
PHYS A124  Basic Physics II* (3)  
PHYS A124L  Basic Physics II Laboratory* (1)  
PHYS A211  General Physics I* (3)  
PHYS A211L  General Physics I Laboratory* (1)  
PHYS A212  General Physics II* (3)  
PHYS A212L  General Physics II Laboratory* (1)  
PHYS A303  Modern Physics (3)  

*Students cannot get credit for both PHYS 123/L and PHYS 211/L or PHYS 124/L and PHYS 212/L.

c. A minimum of 15 credits must come from the following Math and Computational Skills Course List for the Environmental Sciences Option:  

15

CS A109  Computer Programming  
(Languages Vary) (3)c  
or  
CS A110  Java Programming (3)  
or  
CS A111  Visual Basic .NET Programming (3)  
or  
CSCE A201  Computer Programming I (4)  
CSCE A202  Object-Oriented Programming (3)  
CSCE A302  Object-Oriented Design Patterns (3)  
CSCE A311  Data Structures and Algorithms (3)  
CSCE A351  Automata, Algorithms and Complexity (3)  
CSCE A360  Database Systems (3)
CSCE A385  Computer Graphics (3)
CSCE A411  Artificial Intelligence (3)
CSCE A412  Evolutionary Computing (3)
GEO A157  Analytical and Digital Cartography (3)
GEO A167  Remote Sensing and Image Analysis (4)
GEO A248  Digital Terrain Cartography (3)
GEO A257  Elements of Photogrammetry (3)
GEO A359  Geodesy and Map Projections (3)
GEO A459  Geodetic Geomatics (3)
GEO A467  Analytical and Digital Photogrammetry (3)
GIS A268  Elements of Geographic Information Systems (GIS) (4)
GIS A295  Internship in Geographic Information Systems I (3)
GIS A366  Spatial Information Analysis and Modeling (3)
GIS A367  GIS and Remote Sensing (3)
GIS A370  GIS and Remote Sensing for Natural Resources (3)
GIS A433  Coastal Mapping (3)
GIS A458  Design and Management of Spatial Information (3)
GIS A468  Integration of Geomatics Technologies (3)
GIS A495  Internship in Geographic Information Systems II (3)
MATH A200  Calculus I (4)
or
MATH A272  Applied Calculus (3)
MATH A201  Calculus II (4)
MATH A202  Calculus III (4)
MATH A215  Introduction to Mathematical Proofs (3)
MATH A231  Introduction to Discrete Mathematics (3)
MATH A302  Ordinary Differential Equations (3)
MATH A303  Introduction to Modern Algebra (3)
MATH A305  Introduction to Geometries (3)
MATH A306  Discrete Methods (3)
MATH A314  Linear Algebra (3)
MATH A321  Analysis of Several Variables (3)
MATH A324  Advanced Calculus (3)
MATH A371  Stochastic Processes (3)
MATH A407  Mathematical Statistics I (3)
MATH A408  Mathematical Statistics II (3)
MATH A410  Introduction to Complex Analysis (3)
MATH A422  Partial Differential Equations (3)
STAT A253  Applied Statistics for the Sciences (4)
or
STAT A307  Probability and Statistics (4)
<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>STAT A308</td>
<td>Intermediate Statistics for the Sciences (3)</td>
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<tr>
<td>STAT A402</td>
<td>Scientific Sampling (3)</td>
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<tr>
<td>STAT A403</td>
<td>Regression Analysis (3)</td>
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<tr>
<td>STAT A404</td>
<td>Analysis of Variance (3)</td>
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<tr>
<td>STAT A405</td>
<td>Nonparametric Statistics (3)</td>
</tr>
<tr>
<td>STAT A407</td>
<td>Time Series Analysis (3)</td>
</tr>
<tr>
<td>STAT A408</td>
<td>Multivariate Statistics (3)</td>
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<tr>
<td>STAT A490</td>
<td>Selected Topics in Statistics (1-3)</td>
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</table>

A minimum of 9 credits must come from the following Social Sciences Course List for the Environmental Sciences Option:

