March 29, 2013  
2:00-5:00  
ADM 204

I. Roll  
( ) Dave Fitzgerald (CBPP)  ( ) Ira Ortega (COE)  ( ) Christina Stuive (SA)  ( ) Adjunct vacancy  
( ) Paola Banchero (CAS)  ( ) Jeffrey Callahan (CTC)  ( ) Francisco Miranda (FS CAS)  ( ) USUAA vacancy  
( ) Mari Ippolito (CAS)  ( ) Utpal Dutta (SOE)  ( ) Alberta Harder (FSAL)  ( ) Ex-Officio Members:  
( ) Barbara Harville (CAS)  ( ) Michael Hawfield (KPC)  ( ) Soren Orley (FSAL)  ( ) Susan Kalina  
( ) Len Smiley (CAS)  ( ) Kevin Keating (LIB)  ( ) FS at large vacancy  ( ) Lora Volden  
( ) Lynn Senette (COH)  ( ) Joan O’Leary (Mat-su)  ( ) Kathryn Hollis Buchanan (Kodiak)  ( ) S&P  
( ) Eileen Weatherby (COH)  ( ) Vacant (Adjunct)

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

III. Approval of Meeting Summary (pg. 3-6)

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

V. Chair’s Report  
A. UAB Chair- Dave Fitzgerald
B. GERC

VI. Program/Course Action Request- Second Readings  
Chg OEC, Outdoor Leadership (pg. 7)
Chg Minor, Athletic Training (pg. 8)
Chg BS, Physical Education (pg. 9-30)
Chg BBA, Management (pg. 31-32)
Chg BBA, Finance (pg. 33-43)
Chg JUST A374 The Courts (3 cr)(3+0)(pg. 44-49)
Chg JUST A460 Justice in Crisis (GER)(3 cr)(3+0)(pg. 50-57)
Chg BIOL A373 Conservation Biology (GER)(3 cr)(3+0)(pg. 58-62)

VII. Program/Course Action Request- First Readings  
Add CSCE A415 Machine Learning ( 3 cr)(3+0)(pg. 63-67)
Add CSCE A446 Digital Media and Interactive Systems (3 cr)(3+0)(pg. 68-73)
Add CSCE A450 Robotics (3 cr)(3+0)(pg. 74-78)
Add CSCE A460 Advanced Database Systems (3 cr)(3+0)(pg. 79-82)
Add CSCE A462 Data Mining (3 cr)(3+0)(pg. 83-86)
VIII. Old Business
   A. Language Regarding Concentrations

IX. New Business

X. Informational Items and Adjournment
March 22, 2013
2:00-5:00
ADM 204

Undergraduate Academic Board Summary

I. Roll
(x) Dave Fitzgerald (CBPP) (x) Ira Ortega (COE) (x) Christina Suive (SA) ( ) Adjunct vacancy
(x) Paola Banchero (CAS) (x) Jeffrey Callahan (CTC) (x) Francisco Miranda (FS CAS) ( ) USUAA vacancy
(x) Mari Ippolitio (CAS) (x) Utpal Dutta (SOE) (x) Alberta Harder (FSAL) Ex-Officio Members:
(x) Barbara Harville (CAS) (x) Michael Hawfield (KPC) (x) Soren Orley (FSAL) (x) Susan Kalina
(x) Len Smiley (CAS) (x) Kevin Keating (LIB) ( ) FS at large vacancy (x) Lora Volden
(x) Lynn Senette (COH) (x) Joan O’Leary (Mat-su) (e) Kathryn Hollis Buchanan (Kodiak) (x) S&P
(x) Eileen Weatherby (COH) ( ) Vacant (Adjunct)

II. Approval of the Agenda (pg.1-3)
JUST A400 should be Advanced and not Advance
Move GER Curriculum Handbook changes to the GERC report
Approved as amended

III. Approval of Meeting Summary (pg. 4-6)
Approved

IV. Administrative Report
A. Vice Provost for Undergraduate Academic Affairs Susan Kalina
B. University Registrar Lora Volden
Introduced the new assistant registrar Alyona Selhay

V. Chair’s Report
A. UAB Chair- Dave Fitzgerald
Joint meeting was held today
B. GERC
Second reading of GER Curriculum Handbook Changes
Motion to approve the GER Curriculum Handbook Changes
1st Jeffery Callahan
2nd Mari Ippolitio
Unanimously Approved

VI. Program/Course Action Request- Second Readings
Chg AAS, Medical Laboratory Technology (pg. 7)
Chg OEC, Clinical Assistant (pg. 8)
Chg OEC, Phlebotomist (pg. 9)
Unanimously Approved

VII. Program/Course Action Request- First Readings
Chg BA A315 Property Management and Marketing (3 cr)(3+0)(pg. 10-13)
Waive first reading, approve for second
Chg BA A325 Corporate Finance (3 cr)(3+0)(pg. 14-18)
Waive first reading, approve for second
Chg BA A380 Investment Management (3 cr)(3+0)(pg. 19-22)
Waive first reading, approve for second
Chg BA A385 Intermediate Financial Management (3 cr)(3+0)(pg. 23-26)
Waive first reading, approve for second
Chg  BA A431 Real Estate Appraisal (3 cr)(3+0)(pg. 27-30)  
Waive first reading, approve for second

Chg  BA A432 Real Estate Law (3 cr)(3+0)(pg. 31-34)  
Waive first reading, approve for second

Chg  BA A452 Financial Derivatives (3 cr)(3+0)(pg. 35-38)  
Waive first reading, approve for second

Chg  BA A453 Bond Market Analysis (3 cr)(3+0)(pg. 39-42)  
Waive first reading, approve for second

Add  CE A451 Advanced Structural Analysis (Stacked with CE A651)(3 cr)(3+0)(pg. 43-50)  
Waive first reading, approve for second

Chg  JUST A374 The Courts (3 cr)(3+0)(pg. 51-56)  
Accepted for first reading

Del  JUST A400 Advanced Research Methods in Justice (3 cr)(3+0)(pg. 57)  
Waive first reading, approve for second

Del  JUST A401 Inferential Data Analysis in Justice (3 cr)(3+0)(pg. 58)  
Waive first reading, approve for second

Chg  JUST A460 Justice in Crisis (GER)(3 cr)(3+0)(pg. 52-66)  
Accepted for first reading, going to GERC

Chg  Bachelor of Arts, Justice (pg. 67-74)  
Waive first reading, approve for second

Chg  BS, Social Work (pg. 75-87)  
Waive first reading, approve for second

Chg  EMT A110 Emergency Trauma Technician (3 cr)(2+2)(pg. 88-92)  
Waive first reading, approve for second

Chg  FIRE A101 Principles of Emergency Services (3 cr)(3+0)(pg. 93-97)  
Waive first reading, approve for second

Chg  FIRE A105 Fire Prevention (3 cr)(3+0)(pg. 98-101)  
Waive first reading, approve for second

Chg  FIRE A107 Strategy and Tactics of Fire Suppression (3 cr)(3+0)(pg. 102-105)  
Waive first reading, approve for second

Chg  FIRE A111 Principles of Fire and Emergency Service Administration (3 cr)(3+0)(pg. 106-109)  
Waive first reading, approve for second

Chg  FIRE A121 Fire Behavior and Combustion (3 cr)(3+0)(pg. 110-115)  
Waive first reading, approve for second

Chg  FIRE A123 Fire Investigation I (3 cr)(3+0)(pg. 116-119)  
Waive first reading, approve for second
Chg FIRE A170 Occupational Safety and Health for Emergency Services (3 cr)(3+0)(pg. 120-124)
Waive first reading, approve for second

Chg FIRE A190 Selected Topics in Fire and Emergency Services (3 cr)(0-3+0-9)(pg. 125-127)
Waive first reading, approve for second

Chg FIRE A202 Fire Protection Hydraulics and Water Supply (3 cr)(3+0)(pg. 128-131)
Waive first reading, approve for second

Chg FIRE A203 Hazardous Materials Chemistry (3 cr)(3+0)(pg. 132-135)
Waive first reading, approve for second

Chg FIRE A206 Building Construction for Fire Protection (3 cr)(3+0)(pg. 136-140)
Waive first reading, approve for second

Chg FIRE A214 Fire Protection Systems (3 cr)(3+0)(pg. 141-144)
Waive first reading, approve for second

Chg FIRE A220 Legal Aspects of Emergency Services (3 cr)(3+0)(pg. 145-148)
Waive first reading, approve for second

Add FIRE A221 Principles of Fire and Emergency Services Safety and Survival (3 cr)(3+0)(pg. 149-153)
Waive first reading, approve for second

Chg FIRE A223 Fire Investigation II (3 cr)(3+0)(pg. 154-158)
Waive first reading, approve for second

Add FIRE A295 Fire and Emergency Services Practicum (3 cr)(0+9)(pg. 159-162)
Waive first reading, approve for second

Chg AAS, Fire and Emergency Services Technology (pg. 163-172)
Waive first reading, approve for second

Del HIST A444 Advanced Studies in Film History (3 cr)(3+0)(pg. 173)
Waive first reading, approve for second

Chg BIOL A373 Conservation Biology (GER)(3 cr)(3+0)(pg. 174-179)
Accepted for first reading, going to GERC

Add CSCE A415 Machine Learning ( 3 cr)(3+0)(pg. 180-184)
Add CSCE A446 Digital Media and Interactive Systems (3 cr)(3+0)(pg. 185-190)
Add CSCE A450 Robotics (3 cr)(3+0)(pg. 191-195)
Add CSCE A460 Advanced Database Systems (3 cr)(3+0)(pg. 196-199)
Add CSCE A462 Data Mining (3 cr)(3+0)(pg. 200-203)
Add CSCE A485 Computer Machine Vision (3 cr)(3+0)(pg. 204-208)
Chg Minor, Computer Systems Engineering (pg. 209-211)
Chg Minor, Computer Science (pg. 212-214)
Chg BA, Computer Science (pg. 215-222)
Chg  BS, Computer Science (pg. 223-228)
Add EE A307  Introduction to Power Systems (3 cr)(3+0)(pg. 229-232)
Add EE A333  Electronic Devices (3 cr)(3+0)(pg. 233-236)
Chg  Minor, Electrical Engineering (pg. 237-239)
Chg  BS, Engineering (pg. 240-253)
Chg  ENGR A151  Introduction to Engineering (1 cr)(1+0)(pg. 254-255)
Waive first reading, approve for second

VIII. Old Business
A. Second Reading of Purge Lists (pg. 256-259)
B. Second Reading of GER Curriculum Handbook Changes (pg. 260-264)

IX. New Business

X. Informational Items and Adjournment
A. Election Membership (pg. 265)
B. Programs whose Program Student Learning Outcomes (PSLO’s) have been recently reviewed by the AAC:
   - Languages – BA
   - Math – BA, BS
   - Sociology – BA, BS, Minor
C. Programs whose assessment plans have been recently reviewed by the AAC:
   - Refrigeration and Heating Technology – AAS
1a. School or College  
CT CTC

1b. Department  
HPER

2. Complete Program Title/Prefix  
Outdoor Leadership

3. Type of Program  
Choose one from the appropriate drop down menu:  
Undergraduate: or Graduate:  
Occupational Endorsement Certificate

This program is a Gainful Employment Program:  
☐ Yes or ☒ No

4. Type of Action:  
PROGRAM  
☐ Add  ☒ Change  ☐ Delete

PREFIX  
☐ Add  ☒ Change  ☐ Inactivate

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

6a. Coordination with Affected Units  
Department, School, or College:

Initiator Name (typed): Michael Chriss  
Initiator Signed Initials: __________

Date: __________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)  
Date: 03/21/13

6c. Coordination with Library Liaison  
Date: 03/21/13

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

8. Justification for Action  
Clarification of swimming test and Wilderness First Responder certification requirements

Initiator (faculty only)  
Michael Chriss  
Initiator (TYPE NAME)

☑ Approved  ☐ Disapproved  
Date

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

☐ Approved  ☐ Disapproved  
Undergraduate/Graduate Academic Board Chair  
Date

☑ Approved  ☐ Disapproved  
Department Chair  
Date

☒ Approved  ☐ Disapproved  
Provost or Designee  
Date

☐ Approved  ☐ Disapproved  
College/School Curriculum Committee Chair  
Date
### Program/PREFIX Action Request

**University of Alaska Anchorage**

**Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix**

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT CTC</td>
<td>HPER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Complete Program Title/PREFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletic Training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Type of Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose one from the appropriate drop down menu: Undergraduate: or Graduate: Minor or CHOOSE ONE</td>
</tr>
</tbody>
</table>

This program is a Gainful Employment Program: [ ] Yes or [x] No

<table>
<thead>
<tr>
<th>4. Type of Action:</th>
<th>PROGRAM</th>
<th>PREFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Add</td>
<td></td>
</tr>
<tr>
<td>[x] Change</td>
<td>Change</td>
<td></td>
</tr>
<tr>
<td>Delete</td>
<td>Inactivate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Implementation Date (semester/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From: Fall/2013</td>
</tr>
<tr>
<td>To: /9999</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6a. Coordination with Affected Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department, School, or College:</td>
</tr>
<tr>
<td>Medical Assisting</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Michael Chriss

Initiator Signed Initials: _________

Date: __________________

<table>
<thead>
<tr>
<th>6b. Coordination Email submitted to Faculty Listserv (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 01/09/13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6c. Coordination with Library Liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 01/09/13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Title and Program Description - Please attach the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ Cover Memo</td>
</tr>
<tr>
<td>☑ Catalog Copy in Word using the track changes function</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The course MA A101 Medical Terminology is being added to strengthen the program in an area where students need additional instruction.</td>
</tr>
</tbody>
</table>

Initiator (faculty only) Michael Chriss

Initiator (TYPE NAME) Date

Approved Disapproved

Dean/Director of School/College Date

Approved Disapproved

Undergraduate/Graduate Academic Date

Approved Disapproved

Board Chair Date

Approved Disapproved

Provost or Designee Date
1a. School or College  
CT CTC  

1b. Department  
HPER  

2. Complete Program Title/PREFIX  
Physical Education  

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

This program is a Gainful Employment Program:  
☐ Yes  or  ☑ No  

4. Type of Action:  
PROGRAM  or  PREFIX  
☑ Add  
☑ Change  
☐ Delete  
☐ Inactivate  

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

6a. Coordination with Affected Units  
Department, School, or College: Biology, Chemistry, Dietetics & Nutrition, Physics, Psychology  
Initiator Name (typed): Michael Chriss  
Initiator Signed Initials: ________  
Date:___________  

6b. Coordination Email submitted to Faculty Listserv (uua-faculty@lists.uaa.alaska.edu)  
Date: 01/03/13  

6c. Coordination with Library Liaison  
Date: 01/03/13  

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

8. Justification for Action  
Existing Health and Fitness Leadership emphasis is being restructured to include 2 options in order to streamline requirements for students. This should decrease time to completion for select BSPE students.  

Initiator (faculty only)  
Michael Chriss  
Initiator (TYPE NAME)  
Date  
☐ Approved  
☐ Disapproved  
Dean/Director of School/College  
Date  

☐ Approved  
☐ Disapproved  
Undergraduate/Graduate Academic Board Chair  
Date  

☐ Approved  
☐ Disapproved  
Provost or Designee  
Date  

☐ Approved  
☐ Disapproved  
Department Chair  
Date  

☐ Approved  
☐ Disapproved  
College/School Curriculum Committee Chair  
Date
The Department of Health, Physical Education and Recreation is committed to excellence in offering courses within the discipline of physical education and related disciplines. The courses provide the foundation for an undergraduate major that prepares students for leadership roles in health and fitness or outdoor recreation as well as minors and occupational endorsement certificates within the discipline. In addition, the department offers a variety of courses for students from other fields who wish to learn new physical skills and/or develop personal wellness.

Enrolling in Health, Physical Education and Recreation Courses

Acknowledgement of Risk, Release of Liability and Medical Questionnaire Form: During the first class session, students will receive information about the course. A verbal description will be provided about the inherent risks associated with specific areas and activities. Students may be asked to complete one or all of the following: acknowledgement of risk forms, release of liability statements and provide personal medical information and numbers. Students may be asked to obtain a physical examination and medical consent from a health professional before participation in classes.

Minors: Sixteen- and 17-year-old students must receive department chair approval before they will be allowed to enroll in courses. Students under 16 cannot enroll in HPER classes. Approved students must also meet the university’s Secondary School Student Enrollment Requirements (see Chapter 7).

The university or the department reserves the right to deny or discontinue the enrollment of a student in a course or courses if the university or the department determines that the student lacks the maturity, the legal or intellectual ability, or the academic preparedness to participate on an equal footing with other students, or if it is otherwise not in the best interest of the university or the department for the student to participate.

Behavioral Expectations: Due to the inherent risks involved in activity courses, HPER’s safety and risk management policies and procedures are strictly enforced. Students are expected to comply with all policies and procedures. HPER reserves the right to withdraw from a course any student(s) who fail(s) to demonstrate adherence to policy that may pose a safety risk to themselves or others.

Any financial reimbursements related to such withdrawals are subject to standard university refund policies.

Outdoor/Adventure Courses: The Department of Health, Physical Education and Recreation provides outdoor adventure education through the use of hands-on techniques. Course offerings are diverse and include topics such as backpacking, rock climbing, sea kayaking, winter camping, emergency medicine, and wilderness leadership. Outdoor/adventure classes are held in Alaska’s wilderness, an environment that can pose a risk to even the most experienced outdoor leader.

Students may be required to perform activities in extremely inclement weather i.e., rain, sleet, snow, wind or sub-zero temperatures. Additionally, there is an assumption that a minimum level of physical fitness is needed to succeed in and enjoy many of the activities. Consequently, before enrolling in these courses, students should review the following information.

1. Physical Fitness Level

Many 100-level courses have been designed for the student with an average level of fitness and health; e.g., a student would be expected to comfortably travel five miles over easy terrain. If a higher than average fitness level is required, a special note will identify the necessary level of fitness.

a. Good fitness is defined as above average fitness relative to a typical, healthy adult. Courses that require good fitness will involve a moderate degree of physical activity, may involve travel over challenging terrain, may involve carrying a pack weighing up to 50 pounds, or may involve multiple hours of exercise. A student who is physically or mentally unprepared to withstand a moderate amount of exercise should not enroll in the course.
b. **Excellent fitness** is defined as possessing health of outstanding quality or being in remarkably good physical condition. Excellent fitness is required for expedition courses. Expedition courses include difficult to extremely difficult terrain on uneven and steep ground with rapidly increasing elevation while carrying a backpack that may weigh 50 pounds or more in less than ideal weather. A student who is physically or mentally unprepared to withstand an intense amount of exercise with challenging conditions should not enroll in the course.

