I. Roll

( ) Alberta Harder (FS)
( ) Soren Orley (FS)
( ) Francisco Miranda (CAS, Chair)
( ) Barbara Harville (CAS)
( ) Mari Ippolito (CAS)
( ) Len Smiley (CAS)
( ) Dave Fitzgerald (CBPP)
( ) Eileen Weatherby (COH)
( ) Irasema Ortega (COE)
( ) Jeffrey Callahan (CTC)
( ) Utpal Dutta (SOE)
( ) Michael Hawfield (KPC)
( ) Sheri Denison (Mat-su)
( ) Kathryn Hollis Buchanan (Kod)
( ) Kevin Keating (LIB)

Ex-Officio Members

( ) Susan Kalina
( ) Lora Volden
( ) Michael Worth

II. Approval of the Agenda (pg.1-2)

III. Approval of Meeting Summary (pg. 3-4)

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. Program/Course Action Request- Second Readings

Add MUS A216 World Music (GER) (Cross Listed with AKNS A216)(3 cr)(3+0)(pg. 5-8)

Add AKNS A216 World Music (GER) (Cross Listed with MUS A216)(3 cr)(3+0)(pg. 9-12)

Chg CHEM A411 Biophysical Chemistry (Stacked with CHEM A611) (3 cr)(3+0)(pg. 13-22)

Chg CHEM A450 Environmental Chemistry (Stacked with CHEM A650)(3 cr)(3+0)(pg. 23-33)

Chg CHEM A477 Bioanalytical Chemistry (Stacked with CHEM A677)(3 cr)(3+6)(pg. 34-44)

Add CHEM A480 Nuclear Magnetic Resonance (stacked with CHEM A680)(3 cr)(3+0)(pg. 45-53)

Add CHEM A490 Selected Lecture Topics in Chemistry (Stacked with CHEM A690)
(1-3 cr)(1-3+0)(pg. 54-63)

Add CHEM A495 Chemistry Internship (3 cr)(0+9)(pg. 64-68)

VII. Program/Course Action Request- First Readings

Chg BS, Chemistry (pg. 69-80)

Chg ART A270 Beginning Alaska Native Art (Stacked with ART A370/A470)
(3 cr)(0+6)9pg. 81-85
Chg  ART A370  Intermediate Alaska Native Art (Stacked with ART A270/A470)  
(3 cr)(0+6)9pg. 86-91

Chg  ART A470  Advanced Alaska Native Art (Stacked with ART A270/A370)  
(3 cr)(0+6)9pg. 92-97

VIII.  Old Business

IX.  New Business

X.  Informational Items and Adjournment
I. Roll
(x) Alberta Harder (FS)  (x) Dave Fitzgerald (CBPP)  (x) Michael Hawfield (KPC)
(e) Soren Orley (FS)    (x) Eileen Weatherby (COH)  (x) Sheri Denison (Mat-su)
(x) Francisco Miranda (CAS, Chair)  (x) Irasema Ortega (COE)  ( ) Kathryn Hollis Buchanan (Kod)
(x) Barbara Harville (CAS)  ( ) Jeffrey Callahan (CTC)  (x) Christina Stuive (ADV)
( ) Mari Ippolito (CAS)  (x) Utpal Dutta (SOE)  (x) Len Smiley (CAS)  (e) Kevin Keating (LIB)

Ex-Officio Members
(x) Susan Kalina
(x) Lora Volden
(x) Michael Worth

II. Approval of the Agenda (pg.1)
AKNS/MUS A216 will not be reviewed as GERC approval was not received
Approved as amended

III. Approval of Meeting Summary (pg. 2-3)
Approved

IV. Administrative Report
A. Vice Provost for Undergraduate Academic Affairs Susan Kalina
OAA and the Registrar’s Office are continuing to look into residency credit and the impact it has on students

B. University Registrar Lora Volden
Course Leaf pilot meeting took place Tuesday, October 8th

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

B. GERC
Faculty Senate approved the Curriculum Handbook changes with the exception of the assessment language
Did not approve MUS/ AKNS A216 due to the faculty initiator not being present

VI. Program/Course Action Request- Second Readings
Add MUS A216 World Music (GER) (Cross Listed with AKNS A216)(3 cr)(3+0)(pg. 4-7)
Add AKNS A216 World Music (GER) (Cross Listed with MUS A216)(3 cr)(3+0)(pg. 9-11)
Postponed until GERC approval is received

VII. Program/Course Action Request- First Readings
Del OEC, Bookkeeping Support (pg. 11-14)
Del OEC, Medical Office Support (pg. 15)
Del OEC, Office Digital Media (pg. 16)
Del OEC, Technical Support (pg. 17-30)
Waive first reading, approve for second
VIII. Old Business
   A. Transfer Policy related to upper/lower division equivalencies (pg. 31)
      
      **Motion to approve the proposed policy:**
      Lower division transfer courses with a course description that matches the course description of an upper division UAA course will be brought in as a departmental elective at the level of institution, i.e. at the lower-division level. In the case where a department determines that a lower division course from another institution satisfies the learning outcomes of an upper division degree requirement of their program, the department may request to have the lower division course meet the degree requirement via petition; however the course will not be allowed to be applied towards the general university requirement of 42 upper-division credits.
      
      **Unanimously Approved**

IX. New Business
   A. Incoming Transcripts from Study Abroad Agencies (pg. 32)
      
      **Motion to approve the proposal that UAA adopt a policy which limits the amount of credit awarded for a study abroad experience through an outside agency to 15 credits per semester.**
      This will allow the student to be enrolled as a full-time student with complete financial aid, while still reducing the possible negative ramifications of surplus credits and maintaining compliance with current policy.
      
      **Unanimously Approved**

X. Informational Items and Adjournment
## Course Action Request

**University of Alaska Anchorage**

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

### 1a. School or College
- AS CAS

### 1b. Division
- AFAR Division of Fine Arts

### 1c. Department
- Music

### 2. Course Prefix
- MUS

### 3. Course Number
- A216

### 4. Previous Course Prefix & Number
- N/A

### 5a. Credits/CEUs
- 3

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

### 6. Complete Course Title
- World Music

### 7. Type of Course
- Academic

### 8. Type of Action:
- Add

### 9. Repeat Status No
- 

### 10. Grading Basis
- A-F

### 11. Implementation Date
- From: Spring/2014
- To: 9/9999

### 12. Cross Listed with
- AKNS A216

### 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>Catalog Page(s) Impacted</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
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</tbody>
</table>

### 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)

Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and culture.

### 16a. Course Prerequisite(s) (list prefix and number)
- ENG A111

### 16b. Test Score(s)

### 16c. Co-requisite(s) (concurrent enrollment required)

### 16d. Other Restriction(s)

### 16e. Registration Restriction(s) (non-codable)

### 16f. Other Requirements

### 17. Mark if course has fees

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

### 19. Justification for Action

Rounding out program, accreditation purposes, provides a global perspective on music/culture.

---

**Initiator Name (typed): Christopher Sweeney**

Initiator Signed Initials: ______________________ Date: __________________

---

**13b. Coordination Email**
- Date: 9/6/2013
- submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

**13c. Coordination with Library Liaison**
- Date: 9/6/2013

---

**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**

Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and culture.

---

**16a. Course Prerequisite(s) (list prefix and number)**
- ENG A111

---

**16b. Test Score(s)**

---

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

---

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

---

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

---

**17. Mark if course has fees**

---

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

---

**19. Justification for Action**

Rounding out program, accreditation purposes, provides a global perspective on music/culture.

---

**Initiator (faculty only)

Christopher Sweeney**

Initiator (TYPE NAME)

[Approval Options]
Approved
Disapproved

---

**Dean/Director of School/College**

[Approval Options]
Approved
Disapproved

---

**Undergraduate/Graduate Academic Board Chairperson**

[Approval Options]
Approved
Disapproved

---

**Provost or Designee**

[Approval Options]
Approved
Disapproved

---

5
I. **Course Description:** Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and cultures.

II. **Course Design:** This course will examine indigenous music cultures of the world: traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East. This course is an introduction to the different musical styles and worldviews, and focuses on how music is not only defined, but also placed within each cultural context. Issues of change, adaptation, and contemporary influences on music traditions will also be discussed. Lectures and discussions are enhanced by listening CD’s, required reading, video/films, and guest lectures. Ability to read music is not essential.

A. **Credits:** 3
B. **Lecture/lab ratio:** 3 + 0
C. **Degree requirements met:** Fine Arts GER
D. **Grading basis:** A - F
E. **Prerequisites:** ENGL 111
F. **Registration restrictions:** N/A
G. **Course level justification:** This is an introductory course.

III. **Course Activities:** Course activities include lectures, guided listening and analysis of recordings of various musical genres, guided discussion of assigned readings and research topics, and opportunities to learn from guest artists and scholars. In addition, the student will write a research paper and make an oral presentation to the class on the same research topic.
IV. Instructional Goals and Student Learning Outcomes:

Instructional Goals:

Teacher will:
A. Help students develop the skills necessary to analyze various world music traditions with regard to rhythm and form/structure, as well as cultural contextual information.
B. Assist the student in learning concepts of music, and music terminology.
C. Teach how to understand and hear the differences and similarities in the music of various music cultures and be able to discuss issues of music, change, and cultural context.
D. Provide an overview of different music cultures of the world and identify the unique musical characteristics in each major region.

Defined Student Learning Outcomes: Student will be able to:

<table>
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<tr>
<th>Student Outcomes</th>
<th>Assessment procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and compare/contrast various musical styles from both musical and cultural viewpoints</td>
<td>Exams</td>
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<td>Apply aural skills and knowledge of styles necessary to recognize the music of the different world cultures</td>
<td>Exams</td>
</tr>
<tr>
<td>Discuss issues of music, change, and cultural context</td>
<td>Exams; research paper</td>
</tr>
<tr>
<td>Learn and use music terminology</td>
<td>Exams; research paper; oral presentation</td>
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V. Course Outline:

A. Cultural Perspective
   1. World music traditions by: geography, history, and culture.
   2. The role of lifestyle and ceremony in indigenous music (religious, social, cultural context, etc.).

B. Theoretical Perspective
   1. Music theory: introduction to concepts of pitch, scales, rhythm, form/structure.
   2. Problems in notation in non-Western musical traditions.

C. Characteristics of Global Indigenous Music by Region
   1. Europe
   2. The Americas
   3. Asia
   4. Africa
   5. Oceania
   6. Near East/Middle East
VI. Suggested Text:


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 AHUM Division of Humanities
1c. Department AKNS

2. Course Prefix AKNS
   3. Course Number A216
   4. Previous Course Prefix & Number N/A
   5a. Credits/CEUs 3
   5b. Contact Hours (Lecture + Lab) (3+0)

6. Complete Course Title World Music
   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

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

10. Grading Basis ☑ A-F ☐ P/NP ☐ NG

11. Implementation Date from: Spring/2014 to: /9999

12. Cross Listed with MUS A216

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): Christopher Sweeney
Initiator Signed Initials: ______________ Date: ______________

13b. Coordination Email Date: 9/6/2013 submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison Date: 9/6/2013

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)
Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and culture.

16a. Course Prerequisite(s) (list prefix and number) ENG A111
16b. Test Score(s)
16c. Co-requisite(s) (concurrent enrollment required)

16d. Other Restriction(s)
☐ College ☐ Major ☐ Class ☐ Level
16e. Registration Restriction(s) (non-codable)

17. ☑ Mark if course has fees
18. ☐ Mark if course is a selected topic course

19. Justification for Action
Rounding out program, accreditation purposes, provides a global perspective on music/culture.

Initiator (faculty only) Christopher Sweeney
Initiator Signed Initials: ______________ Date: ______________

Mark if course has fees
Mark if course is a selected topic course

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

☑ Approved Undergraduate/Graduate Academic Date
☐ Disapproved

☑ Approved Board Chairperson Date
☐ Disapproved

☑ Approved Provost or Designee Date
☐ Disapproved
I. Course Description: Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the near/Far East are examined within the context of musical styles and culture.

II. Course Design: Overview: This course will examine indigenous music cultures of the world: traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East. This course is an introduction to the different musical styles and worldviews, and focuses on how music is not only defined, but also placed within each cultural context. Issues of change, adaptation, and contemporary influences on music traditions will also be discussed. Lectures and discussions are enhanced by listening CD’s, required reading, video/films, and guest lectures. Ability to read music is not essential.

A. Credits: 3
B. Lecture/lab ratio: 3 + 0
C. Degree requirements met: Fine Arts GER
D. Grading basis: A - F
E. Prerequisites: ENGL 111
F. Registration restrictions: N/A
G. Course level justification: This is an introductory course.

III. Course Activities: Course activities will include lectures, guided listening and analysis of recordings of various musical genres, guided discussion of assigned readings and research topics, and opportunities to learn from guest artists and scholars. In addition, the student will write a research paper and make an oral presentation to the class on the same research topic.

IV. Instructional Goals and Student Learning Outcomes:
Instructional Goals: Teacher will:
A. Help students develop the skills necessary to analyze various world music traditions with regard to rhythm, and form/structure, as well as cultural contextual information.
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V. Course Outline:

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C. Characteristics of Global Indigenous Music by Region
   1. Europe
   2. The Americas
   3. Asia
   4. Africa
   5. Oceania
   6. Near East/Middle East

VI. Suggested Text:


VII. Bibliography


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

Complete Course Title

Biophysical Chemistry

Abbreviated Title for Transcript (30 character)

Biophysical Chemistry

Type of Course

Academic

Preparatory/Development

Non-credit

CEU

Professional Development

Type of Action:

Add

Change

Delete

Prefix

Course Number

Contact Hours

Repeat Status

Cross-Listed/Stacked

Course Prerequisites

Registration Restrictions

Repeat Status No

# of Repeats

Max Credits

Grading Basis

A-F

P/NP

NG

Implementation Date

From:

To:

Chair/Coordinator Contacted

Date of Coordination

1a. School or College

AS CAS

1b. Division

AMSC Division of Math Science

1c. Department

Chemistry

2. Course Prefix

CHEM

3. Course Number

A411

4. Previous Course Prefix & Number

A311

5a. Credits/CEUs

3

5b. Contact Hours

(Lecture + Lab)

(3+0)

6. Complete Course Title

Biophysical Chemistry

7. Type of Course

8. Type of Action:

9. Repeat Status

10. Grading Basis

A-F

P/NP

NG

11. Implementation Date

From:

To:

12. Cross Listed with

Stacked with

Cross-Listed Coordination

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

13b. Coordination Email

Date: 10/3/2013

13c. Coordination with Library Liaison

Date: 10/3/2013

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)

Study of principles of thermodynamics, chemical kinetics, molecular kinetic theory and spectroscopy as applied to biochemical systems. Applications to solutions, phase equilibria, biochemical reactions, transport properties, and spectroscopic techniques for biomolecular characterization. Introduction to computational techniques in physical chemistry.

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

(Chemistry A413, Math A201, and Math A412) with minimum grade of C.

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

n/a

16c. Other 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

Updating course level to appropriate numbering considering course depth and breadth and title as a required course for Chemistry/Biochemistry option and CHEM minor and as an elective class for science majors due to student demand.