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<tr>
<th>Course Code</th>
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<tr>
<td>ANTH A101</td>
<td>Introduction to Anthropology (3)</td>
</tr>
<tr>
<td>ANTH A202</td>
<td>Cultural Anthropology (3)</td>
</tr>
<tr>
<td>ANTH A205</td>
<td>Biological Anthropology (3)</td>
</tr>
<tr>
<td>ANTH A335</td>
<td>Native North Americans (3)</td>
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<tr>
<td>ANTH A354</td>
<td>Culture and Ecology (3)</td>
</tr>
<tr>
<td>ANTH A415</td>
<td>Applied Anthropology (3)</td>
</tr>
<tr>
<td>ANTH A445</td>
<td>Evolution of Humans and Disease (3)</td>
</tr>
<tr>
<td>CEL A292</td>
<td>Introduction to Civic Engagement (3)</td>
</tr>
<tr>
<td>CEL A390</td>
<td>Selected Topics in Civic Engagement (1-3)</td>
</tr>
<tr>
<td>ECON A201</td>
<td>Principles of Macroeconomics (3)</td>
</tr>
<tr>
<td>ECON A202</td>
<td>Principles of Microeconomics (3)</td>
</tr>
<tr>
<td>ECON A210</td>
<td>Environmental Economics and Policy (3)</td>
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<tr>
<td>ECON A300</td>
<td>The Economy of Alaska (3)</td>
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<tr>
<td>ECON A321</td>
<td>Intermediate Microeconomics (3)</td>
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<tr>
<td>ECON A324</td>
<td>Intermediate Macroeconomics (3)</td>
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<tr>
<td>ECON A435</td>
<td>Natural Resource Economics (3)</td>
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<tr>
<td>ENVI/PHIL A303</td>
<td>Environmental Ethics (3)</td>
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<tr>
<td>ENVI A470</td>
<td>Environmental Planning and Problem Solving (4)</td>
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<tr>
<td>ENVI A490</td>
<td>Topics in Environment and Society (3)</td>
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<td>GEOG A101</td>
<td>Local Places/Global Regions: An Introduction to Geography (3)</td>
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<td>LSSS A311</td>
<td>People, Places and Ecosystems (3)</td>
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<tr>
<td>SOC A101</td>
<td>Introduction to Sociology (3)</td>
</tr>
<tr>
<td>SOC A404</td>
<td>Environmental Sociology (3)</td>
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</table>

**Pre-Health Professions Option (80 credits)**

1. Complete the following required courses (22 credits):

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIOL A108</td>
<td>Principles and Methods in Biology (6)</td>
</tr>
<tr>
<td>CHEM A105</td>
<td>General Chemistry I (3)</td>
</tr>
<tr>
<td>CHEM A105L</td>
<td>General Chemistry I Laboratory (1)</td>
</tr>
<tr>
<td>CHEM A106</td>
<td>General Chemistry II (3)</td>
</tr>
<tr>
<td>CHEM A106L</td>
<td>General Chemistry II Laboratory (1)</td>
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<tr>
<td>PHYS A123</td>
<td>Basic Physics I (3)</td>
</tr>
<tr>
<td>PHYS A123L</td>
<td>Basic Physics I Laboratory (1)</td>
</tr>
</tbody>
</table>
2. Complete an additional 58 credits of degree electives from the approved course lists for the Pre-Health Professions Option.
   a. A minimum of 32 credits must be upper division.
   b. A minimum of 24 credits must come from the following:
      Natural Sciences Course List for the Pre-Health Professions Option:
      - BIOL A111 Human Anatomy and Physiology I (4)
      - BIOL A112 Human Anatomy and Physiology II (4)
      - BIOL/CPLX A200 Introduction to Complexity (3)
      - BIOL A240 Introductory Microbiology for Health Sciences (4)
      or
      - BIOL A340 Microbial Biology (3)
      and
      - BIOL A342 Experiential Learning: Microbial Biology (4)
      - BIOL A242 Fundamentals of Cell Biology (3)
      - BIOL A252 Principles of Genetics (3)
      - BIOL A243 Experiential Learning: Genetics and Cell Biology (4)
      - BIOL A310 Principles of Animal Physiology (3)
      - BIOL A320 Vertebrate Biology (3)
      - BIOL A321 Experiential Learning: Vertebrate Biology (2)
      - BIOL A403 Experiential Learning: Microscopical Tissue Techniques (6)
      - BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM) (6)
      - BIOL A412 Behavioral Endocrinology (3)
      - BIOL A413 Neurophysiology (3)
      - BIOL A414 Chronobiology (3)
      - BIOL A415 Comparative Animal Physiology (3)
      - BIOL A416 Exercise Physiology (3)
      - BIOL A451 Microbial Biotechnology (3)
      - BIOL A452 Human Genome (3)
      - BIOL A454 Experiential Learning: Microbial Biotechnology (4)
      - BIOL A455 Experiential Learning: Bioinformatics (4)
      - BIOL/ CHEM/ PHYS A456 Nonlinear Dynamics and Chaos (3)
      - BIOL A461 Molecular Biology (3)
      - BIOL A462 Virology (3)
      - BIOL A463 Molecular Biology of Cancer (3)
      - BIOL A464 Metals in Biology (3)
      - BIOL A465 Experiential Learning: Molecular Biology (4)
      - BIOL/ CHEM A471 Immunology (3)
      - BIOL A487 Comparative Anatomy of Vertebrates (4)
      - BIOL A488 Experiential Learning: Developmental Biology (4)
<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tr>
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<td>Population Genetics and Evolutionary Processes</td>
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<td>Selected Lecture Topics in Biology</td>
<td>(1-3)</td>
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<tr>
<td>BIOL A490L</td>
<td>Selected Laboratory Topics in Biology</td>
<td>(1-3)</td>
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<tr>
<td>BIOL A492</td>
<td>Undergraduate Seminar</td>
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<td>BIOL A495A</td>
<td>Internship in the Biological Sciences</td>
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<tr>
<td>BIOL A498</td>
<td>Individual Research</td>
<td>(1-6)</td>
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<tr>
<td>CHEM A311</td>
<td>Physical Chemistry: A Biological Orientation</td>
<td>(3)</td>
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<td>CHEM A312</td>
<td>Quantitative Analysis</td>
<td>(5)</td>
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<td>CHEM A323L</td>
<td>Organic Chemistry Laboratory</td>
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<tr>
<td>CHEM A434</td>
<td>Instrumental Methods</td>
<td>(5)</td>
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<tr>
<td>CHEM A441</td>
<td>Principles of Biochemistry I</td>
<td>(3)</td>
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<td>Principles of Biochemistry II</td>
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<td>Chemical Ecotoxicology</td>
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<td>CHEM A492</td>
<td>Undergraduate Seminar</td>
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<td>CHEM A498</td>
<td>Individual Research</td>
<td>(3)</td>
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**c.** A minimum of (15) credits must come from the following Social Sciences Course List for the Pre-Health Professions Option: 15