2. **Venue and Terrain Difficulty**

   Students will hike and travel in a variety of environments in outdoor/adventure courses. The following breakdown provides an overview of terrain difficulty.

   a. **Easy terrain** can be negotiated by novices. Traveling is usually done on well-maintained trail systems; can include hiking, skiing or snowshoeing; elevation gains/losses generally under 500 feet per mile; and stream crossings of calf deep or less. Off-trail touring includes traveling on firm ground over gentle terrain.

   b. **Moderate terrain** requires good physical fitness. Traveling is usually done on rugged trails or off trail. The hiking often includes inclines/declines of 500 to 1500 feet per mile. Off-trail travel can include bushwhacking; uneven, wet or marshy ground; scrambling up, over or around small terrain features; and river crossings up to knee deep.

   c. **Difficult terrain** requires excellent physical fitness. Traveling is usually done off trail and can include uneven, challenging ground; lack of firm footing; steep tundra, rock or scree; wet, snowy or icy slopes, and thigh- to waist-deep river crossings. Specialized gear may be required for travel.

   d. **Extremely difficult terrain** requires excellent physical fitness. Traveling is done off trail and participants must be prepared to endure all of the features listed under “difficult terrain” for long hours and potentially multiple days. Specialized gear is usually required for travel.

3. **Student Health Insurance**

   Students enrolling in many outdoor/adventure activity courses are provided with basic health insurance coverage during the field sessions only. This policy is intended to supplement personal policies and does not include the cost of emergency evacuation.

**Occupational Endorsement Certificate, Fitness Leadership**

The Fitness Leadership Occupational Endorsement Certificate provides students the opportunity to acquire the knowledge and skills necessary to develop a career in the ever-changing fitness industry. An array of career possibilities is available to individuals who successfully complete this program in group fitness instruction or personal training.

This comprehensive program provides students with 90 hours of leadership training in exercise theory and practice and 60 hours of training in their chosen fitness specialty or emphasis area: Group Fitness Leader or Personal Trainer. All classes combine current fitness research and training techniques with practical, hands-on teaching experience. This program follows the guidelines established by the American Council on Exercise (ACE) and the American College of Sports Medicine (ACSM).

The Fitness Leadership Occupational Endorsement Certificate is designed to provide quality education and training to individuals interested in working in the fitness industry. Of the required 10 credits, 7 include lecture courses and 3 are laboratory sessions. The labs are enhanced by practicum experiences that reinforce skills, knowledge, and leadership qualities. Students receive training in basic applied kinesiology and exercise physiology, nutrition and healthy weight loss, injury prevention, fitness assessment, legal considerations, special populations, health screening, leadership, and motivation.

**Admission Requirements**

Satisfy the UAA Admissions Requirements for Occupational Endorsement Certificates found in Chapter 7, Academic Standards and Regulations.

**Academic Progress**

A minimum grade of B or better in each required course.
Occupational Endorsement Requirements

1. Complete the following required courses (7 credits):

   DN A101   Principles of Nutrition (3)  
   or
   DN A203   Nutrition for Health Sciences (3)
   PEP A112   First Aid and CPR for Professionals  
   PEP A115   Fitness Leadership/Group Fitness and  
               Personal Training  

2. Complete the required courses within one of the following two emphasis areas (3 credits):

   **Group Fitness Leader**
   - PEP A116   Techniques in Group Fitness Instruction  
   - Choose PER activity course related to specialty

   **Personal Trainer**
   - PEP A117   Techniques in Personal Training  
   - PER A118   Beginning Weight Training  

3. A total of 10 credits is required for this certificate.

**Occupational Endorsement Certificate, Outdoor Leadership**

The Outdoor Leadership (OL) Occupational Endorsement Certificate (OEC) is designed to provide quality education and training to individuals interested in working in the outdoor recreation industry. The OL OEC provides students the opportunity to acquire the foundational knowledge, skills, and abilities necessary for an entry level position in the ever-changing recreation and tourism industry. An array of career possibilities is available to individuals who successfully complete this program. Students can enter into the field of outdoor/adventure education, guiding, activity/recreation therapy, or as a recreation specialist. There are positions in the government, non-profit, ecotourism, education, health care, and for-profit sectors of industry.

This comprehensive program provides students with 19 credits of training in technical outdoor skills, judgment, decision making, leadership, and risk assessment and hazard evaluation. Nine credits comprise the core curriculum. The student can then choose an emphasis area in water-based or land-based outdoor leadership. Classes combine current recreation research and instructional techniques with practical, hands-on teaching experience with extended field application. The field-based courses allow for practical skill application that reinforces technical knowledge, skills, abilities, and refinement of leadership skills.

**Academic Progress**

A minimum grade of B or better in each required course.

Occupational Endorsement Requirements

1. Complete the following required courses (9 credits):

   PEP A262   Foundations of Outdoor Recreation  
   PEP A365   Outdoor Leadership Theory and Practice  
   PER A169   Four-Season Backpacking

2. Complete the required courses within one of the following two emphasis areas (10 credits):

   **Water-Based Leadership Emphasis (10 credits):**
   - PEP A467D   Water-Based Outdoor Leadership  
   - PER A150   Water Safety and Rescue
PER A151  Beginning Canoeing 1
PER A152  Beginning River Rafting 1
PER A153  Beginning Sea Kayaking 1
PER A252  Intermediate River Rafting 2
PER A253  Intermediate Sea Kayaking 2

Other requirements for Water-based: Pass a swimming test and possess current Wilderness First Responder Certification from a recognized institution at time of completion.

Land-based Leadership Emphasis (10 credits):

PEP A467C  Land-Based Outdoor Leadership 2
PER A146  Beginning Rock Climbing 1
PER A147  Beginning Ice Climbing 1
PER A164  Skiing Alaska’s Backcountry 2
PER A165  Avalanche Hazard Recognition and Evaluation 1
PER A181  Crevasse Rescue Techniques 1
Choose one of the following: 2
PER A246  Intermediate Rock Climbing (2)
PER A287  Expedition Backpacking (2)

Other requirements for Land-based: Possess a current Wilderness First Responder Certification from a recognized institution at time of completion.

3. A total of 19 credits is required for this certificate.

Bachelor of Science, Physical Education

The core of the Bachelor of Science in Physical Education degree emphasizes the broad fundamental principles of physical education, including scientific foundations, psychological and cultural aspects, assessment and testing methods, trends, and leadership development in a variety of physical activities. Students may choose to pursue study in one of two emphasis areas within the degree: Health and Fitness Leadership or Outdoor Leadership and Administration.

The Health and Fitness Leadership emphasis and the Outdoor Leadership and Administration emphases prepare students for professional positions in rapidly growing fields. Each emphasis focuses on developing leadership expertise as well as the knowledge, physical skills, and technical competencies to prepare graduates for the job market. The Health and Fitness Leadership emphasis readies students for employment in hospital-based health education and fitness programs, community or public health/fitness programs, private health clubs and fitness facilities, corporate fitness/wellness programs, military fitness centers, as personal trainers, or helps them prepare for further education in physical therapy. The Outdoor Leadership and Administration emphasis readies graduates for employment with youth or recreational programs, adventure tourism, guide services, camps, schools, or a host of experiential education opportunities.

Student Learning Outcomes

Graduates of the Bachelor of Science in Physical Education will have demonstrated:

• Knowledge of physical education concepts as well as concepts related to a specific area of emphasis.
• Competency in many activity forms and proficiency in a few.
• Ability to apply established national standards in the field(s).
• Proficiency in entry-level discipline specific administrative skills.
• Proficiency in general and discipline-specific technologies.
• Effective leadership skills, including the abilities to: 1) evaluate and direct/re-direct skillful movement, 2) lead a variety of activities, 3) use appropriate motivational strategies, 4) employ appropriate safety and prevention techniques, 5) exercise sound judgment and good decision-making skills, and 6) communicate effectively.
Admission Requirements

1. Complete the Baccalaureate Degree Programs Admission Requirements in Chapter 7, Academic Standards and Regulations.
2. Completion of BIOL A111 and PEP A181 with a grade of C or better
3. Meet with a Health, Physical Education and Recreation advisor regarding program requirements and development of a program of study.
4. The degree requires computer competency which may be demonstrated by:
   a. successful completion of an approved university computer course,
   b. work-related experience requiring computer competency as approved by faculty or major advisor, or
   c. demonstrated computer competency as approved by faculty or major advisor.

Advising

All students are encouraged to meet with their academic advisor each semester for the purpose of reviewing their academic progress and planning future courses. It is particularly important for students to meet with their advisor whenever difficulties arise.

Academic Progress

A grade of C or better in all emphasis-specific courses and an overall GPA of 2.75 is required to enroll in the internship. A grade of B or better is required in the internship (PEP A495/PEP A496).

Degree Requirements

1. Complete the General University Requirements for Baccalaureate Degrees listed at the beginning of this chapter.
2. Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.
3. Complete the Support Courses and the Major Requirements listed below.

Required Support Courses

Complete the following support courses, some of which may be used to satisfy the General Education Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL A111</td>
<td>Human Anatomy and Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A112</td>
<td>Human Anatomy and Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>DN A203</td>
<td>Nutrition for Health Sciences (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN A215</td>
<td>Sports Nutrition (3)</td>
<td>3</td>
</tr>
<tr>
<td>HS A220</td>
<td>Core Concepts in the Health Sciences</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSY A111</td>
<td>General Psychology (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSY A150</td>
<td>Lifespan Development (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Major Requirements

1. Complete the following core courses (39 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEP A181</td>
<td>Introduction to Health, Physical Education and Recreation</td>
<td>3</td>
</tr>
<tr>
<td>PEP A182</td>
<td>Technology in Health, Physical Education and Recreation</td>
<td>1</td>
</tr>
<tr>
<td>PEP A183</td>
<td>Wellness Principles</td>
<td>1</td>
</tr>
<tr>
<td>PEP A184</td>
<td>Fundamental Motor Skills</td>
<td>1</td>
</tr>
<tr>
<td>PEP A280</td>
<td>Leadership in Health, Physical Education and Recreation</td>
<td>3</td>
</tr>
<tr>
<td>PEP A281</td>
<td>Leadership in Activities for Diverse Populations</td>
<td>2</td>
</tr>
<tr>
<td>PEP A282</td>
<td>Leadership in Initiative Activities</td>
<td>2</td>
</tr>
</tbody>
</table>
PEP A284 Leadership in Fitness Activities 2
PEP A382 Kinesiology and Biomechanics 4
PEP A383 Movement Theory and Motor Development 3
PEP A384 Cultural and Psychological Aspects of Health and Physical Activity 3
PEP A385 Physiology of Exercise 4
PEP A486 Standards and Assessment in Health, Physical Education, and Recreation 3
PEP A487 Administration and Supervision in Health, Physical Education and Recreation 3

Complete two from:

PEP A283 Leadership in Aquatic Activities (2)
PEP A285 Leadership in Team Activities (2)
PEP A286 Leadership in Individual and Dual Activities (2)
PEP A287 Leadership in Outdoor Recreation Activities (2)
PEP A288 Leadership in Rhythmic Activities (2)

2. Complete one of the following emphasis areas:

**Health and Fitness Leadership (43 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA A151</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>PEP A251</td>
<td>Prevention and Care of Activity-Related Injuries</td>
<td>3</td>
</tr>
<tr>
<td>PEP A454</td>
<td>Exercise Testing and Prescription</td>
<td>4</td>
</tr>
<tr>
<td>PEP A455</td>
<td>Cardiac Rehabilitation and Special Populations</td>
<td>4</td>
</tr>
<tr>
<td>PEP A456</td>
<td>Contemporary Personal Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>PEP A495</td>
<td>Internship in Health and Fitness Leadership</td>
<td>6</td>
</tr>
</tbody>
</table>

**Exercise Management Option (20 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA A231</td>
<td>Fundamentals of Supervision</td>
<td>3</td>
</tr>
<tr>
<td>BA A260</td>
<td>Marketing Practices</td>
<td>3</td>
</tr>
<tr>
<td>HS/NS A433</td>
<td>Health Education: Theory and Practice (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEP A490</td>
<td>Special Topics in Health, Physical Education and Recreation (3)</td>
<td></td>
</tr>
<tr>
<td>PEP A453</td>
<td>Health Promotion</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

**Exercise and Rehabilitation Sciences Option (20 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEP A346</td>
<td>Lower Body Injury Assessment Skills</td>
<td>3</td>
</tr>
<tr>
<td>PEP A347</td>
<td>Upper Body Injury Assessment Skills</td>
<td>3</td>
</tr>
</tbody>
</table>

**Science and Rehabilitation Core**

Complete courses from at least two of the following prefixes in consultation with the faculty advisor:

BIOL, CHEM, DN, PEP, PHYS, PSY

15
**Outdoor Leadership and Administration (43 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA A151</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>ENVI A303</td>
<td>Environmental Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PEP A262</td>
<td>Foundations of Outdoor Recreation</td>
<td>3</td>
</tr>
<tr>
<td>PEP A264</td>
<td>Recreation Program Planning and Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>PEP A363</td>
<td>Natural History Interpretation and Environmental Education</td>
<td>3</td>
</tr>
<tr>
<td>PEP A365</td>
<td>Adventure Leadership Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>PEP A464</td>
<td>Outdoor Recreation Administration</td>
<td>3</td>
</tr>
<tr>
<td>PEP A467C</td>
<td>Land-Based Outdoor Leadership</td>
<td>2</td>
</tr>
<tr>
<td>PEP A467D</td>
<td>Water-Based Outdoor Leadership</td>
<td>2</td>
</tr>
<tr>
<td>PEP A496</td>
<td>Internship in Outdoor Leadership</td>
<td>6</td>
</tr>
<tr>
<td>PER A169</td>
<td>Four-Season Backpacking</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Choose a minimum of 6 credits from the following:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>PER A146</td>
<td>Beginning Rock Climbing (1)</td>
<td></td>
</tr>
<tr>
<td>PER A147</td>
<td>Beginning Ice Climbing (1)</td>
<td></td>
</tr>
<tr>
<td>PER A148</td>
<td>Beginning Indoor Sport Climbing (1)</td>
<td></td>
</tr>
<tr>
<td>PER A150</td>
<td>Water Safety and Rescue (1)</td>
<td></td>
</tr>
<tr>
<td>PER A151</td>
<td>Beginning Canoeing (1)</td>
<td></td>
</tr>
<tr>
<td>PER A152</td>
<td>Beginning River Rafting (1)</td>
<td></td>
</tr>
<tr>
<td>PER A153</td>
<td>Beginning Sea Kayaking (1)</td>
<td></td>
</tr>
<tr>
<td>PER A164</td>
<td>Skiing Alaska’s Backcountry (2)</td>
<td></td>
</tr>
<tr>
<td>PER A165</td>
<td>Avalanche Hazard Recognition and Evaluation (1)</td>
<td></td>
</tr>
<tr>
<td>PER A181</td>
<td>Crevasse Rescue Techniques (1)</td>
<td></td>
</tr>
<tr>
<td>PER A246</td>
<td>Intermediate Rock Climbing (2)</td>
<td></td>
</tr>
<tr>
<td>PER A252</td>
<td>Intermediate River Rafting (2)</td>
<td></td>
</tr>
<tr>
<td>PER A253</td>
<td>Intermediate Sea Kayaking (2)</td>
<td></td>
</tr>
</tbody>
</table>

**Other requirements:** Pass a swim test and possess Current Wilderness First Responder Certification from a recognized institution at time of completion.

3. A minimum of 120 credits is required for the degree of which 42 credits must be upper division.

**Recommended Course Sequence**

See a Health, Physical Education and Recreation advisor for information on a recommended course sequence.

**Minor, Athletic Training**

Students who wish to minor in Athletic Training must complete the following requirements. A minimum of 23 credits, including 14 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in PEP A346 and PEP A347.

1. Complete the following requirements (23 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN A203</td>
<td>Nutrition for Health Sciences (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>DN A215</td>
<td></td>
</tr>
<tr>
<td>MA A101</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>PER A164</td>
<td></td>
</tr>
<tr>
<td>PER A165</td>
<td>Skiing Alaska’s Backcountry (2)</td>
<td></td>
</tr>
<tr>
<td>PER A166</td>
<td>Avalanche Hazard Recognition and Evaluation (1)</td>
<td></td>
</tr>
<tr>
<td>PER A181</td>
<td>Crevasse Rescue Techniques (1)</td>
<td></td>
</tr>
<tr>
<td>PER A246</td>
<td>Intermediate Rock Climbing (2)</td>
<td></td>
</tr>
<tr>
<td>PER A252</td>
<td>Intermediate River Rafting (2)</td>
<td></td>
</tr>
<tr>
<td>PER A253</td>
<td>Intermediate Sea Kayaking (2)</td>
<td></td>
</tr>
</tbody>
</table>
Minor, Coaching

Students who wish to minor in Coaching must complete the following requirements. A minimum of 22 credits, including 10 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in PEP A130 and sport specific coaching course.

1. Complete the following core courses (20 credits):
   - PEP A130  Introduction to Coaching  3
   - PEP A230  Sport Ethics  1
   - PEP A231  Drugs and Sport  1
   - PEP A251  Prevention and Care of Activity-Related Injuries  3
   - PEP A281  Leadership in Activities for Diverse Populations  2
   - PEP A383  Movement Theory and Motor Development  3
   - PEP A384  Cultural and Psychological Aspects of Health and Physical Activity  3
   - PEP A385  Physiology of Exercise  4

2. Choose one of the following:  2
   - PEP A233 Coaching Track and Field and Running (2)
   - PEP A234 Coaching Wrestling (2)
   - PEP A235 Coaching Swimming and Diving (2)
   - PEP A236 Coaching Skiing (2)
   - PEP A237 Coaching Figure Skating (2)
   - PEP A238 Coaching Gymnastics (2)
   - PEP A239 Coaching Baseball/Softball (2)
   - PEP A240 Coaching Football (2)
   - PEP A241 Coaching Basketball (2)
   - PEP A242 Coaching Soccer (2)
   - PEP A243 Coaching Hockey (2)
   - PEP A244 Coaching Volleyball (2)

Minor, Health and Fitness Leadership*

Students who wish to minor in Health and Fitness Leadership must complete the following requirements. A minimum of 27 credits, including 6 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a minimum grade of C or better in the courses within the option.