Initiator Name (typed): Holmberg

Initiator Signed Initials: _________

Date:________________

Initiator (faculty only)

Holmberg

Initiator (TYPE NAME)

Department Chair

Date

Disapproved

Approved

Dean/Director of School/College

Undergraduate/Graduate Academic

Board Chair

Provost or Designee

Date

Date

Date

Date

Date
Course Content Guide for **CHEM A411**  
University of Alaska Anchorage  
College of Arts and Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course information:**

A. **College:** College of Arts and Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A411

D. **Number of Credits:** 3

E. **Contact Hours:** 3+0

F. **Course Title:** Biophysical Chemistry

G. **Grading Basis:** A – F

H. **Implementation Date:** Fall 2013

I. **Course Description:** Study of principles of thermodynamics, chemical kinetics, molecular kinetic theory and spectroscopy as applied to biochemical systems. Applications to solutions, phase equilibria, biochemical reactions, transport properties, and spectroscopic techniques for biomolecular characterization. Introduction to computational techniques in physical chemistry.

J. **Course Attributes:** N/A

K. **Prerequisites:** (CHEM A106, MATH A201, and PHYS A124) with minimum grade of C.

L. **Test Scores:** N/A

M. **Corequisites:** N/A

N. **Registration Restrictions:** N/A
O. Course Fee: No

P. Stacked With: CHEM A611

III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

Instructor will:

1. Present principles of thermodynamics with applications to biochemical systems.
2. Introduce molecular kinetic theory with applications to transport properties of macromolecules.
3. Introduce chemical kinetics with heavy accent on enzymatic catalysis.
4. Demonstrate spectroscopic techniques for bio-molecular characterization as well as modern computational techniques.

B. Student Learning Outcomes:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate critical thinking skills for explanation and prediction of biophysical/bio-chemical phenomena using thermodynamics and chemical kinetics.</td>
<td>Quizzes, Exams, Assignments, Critical Thinking Questions</td>
</tr>
<tr>
<td>Integrate mathematical skills and concepts learned in MATH 200-201 classes with applications in physical chemistry.</td>
<td>Quizzes, Exams, Assignments, Critical Thinking Questions</td>
</tr>
<tr>
<td>Demonstrate knowledge of spectroscopic and computational techniques for bio-molecular characterization.</td>
<td>Quizzes, Exams</td>
</tr>
<tr>
<td>Apply the knowledge of kinetics to design methods for determination of reactions’ mechanisms.</td>
<td>Quizzes, Exams</td>
</tr>
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</table>

IV. Course Activities

A. Lecture
B. Assignments
V. **Guidelines for Evaluation**

The students will be evaluated based on their performance on quizzes, in-class exams and comprehensive final.

VI. **Course Level Justification**

This course requires a background in the principles of chemistry, calculus and basic concepts in physics. It also requires a great deal of analytical thinking, critical analysis, medium to advanced level mathematics and attention to detail.

VII. **Course Outline**

A. Principles of Thermodynamics: laws of thermodynamics, application to biochemical systems. Application topics discussed can include thermodynamic basis of protein stability, ligand binding equilibria, Scatchard’s and Hill’s models, differential scanning calorimetry, transport across membranes, phase transition in lipid bilayers, equilibria in double stranded helices of complementary oligonucleotides.

B. Molecular Kinetic Theory and Transport Properties, applications to Fick’s Laws, viscosity and sedimentation as applied to bio-molecular measurements.

C. Chemical Kinetics as applied to enzymatic catalysis.

D. Introduction to spectroscopy and computational techniques as applied to characterization of secondary and tertiary structure of proteins, as well as structural characterization of RNA/DNA molecules.

VIII. **Suggested Texts**


4. Scientific Journals such as (not a comprehensive list):
   - Biological Chemistry
   - Biochemistry
   - Biophysical Journal
   - Cell
   - Journal of Biological Chemistry
   - Journal of Molecular Biology
   - Molecular Biology
   - Molecular Cell
   - Nature
   - Nature Structure
   - Science
**Course Action Request**  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Course

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<td>AMSC Division of Math Science</td>
<td>Chemistry</td>
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<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
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<td>(3+0)</td>
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<th>7. Type of Course</th>
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<td>Non-credit</td>
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<td>Professional Development</td>
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If a change, mark appropriate boxes:
- [ ] Prefix
- [ ] Credits
- [ ] Title
- [ ] Grading Basis
- [ ] Course Description
- [ ] Test Score Prerequisites
- [ ] Other Restrictions
  - [ ] Class
  - [ ] Level
  - [ ] College
  - [ ] Major
  - [ ] (please specify)

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<th>semester/year</th>
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<td>From: Fall/2013</td>
<td>To: /9999</td>
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<th>12. Cross Listed with</th>
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<td>CHEM A411</td>
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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).

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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| Initiator Name (typed): Holmberg | Initiator Signed Initials: _________ | Date: ____________ |

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<th>13b. Coordination Email</th>
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<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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| 13c. Coordination with Library Liaison | Date: ____________ |

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<td>Written Communication</td>
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<td>Social Sciences</td>
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<td>Natural Sciences</td>
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<tr>
<td>Integrative Capstone</td>
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<table>
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<tr>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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<tr>
<td>Advanced study of Biophysical Chemistry through the principles of thermodynamics, kinetic concepts and spectroscopic analysis. Examination of the current literature in Biophysical Chemistry.</td>
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<table>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<th>16c. Other Restriction(s)</th>
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<tr>
<td>Class</td>
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<tr>
<td>Level</td>
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</table>

| 16d. Registration Restriction(s) (non-codable) |
| Instructor permission and graduate standing. |

<table>
<thead>
<tr>
<th>17. Mark if course has fees</th>
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<table>
<thead>
<tr>
<th>18. Mark if course is a selected topic course</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>19. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of graduate level course stacked with CHEM A411 for inclusion in the Interdisciplinary Masters Program.</td>
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</table>

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
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<tr>
<td>Holmberg</td>
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<th>Approved</th>
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<tr>
<td>Disapproved</td>
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<tr>
<th>Dean/Director of School/College</th>
<th>Date: ____________</th>
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<th>Undergraduate/Graduate Academic</th>
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<th>Board Chair</th>
<th>Date: ____________</th>
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<th>Provost or Designee</th>
<th>Date: ____________</th>
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<tr>
<td>Disapproved</td>
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</tbody>
</table>

18
Course Content Guide for **CHEM A611**
University of Alaska Anchorage
College of Arts and Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course information**

A. **College:** College of Arts and Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A611

D. **Number of Credits:** 3

E. **Contact Hours:** 3+0

F. **Course Title:** Advanced Biophysical Chemistry

G. **Grading Basis:** A – F

H. **Implementation Date:** Spring 2014

I. **Course Description:** Advanced study of Biophysical Chemistry through the principles of thermodynamics, kinetic concepts and spectroscopic analysis. Introduction to computational techniques in physical chemistry. Examination of the current literature in Biophysical Chemistry. Special note: not available for students who have taken CHEM A411.

J. **Course Attributes:** N/A

K. **Prerequisites:** N/A

L. **Test Scores:** N/A

M. **Corequisites:** N/A

N. **Registration Restrictions:** Instructor permission and graduate standing.

O. **Course Fee:** No
III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

The instructor will:

1. Present advanced principles of thermodynamics with applications to biochemical systems.
2. Detail advanced concepts in molecular kinetic theory with applications to transport properties of macromolecules.
3. Present chemical kinetics with heavy accent on enzymatic catalysis and biological system modeling.
4. Utilize spectroscopic techniques for bio-molecular characterization as well as modern computational techniques.
5. Derive pertinent expressions from basic principles using theoretical modeling techniques.

B. Student Learning Outcomes:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td></td>
</tr>
<tr>
<td>Demonstrate critical thinking skills for explanation and prediction of biophysical/bio-chemical phenomena using thermodynamics and chemical kinetics.</td>
<td>Quizzes, Exams, Class Activities</td>
</tr>
<tr>
<td>Integrate mathematical skills such as calculus, differential equations, and linear algebra and chemical concepts with applications in physical chemistry. Demonstrate proficiency in derivation of advanced concepts from fundamental principles.</td>
<td>Quizzes, Exams, Class Activities</td>
</tr>
<tr>
<td>Apply a range of spectroscopic and computational techniques for bio-molecular characterization and applications to biochemical problems.</td>
<td>Quizzes, Exams, Research Paper</td>
</tr>
<tr>
<td>Apply the knowledge of kinetics to design methods for determination of reactions’ mechanisms.</td>
<td>Quizzes, Exams, Research Paper</td>
</tr>
</tbody>
</table>
IV. **Course Activities**

A. Lecture  
B. Assignments  
C. Critical Thinking Questions  
D. Quizzes  
E. Exams  
F. Research Paper

V. **Guidelines for Evaluation**

The students will be evaluated based on their performance on quizzes, in-class exams, research papers and comprehensive final. The grades A – F will be assigned based on a curve that is deemed reasonable by the instructor.

VI. **Course Level Justification**

This course requires a background in the principles of chemistry, advanced calculus and mathematical techniques such as differential equations and linear algebra, and concepts in physics. It also requires analytical thinking, critical analysis, and attention to detail. Students will be required to assimilate a number of concepts while clearly describing complex biological phenomenon.

VII. **Course Outline**

- Principles of Thermodynamics: laws of thermodynamics, application to biochemical systems. Applications topics discussed can include thermodynamic basis of protein stability, ligand binding equilibria, Scatchard’s and Hill’s models, differential scanning calorimetry, transport across membranes, phase transition in lipid bilayers, equilibria in double stranded helices of complementary oligonucleotides.
- Molecular Kinetic Theory and Transport Properties, applications to Fick’s Laws, viscosity and sedimentation as applied to bio-molecular measurements.
- Chemical Kinetics as applied to enzymatic catalysis.
- Introduction to spectroscopy and computational techniques as applied to characterization of secondary and tertiary structure of proteins, as well as structural characterization of RNA/DNA molecules.
VIII. Suggested Texts


Additional bibliography for instructors:


Biophysical Journal http://www.cell.com/biophysj/

Journal of Physical Chemistry pubs.acs.org/journal/jpcafh
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
CHEMISTRY

2. Course Prefix
CHEM
3. Course Number
A450
4. Previous Course Prefix & Number
N/A
5a. Credits/CEUs
3
5b. Contact Hours
(Lecture + Lab)
(3+0)

6. Complete Course Title
Environmental Chemistry

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
- ☐ Other CCG (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: ☐ /9999

12. ☐ Cross Listed with

☒ Stacked with CHEM A650  ☐ 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.ualaska.edu/governance.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Catalog Page(s)</th>
<th>Impacted</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tbody>
<tr>
<td>1. B.S. Chemistry</td>
<td></td>
<td></td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
</tr>
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<td>2. CHEM 450 course listing</td>
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<td>5. B.S. Natural Sciences</td>
<td>p. 126</td>
<td></td>
<td>10/3/2013</td>
<td>Fred Rainey</td>
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<tr>
<td>6. M.S. AEST</td>
<td>p. 335</td>
<td></td>
<td>10/3/2013</td>
<td>Osama Abaza</td>
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Initiator Name (typed): John M. Kennish  Initiator Signed Initials: ____________ Date: ____________

13b. Coordination Email
Date: 10/3/2013
submitted to Faculty Listserv: (uaa-faculty@lists.ualaska.edu)

13c. Coordination with Library Liaison
Date: 10/3/2013

14. General Education Requirement
Mark appropriate box:

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

15. Course Description (suggested length 20 to 50 words)
Examine the origin and evolution of the environment, energy, mineral resources, solid wastes, recycling, air and water pollution, and the effects of foreign substances on living systems. The relationships among these problems will be demonstrated and quantitative chemical principles applied. Special Note: This course is an introduction to environmental chemistry for all science majors.

16a. Course Prerequisite(s) (list prefix and number)
CHEM A106 with grade of C or better.

16b. Test Score(s)

16c. Co-requisite(s) (concurrent enrollment required)
Instructor approval required.

16d. Other Restriction(s)

- ☐ Mark if course has fees

17. ☐ Mark if course is a selected topic course

19. Justification for Action
Course now stacked with the newly created CHEM A650, identify critical prerequisite, and include registration restriction.
<table>
<thead>
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<th>Date</th>
<th>Dean/Director of School/College</th>
<th>Date</th>
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<tr>
<td>Department Chairperson</td>
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Course Content Guide for **CHEM A450**

University of Alaska Anchorage

College of Arts & Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course Information:**

A. **College:** College of Arts & Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A450

D. **Number of Credits:** 3

E. **Contact Hours:** 3 + 0

F. **Course Title:** Environmental Chemistry

G. **Grading Basis:** A – F

H. **Implementation Date:** Fall 2013

I. **Course Description:** Examines the origin and evolution of the environment, energy, mineral resources, solid wastes, recycling, air and water pollution, and the effects of foreign substances on living systems. The relationships among these problems will be demonstrated and quantitative chemical principles applied. Special Note: This course is an introduction to environmental chemistry for all science majors.

J. **Course Attributes:** N/A

K. **Prerequisites:** CHEM A106 with grade of C or better.

L. **Test Scores:** N/A

M. **Co-requisites:** N/A

N. **Registration Restrictions:** Instructor approval required.
O. **Course Fee:** No

P. **Stacked With:** CHEM A650

III. **Instructional Goals and Student Learning Outcomes**

A. **Instructional Goals:**

The instructor will:

1. Present chemical models for investigation and develop problem solving and observational skills on problems relevant to current issues and topics in environmental chemistry.
2. Present convergent and divergent questions to initiate discussion on the relevance of current environmental models to: 1) observe and understand natural phenomena, 2) help students differentiate, 3) link and integrate ideas and develop their own concepts, 4) to articulate their thinking and explain models and solutions.
3. Provide multiple historical, cultural, environmental and socially relevant contexts for applying concepts and quantitative skills and invite students to defend and verify their models and their solutions to problems relevant to these contexts.

B. **Student Learning Outcomes:**

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solve problems relevant to the origin and evolution of the earth's environment, about human impacts on this environment resulting from energy production and use of the atmosphere, hydrosphere and the biosphere.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Use quantitative chemical principles to evaluate the interrelationships of anthropomorphic influences on changes occurring in the atmosphere, hydrosphere and biosphere.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Demonstrate appropriate ability to communicate problems and verify solutions.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Design and submit a written research proposal testing a hypothesis answering a specific question concerning a current contamination mechanism.</td>
<td>Research Proposal</td>
</tr>
</tbody>
</table>
IV. **Course Activities**

A. Lecture  
B. Assigned problems  
C. Exams  
D. Research Proposal  

V. **Guidelines for Evaluation**

Students will be evaluated based on their performance on assigned problems, in-class exams, and a research proposal.

VI. **Course Level Justification**

This course requires extensive multidisciplinary knowledge from biology, chemistry, engineering, mathematics, and physics. It requires the integration of this knowledge to solve multidimensional problems and understand complex concepts.