<table>
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<th>Course Title</th>
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<td>ANTH A101</td>
<td>Introduction to Anthropology</td>
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<td>ANTH A205</td>
<td>Biological Anthropology</td>
<td>(3)</td>
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<td>ANTH A324</td>
<td>Psychological Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH A365</td>
<td>Modern Human Biological Diversity</td>
<td>(3)</td>
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<tr>
<td>ANTH A445</td>
<td>Evolution of Humans and Disease</td>
<td>(3)</td>
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<tr>
<td>ANTH A455</td>
<td>Medical Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH A457</td>
<td>Food and Nutrition: An Anthropological Perspective</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH A485</td>
<td>Human Osteology</td>
<td>(4)</td>
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<tr>
<td>ANTH A486</td>
<td>Applied Human Osteology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH A490</td>
<td>Selected Topics in Anthropology</td>
<td>(1-3)</td>
</tr>
<tr>
<td>ECON A201</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON A202</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
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<tr>
<td>HS A210</td>
<td>Introduction to Environmental Health</td>
<td>(3)</td>
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<tr>
<td>HS A220</td>
<td>Core Concepts in the Health Sciences</td>
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<td>HS A230</td>
<td>Introduction to Global Health</td>
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<td>Introduction to Epidemiology</td>
<td>(3)</td>
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STAT A308  Intermediate Statistics for the Sciences (3)
STAT A402  Scientific Sampling (3)
STAT A403  Regression Analysis (3)
STAT A404  Analysis of Variance (3)
STAT A405  Nonparametric Statistics (3)
STAT A407  Time Series Analysis (3)
STAT A408  Multivariate Statistics (3)
STAT A490  Selected Topics in Statistics (1-3)

**General Sciences Option (80 credits)**

1. Complete the following required courses (30 credits):
   - BIOL A108  Principles and Methods in Biology 6
   - CHEM A105  General Chemistry I 3
   - CHEM A105L General Chemistry I Laboratory 1
   - CHEM A106  General Chemistry II 3
   - CHEM A106L General Chemistry II Laboratory 1
   - GEOL A111  Physical Geology 4
   - GEOL A221  Historical Geology 4
   - PHYS A123  Basic Physics I (3) 8
   - PHYS A123L Basic Physics I Laboratory (1)
   - PHYS A124  Basic Physics II (3)
   - PHYS A124L Basic Physics II Laboratory (1)
   - PHYS A211  General Physics I (3)
   - PHYS A212  General Physics II (3)
   - PHYS A212L General Physics II Laboratory (1)