1. Complete the following core courses (24 credits):
   - BIOL A111/L Human Anatomy and Physiology I with Laboratory  4
   - BIOL A112/L Human Anatomy and Physiology II with Laboratory  4
   - DN A203  Nutrition for Health Sciences (3)  3
or

DN A215  Sports Nutrition (3)
Pep A115  Fitness Leadership/Group Fitness and Personal Training 3
Pep A385  Physiology of Exercise 4
Pep A442  Exercise and Aging 3
Pep A453  Health Promotion 3

2. Choose one of the following options: 3-4

**Fitness Instruction Option (3 credits)**

Pep A116  Techniques in Group Fitness Instruction 2
Per activity course related to specialty 1

**Personal Training Option (3 credits)**

Pep A117  Techniques in Personal Training 2
Per A118  Beginning Weight Training 1

**Wellness Option (4 credits)**

Pep A116  Techniques in Group Fitness Instruction 2
Pep A117  Techniques in Personal Training 2

3. A minimum of 27 credits is required for this minor.

* Not available to Physical Education majors with Health and Fitness Leadership emphasis.

**Minor, Outdoor Leadership**

Students who wish to minor in Outdoor Leadership must complete the following requirements. A minimum of 22 credits, including 7 upper division credits are required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of B or better in Pep A467C or Pep A467D.

1. Complete the following core courses (16 credits)

Pep A262  Foundations of Outdoor Recreation 3
Pep A264  Recreation Program Planning and Evaluation 3
Pep A365  Outdoor Leadership Theory and Practice 3
Pep A467C  Land-Based Outdoor Leadership 2
Pep A467D  Water-Based Outdoor Leadership 2
Per A169  Four-Season Backpacking 3

2. Choose a minimum of three (3) credits from the following: 3

Per A150  Water Safety and Rescue (1)
Per A151  Beginning Canoeing (1)
Per A152  Beginning River Rafting (1)
Per A153  Beginning Sea Kayaking (1)
Per A252  Intermediate River Rafting (2)
Per A253  Intermediate Sea Kayaking (2)

3. Choose a minimum of three (3) credits from the following: 3

Per A146  Beginning Rock Climbing (1)
Per A147  Beginning Ice Climbing (1)
Per A148  Beginning Indoor Sport Climbing I (1)
Per A164  Skiing Alaska’s Backcountry (2)
Per A181  Crevasse Rescue Techniques (1)
PER A246 Intermediate Rock Climbing (2)

4. A minimum of 22 credits is required for this minor.

Other requirements: Pass a swimming test and possess current certification in First Aid and CPR

* Not available to Physical Education majors with Outdoor Leadership and Administration emphasis

Minor, Physical Education *

Students who wish to minor in Physical Education must complete the following requirements. A total of 30 credits, including 10 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in the leadership courses.

1. Complete the following core courses (15 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL A111</td>
<td>Human Anatomy and Physiology I with Laboratory</td>
</tr>
<tr>
<td>BIOL A112</td>
<td>Human Anatomy and Physiology II with Laboratory</td>
</tr>
<tr>
<td>PEP A181</td>
<td>Introduction to Health, Physical Education and Recreation</td>
</tr>
<tr>
<td>PEP A182</td>
<td>Technology in Health, Physical Education and Recreation</td>
</tr>
<tr>
<td>PEP A183</td>
<td>Wellness Principles</td>
</tr>
<tr>
<td>PEP A184</td>
<td>Fundamental Motor Skills</td>
</tr>
<tr>
<td>PEP A280</td>
<td>Leadership in Health, Physical Education and Recreation</td>
</tr>
<tr>
<td>PEP A281</td>
<td>Leadership in Activities for Diverse Populations</td>
</tr>
<tr>
<td>PEP A382</td>
<td>Kinesiology and Biomechanics</td>
</tr>
<tr>
<td>PEP A383</td>
<td>Movement Theory and Motor Development</td>
</tr>
</tbody>
</table>

2. Choose two of the following: 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEP A282</td>
<td>Leadership in Initiative Activities</td>
</tr>
<tr>
<td>PEP A283</td>
<td>Leadership in Aquatic Activities</td>
</tr>
<tr>
<td>PEP A284</td>
<td>Leadership in Fitness Activities</td>
</tr>
<tr>
<td>PEP A285</td>
<td>Leadership in Team Activities</td>
</tr>
<tr>
<td>PEP A286</td>
<td>Leadership in Individual and Dual Activities</td>
</tr>
<tr>
<td>PEP A287</td>
<td>Leadership in Outdoor Recreation Activities</td>
</tr>
<tr>
<td>PEP A288</td>
<td>Leadership in Rhythmic Activities</td>
</tr>
</tbody>
</table>

*Not available to Physical Education majors.

FACULTY

Sandra Carroll-Cobb, Director/Associate Professor, AFSC@uaa.alaska.edu
Michael Chriss, Assistant Professor, AFMCI@uaa.alaska.edu
Timothy Miller, Assistant Professor, ANTJM2@uaa.alaska.edu
HEALTH, PHYSICAL EDUCATION AND RECREATION

Eugene Short Hall (ESH), Room 125, (907) 786-4083
www.uaa.alaska.edu/hper

The Department of Health, Physical Education and Recreation is committed to excellence in offering courses within the discipline of physical education and related disciplines. The courses provide the foundation for an undergraduate major that prepares students for leadership roles in health and fitness or outdoor recreation as well as minors and occupational endorsement certificates within the discipline. In addition, the department offers a variety of courses for students from other fields who wish to learn new physical skills and/or develop personal wellness.

Enrolling in Health, Physical Education and Recreation Courses

Acknowledgement of Risk, Release of Liability and Medical Questionnaire Form: During the first class session, students will receive information about the course. A verbal description will be provided about the inherent risks associated with specific areas and activities. Students may be asked to complete one or all of the following: acknowledgement of risk forms, release of liability statements and provide personal medical information and numbers. Students may be asked to obtain a physical examination and medical consent from a health professional before participation in classes.

Minors: Sixteen- and 17-year-old students must receive department chair approval before they will be allowed to enroll in courses. Students under 16 cannot enroll in HPER classes. Approved students must also meet the university’s Secondary School Student Enrollment Requirements (see Chapter 7).

The university or the department reserves the right to deny or discontinue the enrollment of a student in a course or courses if the university or the department determines that the student lacks the maturity, the legal or intellectual ability, or the academic preparedness to participate on an equal footing with other students, or if it is otherwise not in the best interest of the university or the department for the student to participate.

Behavioral Expectations: Due to the inherent risks involved in activity courses, HPER’s safety and risk management policies and procedures are strictly enforced. Students are expected to comply with all policies and procedures. HPER reserves the right to withdraw from a course any student(s) who fail(s) to demonstrate adherence to policy that may pose a safety risk to themselves or others.

Any financial reimbursements related to such withdrawals are subject to standard university refund policies.

Outdoor/Adventure Courses: The Department of Health, Physical Education and Recreation provides outdoor adventure education through the use of hands-on techniques. Course offerings are diverse and include topics such as backpacking, rock climbing, sea kayaking, winter camping, emergency medicine, and wilderness leadership. Outdoor/adventure classes are held in Alaska’s wilderness, an environment that can pose a risk to even the most experienced outdoor leader.

Students may be required to perform activities in extremely inclement weather i.e., rain, sleet, snow, wind or sub-zero temperatures. Additionally, there is an assumption that a minimum level of physical fitness is needed to succeed in and enjoy many of the activities. Consequently, before enrolling in these courses, students should review the following information.

1. Physical Fitness Level

   Many 100-level courses have been designed for the student with an average level of fitness and health; e.g., a student would be expected to comfortably travel five miles over easy terrain. If a higher than average fitness level is required, a special note will identify the necessary level of fitness.

   a. Good fitness is defined as average fitness relative to a typical, healthy adult. Courses that require good fitness will involve a moderate degree of physical activity, may involve travel over challenging terrain, may involve carrying a pack weighing up to 50 pounds or more, or may involve multiple hours of exercise. A student who is physically or mentally unprepared to withstand a moderate amount of exercise should not enroll in the course.
b. **Excellent fitness** is defined as possessing health of outstanding quality or being in remarkably good physical condition. Excellent fitness is required for expedition courses. Expedition courses include difficult to extremely difficult terrain on uneven and steep ground with rapidly increasing elevation while carrying a backpack that may weigh 50 pounds or more in less than ideal weather. A student who is physically or mentally unprepared to withstand an intense amount of exercise with challenging conditions should not enroll in the course.

2. **Venue and Terrain Difficulty**

Students will hike and travel in a variety of environments in outdoor/adventure courses. The following breakdown provides an overview of terrain difficulty.

a. **Easy terrain** can be negotiated by novices. Traveling is usually done on well-maintained trail systems; can include hiking, skiing or snowshoeing; elevation gains/losses generally under 500 feet per mile; and stream crossings of calf deep or less. Off-trail touring includes traveling on firm ground over gentle terrain.

b. **Moderate terrain** requires good physical fitness. Traveling is usually done on rugged trails or off trail. The hiking often includes inclines/declines of 500 to 1500 feet per mile. Off-trail travel can include bushwhacking; uneven, wet or marshy ground; scrambling up, over or around small terrain features; and river crossings up to knee deep.

c. **Difficult terrain** requires excellent physical fitness. Traveling is usually done off trail and can include uneven, challenging ground; lack of firm footing; steep tundra, rock or scree; wet, snowy or icy slopes, and thigh- to waist-deep river crossings. Specialized gear may be required for travel.

d. **Extremely difficult terrain** requires excellent physical fitness. Traveling is done off trail and participants must be prepared to endure all of the features listed under “difficult terrain” for long hours and potentially multiple days. Specialized gear is usually required for travel.

3. **Student Health Insurance**

Students enrolling in many outdoor/adventure activity courses are provided with basic health insurance coverage during the field sessions only. This policy is intended to supplement personal policies and does not include the cost of emergency evacuation.

**Occupational Endorsement Certificate, Fitness Leadership**

The Fitness Leadership Occupational Endorsement Certificate provides students the opportunity to acquire the knowledge and skills necessary to develop a career in the ever-changing fitness industry. An array of career possibilities is available to individuals who successfully complete this program in group fitness instruction or personal training.

This comprehensive program provides students with 90 hours of leadership training in exercise theory and practice and 60 hours of training in their chosen fitness specialty or emphasis area: Group Fitness Leader or Personal Trainer. All classes combine current fitness research and training techniques with practical, hands-on teaching experience. This program follows the guidelines established by the American Council on Exercise (ACE) and the American College of Sports Medicine (ACSM).

The Fitness Leadership Occupational Endorsement Certificate is designed to provide quality education and training to individuals interested in working in the fitness industry. Of the required 10 credits, 7 include lecture courses and 3 are laboratory sessions. The labs are enhanced by practicum experiences that reinforce skills, knowledge, and leadership qualities. Students receive training in basic applied kinesiology and exercise physiology, nutrition and healthy weight loss, injury prevention, fitness assessment, legal considerations, special populations, health screening, leadership, and motivation.

**Admission Requirements**

Satisfy the UAA Admissions Requirements for Occupational Endorsement Certificates found in Chapter 7, Academic Standards and Regulations.

**Academic Progress**

A minimum grade of B or better in each required course.
Occupational Endorsement Requirements

1. Complete the following required courses (7 credits):
   - DN A101 Principles of Nutrition (3)
   - DN A203 Nutrition for Health Sciences (3)
   - PEP A112 First Aid and CPR for Professionals
   - PEP A115 Fitness Leadership/Group Fitness and Personal Training

2. Complete the required courses within one of the following two emphasis areas (3 credits):
   - **Group Fitness Leader**
     - PEP A116 Techniques in Group Fitness Instruction
     - Choose PER activity course related to specialty
   - **Personal Trainer**
     - PEP A117 Techniques in Personal Training
     - PER A118 Beginning Weight Training

3. A total of 10 credits is required for this certificate.

Occupational Endorsement Certificate, Outdoor Leadership

The Outdoor Leadership (OL) Occupational Endorsement Certificate (OEC) is designed to provide quality education and training to individuals interested in working in the outdoor recreation industry. The OL OEC provides students the opportunity to acquire the foundational knowledge, skills, and abilities necessary for an entry-level position in the ever-changing recreation and tourism industry. An array of career possibilities is available to individuals who successfully complete this program. Students can enter into the field of outdoor/adventure education, guiding, activity/recreation therapy, or as a recreation specialist. There are positions in the government, non-profit, ecotourism, education, health care, and for-profit sectors of industry.

This comprehensive program provides students with 19 credits of training in technical outdoor skills, judgment, decision making, leadership, and risk assessment and hazard evaluation. Nine credits comprise the core curriculum. The student can then choose an emphasis area in water-based or land-based outdoor leadership. Classes combine current recreation research and instructional techniques with practical, hands-on teaching experience with extended field application. The field-based courses allow for practical skill application that reinforces technical knowledge, skills, abilities, and refinement of leadership skills.

Admission Requirements

Satisfy the UAA Admissions Requirements for Occupational Endorsement Certificates found in Chapter 7, Academic Standards and Regulations.

Academic Progress

A minimum grade of B or better in each required course.

Occupational Endorsement Requirements

1. Complete the following required courses (9 credits):
   - PEP A262 Foundations of Outdoor Recreation
   - PEP A365 Outdoor Leadership Theory and Practice
   - PER A169 Four-Season Backpacking

2. Complete the required courses within one of the following two emphasis areas (10 credits):
   - **Water-Based Leadership Emphasis** (10 credits):
     - PEP A467D Water-Based Outdoor Leadership
     - PER A150 Water Safety and Rescue
PER A151  Beginning Canoeing 1
PER A152  Beginning River Rafting 1
PER A153  Beginning Sea Kayaking 1
PER A252  Intermediate River Rafting 2
PER A253  Intermediate Sea Kayaking 2

Other requirements for Water-based: Pass a swimming test and possess current Wilderness First Responder Certification from a recognized institution at time of completion.

Land-based Leadership Emphasis (10 credits):
PEP A467C  Land-Based Outdoor Leadership 2
PER A146  Beginning Rock Climbing 1
PER A147  Beginning Ice Climbing 1
PER A164  Skiing Alaska’s Backcountry 2
PER A165  Avalanche Hazard Recognition and Evaluation 1
PER A181  Crevasse Rescue Techniques 1
Choose one of the following: 2
PER A246  Intermediate Rock Climbing (2)
PER A287  Expedition Backpacking (2)

Other requirements for Land-based: Possess a current Wilderness First Responder Certification from a recognized institution at time of completion.

3. A total of 19 credits is required for this certificate.

Other requirements: Pass a swim test and possess current Wilderness First Responder Certification from a recognized institution at time of completion.

Bachelor of Science, Physical Education

The core of the Bachelor of Science in Physical Education degree emphasizes the broad fundamental principles of physical education, including scientific foundations, psychological and cultural aspects, assessment and testing methods, trends, and leadership development in a variety of physical activities. Students may choose to pursue study in one of two emphasis areas within the degree: Health and Fitness Leadership or Outdoor Leadership and Administration.

The Health and Fitness Leadership emphasis and the Outdoor Leadership and Administration emphases prepare students for professional positions in rapidly growing fields. Each emphasis focuses on developing leadership expertise as well as the knowledge, physical skills, and technical competencies to prepare graduates for the job market. The Health and Fitness Leadership emphasis readies students for employment in hospital-based health education and fitness programs, community or public health/fitness programs, private health clubs and fitness facilities, corporate fitness/wellness programs, military fitness centers, as personal trainers, or helps them prepare for further education in physical therapy. The Outdoor Leadership and Administration emphasis readies graduates for employment with youth or recreational programs, adventure tourism, guide services, camps, schools, or a host of experiential education opportunities.

Student Learning Outcomes

Graduates of the Bachelor of Science in Physical Education will have demonstrated:

- Knowledge of physical education concepts as well as concepts related to a specific area of emphasis.
- Competency in many activity forms and proficiency in a few.
- Ability to apply established national standards in the field(s).
- Proficiency in entry-level discipline specific administrative skills.
- Proficiency in general and discipline-specific technologies.
Effective leadership skills, including the abilities to: 1) evaluate and direct/re-direct skillful movement, 2) lead a variety of activities, 3) use appropriate motivational strategies, 4) employ appropriate safety and prevention techniques, 5) exercise sound judgment and good decision-making skills, and 6) communicate effectively.

**Admission Requirements**

1. Complete the Baccalaureate Degree Programs Admission Requirements in Chapter 7, Academic Standards and Regulations.
2. Completion of BIOL A111 and PEP A181 with a grade of C or better
3. Meet with a Health, Physical Education and Recreation advisor regarding application, program admission requirements, and development of a program of study.
4. The degree requires computer competency which may be demonstrated by:
   a. successful completion of an approved university computer course,
   b. work-related experience requiring computer competency as approved by faculty or major advisor, or
   c. demonstrated computer competency as approved by faculty or major advisor.

**Advising**

All students are encouraged to meet with their academic advisor each semester for the purpose of reviewing their academic progress and planning future courses. It is particularly important for students to meet with their advisor whenever difficulties arise.

**Academic Progress**

Maintain a 2.50 GPA or higher for the courses within the emphasis and A grade of C or better in all emphasis-specific courses and an overall GPA of 2.75 is required to enroll in the internship. A grade of B or better is required in the internship (PEP A495/PEP A496).

**Degree Requirements**

1. Complete the General University Requirements for Baccalaureate Degrees listed at the beginning of this chapter.
2. Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.
3. Complete the Support Courses and the Major Requirements listed below.