VII. **Course Outline**

1. Energy  
   a. Energy Flows and Supplies  
   b. Fossil Fuels  
   c. Nuclear Energy  
   d. Renewable Energy  
   e. Energy Utilization  

2. Atmosphere  
   a. Climate  
   b. Oxygen Chemistry  
   c. Stratospheric Ozone  
   d. Air Pollution  

3. Hydrosphere / Lithosphere  
   a. Water Resources  
   b. Water as Solvent  
   c. Water and the Lithosphere  
   d. Oxygen and Life  
   e. Water Pollution and Water Treatment  

4. Biosphere
VIII. Suggested Text


IX. 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
    Chemistry

2. Course Prefix
    CHEM

3. Course Number
    A650

4. Previous Course Prefix & Number
    reinstated

5a. Credits/CEUs
    3

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

6. Complete Course Title
    Advanced Environmental Chemistry
    Adv Environmental Chemistry

    Abbreviated Title for Transcript (30 character)
    Adv Env Chem

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
    ☐ Test Score Prerequisites
    ☐ Other Restrictions
    ☐ Contact Hours
    ☐ Repeat Status
    ☐ Cross-Listed/Stacked
    ☐ Co-requisites
    ☐ Registration Restrictions
    ☐ Class
    ☐ Level
    ☐ School or College
    ☐ Major
    ☐ (please specify)

9. Repeat Status No

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

11. Implementation Date
    Semester/year
    From: Spring/2014
    To: 99/9999

12. ☐ Cross Listed with

    ☑ Stacked with CHEM A450

    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.

    | Impacted Program/Course | Catalog Page(s) | Impacted | Date of Coordination | Chair/Coordinator Contacted |
    |-------------------------|-----------------|----------|----------------------|-----------------------------|
    | 1. MS-AEST              | None            |          | 08/28/13             | John Olofsson               |
    | 2. Interdisciplinary Masters Program  |          |          |                     |                             |
    | 3.                      |                 |          |                     |                             |

    Initiator Name (typed): John M. Kennish
    Initiator Signed Initials: _________
    Date: __________________

13b. Coordination Email
    Date: 8/28/13
    submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
    Date: 8/28/13

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)
    Detailed examination of structure and function of planet Earth as a living chemical system as constructed around the atmosphere, hydrosphere, lithosphere, and biosphere. The system will be examined as driven energetically by solar energy and energy provided by human technology. Chemical models will be detainted along with the mathematical concepts required to understand the integration of the global system with resource utilization by humans. Special Note: Not available for credit to students who have taken CHEM A450.

16a. Course Prerequisite(s) (list prefix and number)

16b. Test Score(s)

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

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

16e. Registration Restriction(s) (non-codable)
    Graduate standing and instructor permission.

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action
    Addition of graduate level course stacked with CHEM A450 for inclusion into the Interdisciplinary Masters Program.

    Initiator (faculty only)
    John M. Kennish
    Date

    Dean/Director of School/College
    Date

    Undergraduate/Graduate Academic
    Board Chairperson
    Date

    Provost or Designee
    Date
Course Content Guide for CHEM A650

University of Alaska Anchorage

College of Arts & Sciences

I. Date of Initiation: February 22, 2013

II. Course Information:

A. College: College of Arts & Sciences

B. Course Subject: CHEM

C. Course Number: A650

D. Number of Credits: 3

E. Contact Hours: 3 + 0

F. Course Title: Advanced Environmental Chemistry

G. Grading Basis: A – F

H. Implementation Date: Spring 2014

I. Course Description: Detailed examination of the structure and function of planet Earth as a living chemical system as constructed around the atmosphere, hydrosphere, lithosphere, and biosphere. The system will be examined as driven energetically by solar energy and energy provided by human technology. Chemical models will be detained along with the mathematical concepts required to understand the integration of the global system with resource utilization by humans. Special Note: Not available for credit to students who have taken CHEM A450.

J. Course Attributes: N/A

K. Prerequisites: N/A

L. Test Scores: N/A

M. Co-requisites: N/A
N. **Registration Restrictions**: Graduate standing.

O. **Course Fee**: No

P. **Stacked With**: CHEM A450

III. **Instructional Goals and Student Learning Outcomes**

A. **Instructional Goals**:  

The instructor will:

1. Present chemical models for investigation and develop problem solving and observational skills on problems relevant to current issues and topics in environmental chemistry.

2. Present convergent and divergent questions to initiate discussion on the relevance of current environmental models to observe and understand natural phenomena, help students differentiate, link and integrate ideas and develop their own concepts, to articulate their thinking and explain models and solutions.

3. Provide multiple historical, cultural, environmental and socially relevant contexts for applying concepts and quantitative skills and invite students to defend and verify their models and their solutions to problems relevant to these contexts.

B. **Student Learning Outcomes**:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solve problems relevant to the origin and evolution of the Earth’s environment, about human impacts on this environment resulting from energy production and use of the atmosphere, hydrosphere and the biosphere.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Use quantitative chemical principles to evaluate the interrelationships of anthropomorphic influences on changes occurring in the atmosphere, hydrosphere and biosphere.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Communicate problems and verify solutions.</td>
<td>Assigned problems and Exam</td>
</tr>
<tr>
<td>Students will be able to propose a hypothesis and design a research proposal that addresses a specific question concerning a current contamination mechanism.</td>
<td>Research Proposal</td>
</tr>
</tbody>
</table>
Students will be able to make in-class presentation of their proposals

IV. **Course Activities**

A. Lecture  
B. Assigned problems  
C. Exams  
D. Research proposal  
E. In-class presentations

V. **Guidelines for Evaluation**

Students will be evaluated based on their performance on assigned problems, in-class exams, a research proposal, and presentation. The grades A – F will be assigned based on a curve that is deemed reasonable by the instructor.

VI. **Course Level Justification**

This course requires extensive multidisciplinary knowledge from biology, chemistry, engineering, mathematics, and physics. It requires the integration of this knowledge to solve multidimensional problems and understand complex concepts. Graduate student must demonstrate this capability by designing a research project that meets this standard and then present and defend their hypothesis and research design before their peers and instructor.

VII. **Course Outline**

1. Energy  
   a. Energy Flows and Supplies  
   b. Fossil Fuels  
   c. Nuclear Energy  
   d. Renewable Energy  
   e. Energy Utilization  
2. Atmosphere  
   a. Climate  
   b. Oxygen Chemistry  
   c. Stratospheric Ozone  
   d. Air Pollution  
3. Hydrosphere / Lithosphere  
   a. Water Resources
b. Water as Solvent

c. Water and the Lithosphere

d. Oxygen and Life

e. Water Pollution and Water Treatment

4. Biosphere

VIII. Suggested Texts


IX. Bibliography


1a. School or College
   AS CAS

1b. Division
   AMSC Division of Math Science

1c. Department
   Chemistry

2. Course Prefix
   CHEM

3. Course Number
   A477

4. Previous Course Prefix & Number
   N/A

5a. Credits/CEUs
   5

5b. Contact Hours
   (Lecture + Lab) (3+6)

6. Complete Course Title
   Bioanalytical Chemistry

   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   ☐ Course Number   ☐ Contact Hours   ☐ Repeat Status   ☐ Title   ☐ Cross-Listed/Stacked
   ☐ Grading Basis   ☐ Course Prerequisites   ☐ Co-requisites   ☐ Test Score Prerequisites   ☐ Registration Restrictions   ☐ Other Restrictions
   ☐ Class   ☐ Level   ☐ Major   ☐ College (please specify)

9. Repeat Status No # of Repeats Max Credits

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

11. Implementation Date
   From: Fall/2013 To:

12. ☐ Cross Listed with

   Stacked with CHEM A677
   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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<td>Eric Holmberg</td>
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<td>2. Chem A312</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
</tr>
<tr>
<td>3. Chem A441</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
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   Initiator Name (typed): Mark McCoy
   Initiator Signed Initials: _________ Date:________________

13b. Coordination Email Date: 10/3/2013
    submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison Date: 10/3/2013

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

15. Course Description (suggested length 20 to 50 words)
   Techniques in operating instrumentation and laboratory methods for the analysis of biomolecules. Special Note: For students in biology, chemistry, and allied fields.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
   CHEM A312 with minimum grade of C or CHEM A441 with a 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
   Creating an elective course for science majors due to student demand.

   __________________________     __________
   Initiator (faculty only)        Date

   Mark McCoy
   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
Course Content Guide for **CHEM A477**

University of Alaska Anchorage
College of Arts & Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course Information:**

A. **College:** College of Arts & Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A477

D. **Number of Credits:** 5

E. **Contact Hours:** 3 + 6

F. **Course Title:** Bioanalytical Chemistry

G. **Grading Basis:** A-F

H. **Implementation Date:** Fall 2013

I. **Course Description:** Techniques in operating instrumentation and laboratory methods for the analysis of biomolecules. Special Note: For students in biology, chemistry, and allied fields.

J. **Course Attributes:** N/A

K. **Prerequisites:** CHEM A312 with minimum grade of C or CHEM A441 with minimum grade of C.

L. **Test Scores:** N/A

M. **Co-requisites:** N/A

N. **Registration Restrictions:** N/A

O. **Course Fee:** Yes

P. **Stacked with:** CHEM A677
III. Instructional Goals and Student Learning Outcomes:

A. Course Activities:

Students will explore concepts and solve problems relevant to the latest bioanalytical techniques. Activities will provide students with models or data followed by questions to guide the students through learning. Understanding will be gained through a process emulating the scientific method. In the lecture portion of the course the instructor will guide the students through understanding the fundamental science behind modern and historical bioanalytical methods. Teaching methods may include: lectures, facilitation of class discussions, facilitation of real-time problem solving, and use of the Socratic Method. Laboratory activities will include method development, use of modern analytical equipment, computer assisted data collection, data analysis, statistical analysis, and interpretation of results.

B. Instructional Goals:

This course is designed as an advanced laboratory techniques course; it will provide a training base in bioanalytical techniques, which emulates conditions found in research laboratories and industry.

The instructor will:

1. Present models of molecular interactions between biomolecules with chemicals, substrates, and instrumentation and guide students in learning how these interactions can be applied to modern bioanalytical techniques.
2. Present convergent and divergent questions to initiate discussion on relevant scientific problems and how our current discussions could be applied in these cases.
3. Provide multiple historical, cultural, environmental and socially relevant contexts for applying concepts and analytical skills. Invite students to defend or verify their solutions to these problems.
4. Provide students with recent scientific breakthroughs in bioanalytical techniques. Facilitate classroom discussion for understanding of methods.
5. Demonstrate modern bioanalytical techniques in the laboratory. Facilitate student exploration in the laboratory to develop an understanding of the techniques as well as a scientific understanding of the fundamental concepts.

C. Student Learning Outcomes:

Students will solve complex problems related to bioanalytical methods. They will develop an understanding of the fundamental science behind the techniques and gain a basic understanding of how to apply it in the laboratory.

The student will:
1. Apply observation, investigative and problem solving skills to problems relevant to current issues and topics in bioanalytical chemistry.
2. Model laboratory processes as part of the lecture curriculum, after which the student will perform representative processes in the laboratory.
3. Demonstrate skills in science methodology such as exploring and selecting appropriate models.
4. Apply quality control to the student’s own performance in the laboratory with the goal of excellence in performance.
5. Create, communicate, and defend solutions to problems across multiple contexts.
6. Utilize a wide range of laboratory equipment and instrumentation and perform extensive data analysis and interpretation of their results.
7. Identify potential methods that could be used for particular analyses and weigh the strengths and weaknesses of each approach.

D. Guidelines for Assessment and Evaluation:

Evaluation can be based on a variety of instruments such as: homework, lab reports, take-home exams, in-class exams, quizzes, student discussion, and participation.

IV. Course Level Justification:

This course provides students with a more in-depth look at bioanalytical laboratory techniques and methods of analysis. Students learn skills in applied research and verification of research results. Verification for comprehension and retention of concepts are performed using appropriate evaluation tools.

V. Topical Course Outline:

1. Biomolecules
   a. Proteins
   b. Nucleic Acids
   c. Lipids

2. Chromatography
   a. Basic principals
   b. Chromatographic techniques of protein separation
   c. Protein isolation and separation in the laboratory

3. Electrophoresis
   a. Gel electrophoresis in the laboratory
   b. Capillary electrophoresis in the laboratory

4. Mass Spectrometry
   a. Peptide analysis and sequencing in the laboratory
b. Whole protein analysis
c. MALDI

5. Molecular Recognition
   a. Antibody based bioassays
   b. ELISA techniques and flow cytometry in the laboratory
   c. Biosensors
   d. DNA arrays

6. Nucleic Acids
   a. PCR (RT-PCR in the laboratory)
   b. DNA sequencing
   c. RNA/DNA isolation techniques

7. Protein Sequencing
   a. Edman degradation
   b. Protease and chemical digests with mass spectrometry

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
- CHEM

## 3. Course Number
- A677

## 4. Previous Course Prefix & Number
- N/A

## 5. Credits/CEUs
- 5

## 6. Complete Course Title
- Advanced Bioanalytical Chemistry
- Abbreviated Title for Transcript: Adv Bioanalytical Chemistry

## 7. Type of Course
- Academic

## 8. Type of Action:
- Add

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

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

## 11. Implementation Date
- From: Spring 2014
- To: 99/9999

## 12. Cross Listed with
- CHEM A477

## 13a. Impacted Courses or Programs:
- Interdisciplinary Masters Program
  - Date of Coordination: 8/28/13
  - Chair/Coordinator Contacted: 

## 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 techniques in operating instrumentation and laboratory methods for the analysis of biomolecules. Graduate students will be required to develop a bioanalytical technique in the lab and give a seminar on their findings. Special Note: Not available for credit to students who have completed CHEM A477.

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

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

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

## 16d. Registration Restriction(s) (non-codable)
- Graduate standing and instructor approval.

## 17. Mark if course has fees

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

## 19. Justification for Action
Addition of graduate level course stacked with CHEM A477 for inclusion in the Interdisciplinary Masters Program.

**Initiator Name (typed):** Mark McCoy

**Initiator Signed Initials:**

**Date:**

**3a. Impacted Programs/Courses: List any programs or college requirements that require this course.**

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
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<td>8/28/13</td>
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**Initiator Name (typed):** Mark McCoy

**Initiator Signed Initials:**

**Date:**

**3b. Coordination Email**

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<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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**submit to Faculty Listserv:** (uaa-faculty@lists.uaa.alaska.edu)

**3c. Coordination with Library Liaison**

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**19. Justification for Action**
Addition of graduate level course stacked with CHEM A477 for inclusion in the Interdisciplinary Masters Program.

**Initiator (faculty only):** Mark McCoy

**Initiator (TYPE NAME):**

**Date:**

**Approved**

**Disapproved**

**Dean/Director of School/College**

**Date:**

**Undergraduate/Graduate Academic**

**Date:**

**Approved**

**Disapproved**

**Board Chair**

**Date:**

**Approved**

**Disapproved**

**Provost or Designee**

**Date:**

**Disapproved**

**Date:**

39
Course Content Guide for CHEM A677
University of Alaska Anchorage
College of Arts & Sciences

I. Date of Initiation: February 22, 2013

II. Course Information:
A. College: College of Arts & Sciences
B. Course Subject: CHEM
C. Course Number: A677
D. Number of Credits: 5
E. Contact Hours: 3 + 6
F. Course Title: Advanced Bioanalytical Chemistry
G. Grading Basis: A-F
H. Implementation Date: Spring 2014
I. Course Description: Advanced techniques in operating instrumentation and laboratory methods for the analysis of biomolecules. Graduate students will be required to develop a bioanalytical technique in the lab and give a seminar on their findings. Special Note: Not available for credit to students who have completed CHEM A477.
J. Course Attributes: N/A
K. Prerequisites: None.
L. Test Scores: N/A
M. Co-requisites: N/A
N. Registration Restrictions: Graduate standing and instructor approval.
O. Course Fee: Yes
P. Stacked with: CHEM A477
III. Instructional Goals and Student Learning Outcomes:

A. Course Activities:

Students will explore concepts and solve problems relevant to the latest bioanalytical techniques. Activities will provide students with models or data followed by questions to guide the students through learning. Understanding will be gained through a process emulating the scientific method. In the lecture portion of the course the instructor will guide the students through understanding the fundamental science behind modern and historical bioanalytical methods. Teaching methods may include: lectures, facilitation of class discussions, facilitation of real-time problem solving, and use of the Socratic Method. Laboratory activities will include method development, use of modern analytical equipment, computer assisted data collection, data analysis, statistical analysis, and interpretation of results. Students will also research, develop, and implement a bioanalytical strategy in the laboratory, which will be presented as a short in-class seminar.