2. Complete an additional 50 credits of degree electives. 50
   a. The credits may come from the following course lists:
      i. Environmental Sciences Option Course Lists (above)
      ii. Pre-Health Professions Course Lists (above)
      iii. General Sciences Additional Course List
         - ASTR A103  Solar System Astronomy (3)
         - ASTR A103L Solar System Astronomy Laboratory (1)
         - ASTR A104  Stars, Galaxies and Cosmology (3)
         - ASTR A104L Stars, Galaxies and Cosmology Laboratory (1)
         - PHYS A311  Intermediate Classical Mechanics (3)
         - PHYS/EE A314 Electromagnetics (3)
         - PHYS A320  Simulation of Physical Systems (3)
         - PHYS/EE A324 Electromagnetics II (3)
         - PHYS A403  Quantum Mechanics (3)
At least two of the following disciplines must be represented at the upper division level: Astronomy, Biology, Chemistry, Geology, Mathematics, Physics, Statistics.

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The undergraduate program in Natural Sciences is founded on a curriculum that emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation.

Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

The Natural Sciences program is administered by the Department of Biological Sciences. Upon acceptance to the major the student will be assigned an academic advisor from the Department of Biological Sciences in accordance with the student’s declared option, and students are strongly encouraged to consult with their academic advisors to determine which electives best suit their career requirements.

**Bachelor of Science, Natural Sciences**

**Admission Requirements**

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7. Declare the major (see Major Requirements) and select one of three options: General Sciences, Pre-Health Professions or Environmental Sciences.

**Program Student Learning Outcomes**

It is expected that graduates of the Natural Sciences program will:

1. Demonstrate their knowledge of central conceptual models used in the major thematic areas of natural sciences.
2. Identify problems, devise solutions and communicate solutions effectively.

**Academic Progress**

To graduate with a BS in Natural Sciences, the student must complete all courses covered under Major Requirements for a BS in Natural Sciences with a grade of C or better. All prerequisites for courses used to meet the Natural Sciences degree requirements must be completed with a grade of C or better. Students who audit a course intended to meet the Natural Sciences degree requirements or who are unable to earn a grade of C or better in the course may repeat the course. Students who audit, or are unable to earn a grade of C or better in, a lower-division (100 or 200 level) course in the Department of Biological Sciences (BIOL) may repeat the course two additional times on a space available basis. Students who audit, or are unable to earn a grade of C or better in, an upper-division (300 or 400 level) course in the Department of Biological Sciences may repeat the course one additional time on a space available basis. Students repeating a course in the Department of Biological Sciences are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a lecture and laboratory component, both components must be repeated. Students enrolled in a laboratory or Experiential Learning course in the Department of Biological Sciences must attend the lab or course the first week of class or they may be administratively dropped.

**Graduation Requirements**

Students must complete the following graduation requirements:

**A. General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.
B. General Education Requirements
Complete the General Education Requirements for Baccalaureate Degrees (GERs) listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements
Complete the College of Arts and Sciences (CAS) Requirements listed at the beginning of the CAS section. It is recommended that MATH A200 or MATH A272, STAT A253 or STAT A307, and the computer programming requirements be completed in the first two years of study.

D. Major Requirements
1. To declare the Bachelor of Science in Natural Sciences as their major, students must meet with an advisor and then apply to be accepted into the major. To schedule your advising session, contact the Department of Biological Sciences. At the advising session students are required to:
   a. choose one of the three options and
   b. file a preliminary program of study with the Department of Biological Sciences.
2. It is strongly recommended that any changes to the preliminary program be reviewed by an advisor to ensure that the final program of study will meet all requirements for graduation.
3. Students must submit a final Program of Study-Natural Sciences Degree form signed by their advisor to both the Office of the Registrar and the Department of Biological Sciences during the semester prior to the semester in which they plan to graduate. All courses listed in the Program of Study-Natural Sciences Degree form must be approved by the formal advisor before submitting the form to the Office of the Registrar and the Department of Biological Sciences.
4. No more than 6 credits may come from courses designated as A495, A498 and A499 combined, with no more than 2 credits from A495.
5. No more than 4 credits may be A492, with no more than 2 from the same discipline.
6. Courses not listed as approved for the Natural Sciences degree may be considered by petition, which should be signed by an advisor.
7. A total of 120-124 credits is required for the degree, of which 42 credits must be upper division.