**Required Support Courses**

Complete the following support courses, some of which may be used to satisfy the General Education Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL A111</td>
<td>Human Anatomy and Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL A112</td>
<td>Human Anatomy and Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>DN A203</td>
<td>Nutrition for Health Sciences (3)</td>
<td>3</td>
</tr>
<tr>
<td>DN A215</td>
<td>Sports Nutrition (3)</td>
<td></td>
</tr>
<tr>
<td>HS A220</td>
<td>Core Concepts in the Health Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PSY A111</td>
<td>General Psychology (3)</td>
<td>3</td>
</tr>
<tr>
<td>PSY A150</td>
<td>Lifespan Development (3)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Major Requirements**

1. Complete the following core courses (39 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEP A181</td>
<td>Introduction to Health, Physical Education and Recreation</td>
</tr>
<tr>
<td>PEP A182</td>
<td>Technology in Health, Physical Education and Recreation</td>
</tr>
<tr>
<td>PEP A183</td>
<td>Wellness Principles</td>
</tr>
<tr>
<td>PEP A184</td>
<td>Fundamental Motor Skills</td>
</tr>
</tbody>
</table>

24
PEP A280 Leadership in Health, Physical Education and Recreation 3
PEP A281 Leadership in Activities for Diverse Populations 2
PEP A282 Leadership in Initiative Activities 2
PEP A284 Leadership in Fitness Activities 2
PEP A382 Kinesiology and Biomechanics 4
PEP A383 Movement Theory and Motor Development 3
PEP A384 Cultural and Psychological Aspects of Health and Physical Activity 3
PEP A385 Physiology of Exercise 4
PEP A486 Standards and Assessment in Health, Physical Education, and Recreation 3
PEP A487 Administration and Supervision in Health, Physical Education and Recreation 3

Complete two from:

- PEP A283 Leadership in Aquatic Activities (2)
- PEP A285 Leadership in Team Activities (2)
- PEP A286 Leadership in Individual and Dual Activities (2)
- PEP A287 Leadership in Outdoor Recreation Activities (2)
- PEP A288 Leadership in Rhythmic Activities (2)

2. Complete one of the following emphasis areas:

**Health and Fitness Leadership (43 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA A151</td>
<td>Introduction to Business</td>
</tr>
<tr>
<td>BA A231</td>
<td>Fundamentals of Supervision</td>
</tr>
<tr>
<td>BA A260</td>
<td>Marketing Practices</td>
</tr>
<tr>
<td>HS/NS A433</td>
<td>Health Education: Theory and Practice</td>
</tr>
<tr>
<td>PEP A251</td>
<td>Prevention and Care of Activity-Related Injuries</td>
</tr>
<tr>
<td>PEP A452</td>
<td>Health Promotion</td>
</tr>
<tr>
<td>PEP A454</td>
<td>Exercise Testing and Prescription</td>
</tr>
<tr>
<td>PEP A455</td>
<td>Cardiac Rehabilitation and Special Populations</td>
</tr>
<tr>
<td>PEP A456</td>
<td>Contemporary Personal Health Issues</td>
</tr>
<tr>
<td>PEP A495</td>
<td>Internship in Health and Fitness Leadership</td>
</tr>
</tbody>
</table>

**Electives** 8

**Exercise Management Option (20 credits)**

- BA A231 Fundamentals of Supervision 3
- BA A260 Marketing Practices 3
- HS/NS A433 Health Education: Theory and Practice (3) 3

**Exercise and Rehabilitation Sciences Option (20 credits)**

- PEP A490 Special Topics in Health, Physical Education and Recreation (2)
- PEP A453 Health Promotion 3

**Electives** 8
PEP A346 Lower Body Injury Assessment Skills 3
PEP A347 Upper Body Injury Assessment Skills 3
Science and Rehabilitation Core 14
Complete courses from at least two of the following prefixes in consultation with the faculty advisor:
BIOL, CHEM, DN, PEP, PHYS, PSY

Outdoor Leadership and Administration (43 credits)
BA A151 Introduction to Business 3
ENVI A303 Environmental Ethics 3
PEP A262 Foundations of Outdoor Recreation 3
PEP A264 Recreation Program Planning and Evaluation 3
PEP A363 Natural History Interpretation and Environmental Education 3
PEP A365 Outdoor Adventure Leadership Theory and Practice 3
PEP A464 Outdoor Recreation Administration 3
PEP A467C Land-Based Outdoor Leadership 2
PEP A467D Water-Based Outdoor Leadership 2
PEP A496 Internship in Outdoor Leadership 6
PER A169 Four-Season Backpacking 3
Electives 3
Choose a minimum of 6 credits from the following: 6
PER A146 Beginning Rock Climbing (1)
PER A147 Beginning Ice Climbing (1)
PER A148 Beginning Indoor Sport Climbing I (1)
PER A150 Water Safety and Rescue (1)
PER A151 Beginning Canoeing (1)
PER A152 Beginning River Rafting (1)
PER A153 Beginning Sea Kayaking (1)
PER A164 Skiing Alaska’s Backcountry (2)
PER A165 Avalanche Hazard Recognition and Evaluation (1)
PER A181 Crevasse Rescue Techniques (1)
PER A246 Intermediate Rock Climbing (2)
PER A252 Intermediate River Rafting (2)
PER A253 Intermediate Sea Kayaking (2)

Other requirements: Pass a swim test and possess Current Wilderness First Responder Certification from a recognized institution at time of completion.

3. A minimum of 120 credits is required for the degree of which 42 credits must be upper division.

Other requirements: Pass a swim test and possess Current Wilderness First Responder Certification from a recognized institution at time of completion.

Recommended Course Sequence
See a Health, Physical Education and Recreation advisor for information on a recommended course sequence.
Minor, Athletic Training

Students who wish to minor in Athletic Training must complete the following requirements. A minimum of 20-23 credits, including 14 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in PEP A346 and PEP A347.

1. Complete the following requirements (20-23 credits):
   - DN A203 Nutrition for Health Sciences (3)
   - or
   - DN A215 Sports Nutrition (3)
   - MA A101 Medical Terminology (3)
   - PEP A251 Prevention and Care of Activity-Related Injuries (3)
   - PEP A346 Lower Body Injury Assessment Skills (3)
   - PEP A347 Upper Body Injury Assessment Skills (3)
   - PEP A382 Kinesiology and Biomechanics (4)
   - PEP A385 Physiology of Exercise (4)

Minor, Coaching

Students who wish to minor in Coaching must complete the following requirements. A minimum of 22 credits, including 10 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in PEP A130 and sport specific coaching course.

1. Complete the following core courses (20 credits):
   - PEP A130 Introduction to Coaching (3)
   - PEP A230 Sport Ethics (1)
   - PEP A231 Drugs and Sport (1)
   - PEP A251 Prevention and Care of Activity-Related Injuries (3)
   - PEP A281 Leadership in Activities for Diverse Populations (2)
   - PEP A383 Movement Theory and Motor Development (3)
   - PEP A384 Cultural and Psychological Aspects of Health and Physical Activity (3)
   - PEP A385 Physiology of Exercise (4)

2. Choose one of the following:
   - PEP A223 Coaching Track and Field and Running (2)
   - PEP A224 Coaching Wrestling (2)
   - PEP A225 Coaching Swimming and Diving (2)
   - PEP A226 Coaching Skiing (2)
   - PEP A227 Coaching Figure Skating (2)
   - PEP A228 Coaching Gymnastics (2)
   - PEP A229 Coaching Baseball/Softball (2)
   - PEP A240 Coaching Football (2)
   - PEP A241 Coaching Basketball (2)
   - PEP A242 Coaching Soccer (2)
   - PEP A243 Coaching Hockey (2)
   - PEP A244 Coaching Volleyball (2)
Minor, Health and Fitness Leadership*

Students who wish to minor in Health and Fitness Leadership must complete the following requirements. A minimum of 27 credits, including 6 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. A minimum grade of C or better is required in the courses within the option.

1. Complete the following core courses (24 credits):
   - BIOL A111/L Human Anatomy and Physiology I with Laboratory 4
   - BIOL A112/L Human Anatomy and Physiology II with Laboratory 4
   - DN A203 Nutrition for Health Sciences (3) 3
     or
   - DN A215 Sports Nutrition (3)
   - PEP A115 Fitness Leadership/Group Fitness and Personal Training 3
   - PEP A385 Physiology of Exercise 4
   - PEP A442 Exercise and Aging 3
   - PEP A453 Health Promotion 3

2. Choose one of the following options: 3-4
   - Fitness Instruction Option (3 credits)
     - PEP A116 Techniques in Group Fitness Instruction 2
     - PER activity course related to specialty 1
   - Personal Training Option (3 credits)
     - PEP A117 Techniques in Personal Training 2
     - PER A118 Beginning Weight Training 1
   - Wellness Option (4 credits)
     - PEP A116 Techniques in Group Fitness Instruction 2
     - PEP A117 Techniques in Personal Training 2

3. A minimum of 27 credits is required for this minor.

* Not available to Physical Education majors with Health and Fitness Leadership emphasis.

Minor, Outdoor Leadership*

Students who wish to minor in Outdoor Leadership must complete the following requirements. A minimum of 22 credits, including 7 upper division credits are required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of B or better in PEP A467C or PEP A467D.

1. Complete the following core courses (16 credits)
   - PEP A262 Foundations of Outdoor Recreation 3
   - PEP A264 Recreation Program Planning and Evaluation 3
   - PEP A265 Outdoor Leadership Theory and Practice 3
   - PEP A467C Land-Based Outdoor Leadership 2
   - PEP A467D Water-Based Outdoor Leadership 2
   - PER A169 Four-Season Backpacking 3

2. Choose a minimum of three (3) credits from the following: 3
   - PER A150 Water Safety and Rescue (1)
PER A151  Beginning Canoeing (1)
PER A152  Beginning River Rafting (1)
PER A153  Beginning Sea Kayaking (1)
PER A252 Intermediate River Rafting (2)
PER A253 Intermediate Sea Kayaking (2)

3. Choose a minimum of three (3) credits from the following: 3
   PER A146  Beginning Rock Climbing (1)
   PER A147  Beginning Ice Climbing (1)
   PER A148  Beginning Indoor Sport Climbing I (1)
   PER A164  Skiing Alaska’s Backcountry (2)
   PER A181  Crevasse Rescue Techniques (1)
   PER A246  Intermediate Rock Climbing (2)

4. A minimum of 22 credits is required for this minor.

**Other requirements:** Pass a swimming test and possess current certification in First Aid and CPR

*Not available to Physical Education majors with Outdoor Leadership and Administration emphasis*

**Minor, Physical Education**

Students who wish to minor in Physical Education must complete the following requirements. A total of 30 credits, including 10 upper division credits, is required for the minor. Prerequisites for these courses must also be satisfied. Requires a grade of C or better in the leadership courses.

1. Complete the following core courses (15 credits):
   - BIOL A111 Human Anatomy and Physiology I with Laboratory 4
   - BIOL A112 Human Anatomy and Physiology II with Laboratory 4
   - PEP A181 Introduction to Health, Physical Education and Recreation 3
   - PEP A182 Technology in Health, Physical Education and Recreation 1
   - PEP A183 Wellness Principles 1
   - PEP A184 Fundamental Motor Skills 1
   - PEP A280 Leadership in Health, Physical Education and Recreation 3
   - PEP A281 Leadership in Activities for Diverse Populations 2
   - PEP A382 Kinesiology and Biomechanics 4
   - PEP A383 Movement Theory and Motor Development 3

2. Choose two of the following: 4
   - PEP A282 Leadership in Initiative Activities (2)
   - PEP A283 Leadership in Aquatic Activities (2)
   - PEP A284 Leadership in Fitness Activities (2)
   - PEP A285 Leadership in Team Activities (2)
   - PEP A286 Leadership in Individual and Dual Activities (2)
   - PEP A287 Leadership in Outdoor Recreation Activities (2)
PEP A288  Leadership in Rhythmic Activities (2)

*Not available to Physical Education majors.

**FACULTY**

Sandra Carroll-Cobb, Director/Associate Professor, AFSC@uaa.alaska.edu
Michael Chris, Assistant Professor, AFMC1@uaa.alaska.edu
Timothy Miller, Assistant Professor, ANTJM2@uaa.alaska.edu
Purpose Statement:
The purpose of this Program Action Request (PAR) is to 1) reposition the Real Estate and Property Management concentration from a BBA-Finance degree to a BBA-Management degree and 2) restructure the program requirements to ensure curriculum that best aligns with current market demands and affords students the opportunity to earn competitive industry designations upon graduation.

Justification:

2010 Census data indicates that 40% of Anchorage homes are rented versus just 34% nationwide. Coupled with strict lending practices, high home values, increasing density, and high occupancy rates confirm the strength of the property management industry’s demand. Several players can be found in this highly fragmented sector including large private owners and management companies, full-service real estate firms, Native organizations, government organizations, housing authorities, and small-business/individual owners and managers.

As the property management industry has matured over the last 30 years, the need for higher educated professionals has grown nationwide. Managers are often tasked with maintaining multi-million dollar assets; managing multi-million dollar budgets; and are required to have the aptitude to minimize liability risk and navigate the legal realms of Landlord/Tenant law and Fair Housing practices. State and National organizations, including the National Apartment Association (NAA) and the Institute of Real Estate Management (IREM), have developed educational material and professional designations to identify industry skill standards and help distinguish those individuals with extended education, experience, and demonstrated ability.

To date, only a handful of collegiate-level programs are in place that allow students to earn a degree or concentration in this field of study. The need for such a program at the University of Alaska Anchorage was substantiated by a large private monetary contribution.

The ongoing vision of the program is to ensure that the curriculum offered best aligns with the market’s demands. In recognition of this vision, the program needs to be repositioned from a finance concentration to a more appropriate management emphasis. Additionally, an offering of new property management courses¹ have been designed and structured into the program to cover the industry skill standards required to sit for two nationally recognized designations — National Apartment Leasing Professional and Certified Apartment Manager² — providing students with a competitive advantage in the marketplace immediately upon graduation.

¹ BA A215 Introduction to Property Management; BA A225 Leasing in Property Management; BA A302 Property Management Maintenance; BA A303 Property Management Finance; and BA A421 Property Management Capstone.

² For more information on the National Apartment Leasing Professional and Certified Apartment Management designations, visit www.naahq.org/education.
Program/Prefix Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB CBPP</td>
<td>BA</td>
</tr>
</tbody>
</table>

2. Complete Program Title/Prefix

BBA Management

3. Type of Program

Choose one from the appropriate drop down menu:
- Undergraduate: Bachelor of Business Administration
- Graduate: Choose one

This program is a Gainful Employment Program:
- Yes
- No

4. Type of Action:

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>PREFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Add</td>
</tr>
<tr>
<td>Change</td>
<td>Change</td>
</tr>
<tr>
<td>Delete</td>
<td>Inactivate</td>
</tr>
</tbody>
</table>

5. Implementation Date (semester/year)

From: Fall/2013  To: 9999

6a. Coordination with Affected Units

Department, School, or College: CBPP

Initiator Name (typed): Clayton Trotter
Initiator Signed Initials: _________
Date:________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)

Date: 02/22/2013

6c. Coordination with Library Liaison

Date: 02/22/2013

7. Title and Program Description - Please attach the following:

- Cover Memo
- Catalog Copy in Word using the track changes function

8. Justification for Action

The purpose of this Program Action Request is to 1) reposition the Real Estate and Property Management concentration from a BBA Finance degree to a BBA Management degree and 2) restructure the program requirements to ensure curriculum that best aligns with current market demands and affords students the opportunity to earn competitive industry designations upon graduation.

Initiator (faculty only)

Clayton Trotter

Initiator (TYPE NAME)

Date

Approved
Disapproved
Dean/Director of School/College
Date

Approved
Disapproved
Undergraduate/Graduate Academic
Board Chair
Date

Approved
Disapproved
Provost or Designee
Date

Approved
Disapproved
Department Chair
Date

Approved
Disapproved
College/School Curriculum Committee Chair
Date
1a. School or College
CB CBPP

1b. Department
BA

2. Complete Program Title/Prefix
BBA Finance

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

This program is a Gainful Employment Program:
☐ Yes or ☒ No

4. Type of Action:
PROGRAM
☐ Add
☒ Change
☐ Delete

PREFIX
☐ Add
☐ Change
☐ Inactivate

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

6a. Coordination with Affected Units
Department, School, or College: CBPP
Initiator Name (typed): Clayton Trotter
Initiator Signed Initials: _________
Date:__________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)
Date: 02/22/2013

6c. Coordination with Library Liaison
Date: 02/22/2013

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

8. Justification for Action
The purpose of this Program Action Request is to 1) reposition the Real Estate and Property Management concentration from a BBA Finance degree to a BBA Management degree and 2) restructure the program requirements to ensure curriculum that best aligns with current market demands and affords students the opportunity to earn competitive industry designations upon graduation.

Initiator (faculty only)
Clayton Trotter
Initiator (TYPE NAME)

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

Department Chair
Date

Undergraduate/Graduate Academic Board Chair
Date

College/School Curriculum Committee Chair
Date

Provost or Designee
Date
Bachelor of Business Administration

Major areas: Economics  
Finance  
Global Logistics and Supply Chain Management  
Management  
Marketing

The Bachelor of Business Administration (BBA) is a professional degree offered through the College of Business and Public Policy. The curriculum for the BBA degree is management-oriented, rather than highly specialized. It emphasizes concepts relevant to small and large firms and both public and private sector organizations. The five majors -- Economics, Finance, Global Logistics and Supply Chain Management, Management, and Marketing -- prepare students to pursue meaningful and rewarding careers in management. Local, state, national, and international firms, as well as not-for-profit organizations, provide a ready market for graduates in each of the five major areas of concentration.

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

Admission Requirements to Upper Division Courses

1. Completion of at least 39-40 credits with a cumulative GPA of 2.25 or higher.

2. Completion of each of the following courses with a grade of C or better:

- ACCT A201  Principles of Financial Accounting  3
- ACCT A202  Principles of Managerial Accounting  3
- BA A273  Introduction to Statistics for Business and Economics  3
- CIS A110  Computer Concepts in Business  3
- CIS A280  Managerial Communications  3
- ECON A201  Principles of Macroeconomics  3
- ECON A202  Principles of Microeconomics  3
- ENGL A111  Methods of Written Communication  3
- ENGL A212  Technical Writing  3
- MATH A107  College Algebra (4)  3-4
  or  
- MATH A172  Applied Finite Mathematics (3)

- Oral Communication Skills GER  3
  - COMM A111  Fundamentals of Oral Communication (3)
  or  
  - COMM A241  Public Speaking (3)

3. Completion of any combination of at least 9 credits in the following General Education disciplinary areas:  9

- Fine Arts
- Humanities
- Natural Sciences
Admission to Upper Division Status

BBA students in Economics, Finance, Global Logistics and Supply Chain Management, Management, and Marketing who do not meet the above standards may not take upper division courses in ACCT, BA, CIS, or LOG.