B. Instructional Goals:

The instructor will:

1. Present models of molecular interactions between biomolecules with chemicals, substrates, and instrumentation and guide students in learning how these interactions can be applied to modern bioanalytical techniques.
2. Present convergent and divergent questions to initiate discussion on relevant scientific problems and how our current discussions could be applied in these cases.
3. Provide multiple historical, cultural, environmental and socially relevant contexts for applying concepts and analytical skills. Invite students to defend or verify their solutions to these problems.
4. Provide students with recent scientific breakthroughs in bioanalytical techniques. Facilitate classroom discussion for understanding of methods.
5. Demonstrate modern bioanalytical techniques in the laboratory. Facilitate student exploration in the laboratory to develop an understanding of the techniques as well as a scientific understanding of the fundamental concepts.
6. Facilitate the student’s exploration into a modern bioanalytical technique that is relevant to their research.

C. Student Learning Outcomes:
Students will solve complex problems related to bioanalytical methods. They will develop an understanding of the fundamental science behind the techniques and gain advanced understanding of how to apply it in the laboratory.

The student will:

1. Apply observation, investigative and problem solving skills to problems relevant to current issues and topics in bioanalytical chemistry.
2. Model laboratory processes as part of the lecture curriculum, after which they perform representative processes in the laboratory.
3. Demonstrate skills in science methodology such as exploring and selecting appropriate models.
4. Apply quality control to the student’s own performance in the laboratory with the goal of excellence in performance.
5. Create, communicate, and defend solutions to problems across multiple contexts.
6. Utilize a wide range of laboratory equipment and instrumentation and perform extensive data analysis and interpretation of results.
7. Identify potential methods that could be used for particular analyses and weigh the strengths and weaknesses of each approach.
8. Research a bioanalytical method, develop an experiment, and implement the experiment in the lab.
9. Give a short topic seminar about the developed bioanalytical method including background, methods, and results of laboratory experiments.

D. Assessment Measures:

Various assessment tools can be used at the discretion of the instructor, including but not limited to homework, lab reports, take-home exams, in-class exams, quizzes, student discussion participation, and evaluation of independent research and seminar.

E. Guidelines for Evaluation:

Evaluation can be based on a variety of instruments such as: evaluation of independent research and seminar, homework, lab reports, take-home exams, in-class exams, quizzes, and student discussion participation.

IV. Course Level Justification:

This course provides students with a more in-depth look at bioanalytical laboratory techniques and advanced methods of analysis. Students learn skills in applied research, verification of research results, and researching and developing new bioanalytical techniques. Verification for comprehension and retention of concepts are performed using appropriate evaluation tools.
V. **Topical Course Outline:**

1. **Biomolecules**

2. **Chromatography**
   a. Basic principles
   b. Chromatographic techniques of protein separation
   c. Protein isolation and separation in the laboratory

3. **Electrophoresis**
   a. Gel electrophoresis in the laboratory
   b. Capillary electrophoresis in the laboratory

4. **Mass Spectrometry**
   a. Peptide analysis and sequencing in the laboratory

5. **Molecular Recognition**
   a. Antibody based bioassays
   b. ELISA techniques and flow cytometry in the laboratory
   c. Biosensors
   d. DNA arrays

6. **Nucleic Acids**
   a. PCR (RT-PCR in the laboratory)
   b. DNA sequencing
   c. RNA/DNA isolation techniques

7. **Protein Sequencing**

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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<tr>
<th>1a. School or College</th>
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<th>1c. Department</th>
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<td>AS CAS</td>
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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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<table>
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<tr>
<th>15. Course Description (suggested length 20 to 50 words)</th>
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Introduction to nuclear magnetic resonance spectroscopy and basic application to problems in biology and earth sciences.

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<tr>
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<th>16b. Co-requisite(s) (concurrent enrollment required)</th>
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<th>16d. Registration Restriction(s) (non-codable)</th>
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<table>
<thead>
<tr>
<th>17. Mark if course has fees</th>
<th>18. Mark if course is a selected topic course</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

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

Creating an elective class for science majors due to student demand.

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

<table>
<thead>
<tr>
<th>20. General Education Requirement</th>
<th>Oral Communication</th>
<th>Written Communication</th>
<th>Quantitative Skills</th>
<th>Humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark appropriate box:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fine Arts</td>
<td>Social Sciences</td>
<td>Natural Sciences</td>
<td>Integrative Capstone</td>
</tr>
</tbody>
</table>

Initiator (faculty only) Date

Vugmeyster

Initiator (TYPE NAME)

Approved

Disapproved

Dean/Director of School/College Date

Signature

Approved

Disapproved

Undergraduate/Graduate Academic Date

Board Chair

Approved

Disapproved

Provost or Designee Date

Approved

Disapproved

Department Chair Date

College/School Curriculum Committee Chair Date

Approved

Disapproved

Department Chair Date
Course Content Guide for **CHEM A480**
University of Alaska Anchorage
College of Arts and Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course information**

A. **College:** College of Arts and Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A480

D. **Number of Credits:** 3

E. **Contact Hours:** 3+0

F. **Course Title:** Nuclear Magnetic Resonance

G. **Grading Basis:** A – F

H. **Implementation Date:** Spring 2014

I. **Course Description:** Introduction to nuclear magnetic resonance spectroscopy and basic application to problems in biology and earth sciences.

J. **Course Attributes:** N/A

K. **Prerequisites:** [MATH A201 and (CHEM A411 or PHYS A212)] with a grade of C or better.

L. **Test Scores:** N/A

M. **Corequisites:** N/A

N. **Registration Restriction:** N/A

O. **Course Fee:** No

P. **Stacked With:** CHEM A680
III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

The instructor will:

1. Present theoretical principles of nuclear magnetic resonance.
2. Describe main experimental approaches to NMR.
3. Introduce applications to problems in biological and earth sciences.

B. Student Learning Outcomes:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate understanding of principles of nuclear magnetic resonance spectroscopy.</td>
<td>Quizzes, Exams</td>
</tr>
<tr>
<td>Demonstrate knowledge of main experimental approaches to NMR.</td>
<td>Quizzes, Exams</td>
</tr>
<tr>
<td>Demonstrate critical thinking in applying spectroscopic principles to problems in biological and earth sciences.</td>
<td>Oral presentations, Quizzes</td>
</tr>
</tbody>
</table>

IV. Course Activities

A. Lecture
B. Assignments
C. Oral presentations
D. Quizzes
E. Exams

V. Guidelines for Evaluation

Students will be evaluated based on their performance on quizzes, in-class exams and presentations.

VI. Course Level Justification

This course requires a background in calculus, physical chemistry, and physics.
VII. Course Outline

A. Principles of nuclear magnetic resonance spectroscopy.
B. Modern experimental techniques in solution and solid state NMR and metabolomics.
C. Applications to problems in biological and earth sciences. Examples include biomolecular structure and function, protein folding, metabolomics, and advanced analysis of soil matrix.

VIII. Suggested Text


IX. 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>
</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>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>A680</td>
<td></td>
<td>3</td>
<td>(Lecture + Lab)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(3+0)</td>
</tr>
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</table>

6. Complete Course Title
Advanced Nuclear Magnetic Resonance
Adv Nuclear Magnetic Resonance
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

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

9. Repeat Status No
- # of Repeats: 0
- Max Credits: n/a

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

11. Implementation Date
- From: Spring/2014
- To: 99/9999

12. [ ] Cross Listed with
- [X] Stacked with CHEM A480
  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.

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interdisciplinary Masters Program</td>
<td>08/29/2013</td>
<td></td>
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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): Vugmeyster
Initiator Signed Initials: __________ Date: __________

13b. Coordination Email
- Date: 8/28/13
- submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
- Date: 8/28/13

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 nuclear magnetic resonance theory and principles for elucidation of one- and multi-dimensional pulse sequences for structural analysis. Literature will be reviewed with regards to recent applications to biomolecules and soil analysis. Special Note: Not available for credit to students who completed CHEM A480.

16a. Course Prerequisite(s) (list prefix and number or test code and score)
16b. Co-requisite(s) (concurrent enrollment required)
16c. Other Restriction(s)
- [ ] College
- [ ] Major
- [ ] Class
- [x] Level

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

17. [ ] Mark if course has fees
18. [ ] Mark if course is a selected topic course

19. Justification for Action
Addition of graduate level course stacked with CHEM A480 for inclusion in the Interdisciplinary Masters program.

Initiator (faculty only)

Vugmeyster
Initiator (TYPE NAME)

[ ] Approved
[ ] Disapproved

Dean/Director of School/College
Date

Undergraduate/Graduate Academic
Board Chair
Date

Provost or Designee
Date
Course Content Guide for **CHEM A680**
University of Alaska Anchorage
College of Arts and Sciences

I. Date of Initiation: February 22, 2013

II. Course Information

A. College: College of Arts and Sciences

B. Course Subject: CHEM

C. Course Number: A680

D. Number of Credits: 3

E. Contact Hours: 3 + 0

F. Course Title: Advanced Nuclear Magnetic Resonance

G. Grading Basis: A – F

H. Implementation Date: Spring 2014

I. Course Description: Advanced nuclear magnetic resonance theory and principles for elucidation of one- and multi-dimensional pulse sequences for structural analysis. Literature will be reviewed with regards to recent applications to biomolecules and soil analysis. Special Note: Not available for credit to students who completed CHEM A480.

J. Course Attributes: N/A

K. Prerequisites: N/A

L. Test Scores: N/A

M. Corequisites: N/A

N. Registration Restrictions: Graduate standing and instructor approval.
O. **Course Fee:** No

P. **Stacked With:** CHEM A480

III. **Instructional Goals and Student Learning Outcomes**

A. **Instructional Goals:**

   The Instructor will:

   1. Present theoretical principles of nuclear magnetic resonance.
   2. Describe main experimental approaches.
   3. Introduce applications to problems in biological and earth sciences.
   4. Introduce emerging experimental approaches.

B. **Student Learning Outcomes:**

<table>
<thead>
<tr>
<th>Student Learning Outcomes Students will:</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate understanding of principles of nuclear magnetic resonance spectroscopy.</td>
<td>Quizzes, Exams</td>
</tr>
<tr>
<td>Demonstrate knowledge of main experimental approaches.</td>
<td>Quizzes, Exams</td>
</tr>
<tr>
<td>Demonstrate key applications to problems in biological and earth sciences through a critical review of literature.</td>
<td>Presentations of research articles</td>
</tr>
</tbody>
</table>

IV. **Course Activities**

   A. Lecture
   B. Assignments
   C. Analysis of research articles
   D. Quizzes
   E. Exams
V. Guidelines for Evaluation

Students will be evaluated based on their performance on quizzes, in-class exams and presentations. The grades A – F will be assigned based on a curve that is deemed reasonable by the instructor.

VI. Course Level Justification

This course requires a background in calculus, physical chemistry, and physics. It also requires a great deal of analytical thinking and attention to detail. Additional knowledge of literature database is expected of graduate students.

VII. Course Outline

A. Principles of nuclear magnetic resonance spectroscopy.
   i) classical theory of magnetism based on Bloch equations
   ii) product operator formalism
   iii) introduction to multidimensional NMR
   iv) introduction to relaxation phenomenon
B. Modern experimental techniques in solution and solid state NMR and metabolomics. Suggested examples include
   i) two-dimensional COSY, HSQC, and HMQC pulse sequences
   ii) solid-state line shapes based on dipolar and chemical shift anisotropy interactions
   iii) transverse and longitudinal relaxation experiments
   iv) techniques for detection of quadrupolar nuclei
C. Applications to problems in biological and earth sciences. Examples include biomolecular structure and function, protein folding, metabolomics, and advanced analysis of soil matrix. The choice of applications is open and is likely to be governed by future advances in the field.

VIII. Suggested Text


IX. 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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<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>
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<td>1-3</td>
<td>(1-3+0)</td>
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<table>
<thead>
<tr>
<th>6. Complete Course Title</th>
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<tbody>
<tr>
<td>Selected Lecture Topics in Chemistry</td>
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<tr>
<td>Selected Lect Topics Chemistry</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>7. Type of Course</th>
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</thead>
<tbody>
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<td>Academic</td>
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<tr>
<td>Preparatory/Development</td>
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<tr>
<td>Non-credit</td>
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<tr>
<td>CEU</td>
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<tr>
<td>Professional Development</td>
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<table>
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<tr>
<th>8. Type of Action:</th>
<th>Add</th>
<th>Change</th>
<th>Delete</th>
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</table>

If a change, mark appropriate boxes:

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

<table>
<thead>
<tr>
<th>9. Repeat Status Yes</th>
<th># of Repeats</th>
<th>11 Max Credits</th>
</tr>
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</table>

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

Detailed coverage of a selected lecture topic in chemistry presented at a breadth and depth appropriate for undergraduate studies. Activities will vary according to the topic. Exposure to the topic will rely principally on text, lecture, and directed review of selected articles in the literature. For students in chemistry and allied fields. Special Notes: See schedules for specific subtitles to be offered. With changes in subtitles, course may be repeated for credit although course prerequisites and corequisites may vary with topic.

**16a. Course Prerequisite(s) (list prefix and number)**

<table>
<thead>
<tr>
<th>16b. Test Score(s)</th>
<th>16c. Co-requisite(s) (concurrent enrollment required)</th>
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</thead>
</table>

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

<table>
<thead>
<tr>
<th>16e. Registration Restriction(s) (non-codable)</th>
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</table>

- Junior or senior standing and instructor approval.

<table>
<thead>
<tr>
<th>17. Mark if course has fees</th>
<th>18. Mark if course is a selected topic course</th>
</tr>
</thead>
</table>

**Justification for Action**

Provide additional upper division elective opportunities for undergraduate chemistry students, by student demand.