Note 1: It is suggested that the required science sequences for any option be completed in the first two years of study.
Note 2: Students are encouraged to pay careful attention to prerequisite requirements when designing their program of study.
Note 3: Some courses meet more than one of the requirements (GER, CAS, Major). Consult the beginning of this chapter for information about GERs and the beginning of the CAS section for information about CAS requirements.

Environmental Sciences Option (80 credits)
1. Complete the following required courses (28-30 credits):
   - BCOL A115 Fundamentals of Biology I 4
   - BCOL A116 Fundamentals of Biology II 4
   - BIOL A108 Principles and Methods in Biology 6
   - CHEM A105 General Chemistry I 3
   - CHEM A105L General Chemistry I Laboratory 1
   - CHEM A106 General Chemistry II 3
   - CHEM A106L General Chemistry II Laboratory 1
   - GEOL A111 Physical Geology 4
   - GEOL A221 Historical Geology 4
   - ENVI A211 Environmental Science: Systems and Processes 3
   - ENVI A212 Living on Earth: People and the Environment 3
2. Complete an additional 52 credits of degree electives from the approved course lists for the Environmental Sciences Option.
   a. A minimum of 32 credits must be upper division.
   b. 
b. A minimum of 20 credits must come from the following Natural and Physical Sciences Course List for the Environmental Sciences Option:

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<td>BIOL/</td>
<td>GEOL A178 Fundamentals of Oceanography</td>
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<td>GEOL A179 Fundamentals of Oceanography Laboratory</td>
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<td>CPLX A200 Introduction to Complexity</td>
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<td>Fundamentals of Cell Biology</td>
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<td>BIOL A252</td>
<td>Principles of Genetics</td>
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<td>BIOL A271</td>
<td>Principles of Ecology</td>
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<td>Principles of Animal Physiology</td>
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<td>Physical Chemistry: A Biological Orientation</td>
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<td>Principles of Biochemistry I</td>
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<td>CHEM A453</td>
<td>Advanced Inorganic Chemistry</td>
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<td>CHEM A460</td>
<td>Chemical Ecotoxicology</td>
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<tr>
<td>CHEM A492</td>
<td>Undergraduate Seminar</td>
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CHEM A498 Individual Research (3)
GEOL A115 Environmental Geology (3)
GEOL A115L Environmental Geology Laboratory (1)
GEOL A190 Introductory Topics in Geology (1-3)
GEOL A320 Volcanology (3)
GEOL A321 Mineralogy (4)
GEOL A322 Igneous and Metamorphic Petrology (4)
GEOL A325 Geology of Ore Deposits (3)
GEOL A335 Structural Geology (4)
GEOL A340 Hydrogeology (3)
GEOL A350 Geomorphology (4)
GEOL A360 Geochemistry (3)
GEOL A380 Anchorage Field Studies (3)
GEOL A381 Kenai Peninsula Field Studies (3)
GEOL A382 Geological Field Studies (3)
GEOL A450 Paleoclimatology and Global Change (3)
GEOL A452 Sedimentology and Stratigraphy (4)
GEOL A454 Glacial and Quaternary Geology (3)
GEOL A455 Permafrost (3)
GEOL A456 Geochronology (3)
GEOL A460 Environmental Geochemistry (3)
GEOL A475 Environmental Geophysics (3)
GEOL A480 Geological Field Methods (3)
GEOL A481 Alaskan Field Investigations (3)
GEOL A482 Geological Field Investigations (3)
GEOL A490 Advanced Topics in Geology (1-4)
GEOL A492 Geology Seminar (1)
GEOL A495 Geology Internship (1-3)
GEOL A498 Student Research (1-3)
GEOL A499 Senior Thesis (3)
LSIS A201 Life on Earth (5)
LSIS A202 Concepts and Processes: Natural Sciences (5)

*Students cannot get credit for both PHYS 123/L and PHYS 211/L or PHYS 124/L and PHYS 212/L.