Other students who meet course prerequisites may take up to 15 upper division ACCT, BA, CIS, and LOG credits without being formally admitted to a BBA program. All students must apply for admission to a BBA program before accumulating more than 15 such credits. Please contact the Student Advising Center for assistance in applying for admission to upper division standing within the College of Business and Public Policy.

Conditional Admission to Upper Division Status

A student classified as being conditionally admitted to upper division status may take upper division ACCT, BA, CIS, and LOG courses for one semester only, while completing lower division requirements.

Graduation Requirements

Students must complete the following graduation requirements:

A. General University Requirements

Complete the General University Requirements for All Baccalaureate Degrees listed 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 Business and Public Policy Requirements

Economics, Finance, Management, Global Logistics and Supply Chain Management and Marketing Majors

Students earning a BBA degree must complete at least 50 percent of their required business credits at the University of Alaska Anchorage. All ACCT, BA, CIS, ECON, LGOP and LOG courses are considered business credits for the purpose of this requirement.

1. Complete the Business core requirements. The following courses must be completed with a C or better:

   - ACCT A201* Principles of Financial Accounting 3
   - ACCT A202 Principles of Managerial Accounting 3
   - BA/JUST A241 Business Law I 3
   - BA A273 Introduction to Statistics for Business and Economics 3
   - CIS A110 Computer Concepts in Business 3
   - CIS A280 Managerial Communications 3
   - ECON A201 Principles of Macroeconomics 3
   - ECON A202 Principles of Microeconomics 3
   - ENGL A212 Technical Writing 3
   - MATH A107 College Algebra (4) 3-4
     or
   - MATH A172 Applied Finite Mathematics (3)
   - MATH A200 Calculus I (4) 3-4
     or
   - MATH A272 Applied Calculus (3)

*The ACCT A101 Principles of Financial Accounting I and ACCT A102 Principles of Financial Accounting II sequence may be used to satisfy the ACCT A201 requirement for this degree.

Note: Students who plan to attend graduate school are encouraged to take MATH A107 and MATH A200 instead of MATH A172 and MATH A272. MATH A108 Trigonometry is a prerequisite for MATH A200.
2. Complete these upper division core courses. The following courses must be completed with a C or better prior to graduating:

- BA A300 Organizational Theory and Behavior 3
- BA A325 Corporate Finance 3
- BA A343 Principles of Marketing 3
- BA A377 Operations Management 3
- BA A462 Strategic Management 3
- CIS A376 Management Information Systems 3

*(GER Integrative Capstone)*

C. Major Requirements

**Economics Major**

1. Complete the following requirements. The following courses must be completed with a C or better prior to graduating:

   - ECON A312 Econometrics for Business and Economics 3
   - ECON A321 Intermediate Microeconomics 3
   - ECON A324 Intermediate Macroeconomics 3
   - ECON A492 Seminar in Economic Research 3
   - Upper division Economics electives* 12

   *Note: No more than a total of 6 credits earned in an independent study, or ECON A454 Economics Internship, may be used to satisfy requirements for the major (6 credits of independent study or 3 credits of independent study and 3 credits of ECON A454).

2. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

**Finance Major**

All courses must be completed with a C or better prior to graduating.

**Investment Concentration (30 credits)**

1. Complete the following:

   - BA/JUST A242 Business Law II 3
   - BA A375 Statistics for Business and Economics (3)
   - or ECON A312 Econometrics for Business and Economics (3)
   - or ECON A429 Business Forecasting (3)
   - BA A380 Investment Management 3
   - BA A385 Advanced Corporate Finance 3

2. Complete 12 credits from the following: 12

   - BA A426 Financial Institutions (3)
   - BA A427 International Finance (3)
   - BA A451 Advanced Investment Strategies (3)
   - BA A452 Financial Derivatives (3)
   - BA A453 Bond Market Analysis (3)
   - BA A491A Student Managed Portfolio (3)
3. Complete 6 credits of upper division electives in ACCT, BA, CIS, ECON, or LOG.

4. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

**Global Logistics and Supply Chain Management Major**

1. Complete the following requirements. The following courses must be completed with a grade of C or better prior to graduating:
   - LOG A378  Foundations of Logistics and Supply Chain Management  3
   - LOG A379  Transportation Management  3
   - LOG A415  Purchasing Management  3
   - LOG A416  International Logistics and Transportation Management  3
   - LOG A417  Materials Management  3
   - Complete LOG A495 Internship in Global Logistics and Supply Chain Management* 3
     
   *The internship is intended to be in logistics and/or supply chain management. This requirement may be waived if the major advisor determines that the student already has significant logistics work experience. If waived, the student will need to select 3 additional upper division credits to total 45.

3. Complete 9 credits of upper division program electives approved by the student’s advisor with a grade of C or better. These may include, but are not limited to the following: 9
   - ACCT A342  Managerial Cost Accounting (3)
   - ATP A332  Transport Aircraft Systems (3)
   - BA A375  Statistics for Business and Economics (3)
   - BA A420  Marketing Research (3)
   - BA A447  International Marketing (3)
   - BA A487  International Management (3)
   - CIS A310  Analysis of Business Systems (3)
   - CIS A330  Database Management Systems (3)
   - CIS A410  Project Management (3)
   - CIS A489  Systems Design, Development and Implementation (3)
   - ECON A312  Econometrics for Business and Economics (3)
   - ECON A363  International Economics (3)
   - ECON A429  Business Forecasting (3)

4. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

**Management Major**

All courses must be completed with a C or better prior to graduating.

1. **Management (27 credits)**
   a. Complete the following requirements.
      - BA A361  Human Resource Management  3
      - BA A461  Negotiations and Conflict Management  3
      - BA A481  Applications in Management  3
      - BA A488  Environment of Business  3
b. Upper division electives in ACCT, BA, CIS, ECON, or LOG 12

2. **Management: Property Management and Real Estate Concentration (33 credits)**
   a. Complete the following requirements.
      - BA A215 Introduction to Property Management 3
      - BA A225 Leasing in Property Management 3
      - BA A302 Maintenance in Property Management 3
      - BA A303 Property Management Finance 3
      - BA A361 Human Resource Management 3
      - BA A461 Negotiation and Conflict Management 3
      - BA A421 Property Management Capstone 3
      - BA A432 Real Estate Law 3
   b. Complete 9 credits from the following:
      - BA A306 Real Estate Principles (3)
      - BA A320 Real Estate Finance (3)
      - BA A395 Property Management Internship (3-6)
      - BA A431 Real Estate Appraisal (3)
      - BA A489 Entrepreneurship and New Business Planning (3)

3. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.
Bachelor of Business Administration

Major areas: Economics
Finance
Global Logistics and Supply Chain Management
Management
Marketing

The Bachelor of Business Administration (BBA) is a professional degree offered through the College of Business and Public Policy. The curriculum for the BBA degree is management-oriented, rather than highly specialized. It emphasizes concepts relevant to small and large firms and both public and private sector organizations. The five majors -- Economics, Finance, Global Logistics and Supply Chain Management, Management, and Marketing -- prepare students to pursue meaningful and rewarding careers in management. Local, state, national, and international firms, as well as not-for-profit organizations, provide a ready market for graduates in each of the five major areas of concentration.

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

Admission Requirements to Upper Division Courses

1. Completion of at least 39-40 credits with a cumulative GPA of 2.25 or higher.
2. Completion of each of the following courses with a grade of C or better:
   - ACCT A201  Principles of Financial Accounting  3
   - ACCT A202  Principles of Managerial Accounting  3
   - BA A273  Introduction to Statistics for Business and Economics  3
   - CIS A110  Computer Concepts in Business  3
   - CIS A280  Managerial Communications  3
   - ECON A201  Principles of Macroeconomics  3
   - ECON A202  Principles of Microeconomics  3
   - ENGL A111  Methods of Written Communication  3
   - ENGL A212  Technical Writing  3
   - MATH A107  College Algebra (4) 3-4
   - MATH A172  Applied Finite Mathematics (3) 3
   - Oral Communication Skills GER  3
   - COMM A111  Fundamentals of Oral Communication (3) 3
   - COMM A241  Public Speaking (3) 3

3. Completion of any combination of at least 9 credits in the following General Education disciplinary areas:
   - Fine Arts
   - Humanities
   - Natural Sciences
**Admission to Upper Division Status**

BBA students in Economics, Finance, Global Logistics and Supply Chain Management, Management, and Marketing who do not meet the above standards may not take upper division courses in ACCT, BA, CIS, or LOG.

Other students who meet course prerequisites may take up to 15 upper division ACCT, BA, CIS, and LOG credits without being formally admitted to a BBA program. All students must apply for admission to a BBA program before accumulating more than 15 such credits. Please contact the Student Advising Center Information Office for assistance in applying for admission to upper division standing within the College of Business and Public Policy.

**Conditional Admission to Upper Division Status**

A student classified as being conditionally admitted to upper division status may take upper division ACCT, BA, CIS, and LOG courses for one semester only, while completing lower division requirements.

**Graduation Requirements**

Students must complete the following graduation requirements:

A. **General University Requirements**

   Complete the General University Requirements for All Baccalaureate Degrees listed 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 Business and Public Policy Requirements**

   **Economics, Finance, Management, Global Logistics and Supply Chain Management and Marketing Majors**

   Students earning a BBA degree must complete at least 50 percent of their required business credits at the University of Alaska Anchorage. All ACCT, BA, CIS, ECON, LGOP and LOG courses are considered business credits for the purpose of this requirement.

   1. Complete the Business core requirements. The following courses must be completed with a C or better:

      - ACCT A201* Principles of Financial Accounting 3
      - ACCT A202 Principles of Managerial Accounting 3
      - BA/JUST A241 Business Law I 3
      - BA A273 Introduction to Statistics for Business and Economics 3
      - CIS A110 Computer Concepts in Business 3
      - CIS A280 Managerial Communications 3
      - ECON A201 Principles of Macroeconomics 3
      - ECON A202 Principles of Microeconomics 3
      - ENGL A212 Technical Writing 3
      - MATH A107 College Algebra (4) or MATH A127 Calculus I (4) 3-4
      - MATH A172 Applied Finite Mathematics (3) or MATH A200 Calculus I (4) 3-4
      - MATH A272 Applied Calculus (3)

*The ACCT A101 Principles of Financial Accounting I and ACCT A102 Principles of Financial Accounting II sequence may be used to satisfy the ACCT A201 requirement for this degree.

**Note:** Students who plan to attend graduate school are encouraged to take MATH A107 and MATH A200 instead of MATH A172 and MATH A272. MATH A108 Trigonometry is a prerequisite for MATH A200.
2. Complete these upper division core courses. The following courses must be completed with a C or better prior to graduating:

- BA A300 Organizational Theory and Behavior 3
- BA A325 Corporate Finance 3
- BA A343 Principles of Marketing 3
- BA A377 Operations Management 3
- BA A462 Strategic Management 3
- CIS A376 Management Information Systems 3

(GER Integrative Capstone)

C. Major Requirements

Economics Major

1. Complete the following requirements. The following courses must be completed with a C or better prior to graduating:

- ECON A312 Econometrics for Business and Economics 3
- ECON A321 Intermediate Microeconomics 3
- ECON A324 Intermediate Macroeconomics 3
- ECON A492 Seminar in Economic Research 3
- Upper division Economics electives* 12

*Note: No more than a total of 6 credits earned in an independent study, or ECON A454 Economics Internship, may be used to satisfy requirements for the major (6 credits of independent study or 3 credits of independent study and 3 credits of ECON A454).

2. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

Finance Major

All courses must be completed with a C or better prior to graduating.

1. Investment Concentration (30 credits)
   1.a. Complete the following:
   - BA/JUST A242 Business Law II 3
   - BA A375 Statistics for Business and Economics (3)
   - or ECON A312 Econometrics for Business and Economics (3)
   - or ECON A429 Business Forecasting (3)
   - BA A380 Investment Management 3
   - BA A385 Advanced Corporate Finance 3

   1.b. Complete at least 12 credits from the following: 12-18
   - BA A426 Financial Institutions (3)
   - BA A427 International Finance (3)
   - BA A451 Advanced Investment Strategies (3)
   - BA A452 Financial Derivatives (3)
   - BA A453 Bond Market Analysis (3)
   - BA A491A Student Managed Portfolio (3)
3. Complete 0 to 6 credits of upper division electives in ACCT, BA, CIS, ECON, or LOG business electives.

2. Real Estate and Property Management Concentration (30 credits)
   a. Complete the following:
      - BA A131 Personal Finance 3
      - BA/JUST A242 Business Law II 3
      - BA A306 Real Estate Principles 3
      - BA A315 Property Management and Marketing 3
      - BA A320 Real Estate Finance 3
   b. Complete at least 9 credits from the following: 9-15
      - BA A385 Advanced Corporate Finance (3)
      - BA A395 Property Management Internship (3)
      - BA A426 Financial Institutions (3)
      - BA A431 Real Estate Appraisal (3)
      - BA A432 Real Estate Law (3)
   c. Complete 0 to 6 credits upper division business electives 0-6

4. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

Global Logistics and Supply Chain Management Major

1. Complete the following requirements. The following courses must be completed with a grade of C or better prior to graduating:
   - LOG A378 Foundations of Logistics and Supply Chain Management 3
   - LOG A379 Transportation Management 3
   - LOG A415 Purchasing Management 3
   - LOG A416 International Logistics and Transportation Management 3
   - LOG A417 Materials Management 3

2. Complete LOG A495 Internship in Global Logistics and Supply Chain Management* 3
   *The internship is intended to be in logistics and/or supply chain management. This requirement may be waived if the major advisor determines that the student already has significant logistics work experience. If waived, the student will need to select 3 additional upper division credits to total 45.

3. Complete 9 credits of upper division program electives approved by the student’s advisor with a grade of C or better. These may include, but are not limited to the following: 9
   - ACCT A342 Managerial Cost Accounting (3)
   - ATP A332 Transport Aircraft Systems (3)
   - BA A375 Statistics for Business and Economics (3)
   - BA A420 Marketing Research (3)
   - BA A447 International Marketing (3)
   - BA A487 International Management (3)
CIS A310  Analysis of Business Systems (3)
CIS A330  Database Management Systems (3)
CIS A410  Project Management (3)
CIS A489  Systems Design, Development and Implementation (3)
ECON A312  Econometrics for Business and Economics (3)
ECON A363  International Economics (3)
ECON A429  Business Forecasting (3)

4. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.

Management Major

All courses must be completed with a C or better prior to graduating.

1. Management (without declared concentration) (27 credits)
   a. Complete the following requirements. The following courses must be completed with a C or better prior to graduating:
      BA A361  Human Resource Management  3
      BA A461  Negotiations and Conflict Management  3
      BA A481  Applications in Management  3
      BA A488  Environment of Business  3
      BA A489  Entrepreneurship and New Business Planning  3
   b. Upper division electives in ACCT, BA, CIS, ECON, or LOG  12

2. Management: Property Management and Real Estate Concentration (33 credits)
   a. Complete the following requirements. The following courses must be completed with a C or better prior to graduating:
      BA A215  Introduction to Property Management  3
      BA A225  Leasing in Property Management  3
      BA A302  Maintenance in Property Management  3
      BA A303  Property Management Finance  3
      BA A361  Human Resource Management  3
      BA A461  Negotiations and Conflict Management  3
      BA A421  Property Management Capstone  3
      BA A432  Real Estate Law  3
   b. Complete at least 9 credits from the following:
      BA A306  Real Estate Principles (3)
      BA A320  Real Estate Finance (3)
      BA A395  Property Management Internship (3-6)
      BA A431  Real Estate Appraisal (3)
      BA A489  Entrepreneurship and New Business Planning (3)

43. A total of 120 credits is required for the degree, of which a minimum of 45 credits must be upper division.
Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College
CH College of Health

1b. Division
AJUS Division of Justice

1c. Department
Justice Center

2. Course Prefix
JUST

3. Course Number
A374

4. Previous Course Prefix & Number
N/A

5a. Credits/CEUs
3

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

Initiator (faculty only)
Cory Lepage
Initiator Signed Initials: _________

Date:________________

Curriculum Committee Chairperson
Date:________________

Dean/Director of School/College
Date:________________

Provost or Designee
Date:________________

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

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>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts, Justice</td>
<td>3/22/2013</td>
<td>Marny Rivera, Justice Undergraduate Program Coordinator</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initiator Name (typed): Cory Lepage

13b. Coordination Email
Date: 2/26/2013
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison
Date: 2/26/2013

14. General Education Requirement
Mark appropriate box:

- Oral Communication
- Written Communication
- Quantitative Skills
- Social Sciences
- Natural Sciences
- Integrative Capstone

15. Course Description (suggested length 20 to 50 words)
Examines the basic components of the U.S. courts with particular emphasis on case processing through the court system and the roles of court actors. Covers the history as well as the current structure and function of the court system and assesses the gap between the ideals and the realities of court processes and practices.

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

([JUST A110 and JUST A200 and JUST A201) or LEGL A101] with a minimum grade of D.

16b. Test Score(s)
N/A

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

16d. Other Restriction(s)

16e. 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
This prerequisite change reflects the faculty approved restructuring of course prerequisites.