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
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</thead>
<tbody>
<tr>
<td>Colin McGill</td>
<td></td>
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<thead>
<tr>
<th>Initiator (TYPE NAME)</th>
<th>Date</th>
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<th>Disapproved</th>
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</table>

1. B.S. Chemistry
2.
3.

### Impacted Courses or Programs

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Catalog Page(s)</th>
<th>Impact</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tr>
<td>1. B.S. Chemistry</td>
<td>2/22/2013</td>
<td></td>
<td>Eric Holmberg</td>
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Initiator Name (typed): Colin McGill  
Initiator Signed Initials: _________  
Date:____________

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<th>Impacted Program/Course</th>
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### Coordination Email

<table>
<thead>
<tr>
<th>Coordination Email</th>
<th>Date</th>
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</table>

<table>
<thead>
<tr>
<th>Coordination with Library Liaison</th>
<th>Date</th>
</tr>
</thead>
</table>

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)

Detailed coverage of a selected lecture topic in chemistry presented at a breadth and depth appropriate for undergraduate studies. Activities will vary according to the topic. Exposure to the topic will rely principally on text, lecture, and directed review of selected articles in the literature. For students in chemistry and allied fields. Special Notes: See schedules for specific subtitles to be offered. With changes in subtitles, course may be repeated for credit although course prerequisites and corequisites may vary with topic.

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<table>
<thead>
<tr>
<th>16d. Other Restriction(s)</th>
</tr>
</thead>
</table>

- Junior or senior standing and instructor approval.

17. Mark if course has fees

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</table>

**Justification for Action**

Provide additional upper division elective opportunities for undergraduate chemistry students, by student demand.

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<thead>
<tr>
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<th>Disapproved</th>
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1. B.S. Chemistry
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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

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

Detailed coverage of a selected lecture topic in chemistry presented at a breadth and depth appropriate for undergraduate studies. Activities will vary according to the topic. Exposure to the topic will rely principally on text, lecture, and directed review of selected articles in the literature. For students in chemistry and allied fields. Special Notes: See schedules for specific subtitles to be offered. With changes in subtitles, course may be repeated for credit although course prerequisites and corequisites may vary with topic.

16a. Course Prerequisite(s) (list prefix and number)

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</table>

<table>
<thead>
<tr>
<th>16d. Other Restriction(s)</th>
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</table>

- Junior or senior standing and instructor approval.

17. Mark if course has fees

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</table>

**Justification for Action**

Provide additional upper division elective opportunities for undergraduate chemistry students, by student demand.

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<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
</table>

1. B.S. Chemistry
2.
3.
Course Content Guide for **CHEM A490**  
University of Alaska Anchorage  
College of Arts & Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course Information**

A. **College:** College of Arts & Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A490

D. **Number of Credits:** 1-3

E. **Contact Hours:** 1-3 + 0

F. **Course Title:** Selected Lecture Topics in Chemistry

G. **Grading Basis:** A-F

H. **Implementation Date:** Fall 2013

I. **Course Description:** Detailed coverage of a selected lecture topic in chemistry presented at a breadth and depth appropriate for upper-division undergraduate science studies. Activities will vary according to the topic. For students in chemistry and allied fields. Special Notes: Course can be repeated for up to 12 credits with a change in subtitle. Prerequisites and corequisites may vary with topic.

J. **Course Attributes:** N/A

K. **Prerequisites:** N/A

L. **Test Scores:** N/A

M. **Corequisites:** N/A

N. **Registration Restrictions:** Junior or senior standing and instructor approval.

O. **Course Fee:** No

P. **Stacked With:** CHEM A690
III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

Instructional goals will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

The instructor will:

1. Introduce students to the fundamental topics of the chemical origins of biology emphasizing regulation at the chemical level.
2. Encourage knowledge integration by presenting bioorganic chemistry in an integrated context that relates knowledge from biology, chemistry and modeling to understand macromolecular structure and function.
3. Encourage critical thinking by providing reading assignments from primary literature, and leading in-class discussion that requires critical assessments of the articles by the students.

B. Student Learning Outcomes:

Student learning outcomes will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

<table>
<thead>
<tr>
<th>Student Learning Outcomes – Students will:</th>
<th>Assessment Strategies and Student Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be able to demonstrate a working knowledge of the chemical basis for the production and function of classic biological macromolecules.</td>
<td>Assigned problems, Written (or oral) presentations on the topic, Exams</td>
</tr>
<tr>
<td>Be able to integrate mechanistic arrow pushing in the study of biochemistry and molecular biology.</td>
<td>Assigned problems, Written (or oral) presentations on the topic, Exams</td>
</tr>
<tr>
<td>Be able to describe enzyme function and regulation by integrating crystal structure data, NMR data, and classical organic chemistry.</td>
<td>Assigned problems, Written (or oral) presentations on the topic, Exams</td>
</tr>
<tr>
<td>Actively participate in and contribute to in-class discussion of primary research literature.</td>
<td>Attendance and participation in lecture, Participation in discussion of primary literature demonstrating due diligence prior to discussion.</td>
</tr>
</tbody>
</table>
IV. **Course Activities:**

A. Lecture and in-class discussion  
B. Critical reading, analysis and discussion of primary research literature with written (or oral) reports  
C. Assigned problems to be worked outside of class  
D. Exams  
E. Research and/or papers reviewing literature on a current theoretical or practical topic in biochemistry

V. **Guidelines for Evaluation**

A. At least 3 written exams, one of which is a comprehensive final exam  
B. Reports (written or oral) on primary literature  
C. Research paper  
D. Attendance and participation in discussion

VI. **Course Level Justification**

This course builds upon a foundation of knowledge established in 300-level chemistry and biology courses.

VII. **Topic Course Outline**

Topics will vary according to subtitle. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

A. Chemical origins of biology  
B. DNA and RNA  
C. Peptide and protein structure  
D. Protein function and regulation at the chemical level  
E. Glycobiology  
F. Terpenes  
G. Chemical control of signal transduction

VIII. **Suggested Texts**

IX. Bibliography


3. Scientific Journals such as (not a comprehensive list):
   - Biological Chemistry
   - Biochemistry
   - Biophysical Journal
   - Cell
   - European Journal of Molecular Biology
   - Journal of Biological Chemistry
   - Journal of molecular Biology
   - Molecular Biology
   - Molecular Cell
   - Nature
   - Nature Structure
   - Proceedings of the National Academy of Sciences
   - Science
# Proposal to Initiate, Add, Change, or Delete a Course

**Course Title:**
Advanced Lecture Topics in Chemistry

**Abbreviated Title for Transcript:**
Adv Lecture Topics Chemistry

## Course Information

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. School or College</td>
<td>AS CAS</td>
</tr>
<tr>
<td>1b. Division</td>
<td>AMSC Division of Math Science</td>
</tr>
<tr>
<td>1c. Department</td>
<td>CHEMISTRY</td>
</tr>
<tr>
<td>2. Course Prefix</td>
<td>CHEM</td>
</tr>
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<td>3. Course Number</td>
<td>A-690</td>
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<td>4. Previous Course Prefix &amp; Number</td>
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<tr>
<td>5a. Credits/CEUs</td>
<td>1-3</td>
</tr>
<tr>
<td>5b. Contact Hours (Lecture + Lab)</td>
<td>(1-3+0)</td>
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</tbody>
</table>

## Course Description

Advanced coverage of selected lecture topics in chemistry presented at a breadth and depth appropriate for graduate studies. Exposure to the topic will rely extensively on independent review of literature supplemented with text and lecture for references. Special Notes: course prerequisites and corequisites may vary with topic. With changes in topic, course may be repeated for up to 12 credits.

## Course Requirements

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

## Course Action Request

**Initiator Name (typed):** Colin McGill

**Initiator Signed Initials:** _________  **Date:** __________

**Coordination Email Date:** 8/28/13

**Coordination with Library Liaison Date:** 8/28/13

**Justification for Action:**
Provide a flexible graduate level curriculum for Interdisciplinary Graduate Students addressing material not taught on a regular basis.

**Initiator (faculty only) Date:**

**Approved**

**Disapproved**

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

**Approved**

**Disapproved**

**Undergraduate/Graduate Academic Date:**

**Approved**

**Disapproved**

**Board Chairperson**

**Approved**

**Disapproved**

**Provost or Designee Date:**

**Approved**

**Disapproved**

**Curriculum Committee Chairperson Date:**

**Approved**

**Disapproved**

**Department Chairperson Date:**

**Approved**

**Disapproved**
Course Content Guide for **CHEM A690**  
University of Alaska Anchorage  
College of Arts & Sciences

I. **Date of Initiation:** February 22, 2013

II. **Course Information**

A. **College:** College of Arts & Sciences

B. **Course Subject:** CHEM

C. **Course Number:** A690

D. **Number of Credits:** 1-3

E. **Contact Hours:** 1-3 + 0

F. **Course Title:** Advanced Lecture Topics in Chemistry

G. **Grading Basis:** A-F

H. **Implementation Date:** Spring 2014

I. **Course Description:** Advanced coverage of selected lecture topics in chemistry presented at a breadth and depth appropriate for graduate studies. Exposure to the topic will rely extensively on independent review of literature supplemented with text and lecture for references. Special Notes: course prerequisites and corequisites may vary with topic. With changes in topic, course may be repeated for up to 12 credits.

J. **Course Attributes:** N/A

K. **Prerequisites:** N/A

L. **Test Scores:** N/A

M. **Corequisites:** N/A

N. **Registration Restrictions:** Graduate standing.

O. **Course Fee:** No

P. **Stacked With:** CHEM A490

III. **Instructional Goals and Student Learning Outcomes**
A. **Instructional Goals:**

Instructional goals will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

The instructor will:

1. Introduce students to advanced topics concerning the chemical origins of biology emphasizing regulation at the chemical level.
2. Present bioorganic chemistry in an integrated context that relates knowledge from biology, chemistry and modeling to understand macromolecular structure and function.
3. Provide reading assignments from primary literature, and leading in-class discussion that requires critical assessments of the articles by the students.

B. **Student Learning Outcomes:**

Student learning outcomes will vary according to topic.

<table>
<thead>
<tr>
<th>Student Learning Outcomes – Students will:</th>
<th>Assessment Strategies and Student Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>demonstrate a working knowledge of the chemical basis for the production and function of classic biological macromolecules.</td>
<td>Written reports, In-Class Discussion, Exams</td>
</tr>
<tr>
<td>integrate mechanistic arrow pushing in the study of biochemistry and molecular biology.</td>
<td>Written reports, In-Class Discussion, Exams</td>
</tr>
<tr>
<td>describe enzyme function and regulation by integrating crystal structure data, NMR data, and classical organic chemistry.</td>
<td>Written reports, In-Class Discussion, Exams</td>
</tr>
<tr>
<td>Independently integrate information from the literature to address specific questions concerning the function of classic enzyme systems.</td>
<td>Oral (or written) presentations and in-class discussion work facilitated by the instructor.</td>
</tr>
</tbody>
</table>

IV. **Course Activities:**

A. Lecture
B. Critical reading, analysis and discussion of primary research literature with written (or oral) reports  
C. Assigned problems to be worked outside of class  
D. Exams  
E. Research and/or papers reviewing literature on a current theoretical or practical topic in biochemistry

V. **Guidelines for Evaluation**

Guidelines for evaluation will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

Criteria may include, but are not limited to the following:  
A. Three written exams, one of which is a comprehensive final exam  
B. Reports (written or oral) on primary literature  
C. Research paper  
D. Assigned problems

VI. **Course Level Justification**

Course level justification will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

This is an advanced lecture course in the principles and processes of biochemistry topics emphasizing the mechanistic aspects of function and regulation at the chemical level. Success in the course requires functional knowledge in multiple 300- and 400-level chemistry and biology courses and the ability to integrate this knowledge with data in the literature.

VII. **Topic Course Outline**

Topic course outline will vary according to topic. An example is provided below for course subtitled “Bioorganic Chemistry and Chemical Biology”.

A. Chemical origins of biology  
B. DNA and RNA  
   a. Structure of nucleotides  
   b. Transcription  
   c. Translation  
C. Peptide and protein structure  
   a. Fundamentals of structure  
   b. Mechanisms of folding  
D. Protein function and regulation at the chemical level  
   a. Surface chemistry  
   b. Thermodynamics and chemical regulation
E. Glycobiology
   a. Roles of carbohydrates
   b. Regulation
F. Terpenes
   a. Synthesis
   b. Modifications to lipid membranes
G. Chemical control of signal transduction
   a. Transduction basics
   b. Signal cascades

VIII. Suggested Texts


IX. Bibliography

3. Scientific Journals such as (not a comprehensive list):
   Biological Chemistry
   Biochemistry
   Biophysical Journal
   Cell
   European Journal of Molecular Biology
   Journal of Biological Chemistry
   Journal of molecular Biology
   Molecular Biology
   Molecular Cell
   Nature
   Nature Structure
   Proceedings of the National Academy of Sciences
   Science
## Course Action Request

### University of Alaska Anchorage

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

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<th>2. Course Prefix</th>
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<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours</th>
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<tr>
<td>CHEM</td>
<td>A495</td>
<td>N/A</td>
<td>3</td>
<td>(Lecture + Lab) (0+9)</td>
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### Complete Course Title

Chemistry Internship

Abbreviated Title for Transcript (30 character)

<table>
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<th>7. Type of Course</th>
<th>8. Type of Action:</th>
<th>9. Repeat Status Yes</th>
<th># of Repeats</th>
<th>Max Credits</th>
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<tbody>
<tr>
<td></td>
<td>Add</td>
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<td>Yes</td>
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### Course Description

Work experience in an approved position with supervision and training in various agencies and businesses. Exposes student to work environment beyond the campus setting to acquire essential practical skills and enhance self-confidence and career direction. Special Note: May be repeated once for credit.

### Course Action Request

Addition of an elective course for chemistry majors, due to student demand.

---

**Initiator Name (typed):** John M. Kennish  
**Initiator Signed Initials:** __________  
**Date:** __________

**Impacted Program/Course**

<table>
<thead>
<tr>
<th>Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. B.S. Chemistry</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Initiator Name (typed):** John M. Kennish  
**Initiator Signed Initials:** __________  
**Date:** __________

**Coordination Email**

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

**Coordination with Library Liaison**

Date: 10/3/2013

**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)

Work experience in an approved position with supervision and training in various agencies and businesses. Exposes student to work environment beyond the campus setting to acquire essential practical skills and enhance self-confidence and career direction. Special Note: May be repeated once for credit.

**Course Action Request**

Addition of an elective course for chemistry majors, due to student demand.

---

**Initiator Name (typed):** John M. Kennish  
**Initiator Signed Initials:** __________  
**Date:** __________

**Approved**

**Dean/Director of School/College**

**Date:** __________

**Undergraduate/Graduate Academic Board Chair**

**Date:** __________

**Provost or Designee**

**Date:** __________
Course Content Guide for **CHEM A495**  
University of Alaska Anchorage  
College of Arts and Sciences

I. **Date of Initiation:** February 22, 2013  

II. **Course Information**  

A. **College:** College of Arts and Sciences  
B. **Course Subject:** CHEM  
C. **Course Number:** A495  
D. **Number of Credits:** 3  
E. **Contact Hours:** 0+9  
F. **Course Title:** Chemistry Internship  
G. **Grading Basis:** A – F  
H. **Implementation Date:** Fall 2013  

I. **Course Description:** Work experience in an approved position with supervision and training in various agencies and businesses. Exposes student to work environment beyond the campus setting to acquire essential practical skills and enhance self-confidence and career direction. Special Note: May be repeated once for credit.  

J. **Course Attributes:** N/A  
K. **Prerequisites:** None.  
L. **Test Scores:** N/A  
M. **Corequisites:** N/A  

N. **Registration Restrictions:** Junior or senior standing and Department Chair approval.  

O. **Course Fee:** No
III. Instructional Goals and Defined Student Outcomes

A. The instructor will clarify the student’s occupational interests and gain insight into various Career Services Center (CSC) Program positions and job requirements.