A minimum of 15 credits must come from the following Math and Computational Skills Course List for the Environmental Sciences Option: 15

CS A109 Computer Programming
(Language Vary) (3c)
or

CS A110  Java Programming (3)
or
CS A111  Visual Basic .NET Programming (3)
or
CSCE A201  Computer Programming I (4)
CSCE A202  Object-Oriented Programming (3)
CSCE A302  Object-Oriented Design Patterns (3)
CSCE A311  Data Structures and Algorithms (3)
CSCE A351  Automata, Algorithms and Complexity (3)
CSCE A360  Database Systems (3)
CSCE A385  Computer Graphics (3)
CSCE A411  Artificial Intelligence (3)
CSCE A412  Evolutionary Computing (3)
GEO A157  Analytical and Digital Cartography (3)
GEO A248  Digital Terrain Cartography (3)
GEO A257  Elements of Photogrammetry (3)
GEO A359  Geodesy and Map Projections (3)
GEO A459  Geodetic Geomatics (3)
GEO A467  Analytical and Digital Photogrammetry (3)
GIS A268  Elements of Geographic Information Systems (GIS) (4)
GIS A295  Internship in Geographic Information Systems I (3)
GIS A366  Spatial Information Analysis and Modeling (3)
GIS A367  GIS and Remote Sensing (3)
GIS A370  GIS and Remote Sensing for Natural Resources (3)
GIS A433  Coastal Mapping (3)
GIS A458  Design and Management of Spatial Information (3)
GIS A468  Integration of Geomatics Technologies (3)
GIS A495  Internship in Geographic Information Systems II (3)
MATH A200  Calculus I (4)
or
MATH A227  Applied Calculus (3)
MATH A221  Calculus II (4)
MATH A222  Calculus III (4)
MATH A215  Introduction to Mathematical Proofs (3)
MATH A231  Introduction to Discrete Mathematics (3)
MATH A302  Ordinary Differential Equations (3)
MATH A303  Introduction to Modern Algebra (3)
MATH A305  Introduction to Geometries (3)
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>MATH A306</td>
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<tr>
<td>MATH A314</td>
<td>Linear Algebra</td>
<td>3</td>
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<tr>
<td>MATH A321</td>
<td>Analysis of Several Variables</td>
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<td>MATH A324</td>
<td>Advanced Calculus</td>
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<td>MATH A371</td>
<td>Stochastic Processes</td>
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<tr>
<td>MATH A407</td>
<td>Mathematical Statistics I</td>
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<tr>
<td>MATH A408</td>
<td>Mathematical Statistics II</td>
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<tr>
<td>MATH A410</td>
<td>Introduction to Complex Analysis</td>
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</tr>
<tr>
<td>MATH A422</td>
<td>Partial Differential Equations</td>
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<tr>
<td>STAT A253</td>
<td>Applied Statistics for the Sciences</td>
<td>4</td>
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</table>

or

<table>
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<th>Course Code</th>
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<tbody>
<tr>
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<tr>
<td>STAT A402</td>
<td>Scientific Sampling</td>
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<tr>
<td>STAT A403</td>
<td>Regression Analysis</td>
<td>3</td>
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<tr>
<td>STAT A404</td>
<td>Analysis of Variance</td>
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</tr>
<tr>
<td>STAT A405</td>
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<td>STAT A407</td>
<td>Time Series Analysis</td>
<td>3</td>
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<tr>
<td>STAT A408</td>
<td>Multivariate Statistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT A490</td>
<td>Selected Topics in Statistics</td>
<td>1-3</td>
</tr>
</tbody>
</table>

d. A minimum of 9 credits must come from the following Social Sciences Course List for the Environmental Sciences Option:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH A101</td>
<td>Introduction to Anthropology</td>
<td>3</td>
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<tr>
<td>ANTH A202</td>
<td>Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH A205</td>
<td>Biological Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH A335</td>
<td>Native North Americans</td>
<td>3</td>
</tr>
<tr>
<td>ANTH A354</td>
<td>Culture and Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH A415</td>
<td>Applied Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH A445</td>
<td>Evolution of Humans and Disease</td>
<td>3</td>
</tr>
<tr>
<td>CEL A292</td>
<td>Introduction to Civic Engagement</td>
<td>3</td>
</tr>
<tr>
<td>CEL A390</td>
<td>Selected Topics in Civic Engagement</td>
<td>1-3</td>
</tr>
<tr>
<td>ECON A201</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON A202</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON A210</td>
<td>Environmental Economics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ECON A300</td>
<td>The Economy of Alaska</td>
<td>3</td>
</tr>
<tr>
<td>ECON A321</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
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<tr>
<td>ECON A324</td>
<td>Intermediate Macroeconomics</td>
<td>3</td>
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<tr>
<td>ECON A435</td>
<td>Natural Resource Economics</td>
<td>3</td>
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<tr>
<td>ENVI</td>
<td></td>
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<tr>
<td>PHIL A303</td>
<td>Environmental Ethics</td>
<td>3</td>
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<tr>
<td>ENVI A470</td>
<td>Environmental Planning and Problem Solving</td>
<td>4</td>
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<tr>
<td>ENVI A490</td>
<td>Topics in Environment and Society</td>
<td>3</td>
</tr>
<tr>
<td>GEOG A101</td>
<td>Local Places/Global Regions: An Introduction to Geography</td>
<td>3</td>
</tr>
</tbody>
</table>
LSSS A311 People, Places and Ecosystems (3)
SOC A101 Introduction to Sociology (3)
SOC A404 Environmental Sociology (3)