Approved
Disapproved

Cory Lepage
Initiator (TYPE NAME)

Approved
Disapproved

Department Chairperson
Date:________________

Approved
Disapproved

Board Chairperson
Date:________________

Approved
Disapproved

Provost or Designee
Date:________________
I. Date of Initiation: February 2013

II. Curriculum Action Request
A. School: College of Health
B. Course Subject: JUST
C. Course Number: A374
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Program: Bachelor of Arts, Justice
G. Course Title: The Courts
H. Grading Basis: A-F
I. Implementation Date: Spring/2014
J. Cross-listed/Stacked: N/A
K. Course Description: Examines the basic components of the U.S. courts with particular emphasis on case processing through the court system and the roles of court actors. Covers the history as well as the current structure and function of the court system and assesses the gap between the ideals and the realities of court processes and practices.
L. Course Prerequisites: [(JUST A110 and JUST A200 and JUST A201) or LEGL A101] with a minimum grade of D.
M. Course Co-requisites: N/A
N. Other Restrictions: N/A
O. Registration Restrictions: N/A
P. Course Fees: No
Q. Course Attributes: N/A

III. Instructional Goals and Student Learning Outcomes
A. The instructor will:
1. Describe the historical development of the modern court system with emphasis on the European historical roots.
2. Present the evolution and the current state of the legal theoretical paradigms.
3. Present the institutional structure and processes of the American court system.
4. Identify the actors in the court setting and discuss their authority and roles.
5. Discuss the differences between theory and practice in the operation of the court system.
B. Upon completion of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Evaluate effect of history on current court policies and practices.</td>
<td>Examinations.</td>
</tr>
<tr>
<td>2. Compare the theoretical paradigms with the current policies and practices in the courts.</td>
<td>Examinations, writing assignments, faculty directed discussions.</td>
</tr>
<tr>
<td>3. Distinguish among the sources, types, and socio-political influences on formation of law and judicial processes.</td>
<td>Examinations.</td>
</tr>
<tr>
<td>4. Categorize the different actors in the court and examine the power differences between those actors.</td>
<td>Examinations, writing assignments.</td>
</tr>
<tr>
<td>5. Research and be able to discuss contemporary scholarship on court policies.</td>
<td>Written assignments, faculty directed discussions, presentations.</td>
</tr>
<tr>
<td>6. Conclude how court policies and procedures have varying effects on different segments of the population.</td>
<td>Group exercises, written assignments, presentations.</td>
</tr>
</tbody>
</table>

IV. Course Level Justification
The class builds upon course work presented in lower division justice courses; and provides in-depth coverage of the empirical and methodological issues present in the study of the courts.

V. Topical Course Outline
1. Historical roots and evolution of legal systems
   1.1. Medieval legal systems
   1.2. European legal systems
   1.3. American legal systems
2. Nature of law
   2.1. Definition of law
   2.2. Law and judicial function
3. Sources of law
   3.1. Natural law
   3.2. Common law
   3.3. Statutes
   3.4. Constitutional rights
   3.5. The Bill of Rights
4. Legal systems
   4.1. Civil law
   4.2. Criminal law
5. Theories of law
   5.1. Classical theories
   5.2. Contemporary theories
6. Court organization and structure
   6.1. Federal courts
   6.2. State courts
   6.3. Local courts
   6.4. Tribal courts
   6.5. Overview of case-flow and processing
7. Authority and power of the actors in the courtroom workgroup
   7.1. Power of the prosecutor and ethical issues
   7.2. Limits on power of defense and ethical guidelines
   7.3. Judicial limits and responsibilities
   7.4. Role of the jury
8. Criminal proceedings and impacts on defendants
   8.1. Pretrial processes
   8.2. The trial proceedings
   8.3. Sentencing
   8.4. The appellate process
9. Civil proceedings
   9.1. Nature of civil litigation
   9.2. Civil procedure
   9.3. Alternative dispute resolution
10. Specialized courts
    10.1. History of specialized courts
    10.2. Types of specialized courts
11. Tribal courts
    11.1. Structure and authority
    11.2. Contemporary issues
12. Contemporary problems in:
    12.1. Abuse of prosecutorial discretion
    12.2. Bias in the courtroom
    12.3. Access to justice
    12.4. Judicial/prosecutorial independence

VI. Suggested Texts


VII. Bibliography


*denotes classic/seminal text.
# Course Action Request

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

## 1. School or College  
**CH College of Health**

## 2. Course Prefix  
**JUST**

## 3. Course Number  
**A460**

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

## 5. Credits/CEUs  
**3**

## 6. Complete Course Title  
**Justice in Crisis**

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

## 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

## 9. Repeat Status No  
- [ ] Add  
- [ ] Change  
- [ ] Delete

### # of Repeats  
**Max Credits**

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

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

## 12. Cross Listed with N/A  
- [ ] Stacked  
- [ ] N/A  
- [ ] Cross-Listed Coordination Signature

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

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

<table>
<thead>
<tr>
<th>Course Action Request</th>
<th>Catalog Page(s)</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bachelor of Arts, Justice</td>
<td>3/22/2013</td>
<td>Marny Rivera, Justice Undergraduate Program Coordinator</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Initiator Name (typed): Ronald Everett**  
**Initiator Signed Initials:**  
**Date:**

## 14. General Education Requirement

### Mark appropriate box:

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

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

Critically examines various perspectives on justice and the ability of a society to maintain the ideal of justice. Compares conditions in different countries and investigates different social and historical conditions when justice was challenged. Analyzes the influence of culture, race/ethnicity and socioeconomic inequality on the operation of the American justice system.

## 16. Course Prerequisite(s)  
(list prefix and number)  
**JUST A110 and JUST A200 and JUST A201**

## 17. Other Restriction(s)  
- [ ] College  
- [ ] Major  
- [ ] Class  
- [ ] Level

## 18. Mark if course has fees

## 19. Justification for Action

**Updated prerequisites as part of Justice program curriculum revisions.**

### Initiator (faculty only)  
**Ronald Everett**

### Initiator Signed Initials:  
**Date:**

### Approved  
- [ ] Dean/Director of School/College  
**Date:**

### Disapproved  
- [ ] Undergraduate/Graduate Academic  
**Date:**

### Approved  
- [ ] Board Chairperson  
**Date:**

### Disapproved  
- [ ] Provost or Designee  
**Date:**

---

50
University of Alaska Anchorage  
College of Health  
Course Content Guide

I. Date of Initiation: April 2012

II. Curriculum Action Request
A. School: College of Health
B. Course Subject: JUST
C. Course Number: A460
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Program: Bachelor of Arts, Justice
G. Course Title: Justice in Crisis
H. Grading Basis: A-F
I. Implementation Date: Spring/2014
J. Cross-listed/Stacked: N/A
K. Course Description: Critically examines various perspectives on justice and the ability of a society to maintain the ideal of justice. Compares conditions in different countries and investigates different social and historical conditions when justice was challenged. Analyzes the influence of culture, race/ethnicity and socioeconomic inequality on the operation of the American justice system.

L. Course Prerequisites: [(JUST A110 and JUST A200 and JUST A201) and (JUST A251 or SOC A251)] with a minimum grade of D.
M. Course Co-requisites: N/A
N. Other Restrictions: Class
O. Registration Restrictions: Completion of all GER Tier 1 (Basic College-Level Skills) courses and Senior Standing.
P. Course Fees: N/A
Q. Course Attributes: General Education Requirement, Integrative Capstone

III. Instructional Goals and Student Learning Outcomes:
A. The instructor will:
   1. Present and critically review different perspectives on justice.
   2. Direct and guide students to develop an appreciation and understanding of the operation of systems of justice.
   3. Illustrate the strengths and weaknesses of different systems of justice.
   4. Review and critique different strategies for achieving justice.
   5. Identify and consider the role of historical events, information and social science literature on the operation of justice.
   6. Assess the relationship between the operation of contemporary criminal law and justice.
7. Analyze and critique the operation of the contemporary criminal justice process.
8. Appraise and critique the influence of socioeconomic inequality and racial/ethnic bias on the criminal justice system.
9. Review and critique differing sources of academic literature, research reports, and statistical information and the impact of such material on justice policy.

B. Upon completion of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Measures</th>
<th>Integrative Capstone Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate a critical understanding of different perspectives on justice.</td>
<td>Objective and essay examinations, oral presentations, research paper, answer reading comprehension questions, participation and attendance.</td>
<td>Knowledge integration, effective communication, critical thinking.</td>
</tr>
<tr>
<td>2. Evaluate different systems of justice.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Knowledge integration, effective communication, critical thinking.</td>
</tr>
<tr>
<td>3. Analyze the qualities of different systems of justice.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Knowledge integration, effective communication, critical thinking.</td>
</tr>
<tr>
<td>4. Evaluate different strategies for achieving justice.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Knowledge integration, effective communication, critical thinking.</td>
</tr>
<tr>
<td>5. Examine the role of historical events and information on justice systems.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Knowledge integration, effective communication, critical thinking.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6. Analyze the operation of contemporary criminal law and its ability to achieve justice.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Effective communication, critical thinking, information literacy.</td>
</tr>
<tr>
<td>7. Evaluate the influence of social and economic forces on the criminal justice process.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Effective communication, critical thinking, information literacy.</td>
</tr>
<tr>
<td>8. Appreciate and assess the enduring influence of racial/ethnic bias and socioeconomic inequality on the operation of the criminal justice system.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Effective communication, critical thinking, information literacy.</td>
</tr>
<tr>
<td>9. Assess and evaluate appropriateness and quality of academic literature, research reports, and statistical information and the effect of such material on justice policy development.</td>
<td>Objective and essay examinations, oral presentations, research paper, reading study guide questions, participation and attendance.</td>
<td>Effective communication, critical thinking, information literacy.</td>
</tr>
</tbody>
</table>

**IV. Course Level Justification**

This course is designed to fulfill the Integrative Capstone course requirement. The structure and substantive content of the course requires students to generate artifacts demonstrating complex knowledge integration, effective communication, critical thinking, and information literacy.

**V. Topical Course Outline**

In this course the legal systems offered as comparative examples and contemporary justice issues and historical events selected as examples of justice in crisis are at the discretion of the instructor and may vary depending on current events and instructor desires.

1. What is justice?
   1.1. Religion as justice
   1.2. Justice and philosophy
2. Justice and the state
   2.1. The social contract
   2.2. Liberty, equality and justice
   2.3. Criminal justice
3. Social justice
   3.1. Human rights
   3.2. Justice and economics
   3.3. Environmental justice
4. Formal systems of justice
   4.1. Common law systems
      4.1.1. History
      4.1.2. Characteristics
      4.1.3. Modern structure of the legal system
   4.2. Civil law systems
      4.2.1. History
      4.2.2. Characteristics
      4.2.3. Modern structure of the legal system
   4.3. Islamic law systems
      4.3.1. Sources of Islamic law
      4.3.2. Crime and punishment
      4.3.3. Criminal procedure
   4.4. Justice American style
      4.4.1. Efficiency and inefficiency and justice
      4.4.2. Criminal justice process
      4.4.3. Distinguish justice and crime
      4.4.4. Disciplinary views of justice studies
      4.4.5. Theoretical approaches to law and criminal justice
      4.4.6. Critical issues
5. Strategies for achieving justice
   5.1. Individual strategies
   5.2. Organizational strategies
   5.3. Global strategies
6. Investigations of justice in crisis – history
   6.1. Hitler’s justice: courts of the Third Reich
      6.1.1. Role of judges
      6.1.2. Enforcement of conformity
   6.2. General legal system (1933 – 1945)
      6.2.1. Treason and treachery: political opposition and the courts
      6.2.2. Creation of the concentration camps
      6.2.3. Arbitrary decisions in everyday life
      6.2.4. Resistance from the bench
   6.3. Collapse and reconstruction of the legal system
      6.3.1. Restoration
      6.3.2. Coming to terms with the past
      6.3.3. Injustice confirmed
      6.3.4. An attempt at an explanation
7. Investigations of justice in crisis – the death penalty
   7.1. When justice goes wrong (death penalty and wrongful convictions)
7.1.1. Actual innocence
7.1.2. DNA
7.2. Recent empirical research on the death penalty
7.3. Recent debates on punishment rationales for the death penalty
7.4. Characteristics and common elements of wrongful convictions
   7.4.1. Seeing things and false identification
   7.4.2. False confessions
   7.4.3. Faulty science
   7.4.4. Lawyers
7.5. Lessons
7.6. Current debates and the future of the death penalty
8. Investigations of justice in crisis - race, poverty, drugs and corruption
   8.1. Tulia: race, cocaine, and corruption in a small Texas town
      8.1.1. Police and community
      8.1.2. Race and legal representation
   8.2. Empirical research on police corruption
   8.3. Undercover police investigations
      8.3.1. Discretion and race
      8.3.2. Race and power
      8.3.3. Selective enforcement
   8.4. Prosecutorial discretion: power and privilege
   8.5. Social and political theories of plea bargaining
   8.6. The power of plea bargaining
   8.7. Prosecutorial misconduct: the abuse of power and discretion
   8.8. Prosecutorial ethics
   8.9. Court process and issues of race
      8.9.1. Evidence and convictions
      8.9.2. Juries and beyond a reasonable doubt
      8.9.3. Media attention
   8.10. Questions and doubt
      8.10.1. Legal review
      8.10.2. Appeals
   8.11. Negotiations
      8.11.1. Release and pardons
      8.11.2. Prosecution of police corruption
      8.11.3. Prosecutorial misconduct
      8.11.4. Prosecutorial accountability
   8.12. Race, poverty and the justice process

VI. Suggested Texts


VII. Bibliography

**Manuscripts and Edited Volumes:**


*most recent edition of text

**Journals:**
American Sociological Review
American Journal of Sociology
Criminology
Justice Quarterly
Law and Policy
Law and Society
Punishment and Society
Social Problems
### 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>BIOL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>373</td>
<td>A373</td>
<td>3</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Complete Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abbreviated Title for Transcript (30 character)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>7. Type of Course</th>
<th>Academic</th>
<th>Preparatory/Development</th>
<th>Non-credit</th>
<th>CEU</th>
<th>Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Type of Action:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
</tr>
</tbody>
</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, Integrative Capstone (please specify)

<table>
<thead>
<tr>
<th>9. Repeat Status No</th>
<th># of Repeats</th>
<th>Max Credits</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>10. Grading Basis</th>
<th>A-F</th>
<th>P/NP</th>
<th>NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>semester/year</td>
</tr>
</tbody>
</table>

From: Spring/2014  To: 9999/9999

<table>
<thead>
<tr>
<th>12. Cross Listed with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stacked with</td>
</tr>
</tbody>
</table>

Cross-Listed Coordination Signature

---

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

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment &amp; Society (BS, minor)</td>
<td>6/2012</td>
<td>Shannon Donovan</td>
</tr>
<tr>
<td>Biological Sciences (BA, BS)</td>
<td>1/2013</td>
<td>Khrys Duddleston</td>
</tr>
<tr>
<td>Natural Sciences (BS)</td>
<td>1/2013</td>
<td>Khrys Duddleston</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Douglas Causey  Initiator Signed Initials: _________  Date:________________

13b. Coordination Email  Date: 2/26/2013  submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  Date: n/a

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)

Review of the human drivers of global environmental change (human population growth and consumption of resources), the consequences of environmental degradation, and application of tools to slow down or reverse environmental change.

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

BIOLA271 or ENVI A211, with minimum grade of C

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

<table>
<thead>
<tr>
<th>16c. Other Restriction(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
</tr>
</tbody>
</table>

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

Completion of all GER Tier 1 and Tier 2 courses is required

17. Mark if course has fees

18. Mark if course is a selected topic course

19. Justification for Action

The change in prerequisites will facilitate students in the Environment & Society and Environmental Studies programs to enroll in this course. The change to Integrative Capstone status will provide more choices for this requirement.

Initiator (faculty only)  Douglas Causey

Initiator (TYPE NAME)  Date

Approved  Disapproved

Dean/Director of School/College  Date

Approved  Disapproved

Undergraduate/Graduate Academic  Date

Approved  Disapproved

Board Chair  Date

Approved  Disapproved

Provost or Designee  Date

---

58
I. Implementation Date: Spring 2014

II. Course Information
A. College: College of Arts and Sciences
B. Course Title: Conservation Biology
C. Course Subject/Number: BIOL A373
D. Credit Hours: 3.0 Credits
E. Contact Time: 3+0 Contact Time
F. Grading Information: A-F
G. Course Description: Review of the human drivers of global environmental change (human population growth and consumption of resources), resulting environmental degradation, and tools to slow down or reverse environmental change. Special Note: This is a service-learning course and includes field work outside of class time.
H. Status of course relative to degree or certificate program: Selective for B.A. and B.S. in Biological Sciences, and B.S. in Natural Sciences, required for B.A. and B.S. in Environment & Society.
I. Course Fees: Yes
J. Coordination: UAA Faculty Listserv
K. Course Prerequisites: BIOL A271 or ENVI A211, with minimum grade of C.
L. Registration Restrictions: yes

III. Course Activities
This is a lecture course focused on multi-disciplinary problem-solving skills. It is also a service-learning course that requires students to engage in an environmental project to provide technical assistance to the local community (e.g., water quality assessment). As a service-learning course it provide students with an opportunity to learn course content in an applied setting that directly benefits people and the environment in surrounding neighborhoods.

IV. Evaluation
The course is graded A-F. Students will be graded based on their performance on examinations given during the semester (including the final exam), and on their field reports for the service-learning portion of the course. The grade will be based on how well the student masters the subject matter.

V. Course Level Justification
Students are required to learn and integrate information from a variety of scientific disciplines as it relates to conservation biology, to read, to understand, and to apply ideas conveyed by primary scientific literature, to synthesize chemical, geological, ecological and biological knowledge and social considerations; and to apply course materials to this topic.
GER Integrative Capstone Justification:
Justifications for designating BIOL A373 Conservation Biology as a GER Integrative Capstone course include:

1. Knowledge Integration/Interrelationships and synergy among GER disciplines: The overall theme of the course is understanding the relationship of biological conservation principles to other natural and social sciences. The course will focus on the interfaces among physical sciences (biochemistry, geological history, mathematics), biological sciences (biology, ecology, conservation, molecular biology, etc.), and the social sciences (particularly human biology, sociology, anthropology).

2. Effective Communication Skills: Course success demands effective communication through essay examinations, individual classroom presentations, brief reports (oral and written) on current controversies surrounding conservation biology, and a final research product.

3. Critical Thinking: Students will not be able to succeed in the course unless they are able to integrate information across disciplines, and critically evaluate the reliability of data and positions presented in lecture, texts, scientific, and popular viewpoints. Student ability to critically evaluate diverse material will be determined based on writing assignments, class presentations, and examinations.

4. Information Literacy: Students are expected to achieve and demonstrate computer and internet skills for acquiring information relevant to current topics in evolutionary biology. This will involve research in the primary scientific literature, and the collection of information from unpublished sources such as popular press and public statements. Students will be required to show that they can critically winnow facts and scientific content from diverse non-scientific sources.