The Student will:
- Obtain approval from the CSC and the Chemistry Faculty Internship Coordinator and Department Chair by demonstrating academic and employment readiness.
- Interview with a CSC program representative.
- Discuss placement opportunities with the CSC.
- Determine whether there’s a match between student’s interests and employer’s needs.
- Provide a copy of college transcript(s).
- Obtain the Faculty Internship Coordinator’s signature on the CSC recommendation form.

B. The instructor will help the student develop an updated resume.

The Student will:
- Produce a resume that reflects the student’s current academic and employment history.
- Meet with the CSC representative and with the Chemistry Faculty Internship Coordinator.

C. The internship will provide a program orientation.

The Student will:
- Meet with the CSC representative and with the Chemistry Faculty Internship Coordinator.
- Discuss special requirements of the course.
- Discuss the placement process.
- Learn interviewing skills.

D. The internship will provide for a Student-Employer Interview.

The Student will:
- Prepare for the interview by researching the firm and practicing interview skills.
- Attend the interview.

E. The internship will develop learning objectives with specific academic content.

The Student will:
- Gain clear understanding of his/her employment responsibilities.
- Help define his/her course/employment objectives.
- Gain understanding of the employer’s role in this process.
- Gain approval from the Chemistry Faculty Internship Coordinator underwriting the academic value of the proposed internship objectives.

F. The internship will provide practical learning experience.

The Student will:
- Learn work skills relevant to the academic major.
- Augment job readiness skills.
- Demonstrate a better understanding of human relations through working with other employees.
- Demonstrate attitudes and work habits for job competency.
- Demonstrate skills that may increase the student’s marketability in his/her program of study.
- Prepare a final paper (Technical Report) describing academic achievements and learning experiences.
- Obtain from the employer: an (1) “Employer’s Survey”, and (2) two “Employer Evaluation Forms” one at the mid-point of the placement and one at its completion.

IV. Evaluation

Evaluation will be based on the student’s final Technical Report and the Employer Evaluations. Students must work 75 hours on the job for each credit hour earned.

Criteria for Grading:

A. To receive a grade of A:
- Job performance as evaluated by the on-the-job review and Technical Report as evaluated by the Faculty Coordinator must both be scored as excellent.
- Individual improvement - must demonstrate exceptional mastery of on-the-job techniques.
- Individual improvement in writing skills - must demonstrate exceptional mastery of report writing.

B. To receive a grade of B:
- Job performance as evaluated by the on-the-job review and Technical Report as evaluated by the Faculty Coordinator must both be scored as above-average.
- Individual improvement - must demonstrate above-average mastery of on-the-job techniques.
- Individual improvement in writing skills - must demonstrate above-average mastery of report writing.

C. To receive a grade of C:
- Job performance as evaluated by the on-the-job review and Technical Report as evaluated by the Faculty Coordinator must both be scored as average.
Individual improvement - must demonstrate average mastery of on-the-job techniques.
Individual improvement in writing skills - must demonstrate average mastery of report writing.

D. To receive a grade of D:
- Job performance as evaluated by the on-the-job review and Technical Report as evaluated by the Faculty Coordinator must both be scored as below-average.
- Individual improvement - must demonstrate below average mastery of on the job techniques.
- Individual improvement in writing skills - must demonstrate below-average mastery of report writing.

E. To receive a grade of F:
- Majority of work and/or the final Technical Report are unacceptable or missing.

V. **Course Level Justification**

This course requires junior or senior standing. It is considered an important stepping stone from academia to the professional community.

VI. **Outline**

A. Overview of the Internship
   - Clarify the student’s occupational interest.
   - Produce an updated resume.
   - Meet with faculty and a Career Services Center (CSC) representative.
   - Program Orientation.

B. Interview Process and Selection
   - Student interview.

C. Training Goals and Objectives
   - Proficiency of the learning objectives.

D. Student’s Participation in Program Placement
   - Practical learning experience.

E. Meeting Schedule
   - Variable 10-20 hours per week depending on employer’s needs and student’s class schedule. Summer hours may vary.

VII. **Suggested Text and Bibliography**

Not applicable.
DATE  December 20, 2012

FROM: Eric G. Holmberg, Ph.D.
       Professor/Chair Chemistry

RE:     B.S. Chemistry/Biochemistry Option Change

The Chemistry Department proposes the following changes to the B.S.
Chemistry/Biochemistry option course requirements.

1. Elimination of MAT 202 as a requirement.
2. Addition of BIOL 461 (Molecular Biology) as a requirement.
3. Addition of PHYS 123/124 course and lab sequence as an option.
4. Movement of CHEM 434 as an elective.
5. Addition of CHEM 311 as and alternate to CHEM 331.
6. Expansion of the required electives with courses appropriate to the
curriculum.

The department has determined each of these changes, additions and deletion will
strengthen our degree in preparing students for a graduate experience and/or the
job market. In addition, it will offer students more opportunity to finish the degree
program in a four -year period with respect to course offering and student focus.
1a. School or College
AS CAS

1b. Department
Chemistry

2. Complete Program Title/Prefix
Bachelor of Science, Chemistry/Biochemistry Option

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
☒ Change
☐ Delete

☐ PREFIX
☐ Add
☒ Change
☐ Inactivate

5. Implementation Date (semester/year)
From: Fall /2013 To: 99/9999

6a. Coordination with Affected Units
Department, School, or College: Math, Biological Sciences, Physics
Initiator Name (typed): Eric Holmberg
Date:__________
Initiator Signed Initials: _________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu) Date: 12/20/2012

6c. Coordination with Library Liaison Date: 12/20/2012

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

8. Justification for Action
Updating the requirements for the BS Chemistry/Biochem option to reflect the skill set required in a graduate or work environment.

Initiator (faculty only) Date
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
1. 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 A115 Fundamentals of Biology I 4
- BIOL A116 Fundamentals of Biology II 4
- BIOL A242 Fundamentals of Cell Biology 4
- BIOL A252 Principles of Genetics 4
- Upper division Biological Sciences electives 12

**FACULTY**

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- Eric Bortz, Assistant Professor
- Loren Buck, Professor, clbuck@uaa.alaska.edu
- Jason Burkhead, Assistant Professor, jlburkhead@uaa.alaska.edu
- Jennifer Moss Burns, Professor, jmburns@uaa.alaska.edu
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- Ian van Tets, Associate Professor, igvantets@uaa.alaska.edu
- Frank von Hippel, Professor, favonhippel@uaa.alaska.edu

**CHEMISTRY**

ConocoPhillips Integrated Sciences Building (CPSB), Room 101Q, (907) 786-1238

www.uaa.alaska.edu/chemistry

Chemistry is the science concerned with substances and their properties, composition, and reactions. Recent advances in chemistry have exerted a profound influence on the progress of medicine, agriculture, industry, and commerce.
The undergraduate courses in Chemistry offered at UAA are designed primarily to provide a broad knowledge of the field as a part of the program of liberal education offered by the College of Arts and Sciences. They are also designed to provide a substantial foundation in chemistry for students interested in post-graduate studies in chemistry or the other sciences, preparation for professional degrees, teaching, or a career in government or industry. Students majoring in Chemistry will meet basic course requirements in inorganic, analytical, organic, physical chemistry and biochemistry.

The biochemistry option is designed for students who prefer a more biologically oriented approach to chemistry. During the past 25 years, biochemistry has become a central scientific discipline linking the chemical, physical, and biological sciences. By applying the concepts and methods of chemistry to the problems of biology, biochemists have made great progress in explaining life in chemical terms.

**High School Preparation**

The Bachelor of Science in Chemistry with options in Chemistry or Biochemistry is a four-year baccalaureate program which assumes a proper high school preparation. Consult the College of Arts and Sciences list of recommended preparatory courses in all disciplines. The specific coursework which a freshman student must have mastered for admission to the Chemistry program without a deficiency includes:

**English**

4 years

**Mathematics**

- Algebra 2 years
  - *(This must have included at least complex numbers, logarithms, quadratic functions, inequalities and absolute values, plus conic sections).*
- Geometry 1 year
- Trigonometry 1/2 year

**Natural Sciences**

- Physics 1 year
  - *(This must cover mechanics, thermodynamics, electricity and magnetism, and optics).*
- Chemistry 1 year
  - *(This must cover elementary laboratory procedures, introduction to atoms and molecules, chemical reactions, equilibrium, and an introduction to chemical calculations).*

It is strongly recommended that students graduating from high school without the preparation indicated above enroll in available non-science courses during the summer session to make up deficiencies so that they can begin the fall semester with the correct sequence of the freshman Chemistry curriculum. If this is not done, it will be necessary to carry heavier course loads or take more than eight semesters to complete the degree. Students are reminded that it is imperative for them to regularly (at least once per semester) consult a departmental advisor to evaluate their progress through the program of study: **Program Student Learning Outcomes**

It is expected that graduates of the Chemistry program will have the ability to:

1. Understand and critically solve problems related to the Physical and Natural Sciences and present those solutions for the advancement of knowledge in the field of Chemistry and Biochemistry.
2. Design and conduct experiments that include fieldwork, laboratory analyses, instrumental methods, theoretical development and interpretation in the discipline.

**Honors in Chemistry**

The Department of Chemistry awards departmental honors in Chemistry to undergraduate students who show exceptional performance in all their coursework. To graduate with honors students must:

1. Satisfy all requirements for a Bachelor of Science degree in Chemistry.
2. Meet the requirements for Graduation with Honors as listed in Chapter 7.
3. Maintain a minimum GPA of 3.50 in Chemistry classes.
4. Complete, with distinction, a written assignment in the style of a chemical journal based on the research performed in CHEM A498.
5. Notify the Departmental Honors Committee in writing at the time they file their Application for Graduation with the Office of the Registrar that they intend to graduate with departmental honors.

**Bachelor of Science, Chemistry**

**Admission Requirements**

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.
**Academic Progress**

In order to graduate with a BS in Chemistry, all courses covered under Major Requirements for a BS in Chemistry must be completed with a grade of C or better.

**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**

Students are strongly encouraged to talk to a faculty advisor in the Chemistry Department to ensure that the necessary math and science courses are taken in the first two years of study.

1. Students working toward a degree in Chemistry can choose one of two options:

**Chemistry Option (82-83 credits)**

Complete the following required courses:

- **BIOL A115** Fundamentals of Biology I 4
- **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 A253** Principles of Inorganic Chemistry 3
- **CHEM A312** Quantitative Analysis 5
- **CHEM A321** Organic Chemistry I 3
- **CHEM A322** Organic Chemistry II 3
- **CHEM A323L** Organic Chemistry Laboratory 2
- **CHEM A331** Physical Chemistry I 3
- **CHEM A332** Physical Chemistry II 3
- **CHEM A333L** Physical Chemistry Laboratory 2
- **CHEM A434** Instrumental Methods 5
- **CHEM A441** Principles of Biochemistry I 3
- **CHEM A453** Advanced Inorganic Chemistry 5
- **CHEM A492** Undergraduate Seminar (1) 2
- **CHEM A498** Individual Research (3) 6
- **MATH A200** Calculus I 4
- **MATH A201** Calculus II 4
- **MATH A202** Calculus III 4
- **MATH A314** Linear Algebra 3
- **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

**Upper Division Elective (choose one of the following)** 3-4

- **BIOL A310** Principles of Physiology (3)
- **BIOL A415** Comparative Animal Physiology (4)
- **BIOL A461** Molecular Biology (3)
- **CHEM A442** Principles of Biochemistry II (3)
- **CHEM A450** Environmental Chemistry (3)
CHEM A456  Non-linear Dynamics and Chaos (3)
CHEM A460  Chemical Ecotoxicology (3)
CHEM A471  Immunochemistry (4)
GEOL A321  Mineralogy (4)
GEOL A360  Geochemistry (3)
GEOL A460  Environmental Geochemistry (3)
MATH A302  Ordinary Differential Equations (3)
MATH A422  Partial Differential Equations (3)
PHYS A303  Modern Physics (3)
PHYS A320  Simulation of Physical Systems (3)
PHYS A403  Quantum Mechanics (3)
PHYS A413  Statistical Methods (3)

Biochemistry Option (87 credits)

Complete the following required courses:
BIOL A115  Fundamentals of Biology I  4
BIOL A116  Fundamentals of Biology II  4
BIOL A242  Fundamentals of Cell Biology  4
BIOL A252  Principles of Genetics  4
BIOL A461  Molecular Biology  3
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 A253  Principles of Inorganic Chemistry  3
CHEM A312  Quantitative Analysis  5
CHEM A321  Organic Chemistry I  3
CHEM A322  Organic Chemistry II  3
CHEM A323L Organic Chemistry Laboratory  2
CHEM A311  Physical Chemistry/Biological Orientation  3
or
CHEM A331  Physical Chemistry I  3
CHEM A441  Principles of Biochemistry I  3
CHEM A442  Principles of Biochemistry II  3
CHEM A443  Biochemistry Laboratory  2
CHEM A492  Undergraduate Seminar (1)  2
CHEM A498  Individual Research (3)  6
MATH A200  Calculus I  4
MATH A201  Calculus II  4

(either Physics sequence)
PHYS A123  Basic Physics I  3
PHYS A123L Basic Physics I Lab  1
PHYS A124  Basic Physics II  3
PHYS A124L Basic Physics II Lab  1
or
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

Upper Division Elective (choose from the following) 9
BIOL A310  Principals of Physiology (3)
BIOL A340/L General Microbiology (5)
2. A total of 120-126 credits is required for the degree, of which 42 credits must be upper division.

**Minor, Chemistry**

Students majoring in another subject who wish to minor in Chemistry must complete the following requirements. A total of 24 credits is required for the minor.

- 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 A312  Quantitative Analysis  5
- CHEM A321  Organic Chemistry I  3
- CHEM A322  Organic Chemistry II  3
- CHEM A323L  Organic Chemistry Laboratory  2
- CHEM A311  Physical Chemistry: A Biological Orientation (3)  
  or
- CHEM A331  Physical Chemistry I (3)  

**FACULTY**

- Eric Holmberg, Professor/Chair, egholmberg@uaa.alaska.edu
- John Kennish, Professor, jmkennish@uaa.alaska.edu
- Jerzy Maselko, Professor, jmaselko2@uaa.alaska.edu
- Colin McGill, Assistant Professor, cmmcgill@uaa.alaska.edu
- Mark McCoy, Assistant Professor, mrmccoy@uaa.alaska.edu
- Liliya Vugmeyster, Assistant Professor, lvugmeyster@uaa.alaska.edu
1. 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL A115</td>
<td>Fundamentals of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A116</td>
<td>Fundamentals of Biology II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A242</td>
<td>Fundamentals of Cell Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A252</td>
<td>Principles of Genetics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Upper division Biological Sciences electives</td>
<td>12</td>
</tr>
</tbody>
</table>

**FACULTY**

- Lilian Alessa, Professor, laless@uaa.alaska.edu
- Eric Bortz, Assistant Professor
- Loren Buck, Professor, lbuck@uaa.alaska.edu
- Jason Burkhead, Assistant Professor, jburkhead@uaa.alaska.edu
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- Douglas Causey, Professor, dcausey@uaa.alaska.edu
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- Kristine Mann, Professor Emeritus, kmann@uaa.alaska.edu
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- Jonathan Stecyk, Assistant Professor
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- Ian van Tets, Associate Professor, ivantets@uaa.alaska.edu
- Frank von Hippel, Professor, fvonhippel@uaa.alaska.edu

**CHEMISTRY**

ConocoPhillips Integrated Sciences Building (CPSB), Room 101Q, (907) 786-1238

www.uaa.alaska.edu/chemistry

Chemistry is the science concerned with substances and their properties, composition, and reactions. Recent advances in chemistry have exerted a profound influence on the progress of medicine, agriculture, industry, and commerce.
The undergraduate courses in Chemistry offered at UAA are designed primarily to provide a broad knowledge of the field as a part of the program of liberal education offered by the College of Arts and Sciences. They are also designed to provide a substantial foundation in chemistry for students interested in post-graduate studies in chemistry or the other sciences, preparation for professional degrees, teaching, or a career in government or industry. Students majoring in Chemistry will meet basic course requirements in inorganic, analytical, organic, physical chemistry and biochemistry.