Pre-Health Professions Option (80 credits)

1. Complete the following required courses (24-22 credits):
   - BIOL A115 Fundamentals of Biology I 4
   - BIOL A116 Fundamentals of Biology II 3
   - BIOL A108 Principles and Methods in Biology 6
   - CHEM A105 General Chemistry I 3
   - CHEM A105L General Chemistry I Laboratory 1
   - CHEM A106 General Chemistry II 3
   - CHEM A106L General Chemistry II Laboratory 1
   - PHYS A123 Basic Physics I 3
   - PHYS A123L Basic Physics I Laboratory 1
   - PHYS A124 Basic Physics II 3
   - PHYS A124L Basic Physics II Laboratory 1

2. Complete an additional 56-58 credits of degree electives from the approved course lists for the Pre-Health Professions Option.
   a. A minimum of 32 credits must be upper division.
   b. A minimum of 24 credits must come from the following Natural Sciences Course List for the Pre-Health Professions Option:
      - BIOL A111 Human Anatomy and Physiology I (4)
      - BIOL A112 Human Anatomy and Physiology II (4)
      - BIOL A200 Introduction to Complexity (3)
      - BIOL A240 Introductory Microbiology for Health Sciences (4)
      - BIOL A340 General Microbiology/Microbial Biology (5)
      - BIOL A342 Experiential Learning: Microbial Biology (4)
      - BIOL A242 Fundamentals of Cell Biology (3)
      - BIOL A252 Principles of Genetics (3)
      - BIOL A243 Experiential Learning: Genetics and Cell Biology (4)
      - BIOL A242 Fundamentals of Cell Biology (4)
      - BIOL A252 Principles of Genetics (3)
      - BIOL A310 Principles of Animal Physiology (4)
      - BIOL A320 Vertebrate Biology (3)
      - BIOL A321 Experiential Learning: Vertebrate Biology (2)
      - BIOL A403 Experiential Learning: Microscopical Tissue Techniques (4)
      - BIOL A408 Experiential Learning: Scanning Electron Microscopy (SEM) (6)
      - BIOL A412 Behavioral Endocrinology (3)
      - BIOL A413 Neurophysiology (3)
      - BIOL A414 Chronobiology (3)
      - BIOL A415 Comparative Animal Physiology (3)
c. A minimum of (15) credits must come from the following Social Sciences Course List for the Pre-Health Professions Option:

- ANTH A101 Introduction to Anthropology (3)
- ANTH A205 Biological Anthropology (3)
- ANTH A324 Psychological Anthropology (3)
- ANTH A365 Modern Human Biological Diversity (3)
- ANTH A445 Evolution of Humans and Disease (3)
ANTH A455 Medical Anthropology (3)
ANTH A457 Food and Nutrition: An Anthropological Perspective (3)
ANTH A485 Human Osteology (4)
ANTH A486 Applied Human Osteology (3)
ANTH A490 Selected Topics in Anthropology (1-3)
ECON A201 Principles of Macroeconomics (3)
ECON A202 Principles of Microeconomics (3)
HS A210 Introduction to Environmental Health (3)
HS A220 Core Concepts in the Health Sciences (3)
HS A230 Introduction to Global Health (3)
HS A265 Introduction to Epidemiology (3)
HS A492 Senior Seminar: Contemporary Health Policy (3)
PHIL A302 Biomedical Ethics (3)
PSY A111 General Psychology (3)
PSY A143 Death and Dying (3)
PSY A150 Lifespan Development (3)
PSY A260 Statistics for Psychology (3)
PSY A260L Statistics for Psychology Lab (1)
PSY A261 Research Methods in Psychology (4)
PSY A345 Abnormal Psychology (3)
PSY A355 Learning and Cognition (4)
PSY A366 Perception (3)
PSY A368 Personality (3)
PSY A370 Behavioral Neuroscience (3)
PSY A412 Foundations of Modern Psychology (3)
PSY A420 Conducting Research in Psychology (3)
PSY A425 Clinical Psychology (3)
PSY A428 Evolutionary Psychology (3)
PSY A450 Adult Development and Aging (3)
PSY A455 Mental Health Services in Alaska (3)
PSY A485 Health Psychology (3)
PSY A498 Individual Research (3)

d. A minimum of 9 credits must come from the following Math and Computational Skills Course List for the Pre-Health Professions Option:

MATH A200 Calculus I (4)
MATH A201 Calculus II (4)
MATH A202 Calculus III (4)
MATH A215 Introduction to Mathematical Proofs (3)
MATH A231 Introduction to Discrete Mathematics (3)
MATH A302 Ordinary Differential Equations (3)
MATH A303 Introduction to Modern Algebra (3)
MATH A305 Introduction to Geometries (3)

or

MATH A272 Applied Calculus (3)
<table>
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<th>Course Title</th>
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<tbody>
<tr>
<td>MATH A306</td>
<td>Discrete Methods</td>
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<tr>
<td>MATH A314</td>
<td>Linear Algebra</td>
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<td>Stochastic Processes</td>
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<td>MATH A408</td>
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<td>MATH A410</td>
<td>Introduction to Complex Analysis</td>
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<td>MATH A490A</td>
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<tr>
<td>MATH A490B</td>
<td>Selected Topics in Applied Mathematics</td>
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</tr>
<tr>
<td>MATH A498</td>
<td>Individual Research</td>
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<tr>
<td>STAT A253</td>
<td>Applied Statistics for the Sciences</td>
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<tr>
<td>STAT A307</td>
<td>Probability and Statistics</td>
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<td>STAT A402</td>
<td>Scientific Sampling</td>
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<tr>
<td>STAT A403</td>
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<td>Analysis of Variance</td>
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<td>Time Series Analysis</td>
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<td>Selected Topics in Statistics</td>
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### General Sciences Option (80 credits)

1. Complete the following required courses (32-30 credits):

<table>
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<th>Course Title</th>
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<tr>
<td>BIOL A115</td>
<td>Fundamentals of Biology I</td>
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<tr>
<td>BIOL A116</td>
<td>Fundamentals of Biology II</td>
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<td>BIOL A108</td>
<td>Principles and Methods in Biology</td>
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<td>CHEM A105</td>
<td>General Chemistry I</td>
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<td>CHEM A106</td>
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<td>CHEM A106L</td>
<td>General Chemistry II Laboratory</td>
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<tr>
<td>CHEM A106L</td>
<td>General Chemistry II Laboratory</td>
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<tr>
<td>GEOL A111</td>
<td>Physical Geology</td>
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<td>GEOL A221</td>
<td>Historical Geology</td>
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<tr>
<td>PHYS A123</td>
<td>Basic Physics I</td>
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<tr>
<td>PHYS A123L</td>
<td>Basic Physics I Laboratory</td>
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<td>PHYS A124</td>
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2. Complete an additional 45-50 credits of degree electives.
a. The credits may come from the following course lists:
   i. Environmental Sciences Option Course Lists (above)
   ii. Pre-Health Professions Course Lists (above)
   iii. General Sciences Additional Course List
      
      | Course Code | Course Title                        | Credits |
      |-------------|------------------------------------|---------|
      | ASTR A103  | Solar System Astronomy             | 3       |
      | ASTR A103L | Solar System Astronomy Laboratory   | 1       |
      | ASTR A104  | Stars, Galaxies and Cosmology      | 3       |
      | ASTR A104L | Stars, Galaxies and Cosmology      | 1       |
      | PHYS A311  | Intermediate Classical Mechanics   | 3       |
      | PHYS/EE A314| Electromagnetics                   | 3       |
      | PHYS A320  | Simulation of Physical Systems     | 3       |
      | PHYS/EE A324| Electromagnetics II                | 3       |
      | PHYS A403  | Quantum Mechanics                  | 3       |
      | PHYS A413  | Statistical and Thermal Mechanics  | 3       |
      | PHYS A498  | Individual Research                | 1-6     |

b. At least two of the following disciplines must be represented at the upper division level: Astronomy, Biology, Chemistry, Geology, Mathematics, Physics, Statistics.

**FACULTY**

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- Kim Peterson, Professor, ktpeter@uaa.alaska.edu