5. Quantitative Perspectives: A critical understanding of basic conservation biology is grounded in many quantitative disciplines, including statistical analysis, applied maths (algebra, calculus, probability and combinatorics, etc.), general and advanced ecology, and quantitative biology. In addition, students must be able to read and interpret scientific data in graphical and tabular form, and to generate appropriate graphical displays of their own results. Exams will specifically test on these skills.

6. Evolving realities of the 21st century: The growing understanding that conservation biology is a dynamic and everpresent component of modern life, particularly in the context of climate change and anthropogenic change, touches many aspects of science, policy, and social attitudes. This course will help students understand the implication of conservation biological process in a changing environment, and provide them with effective means to communicate its important and relevance for individuals and society.

VI. Outline
I. Impacts and Drivers
   1. What is Conservation Biology?
   2. Status of Biodiversity
   3. Predicting Biodiversity
   4. Conservation Hotspots
   5. Extinctions and its Consequences
   6. Rarity and small populations
   7. Habitat Change
   8. Environmental Change
   9. Climate Change
   10. Invasive Species

II. Problems and Approaches
   11. Metapopulations and Populations
   12. Conserving Metapopulations
   13. Habitat Fragmentation
   14. Landscape Analysis and corridors
   15. Edges, areas, and reserves
   16. Habitat mitigation and environmental reconstruction
   17. Conservation Management
   18. Risk analysis and decisions
   19. Complex decision making

III. Issues and Controversies
   20. Biodiversity and Human Health
   21. Sustainable Development
   22. Endangered Species Act
   23. Ecolgoical services and ecosystem functions
   24. Reserves and Ecological Justice
   25. Environmental Security

VII. Instructional Goals and Defined Outcomes
A. Instructional Goals. The Instructor Will:
   1. Guide students in understanding the roles of habitat preservation, population integrity, and application of conservation policy to maintain natural ecosystems and biota.
   2. Teach students to analyze conservation problems in a multidisciplinary manner with considerations of economics, law, policy and biological principles.
   3. Teach students to assess environmental degradation using standardized protocols and modern instruments, and analyze resulting data.

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

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the drivers and consequences of environmental problems</td>
<td>Case studies, analysis of hypotheticals, exam</td>
</tr>
<tr>
<td>Report and interpret major environmental problems</td>
<td>Exam</td>
</tr>
<tr>
<td>Explain how problems interact in synergism</td>
<td>Exam</td>
</tr>
<tr>
<td>Explain and apply tools for solving environmental</td>
<td>Project Report</td>
</tr>
</tbody>
</table>
VIII. Suggested Texts


IX. Bibliography and Resources

**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>EN SOENGR</td>
<td>No Division Code</td>
<td>Computer Science &amp; Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE</td>
<td>A415</td>
<td>n/a</td>
<td>3</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Complete Course Title</th>
<th>Machine Learning</th>
</tr>
</thead>
</table>

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

7. Type of Course

<table>
<thead>
<tr>
<th></th>
<th>Academic</th>
<th>Preparatory/Development</th>
<th>Non-credit</th>
<th>CEU</th>
<th>Professional Development</th>
</tr>
</thead>
</table>

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

9. Repeat Status No

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

10. Grading Basis

<table>
<thead>
<tr>
<th></th>
<th>A-F</th>
<th>P/NP</th>
<th>NG</th>
</tr>
</thead>
</table>

11. Implementation Date

<table>
<thead>
<tr>
<th></th>
<th>semester/year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From: Spring/2014 To: 99/9999</td>
</tr>
</tbody>
</table>

12. Cross Listed with

<table>
<thead>
<tr>
<th></th>
<th>Stacked with</th>
</tr>
</thead>
</table>

13a. Impacted Courses or Programs:

List any programs or college requirements that require this course.

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

**Initiator (typed): Martin Cenek**

**Initiator Signed Initials:** _________

**Date:** ___________

13b. Coordination Email Date: 12/10/2012

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

13c. Coordination with Library Liaison Date: 12/10/2012

14. General Education Requirement

Mark appropriate box:

<table>
<thead>
<tr>
<th></th>
<th>Oral Communication</th>
<th>Written Communication</th>
<th>Quantitative Skills</th>
<th>Humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fine Arts</td>
<td>Social Sciences</td>
<td>Natural Sciences</td>
<td>Integrative Capstone</td>
</tr>
</tbody>
</table>

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

In-depth survey of basic and advanced concepts of machine learning. Topics include linear discrimination, supervised, unsupervised, semi-supervised learning, multilayer perceptron, maximum-margin methods, Monte-Carlo and reinforcement learning.

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

CSCE A311 with a minimum grade of C.

16b. Test Score(s)

<table>
<thead>
<tr>
<th></th>
<th>n/a</th>
</tr>
</thead>
</table>

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

n/a

16d. Other Restriction(s)

<table>
<thead>
<tr>
<th></th>
<th>College</th>
<th>Major</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
</table>

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

n/a

17. Mark if course has fees Yes, standard SOE fee

18. Mark if course is a selected topic course

19. Justification for Action

New course to expand elective offerings for computer science and computer systems engineering students in the area of computational intelligence.

**Initiator (faculty only)**

**Initiator Signed Initials:** _________

**Date:** ___________

**Dean/Director of School/College**

**Date:** ___________

**Department Chairperson**

**Date:** ___________

**Curriculum Committee Chairperson**

**Date:** ___________

**Provost or Designee**

**Date:** ___________

63
I. **Revision Date:** December 20, 2012

II. **Course Information**
   A. **College:** School of Engineering
   B. **Course Subject/Number:** CSCE A415
   C. **Credits:** 3
   D. **Contact Hours:** (3+0) 45 contact lecture hours (3 contact lecture hours/week x 15 weeks = 45) plus 90 hours outside work (6 hours outside lecture/week x 15 weeks = 90) for a total of 135 hours
   E. **Course Title:** Machine Learning
   F. **Repeat Status:** No
   G. **Grading Basis:** A-F
   H. **Course Description:** In-depth survey of basic and advanced concepts of machine learning. Topics include linear discrimination, supervised, unsupervised, semi-supervised learning, multilayer perceptron, maximum-margin methods, Monte-Carlo and reinforcement learning.
   I. **Course Prerequisites:** CSCE A311 with a minimum grade of C.
   J. **Fees:** Yes, standard SOE fee

III. **Course Level Justification**

   This course builds on knowledge of data structures, algorithms, and computer programming provided at the 200 and 300 levels. Students will design and analyze machine learning algorithms.

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

   A. **Instructional Goals.** The instructor will:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduce students to basic topics of machine learning algorithms that include: linear discrimination, supervised, unsupervised, semi-supervised learning, multilayer perceptron, maximum-margin methods, Monte-Carlo and reinforcement learning.</td>
</tr>
<tr>
<td>2.</td>
<td>Present in-depth material of selected advanced topics such as support vector machines with linear and non-linear kernels, recurrent artificial neural networks, and kernel methods.</td>
</tr>
<tr>
<td>3.</td>
<td>Guide students through design, implement, train/test, and evaluate machine learning algorithms that illustrate covered machine learning topics.</td>
</tr>
</tbody>
</table>
4. Demonstrate implementation and application to several different machine learning approaches to solve problems.

B. Student Learning Outcomes. Upon successful completion of this course, students will be able to:

| 1. Apply machine learning algorithms to solve computational and applied problems. | Exams, Assignments, Project |
| 2. Design, implement, train/test, and analyze machine learning algorithms. | Exams, Assignments, Project |
| 3. Prepare oral and written presentation about machine learning. | Project |

V. Guidelines for Evaluation
A. Exams
B. Project
C. Assignments

VI. Topical Course Outline

1. Linear Discrimination
   a. Perceptron
   b. Linear separability
2. Supervised Learning
   a. Regression
   b. Classification
3. Multi-layer Perceptrons
   a. Hierarchical Temporal Memory (HTM)
   b. Artificial neural networks
      1. Feed-forward
      2. Backward error propagation
      3. Recurrent
   c. Hierarchical Model and X (HMAX)
4. Maximum Margin Methods
   a. Maximum margin classifiers
   b. Support vector machines
      1. Weighted
      2. Fuzzy
      3. Semi-supervised
5. Decision Trees
6. Ensemble Learning
7. Probability and Learning
   a. Gaussian mixture
   b. Nearest neighbor
8. Unsupervised Learning
9. K-means
10. Self-Organizing feature Map (SOM)
11. Dimensionality Reduction
   a. Linear discriminant analysis
   b. Principal component analysis
   c. Independent component analysis
12. Evolutionary Learning
   a. Evolution
   b. Co-evolution
   c. Genetic programming
13. Optimization and Search
14. Reinforcement Learning
   a. Hidden Markov models
   b. Markov chains
15. Graphical Models
   a. Bayesian networks
   b. Markov random fields
16. Monte Carlo

VII. Suggested Texts


VIII. Bibliography


**Course Action Request**

**University of Alaska Anchorage**

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

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN SOENGR</td>
<td>No Division Code</td>
<td>Computer Science and Engineering</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>CSCE</td>
<td>A446</td>
<td>n/a</td>
<td>3</td>
<td>(Lecture + Lab) (3+0)</td>
</tr>
</tbody>
</table>

**6. Complete Course Title**

Digital Media and Interactive Systems

Digital Media & Interactive Sys

Abbreviated Title for Transcript (30 character)

<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>CSCE</td>
<td>A446</td>
<td>n/a</td>
<td>3</td>
<td>(Lecture + Lab) (3+0)</td>
</tr>
</tbody>
</table>

**7. Type of Course**

- [x] 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
  - Level
  - Other (please specify)
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Co-requisites
- Registration Restrictions

**9. Repeat Status**

- No
- # of Repeats: n/a
- 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**

- [ ] Stacked with

Cross-Listed Coordination Signature

**13a. Impacted Courses or Programs:**

List any programs or college requirements that require this course.

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

Initiator Name (typed): Sam Siewert

Initiator Signed Initials: _________

**14. General Education Requirement**

Mark appropriate box:

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

**15. Course Description**

(suggested length 20 to 50 words)

Introduces digital media systems for digital cinema and digital cable/Internet media creation, delivery, and interactive systems. Topics covered include digital audio and video encoding and decoding, transport, multiplexing, broadband and baseband transmission, real-time requirements, and interactive on-demand systems for video and video games. Traditional analog audio and video are covered as history and digital cable, web/mobile Internet Protocol Television (IPTV) and media, Advanced Television Systems Committee (ATSC) over-the-air, interactive on-demand digital video, and digital video gaming.

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

(CSCE A320 and CSCE A365) with a minimum grade of C.

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

n/a

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

n/a

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

- College
- Major
- Class
- Level

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

n/a

**17. Mark if course has fees**

Yes, standard SOE fee

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

**19. Justification for Action**

New course to expand offerings for computer science and computer systems engineering students in the area of digital media.
<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Date</th>
<th>Dean/Director of School/College</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam Siewert</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Department Chairperson</th>
<th>Date</th>
<th>Undergraduate/Graduate Academic</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curriculum Committee Chairperson</th>
<th>Date</th>
<th>Provost or Designee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. Initiation Date: December 2012

II. Course Information
A. College/School: School of Engineering
B. Course Title: Digital Media and Interactive Systems
C. Course Subject/Number: CSCE A446
D. Credit Hours: 3.0 Credits
E. Contact Time: 3+0 Contact Time
F. Grading Information: A-F
G. Course Description: Introduces digital media systems for digital cinema and digital cable/Internet media creation, delivery, and interactive systems. Topics covered include digital audio and video encoding and decoding, transport, multiplexing, broadband and baseband transmission, real-time requirements, and interactive on-demand systems for video and video games. Traditional analog audio and video are covered as history and digital cable, web/mobile Internet Protocol Television (IPTV) and media, Advanced Television Systems Committee (ATSC) over-the-air, interactive on-demand digital video, and digital video gaming.
H. Lab Fees: Yes, standard SOE fee
I. Coordination: SOE and Faculty Listserv
J. Course Prerequisites: (CSCE A320 and CSCE A365) with a minimum grade of C.
K. Registration Restrictions: None

III. Evaluation
Grades are based on written examination, class assignments, and projects.

IV. Course Level Justification
This course allows students to apply programming skills, network, computing, and storage skills taught at the 300 level to digital media application and system development relevant to digital cable, Internet content distribution, and digital Radio Frequency (RF) transmission of media.

V. Outline
A. Lecture
1. Analog Video and Audio Transmission
   a. Brief history
   b. Advantage of digital video
   c. Future challenges for mobile and on-demand
2. Fundamental Digital Video and Audio Encoding
   a. Pulse Code Modulation (PCM) audio sampling
   b. Multi-channel audio
   c. Pixel and still image encoding
   d. Moving picture encoding concepts
e. Elementary streams
f. Program streams
g. Transport streams – single and multi-program

3. Transmission and Transport Fundamentals
   a. Baseband packet switched networks (Motion Picture Experts Group (MPEG) – in User Datagram Protocol (UDP) or Real-Time Protocol (RTP))
   b. Broadband digital cable – Quadrature Phase-Shift Keying (QPSK) and Quadrature Amplitude Modulation (QAM)
   c. Over-the-air digital transmission – Vestigial Sideband Modulation (VSB) for ATSC
   d. Digital packet switched network Quality of Service (QoS)

4. Video Encoding from Bottom Up
   a. Pixel and color encoding
   b. Frames and macro blocks
   c. Discrete Cosine Transform (DCT)
   d. Quantization
   e. Huffman and Run-Length Encoding (RLE)
   f. Motion vector quantization and change only data
   g. Intra, predictive, and bi-directional frames
   h. Packet multiplexing of audio and video elementary streams

5. Real-time Processing
   a. Dynamic priority preemptive scheduling
   b. I/O scheduling
   c. QoS networks
   d. Latency, buffering, bandwidth-delay product
   e. Performance

6. Post Production
   a. Capture form digital cameras
   b. Computer Graphic (CG) rendering of frames
   c. Editing content, color, and selection of encoding quality
   d. Bit rates, resolutions, aspect ratios
   e. Post workflows and I/O processing pipelines

7. Post Production Architecture and Performance
   a. Single Instruction, Multiple Data (SIMD) Graphics Processing Unit (GPU) software
   b. Redundant Array of Independent Disk (RAID) systems for storage and I/O scaling
   c. Clusters and networking
   d. CG and Digital Video Transformation

8. Mobile and End-User Systems
   a. Decoders
   b. Players
   c. Down-conversion and color enhancement

9. Interactive and On-Demand Systems
   a. On-demand digital video and trick play
b. Digital video game concepts

c. Physics and game engines

c. Interactive graphics and animation basics

d. Augmented reality

B. Example Projects (MPEG encoders/decoders – on Linux and/or Windows)
1. MPEG audio and video elementary stream parsing and analysis
2. Portable BitMap (PBM), Portable GreyMap (PGM), Portable PixMap (PPM) frames and encoding for compression
3. Packet switched digital video streaming and performance
4. Simple construction of a digital video encoder for compression
5. Scheduling theory and run-time analysis of threads
6. Work with encoders/decoders to produce short movies from digital images produced using ray tracing and RenderMan or OpenGL Optix real-time ray tracing
7. Post production pipeline speed-up with Compute Unified Device Architecture (CUDA)/OpenCL using GPUs

VI. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The instructor will:

1. Explain the principles of digital media encoding/decoding, transport, quality of service, and system performance.
2. Explain digital media transport over-the-air, over coaxial cable, and over the Internet.
3. Instruct students on the use of MPEG tools, Linux software development for digital media processing, storage and networking applied to digital media.

B. Student Learning Outcomes. Upon successful completion of this course, students will be able to:

<table>
<thead>
<tr>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams, quizzes, assignments, projects</td>
</tr>
</tbody>
</table>

| 1. | Explain the methods of encoding and decoding digital video and audio |
| 2. | Demonstrate methodologies used in the design of digital media systems |
| 3. | Demonstrate methodologies used to transport digital media with quality of service (latency control) |
| 4. | Develop the necessary code to complete the course projects. |
| 5. | Implement course projects, test their operation, and report their findings to the instructor and colleagues. |
| 6. | Demonstrate recognition of the engineering tradeoffs necessary in the design of production CG imagery and interactive 3D graphics |

| Projects |
| Exams, quizzes, assignments, projects |

| Projects |
| Exams, quizzes, assignments, projects |

| Projects |
| Exams, quizzes, assignments, projects |
VII. Suggested Texts


VIII. Bibliography and Resources


### 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>EN SOENGR</td>
<td>No Division Code</td>
<td>Computer Science and Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE</td>
<td>A450</td>
<td>n/a</td>
<td>3</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

6. Complete Course Title

Robotics

Abbreviated Title for Transcript (30 character)

7. Type of Course

- [x] 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
- [ ] Level
- [ ] College
- [ ] Major
- [ ] Other Course Content Guide (please specify)

9. Repeat Status No

- [ ] # of Repeats
- [x] n/a

10. Grading Basis

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

11. Implementation Date

- From: Spring/2014
- To: 99/9999

12. [ ] Cross Listed with

13a. Impacted Courses or Programs:

List any programs or college requirements that require this course.

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

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

<table>
<thead>
<tr>
<th>Initiator Name (typed):</th>
<th>Initiator Signed Initials:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeffrey Miller</td>
<td>________________________</td>
<td></td>
</tr>
</tbody>
</table>

13b. Coordination Email

Date: 12-10-12

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

13c. Coordination with Library Liaison

Date: 12-10-12

14. General Education Requirement

Mark appropriate box:

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

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

Introduces robotics with embedded systems. Controlling mobile robots, sensors, and motors with autonomous and user-controlled operations. Different types of robots, including aerial, underwater, and automotive robots. Real-time image processing and neural networks including genetic algorithms will be covered.

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

(CSCE A241 and CSCE A311 and CSCE A365) with a minimum grade of C.