The biochemistry option is designed for students who prefer a more biologically oriented approach to chemistry. During the past 25 years, biochemistry has become a central scientific discipline linking the chemical, physical, and biological sciences. By applying the concepts and methods of chemistry to the problems of biology, biochemists have made great progress in explaining life in chemical terms.

**High School Preparation**

The Bachelor of Science in Chemistry with options in Chemistry or Biochemistry is a four-year baccalaureate program which assumes a proper high school preparation. Consult the College of Arts and Sciences list of recommended preparatory courses in all disciplines. The specific coursework which a freshman student must have mastered for admission to the Chemistry program without a deficiency includes:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4 years</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>Algebra</td>
<td>2 years</td>
</tr>
<tr>
<td>(This must have included at least complex numbers, logarithms, quadratic functions, inequalities and absolute values, plus conic sections).</td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>1 year</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>1/2 year</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>1 year</td>
</tr>
<tr>
<td>(This must cover mechanics, thermodynamics, electricity and magnetism, and optics).</td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>1 year</td>
</tr>
<tr>
<td>(This must cover elementary laboratory procedures, introduction to atoms and molecules, chemical reactions, equilibrium, and an introduction to chemical calculations).</td>
<td></td>
</tr>
</tbody>
</table>

It is strongly recommended that students graduating from high school without the preparation indicated above enroll in available non-science courses during the summer session to make up deficiencies so that they can begin the fall semester with the correct sequence of the freshman Chemistry curriculum. If this is not done, it will be necessary to carry heavier course loads or take more than eight semesters to complete the degree. Students are reminded that it is imperative for them to regularly (at least once per semester) consult a departmental advisor to evaluate their progress through the program of study.

**Program Student Learning Outcomes**

It is expected that graduates of the Chemistry program will have the ability to:

1. Understand and critically solve problems related to the Physical and Natural Sciences and present those solutions for the advancement of knowledge in the field of Chemistry and Biochemistry.
2. Design and conduct experiments that include fieldwork, laboratory analyses, instrumental methods, theoretical development and interpretation in the discipline.

**Honors in Chemistry**

The Department of Chemistry awards departmental honors in Chemistry to undergraduate students who show exceptional performance in all their coursework. To graduate with honors students must:

1. Satisfy all requirements for a Bachelor of Science degree in Chemistry.
2. Meet the requirements for Graduation with Honors as listed in Chapter 7.
3. Maintain a minimum GPA of 3.50 in Chemistry classes.
4. Complete, with distinction, a written assignment in the style of a chemical journal based on the research performed in CHEM A498.
5. Notify the Departmental Honors Committee in writing at the time they file their Application for Graduation with the Office of the Registrar that they intend to graduate with departmental honors.
Bachelor of Science, Chemistry

Admission Requirements
Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Academic Progress
In order to graduate with a BS in Chemistry, all courses covered under Major Requirements for a BS in Chemistry must be completed with a grade of C or better.

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
Students are strongly encouraged to talk to a faculty advisor in the Chemistry Department to ensure that the necessary math and science courses are taken in the first two years of study.

1. Students working toward a degree in Chemistry can choose one of two options:

   Chemistry Option (82-83 credits)
   Complete the following required courses:
   - BIOL A115 Fundamentals of Biology I  4
   - 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 A253 Principles of Inorganic Chemistry  3
   - CHEM A312 Quantitative Analysis  5
   - CHEM A321 Organic Chemistry I  3
   - CHEM A322 Organic Chemistry II  3
   - CHEM A323L Organic Chemistry Laboratory  2
   - CHEM A331 Physical Chemistry I  3
   - CHEM A332 Physical Chemistry II  3
   - CHEM A333L Physical Chemistry Laboratory  2
   - CHEM A434 Instrumental Methods  5
   - CHEM A441 Principles of Biochemistry I  3
   - CHEM A453 Advanced Inorganic Chemistry  5
   - CHEM A492 Undergraduate Seminar (I)  2
   - CHEM A498 Individual Research (I)  6
   - MATH A200 Calculus I  4
   - MATH A201 Calculus II  4
   - MATH A202 Calculus III  4
   - MATH A314 Linear Algebra  3
   - 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

   Upper Division Elective (choose one of the following)  3-4
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL A310</td>
<td>Principles of Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL A415</td>
<td>Comparative Animal Physiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A461</td>
<td>Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A442</td>
<td>Principles of Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A450</td>
<td>Environmental Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A456</td>
<td>Non-linear Dynamics and Chaos</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A460</td>
<td>Chemical Ecotoxicology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A471</td>
<td>Immunochemistry</td>
<td>4</td>
</tr>
<tr>
<td>GEOL A321</td>
<td>Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>GEOL A360</td>
<td>Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>GEOL A460</td>
<td>Environmental Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>MATH A302</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
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<tr>
<td>MATH A422</td>
<td>Partial Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A303</td>
<td>Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A320</td>
<td>Simulation of Physical Systems</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A403</td>
<td>Quantum Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A413</td>
<td>Statistical Methods</td>
<td>3</td>
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</tbody>
</table>

**Biochemistry Option (66-87 credits)**

Complete the following required courses:

- **BIOL A115 Fundamentals of Biology I** 4
- **BIOL A116 Fundamentals of Biology II** 4
- **BIOL A242 Fundamentals of Cell Biology** 4
- **BIOL A252 Principles of Genetics** 4

*Upper Division Biology (choose one of the following):*

- **BIOL A310 Principles of Physiology** (3)
- or
- **BIOL A415 Comparative Animal Physiology** (4)
- or
- **BIOL A461 Molecular Biology** (3)

*Chemistry*

- **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 A253 Principles of Inorganic Chemistry** 3
- **CHEM A312 Quantitative Analysis** 5
- **CHEM A321 Organic Chemistry I** 3
- **CHEM A322 Organic Chemistry II** 3
- **CHEM A323L Organic Chemistry Laboratory** 2

*Physical Chemistry/Biological Orientation*

- **CHEM A331 Physical Chemistry I** 3
- or
- **CHEM A441 Principles of Biochemistry I** 3
- **CHEM A442 Principles of Biochemistry II** 3
- **CHEM A443 Biochemistry Laboratory** 2
- **CHEM A492 Undergraduate Seminar (I)** 2
- **CHEM A498 Individual Research (3)** 6
- **MATH A200 Calculus I** 4
- **MATH A201 Calculus II** 4
- **MATH A202 Calculus III** 4

*(either Physics sequence)*

- **PHYS A123 Basic Physics I** 3
PHYS A123L  Basic Physics I Lab  1
PHYS A124  Basic Physics II  3
PHYS A124L  Basic Physics II Lab  1
or
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

Upper Division Elective (choose from the following)  9
BIOL A310  Principals of Physiology (3)
BIOL A340L  General Microbiology (3)
BIOL A315  Comparative Animal Physiology (3)
BIOL A451  Applied Microbiology (3)
BIOL A452  Human Genome (3)
BIOL A461L  Molecular Biology Lab (1)
BIOL A462  Virology (3)
BIOL A471  Immunology (4)
BIOL A489  Developmental Biology (4)
CHEM A332  Physical Chemistry II (3)
CHEM A333L  Physical Chemistry Lab (1)
CHEM A434  Instrumental Methods (5)
CHEM A450  Environmental Chemistry (3)
CHEM A453  Adv Inorganic Chemistry (5)
CHEM A460  Chemical Ecotoxicology (3)
CHEM A471  Immunology (4)

2. A total of 120-126 credits is required for the degree, of which 42 credits must be upper division.

**Minor, Chemistry**

Students majoring in another subject who wish to minor in Chemistry must complete the following requirements. A total of 24 credits is required for the minor.

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 A312  Quantitative Analysis  5
CHEM A321  Organic Chemistry I  3
CHEM A322  Organic Chemistry II  3
CHEM A323L  Organic Chemistry Laboratory  2
CHEM A311  Physical Chemistry: A Biological Orientation (3)
or
CHEM A331  Physical Chemistry I (3)

**FACULTY**

Eric Holmberg, Professor/Chair, egholmberg@uaa.alaska.edu
John Kennish, Professor, jmkennish@uaa.alaska.edu
Jerzy Maselko, Professor, jmaselko2@uaa.alaska.edu
Colin McGill, Assistant Professor, cmmcgill@uaa.alaska.edu
Mark McCoy, Assistant Professor, mmccoy@uaa.alaska.edu
Liliya Vugmeyster, Assistant Professor, lvugmeyster@uaa.alaska.edu
<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
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<tbody>
<tr>
<td>AS CAS</td>
<td>AFAR Division of Fine Arts</td>
<td>ART</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>ART</td>
<td>A270</td>
<td>NA</td>
<td>3</td>
<td>(0+6)</td>
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</tbody>
</table>

**Complete Course Title**

Beginning Alaska Native Art

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

**Type of Course**

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

**Type of Action:**

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

**Repeat Status No**

**# of Repeats**

**Max Credits**

**Grading Basis**

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

**Implementation Date**

- From: Spring/2014
- To: /9999

**Cross Listed with**

- [ ] ART A370 & ART A470
- [ ] Cross-Listed

**Coordination Signature**

- [ ] Impacted Courses or Programs

<table>
<thead>
<tr>
<th>Impact Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BA ART</td>
<td>9/20/2013</td>
<td>Mariano Gonzales</td>
</tr>
<tr>
<td>2. ART A370</td>
<td>9/20/2013</td>
<td>Mariano Gonzales</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Initiator Name (typed): Deborah Tharp**

**Initiator Signed Initials:** ____________ **Date:** ____________

**Coordination Email Date:** 9/20/13

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

**Coordination with Library Liaison Date:** 9/20/13

**General Education Requirement**

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

**Course Description**

- [ ] Exercise to and application of indigenous production, rhythms, and attitudes toward making carved art objects. Investigate Alaska Native art history, oral experience, and lifeways. Emphasis on the development of a personal aesthetic and creative design.

**Course Prerequisite(s)**

- [ ] NA

**Other Restriction(s)**

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

**Other Update CCG (please specify)**

**Justification for Action**

- Update CCG and stack with ART A370 and ART A470. This course is in concurrence with UAA’s Strategic Plan 2017. The purpose is to expand educational opportunities and success in education about Alaska Native people.

**Initiator (faculty only) Deborah Tharp**

**Initiator Signed Initials:** ____________ **Date:** ____________

**Legal Signatures**

- [ ] Approved
- [ ] Disapproved

**Dean/Director of School/College**

**Date:** ____________

**Undergraduate/Graduate Academic**

**Date:** ____________

**Provost or Designee**

**Date:** ____________

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UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: September 2013

II. Course Information
A. College: College of Arts and Sciences
B. Course Title: Beginning Alaska Native Art
C. Course Subject/Number: ART A270
D. Credit Hours: 3.0 Credits
E. Contact Time: 0+6 Contact Time
F. Grading Information: A-F
G. Course Description: Exposure to and application of indigenous production, rhythms, and attitudes toward making carved objects. Investigate Alaska Native art history, oral experience and lifeways. Emphasis on the development of a personal aesthetic and creative design.
H. Status of course relative to degree or certificate program:
   Applies as an elective to the BA in Art Degree
I. Lab Fees: Yes
J. Course Prerequisites: None

III. Course Activities
Lectures, demonstrations, class presentations, class projects, assignments, sketchbooks, journals, critiques, and the production of a portfolio of work.

IV. 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 class projects, personal progress, attendance, and class participation. Progress and development will vary with individual students depending on previous skills, creativity and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):
1. Scholarship/Research: Strong, exceeding all instructor requirements
2. Initiative: Contributions exceed assignments and demonstrate resourcefulness
3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing
To receive a grade of B (Above Average):
1. Scholarship/Research: Accurate and complete, meets all instructor requirements
2. Initiative: Good when stimulated by some desirable achievement
3. Cooperation: Good in group activities
4. Individual Improvement: Shows marks of improvement; responds to stimulation

To receive a grade of C (Average):
1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

To receive a grade of D (Below Average, but Passing):
1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

To receive a grade of F (Failure):
1. Majority of work unacceptable or missing

V. Course Level Justification
A 200-level course that builds on department’s foundation core curriculum. This course is in concurrence with UAA’s Strategic Plan 2017. The purpose is to expand educational opportunities and success in education about Alaska Native people.

VI. Outline
A. Survey of Alaska Native art history and material culture
   1. Visual survey of Alaskan Native Art
      a. Prehistoric works to current trends in Alaskan art
   2. Carving history
      a. Regional application of resources and carving styles
      b. Carving techniques used by contemporary artists and works
B. Introduction to carving tools
   1. Traditional tools used in the studio
      a. Crooked knives, carving applications, safety habits, and sharpening procedures
      b. Carving adzes, application of tool safety, and sharpening procedures
   2. Contemporary tools and equipment used in the studio
D. Material resources for carving
   1. Survey of indigenous woods such as birch and alder used in carving
   2. Selection and harvesting of materials during the appropriate season
E. Carving techniques and procedures
   1. Fabrication methods and design approaches
      a. Learn about wood grain direction for carving purposes
b. Roughing out projects with an adze
c. Develop projects with crooked knives
d. Design using additive and subtractive approaches

F. Critical evaluation skills
   1. Assessment of student’s carving skills and use of materials
   2. The articulation of critical language to assessing creative projects

VII. Instructional Goals and Student Learning Outcomes
   A. Instructional Goals. The Instructor will:
      1. Introduce Alaska Native art history and materials usage from prehistory to the contemporary era to provide a conceptual foundation for artistic exploration with an emphasis on carving history
      2. Instruct in the use of traditional and contemporary shop tools
      3. Introduce indigenous materials, fabrication methods, including additive and subtractive approaches
      4. Engage the student in developing a personal aesthetic and critical skills to assess their artwork

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

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss Alaska Native art history from prehistory to the present</td>
<td>In-class discussions and presentations</td>
</tr>
<tr>
<td>Illustrate competency in using traditional and contemporary carving tools and design principles</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Prepare and illustrate knowledge of subsistence cycles involved in harvesting materials</td>
<td>In-class discussions and presentations</td>
</tr>
<tr>
<td>Create and develop final projects based on carving techniques illustrating a personal aesthetic</td>
<td>Final portfolio</td>
</tr>
</tbody>
</table>

VIII. Suggested Texts


### IX. Resources

- Alaska Native Corporation Collections in Anchorage
- Private Collections of Native Alaskan Art
- Rasmuson Library and Collection in 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>AFAR Division of Fine Arts</td>
<td>ART</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>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>A370</td>
<td>NA</td>
<td>3</td>
<td>(0+6)</td>
</tr>
</tbody>
</table>

6. Complete Course Title

Intermediate Alaska Native Art

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
- [ ] Title
- [ ] Contact Hours
- [ ] Grading Basis
- [ ] Repeat Status
- [ ] Cross-Listed/Stacked
- [ ] Course Prerequisites
- [ ] Co-requisites
- [ ] Test Score Prerequisites
- [ ] Registration Restrictions
- [ ] General Education Requirement
- [ ] Other Restrictions
- [ ] Other Update CCG (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: 9999

12. [ ] Cross Listed with

- Stacked with ART A270 & ART A470

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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<td>Mariano Gonzales</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initiator Name (typed): Deborah Tharp

Initiator Signed Initials: _________

Date: ___________

13b. Coordination Email

Date: 9/20/13

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

13c. Coordination with Library Liaison

Date: 9/20/13

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)

Workshops and presentations by visiting elders/artists will be used to explore the unique methods of indigenous production and the cultural heritage of the visiting elder/artist. Students will apply the techniques, design principles and materials of the visiting elder/artist to their projects as a point of departure to develop a personal aesthetic and creative approach to making carved objects.

16a. Course Prerequisite(s)

(list prefix and number or test code and score)

ART A270

16b. Co-requisite(s)

(concurrent enrollment required)

NA

16c. Other Restriction(s)

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

16d. Registration Restriction(s)

(non-codeable)

NA

17. [ ] Mark if course has fees

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

19. Justification for Action

Update CCG and stack with ART A270 and ART A470. This course is in concurrence with UAA's Strategic Plan 2017. Its purpose is to expand educational opportunities and success in education about Alaska Native peoples.

Initiator (faculty only)

Deborah Tharp

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
I. Initiation Date: September 2013

II. Course Information
A. College: College of Arts and Sciences
B. Course Title: Intermediate Alaska Native Art
C. Course Subject/Number: ART A370
D. Credit Hours: 3.0 Credits
E. Contact Time: 0+6 Contact Time
F. Grading Information: A-F
G. Course Description: Workshops and presentations by visiting elders/artists will be used to explore the unique methods of indigenous production and the cultural heritage of the visiting elder/artist. Students will apply the techniques, design principles and materials of the visiting elder/artist to their projects as a point of departure to develop a personal aesthetic and creative approach to making carved objects.
H. Status of course relative to degree or certificate program: Applies as an elective to the BA in Art Degree
I. Lab Fees: Yes
J. Course Prerequisites: ART A270

III. Course Activities
Lectures, demonstrations, class presentations, class projects, assignments, sketchbooks, journals, critiques, and Alaska Native elders and artists workshops.

IV. 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 class projects, personal progress, participation in class and workshops, and attendance. Progress and development will vary with individual students depending on previous skills, creativity, artistic risk-taking, and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):
1. Scholarship/Research: Strong, exceeding all instructor requirements
2. Initiative: Contributions exceed assignments and demonstrate resourcefulness
3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing

**To receive a grade of B (Above Average):**
1. Scholarship/Research: Accurate and complete, meets all instructor requirements
2. Initiative: Good when stimulated by some desirable achievement
3. Cooperation: Good in group activities
4. Individual Improvement: Shows marks of improvement; responds to stimulation

**To receive a grade of C (Average):**
1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

**To receive a grade of D (Below Average, but Passing):**
1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

**To receive a grade of F (Failure):**
1. Majority of work unacceptable or missing

V. **Course Level Justification**
A 300-level course that builds on previous course work.
This course is in concurrence with UAA's Strategic Plan 2017. Its purpose is to expand educational opportunities and success in education about Alaska Native peoples.

VI. **Outline**
The course focuses on workshops/presentations by elders/artists to provide a more in-depth experience of the unique regional characteristics of the visiting elders/artist’s cultural heritage in terms of using tools, design principles and materials. The visiting elders/artists will change from semester to semester. See sample teaching outline below.

A. Survey of Alaska Native art history and material culture pertinent to the cultural background of the visiting elders/artists and other regional developments
   1. Visual survey of regional Alaska Native Art developments including the visiting elder/artist’s cultural background Alaskan Native Art
   2. Carving History relevant to the elders/artist’s region
      a. Regional application of resources and carving styles
      b. Carving techniques used by visiting elders/artists and contemporary artists and works
B The importance of visiting Alaskan elders and artists as role models of artistic expression in the Alaskan context
   1. Schedule visiting elders and artists for workshop presentations. Will vary from semester to semester.

C. Introduction to carving tools pertinent to the visiting elders/artists and other artists
   1. Traditional and contemporary tools used in the studio relevant to the regional characteristics of the visiting elders/artists.

D. Material resources for carving relevant to the visiting elders/artists and other artists
   1. Survey of indigenous woods used in carving from the visiting elders/artist’s region and other Alaska regions
   2. Selection and harvesting of materials during the appropriate season.

E. Carving techniques and procedures of the visiting elders/artists and other artists
   1. Fabrication methods and design approaches used in the region of the visiting elders/artists and other artists
   2. Application of the techniques and methods used by the visiting elders/artists to student projects

F. Critical evaluation skills
   1. Assessment of student’s carving skills, design approach and use of materials
   2. The articulation of critical language to assess creative projects

G. Sample teaching plan used by a visiting Cup’ik elder) of Nunivak Island.
   1. Presentation on Cup’ik environment, lifeways, attitudes on the making of things (there is no Cup’ik word for art) and specific Nunivak aesthetic traits, such as the Nunivak “eye,” “Nunivak tusk,” and dance sticks
   2. Carving materials, learning how to identify specific types of driftwood and what creative possibilities are inherent to the materials themselves for student projects
   3. The use of earth ochres and slips and their application for projects.
   4. Cup’ik oral tradition, attitudes, and history provided by the visiting elder
   5. The use of other media to complement projects such as ivory, baleen, and seal whiskers, and the technology involved to work with these materials
   6. Critical evaluation skills
   7. Discuss projects with visiting elder
   8. Critique presentation/potluck

VII. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The Instructor will:
   1. Introduce indigenous materials, fabrication methods, and design principles relevant to the region of the visiting elders/artists
2. Introduce Alaska Native art history with an emphasis on the unique regional characteristics of the visiting elders/artists and his/her cultural background
3. Instruct in the distinctive uses of traditional and contemporary shop tools pertinent to the visiting elders/artist’s regional approach to making art and other artists
4. Coordinate workshops and projects with visiting elders, artists, and their technology and art. Elders/artists and workshops will vary from semester to semester
5. Provide student research resources with an emphasis on the region of the visiting elders/artists and other artists. Resources may include, but are not solely limited to using elders, artists, collections, books, audio and visual media

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

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate an appreciation of the unique regional art developments in Alaska pertinent to the visiting elders/artists and other artists</td>
<td>In-class discussions and projects</td>
</tr>
<tr>
<td>Apply the carving techniques and materials used by the visiting elders/artists and other artists to art projects</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Demonstrate knowledge of subsistence cycles involved in harvesting materials of the visiting elders/artists and other artists</td>
<td>In-class discussions, presentations and studio projects</td>
</tr>
<tr>
<td>Employ conceptual understanding of Native art by completing projects using techniques developed in class relevant to the visiting elders/artist’s cultural heritage</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Develop a personal aesthetic and design sensibility</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Demonstrate the ability to apply relevant research to the final project based on the visiting elders/artist’s cultural heritage in terms of technique and design</td>
<td>In-class presentations and studio projects</td>
</tr>
<tr>
<td>Create and develop final projects based on learned techniques illustrating a personal aesthetic</td>
<td>Final portfolio</td>
</tr>
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</table>
VIII. Suggested Texts


IX. Resources

Alaska Native Corporation Collections in Anchorage
Private Collections of Native Alaskan Art
Rasmuson Library and Collection in Anchorage
## Course Action Request

**University of Alaska Anchorage**

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

### 1a. School or College
- AS CAS

### 1b. Division
- AFAR Division of Fine Arts

### 1c. Department
- ART

### 2. Course Prefix
- ART

### 3. Course Number
- A470

### 4. Previous Course Prefix & Number
- NA

### 5a. Credits/CEUs
- 3

### 5b. Contact Hours
- (Lecture + Lab) (0+6)

### 6. Complete Course Title
- Advanced Alaska Native Art

### 7. Type of Course
- Academic

### 8. Type of Action:
- Add

### 9. Repeat Status
- Yes
- # of Repeats: 3
- Max Credits: 12

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

### 11. Implementation Date
- From: Spring/2014
- To: /9999

### 12. Cross Listed
- Stacked with ART A270, ART A370

### 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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<td>Mariano Gonzales</td>
</tr>
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</table>

Initiator Name (typed): Deborah Tharp

Initiator Signed Initials: __________

Date: __________

### 13b. Coordination Email
- Date: 9/20/2013
- submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

### 13c. Coordination with Library Liaison
- Date: 9/20/13

### 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)
- Advanced investigation into the development of aesthetics involving indigenous or contemporary materials. Emphasis will be on research design and execution of works reflecting the Native personal experience. Special Note: Maybe be stacked with ART A270 and ART A370. Can be repeated up to three times. Elders/artists will vary from semester to semester.

### 16a. Course Prerequisite(s) (list prefix and number or test code and score)
- ART A270 and ART A370

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

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

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

### 17. Mark if course has fees
- Yes

### 18. Mark if course is a selected topic course
- Yes

### 19. Justification for Action
- This is part of a sequence of Alaska Native Art courses. This course adds advanced curriculum to a sequence of Alaska Native Art courses. This course is in concurrence with UAA’s Strategic Plan 2017. Its purpose is to expand educational opportunities and success in education about Alaska Native peoples.

Initiator (faculty only)

Deborah Tharp

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:
UNIVERSITY OF ALASKA ANCHORAGE  
COURSE CONTENT GUIDE

I. Initiation Date: September 2013

II. Course Information
A. College: College of Arts and Sciences
B. Course Title: Advanced Alaska Native Art
C. Course Subject/Number: ART A470
D. Credit Hours: 3.0 Credits
E. Contact Time: 0+6 Contact Time
F. Grading Information: A-F
G. Course Description: Advanced investigation into the development of aesthetics involving indigenous and or contemporary materials. Emphasis will be on research design and execution of works reflecting the Native personal experience. Special Note: Maybe be stacked with ART A270 and ART A370, and can be repeated up to three times. Elders/artists will vary from semester to semester.
H. Status of course relative to degree or certificate program: Applies as an elective to the BA in Art Degree
I. Lab Fees: Yes
J. Course Prerequisites: ART A270 and ART A370

III. Course Activities
Lectures, demonstrations, advanced research, class presentations, class projects, assignments, sketchbooks, journals, critiques, and Alaska Native elders and artists workshops.

IV. 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 class projects, personal progress, participation in class and workshops, and attendance. Progress and development will vary with individual students depending on previous skills, creativity, artistic risk-taking, and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):
1. Scholarship/Research: Strong, exceeding all instructor requirements
2. Initiative: Contributions exceed assignments and demonstrate resourcefulness
3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing

To receive a grade of B (Above Average):
1. Scholarship/Research: Accurate and complete, meets all instructor requirements
2. Initiative: Good when stimulated by some desirable achievement
3. Cooperation: Good in group activities
4. Individual Improvement: Shows marks of improvement; responds to stimulation

To receive a grade of C (Average):
1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

To receive a grade of D (Below Average, but Passing):
1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

To receive a grade of F (Failure):
1. Majority of work unacceptable or missing

V. Course Level Justification
A 400-level course that builds on previous course work.
This course is in concurrence with UAA’s Strategic Plan 2017. Its purpose is to expand educational opportunities and success in education about Alaska Native peoples.

VI. Outline
The course focuses on individual research and at an advanced level that explores the unique cultural rhythms and attitudes of Native Alaskan regions complemented by exposure to elders, visiting artist’s workshops, the use of tools, exploration of technology, raw materials and historical design principles. See sample class outline and teaching plan below.

A. Survey of Alaska Native art history and material culture as they relate students heritage and visiting elders/artists
   1. Material culture history relevant to the elders/artists regions
   2. Regional investigation of resources and aesthetics
   3. Technology and techniques used by artists of the region in traditional as well as contemporary art

B. The importance of visiting elders and artists as culture bearers and role models
1. Schedule visiting elders and artists for workshops will vary from semester to semester

C. Tool introduction pertinent to visiting elders/artists workshops from traditional to contemporary

D. Material resources used by visiting elders/artists
   1. Survey of indigenous materials used in the making of cultural items/art from elders/artists regions
   2. Selection and harvesting of materials during appropriate season(s)

E. Techniques and procedures of the visiting elders/artists
   1. Design approaches used in the region of the visiting elders/artists
   2. Application of the techniques and methods used by the visiting artists as it applies to student projects

Sample teaching Plan:
Visiting Alutiiq Sugpiaq elder of Kodiak Island
   1. Presentation of Sugpiaq environment, lifeways, subsistence, and attitudes on the making of things and specific Kodiak aesthetic traits, such as “falling snow” regalia, carved headgear, patterns, imagery, and petroglyph drawings
   2. Carving materials, learning the selection and what possibilities are inherent in the materials and how they apply to student projects
   3. The use of pigments and how they are applied for projects
   4. Sugpiaq oral traditions, attitudes, and history provided by visiting elder
   5. The use of other media used to embellish projects such as ivory, baleen, and feathers, and assembly techniques
   6. Critique presentation of student work, and potluck

VII. Instructional Goals and Student Learning Outcomes
A. Instructional Goals. The Instructor will:
   1. Introduce indigenous materials, fabrication methods, and design principles relevant to the region of the visiting elders/artists
   2. Examine Alaska Native art history with an emphasis on the philosophical and spiritual characteristics of the visiting elders/artists and his/her cultural background
   3. Demonstrate advanced instruction in the use of traditional and contemporary shop tools pertinent to the visiting elders/artist’s regional approach to making art and other artists
   4. Coordinate workshops and projects with visiting elders, artists, and their technology and art. Elders/artists and workshops will vary from semester to semester
5. Mentor and provide individual student research resources with an emphasis on the region of the visiting elders/artists and other artists. Resources may include, but are not solely limited to using elders, artists, collections, books, audio and visual media

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

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<td>In-class discussions and projects</td>
</tr>
<tr>
<td>Master techniques and materials used by the visiting elders/artists and other artists to art projects</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Employ conceptual understanding of Native art by completing projects using techniques developed in class</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Develop and refine personal aesthetic and design sensibility</td>
<td>Studio projects</td>
</tr>
<tr>
<td>Demonstrate the ability to apply relevant research to the final project based on the visiting elders/artist’s cultural heritage in terms of technique and design</td>
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</tr>
<tr>
<td>Create and develop final projects based on students research, mastered techniques, and personal aesthetic</td>
<td>Final portfolio</td>
</tr>
</tbody>
</table>

VIII. Suggested Texts


IX. **Resources**

- Alaska Native Corporation Collections in Anchorage
- Private Collections of Native Alaskan Art
- Rasmuson Library and Collection in Anchorage