16b. Test Score(s)

n/a

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

n/a

16d. Other Restriction(s)

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

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

n/a

17. [x] Mark if course has fees

Yes, standard SOE fee

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

19. Justification for Action

New course to add robotics to the curriculum as an elective for computer science and computer systems engineering majors. Robotics is now commonly taught at the high school level, is typically offered in computer engineering programs, and robotic systems are commonly used in industry.
<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeffrey Miller</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Dean/Director of School/College</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department Chairperson</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Undergraduate/Graduate Academic Board Chairperson</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curriculum Committee Chairperson</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provost or Designee</th>
<th>Date</th>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Course Content Guide
University of Alaska Anchorage
School of Engineering
Department of Computer Science and Engineering

I. Revision Date: November 13, 2012

II. Course Information
A. College: Engineering
B. Course Subject/Number: CSCE A450
C. Credits: 3
D. Contact Hours: (3+0) 45 contact lecture hours (3 contact lecture hours/week x 15 weeks = 45) plus 90 hours outside work (6 hours outside lecture/week x 15 weeks = 90) for a total of 135 hours
E. Course Title: Robotics
F. Repeat Status: No
G. Grading Basis: A-F
H. Course Description: Introduces robotics with embedded systems. Controlling mobile robots, sensors, and motors with autonomous and user-controlled operations. Different types of robots, including aerial, underwater, and automotive robots. Real-time image processing and neural networks including genetic algorithms will be covered.
I. Course Prerequisites: (CSCE A241 and CSCE A311 and CSCE A365) with a minimum grade of C.
J. Fees: Yes, standard SOE fee

III. Course Level Justification

This course builds upon concepts taught at the 200 and 300 level to design and develop robotic systems.

IV. Instructional Goals and Student Learning Outcomes

<table>
<thead>
<tr>
<th>A. Instructional Goals. The instructor will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Present the basic principles behind mobile robots.</td>
</tr>
<tr>
<td>2. Describe electronic sensors and what sensors are needed for different operations.</td>
</tr>
<tr>
<td>3. Describe the different types of autonomous robots.</td>
</tr>
<tr>
<td>4. Describe the importance of localization, navigation, and real-time processing of data to develop robotic systems.</td>
</tr>
</tbody>
</table>
B. **Student Learning Outcomes.** Upon successful completion of this course, students will be able to:

<table>
<thead>
<tr>
<th></th>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create a robot with appropriate sensors to perform dedicated tasks</td>
<td>Assignments, Exams, Project</td>
</tr>
<tr>
<td>2. Write code to control a robot by a user with a computer or handheld device</td>
<td>Assignments, Exams, Project</td>
</tr>
<tr>
<td>3. Write code to allow a robot to autonomously perform tasks</td>
<td>Assignments, Exams, Project</td>
</tr>
<tr>
<td>4. Write a program to allow a robot to learn using neural networks and artificial intelligence principles.</td>
<td>Assignments, Exams, Project</td>
</tr>
</tbody>
</table>

V. **Guidelines for Evaluation**

A. Assignments  
B. Exams  
C. Project

VI. **Topical Course Outline**

1. Introduction, Embedded Systems  
2. Mobile Robots, Operating Systems  
3. Analog and Digital Sensors  
4. Actuators, Motors, Servos  
5. Controllers  
6. Multitasking, Synchronization, Scheduling  
7. Wireless Communication, Remote Control  
8. Driving and Omnidirectional Robots  
9. Balanced and Walking Robots  
10. Autonomous Aerial and Underwater Vehicles  
11. Robotic Simulators  
12. Localization and Navigation  
13. Maze Exploration and Map Generation  
14. Real-Time Image Processing  
15. Neural Networks  
16. Genetic Algorithms and Programming  
17. Automotive Systems
VII. **Suggested Texts**


VIII. **Bibliography**


## Course Action Request

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

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>EN SOENGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1b. Division</td>
<td>No Division Code</td>
</tr>
<tr>
<td>1c. Department</td>
<td>Computer Science and Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>CSCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Course Number</td>
<td>A660</td>
</tr>
<tr>
<td>4. Previous Course Prefix &amp; Number</td>
<td>n/a</td>
</tr>
<tr>
<td>5a. Credits/CEUs</td>
<td>3</td>
</tr>
<tr>
<td>5b. Contact Hours (Lecture + Lab)</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

### 6. Complete Course Title

**Advanced Database Systems**

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

### 7. Type of Course

- [x] 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
  - Level
  - College
  - Other
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Registration Restrictions

### 9. Repeat Status

- [ ] No
- [ ] # of Repeats
- [x] 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

<table>
<thead>
<tr>
<th>Stacked with</th>
<th>Cross-Listed Coordination Signature</th>
</tr>
</thead>
</table>

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

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

#### Impacted Program/Course

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

#### Initiator Name (typed): Kirk Scott

Initiator Signed Initials: ________ Date: __________

<table>
<thead>
<tr>
<th>13b. Coordination Email</th>
<th>Date: 12-10-12</th>
<th>13c. Coordination with Library Liaison</th>
<th>Date: 12-10-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>submitted to Faculty Listserv</td>
<td>(<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</td>
<td></td>
<td></td>
</tr>
</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)

In-depth treatment of relational theory, non-relational database models, transaction processing, concurrency control, and administration of databases in practice. Course includes an applied project of significant scope.

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

CSCE A360 with a minimum grade of C.

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

n/a

### 16c. Other Restriction(s)

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

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

n/a

### 17. Mark if course has fees

- [ ] Yes, standard SOE fee

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

- [ ]

### 19. Justification for Action

Industry demand. This is a subject requested by Anchorage IT professionals as a result of a survey conducted in late 2012 by the Computer Science & Engineering Advisory Board.

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirk Scott</td>
<td></td>
</tr>
</tbody>
</table>

Initiator (TYPE NAME)

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

Dean/Director of School/College

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

Undergraduate/Graduate Academic Board Chair

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

Provost or Designee

<table>
<thead>
<tr>
<th>Approved</th>
<th>Disapproved</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. Revision Date: November 15th, 2012

II. Course Information
A. College: School of Engineering
B. Course Subject/Number: CSCE A460
C. Credits: 3
D. Contact Hours: (3+0) 45 contact lecture hours (3 contact lecture hours/week x 15 weeks = 45) plus 90 hours outside work (6 hours outside lecture/week x 15 weeks = 90) for a total of 135 hours
E. Course Title: Advanced Database Systems
F. Repeat Status: No
G. Grading Basis: A-F
H. Course Description: In-depth treatment of relational theory, non-relational database models, transaction processing, concurrency control, and administration of databases in practice. Course includes an applied project of significant scope.
I. Course Prerequisites: CSCE A360 with a minimum grade of C.
J. Fees: Yes, standard SOE fee

III. Course Level Justification

This course is typically taught at the upper division level and depends on an understanding of the concepts of database management systems taught at the 300 level.

IV. Instructional Goals and Student Learning Outcomes

<table>
<thead>
<tr>
<th>A. Instructional Goals.</th>
<th>The instructor will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide a thorough treatment of the theoretical foundations of relational database management systems.</td>
</tr>
<tr>
<td>2.</td>
<td>Indicate how the theoretical foundations are applied in practice.</td>
</tr>
<tr>
<td>3.</td>
<td>Present information on the concerns and tasks involved in administering a database.</td>
</tr>
<tr>
<td>4.</td>
<td>Discuss database management systems that may be wholly or partially different from traditional relational systems.</td>
</tr>
</tbody>
</table>
B. Student Learning Outcomes. Upon successful completion of this course students will be able to:

<table>
<thead>
<tr>
<th></th>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Answer questions about the theory and practice of database management systems. Assignments, Exams, Project</td>
</tr>
<tr>
<td>2.</td>
<td>Install, configure, and administer a database management system. Assignments, Project</td>
</tr>
<tr>
<td>3.</td>
<td>Design a database and write queries for it. Assignments, Project</td>
</tr>
<tr>
<td>4.</td>
<td>Implement a system that correctly and successfully supports secure, concurrent transactions in a multi-user environment. Project</td>
</tr>
</tbody>
</table>

V. Guidelines for Evaluation
A. Assignments
B. Exams
C. Project

VI. Topical Course Outline

1. The Relational Model
   a. Tuples and relations
   b. Relational algebra
   c. Relational calculus
2. Relational Design
   a. Functional dependencies
   b. Normalization
   c. Semantic modeling
3. Query Processing
   a. Simple queries
   b. Embedded Structured Query Language (SQL)
   c. Java Database Connectivity (JDBC)
   d. Transaction processing
4. Database Administration
   a. File systems and physical design
   b. Concurrency control
   c. Transaction rollback and recovery
   d. Security
   e. Optimization
5. Types of Databases
   a. Spatial and temporal databases
   b. Distributed databases
   c. Web databases
   d. Extensible Markup Language (XML) and databases
   e. Logic-based databases
6. Object-Orientation and Databases
   a. Relations and classes
   b. Object databases
   c. Object-relational databases

VII. Suggested Texts

    Wesley, Boston, MA, 2011.
Welling, L. and Thomson, L. PHP and MySQL Web Development, Addison Wesley,
    Boston, MA, 2009.

VIII. Bibliography

1a. School or College  
EN SOENGR  

1b. Division  
No Division Code  

1c. Department  
Computer Science and Engineering  

2. Course Prefix  
CSCE  

3. Course Number  
A462  

4. Previous Course Prefix & Number  
n/a  

5a. Credits/CEUs  
3  

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

6. Complete Course Title  
Data Mining  

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  
☐ Course Number  ☐ Contact Hours  ☐ Repeat Status  ☐ Cross-Listed/Stacked  ☐ Course Prerequisites  ☐ Co-requisites  ☐ Registration Restrictions  
☐ Class  ☐ Level  ☐ College  ☐ Major  ☐ Other  

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

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

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

12. ☐ Cross Listed with  
☐ Stacked with  

Cross-Listed Coordination Signature  

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

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></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): Kirk Scott  
Initiator Signed Initials: __________  Date: __________  

13b. Coordination Email  
Date: 12/10/2012  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)  

13c. Coordination with Library Liaison  
Date: 12/10/2012  

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

15. Course Description (suggested length 20 to 50 words)  
Application of rule-based, tree-based, and statistical techniques for data classification, clustering, and association. Evaluation and analysis of data mining results.  

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
CSCE A360 with a 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 Yes, standard SOE fee  

18. ☐ Mark if course is a selected topic course  

19. Justification for Action  
Industry demand. This is a subject requested by Anchorage IT professionals as a result of a survey conducted in late 2012 by the Computer Science & Engineering Advisory Board.  

Initiator (faculty only)  
Kirk Scott  
Initiator (TYPE NAME)  

Approved  Disapproved  
Dean/Director of School/College  Date  

Approved  Disapproved  
Undergraduate/Graduate Academic  Board Chair  Date  

Approved  Disapproved  
Provost or Designee  Date  

83
Course Content Guide
University of Alaska Anchorage
School of Engineering
Department Computer Science and Engineering

I. Revision Date: November 15th, 2012.

II. Course Information
A. College: School of Engineering
B. Course Subject/Number: CSCE A462
C. Credits: 3
D. Contact Hours: (3+0) 45 contact lecture hours (3 contact lecture hours/week x 15 weeks = 45) plus 90 hours outside work (6 hours outside lecture/week x 15 weeks = 90) for a total of 135 hours
E. Course Title: Data Mining
F. Repeat Status: No
G. Grading Basis: A-F
H. Course Description: Application of rule-based, tree-based, and statistical techniques for data classification, clustering, and association. Evaluation and analysis of data mining results.
I. Course Prerequisites: CSCE A360 with a minimum grade of C.
J. Fees: Yes, standard SOE fee

III. Course Level Justification
This course is typically taught at the upper division level and depends on an understanding of basic concepts of data organization and algorithmic thinking provided in 300 level courses.

IV. Instructional Goals and Student Learning Outcomes

<table>
<thead>
<tr>
<th>A. Instructional Goals. The instructor will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Present an array of common, well-understood data mining algorithms with examples of their application, including classification, clustering, and association rule mining.</td>
</tr>
<tr>
<td>2. Discuss the theoretical and practical basis for the implementation of covering and divide and conquer approaches resulting in rule sets, trees, and other representations of knowledge.</td>
</tr>
<tr>
<td>3. Present a survey of typical approaches to evaluating the results of data mining.</td>
</tr>
<tr>
<td>4. Demonstrate the application of a data mining software package to a data set.</td>
</tr>
</tbody>
</table>
B. **Student Learning Outcomes.** Upon successful completion of this course students will be able to:

<table>
<thead>
<tr>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper, project, homework, exams</td>
</tr>
</tbody>
</table>

1. Answer questions and present information, both verbal and statistical, on the types of data mining algorithms, how they work, their theoretical basis, their evaluation and comparison, and practical aspects of their use.

2. Find relevant literature about data mining techniques using library or web resources and summarize the results in written form.

3. Apply multiple data mining techniques to a data set using data mining tools, analyze the results, and summarize the results in an oral presentation.

V. **Guidelines for Evaluation**

A. Research Paper  
B. Project  
C. Homework  
D. Exams

VI. **Topical Course Outline**

1. Knowledge Representation  
   a. Tables  
   b. Linear models  
   c. Trees  
   d. Rules  

2. Data Mining Algorithms  
   a. Decision trees  
   b. Classification rules  
   c. Association rules  
   d. Linear models  
   e. Instance based methods  
   f. Numeric prediction  
   g. Bayesian approaches  
   h. Simple and hierarchical clustering  
   i. Semi-supervised techniques  
   j. Multi-instance techniques  

3. Evaluating Results  
   a. Training vs. testing  
   b. Cross-validation and other validation techniques  
   c. Comparing different data mining schemes  
   d. Statistical methods
c. Information theoretic methods
f. Including costs and benefits in evaluation

VII. Suggested Texts


VIII. Bibliography

1a. School or College
EN SOENGR

1b. Division
No Division Code

1c. Department
Computer Science and Engineering

2. Course Prefix
CSCE

3. Course Number
A485

4. Previous Course Prefix & Number
n/a

5a. Credits/CEUs
3

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

6. Complete Course Title
Computer and Machine Vision

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

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

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

10. Grading Basis
☑ A-F ☐ P/NP ☐ NG

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

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

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

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

Initiator Name (typed): Sam Siewert
Initiator Signed Initials: _________
Date:________________

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

Date: 12/10/2012

13c. Coordination with Library Liaison
Date: 12/10/2012

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)
Introduces computer vision and machine vision. Topics covered include difference between computer and machine vision, image capture and processing, filtering, thresholding, edge detection, shape analysis, shape detection, pattern matching, digital image stabilization, stereo ranging, 3D models from images, real-time vision systems, and recognition of targets. Applications include inspection, surveillance, search and rescue, and machine vision navigation.

16a. Course Prerequisite(s) (list prefix and number)
(PHYS A124 or PHYS A212) and CSCE A320) with a minimum grade of C.

16b. Test Score(s)
n/a

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

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

16e. Registration Restriction(s) (non-codable)
n/a

17. ☑ Mark if course has fees Yes, standard SOE fee

18. ☐ Mark if course is a selected topic course

19. Justification for Action
New course to establish an elective for computer science and computer systems engineering students in the topic of machine and computer vision.
<table>
<thead>
<tr>
<th>Role</th>
<th>Approved</th>
<th>Disapproved</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiator (faculty only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sam Siewert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiator (TYPE NAME)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department Chairperson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Committee Chairperson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dean/Director of School/College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate/Graduate Academic Board Chairperson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provost or Designee</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. Initiation Date: December 2012

II. Course Information
A. College/School: School of Engineering
B. Course Title: Computer and Machine Vision
C. Course Subject/Number: CSCE A485
D. Credit Hours: 3.0 Credits
E. Contact Time: 3+0 Contact Time
F. Grading Information: A-F
G. Course Description: Introduces computer vision and machine vision. Topics covered include difference between computer and machine vision, image capture and processing, filtering, thresholding, edge detection, shape analysis, shape detection, pattern matching, digital image stabilization, stereo ranging, 3D models from images, real-time vision systems, and recognition of targets. Applications include inspection, surveillance, search and rescue, and machine vision navigation.
H. Lab Fees: Yes, standard SOE fee
I. Course Prerequisites: {(PHYS A124 or PHYS A212) and CSCE A320} with a minimum grade of C.
J. Registration Restrictions: None

III. Evaluation
Grades are based on written examination, assignments, and projects.

IV. Course Level Justification
This course allows students to apply programming skills, mathematics, and digital signal processing and image processing skills learned at the 300 level to develop more advanced applications in computer and machine vision.

V. Outline
A. Lecture
   1. Computer and Machine Vision History
      a. Brief history
      b. Purpose of computer vision (to model human vision)
      c. Purpose of machine vision (to automate with photometers and radiometers)
      d. Difference
   2. Image Capture and Processing
      a. Basic encoding
      b. Convolutions and transformation
      c. Filtering
      d. Thresholds
   3. Edge Detection
      a. Differential gradient
b. Sobel operator  
c. Canny operator  
d. Performance  

4. Shape Analysis and Detection  
a. Binary shape and boundary analysis  
b. Hough transform for line and circle detection  
c. Pattern patching  
d. Keypoint and Scale Invariant Feature Transform / Speeded Up Robust Feature (SIFT/SURF) algorithms  

5. Extracting 3D Models from Scenes  
a. 3D models  
b. Stereo and laser ranging  
c. Perspective and image transformation  

6. Real-time Pattern Recognition  
a. Pixel motion  
b. Inspection systems  
c. Surveillance  
d. Optical navigation systems  

7. Computer Vision Fundamentals  
a. Human color perception, tri-stimulus and models  
b. Human vision system basics  
c. Models for human vision system and scene perception  
d. Artificial Neural Network (ANN) models  
e. 3D perception and proprioception  
f. Challenges  

8. Interactive Applications  
a. Gesture recognition  
b. Vision prosthetics  
c. Instrumentation – photometers, hyper-spectral, radiometers  

B. Example Projects – MATLAB® and Linux Open Computer Vision (OpenCV)  
1. Basic image processing – transformations and convolution for enhancement  
2. Edge Detection  
3. Shape, Boundary Analysis and Classification  
4. Skeletal Models  
5. Target recognition and tracking  
6. Facial and other biometric recognition applications  
7. Image stabilization  

VI. Instructional Goals and Student Learning Outcomes  

<table>
<thead>
<tr>
<th>A. Instructional Goals</th>
<th>The instructor will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe principles of machine and computer vision, clearly defining the differences between the two.</td>
<td></td>
</tr>
<tr>
<td>2. Instruct students on the design, implementation and use of computer and machine vision algorithms.</td>
<td></td>
</tr>
</tbody>
</table>
3. Instruct students on the use of design tools such as OpenCV and MATLAB® for vision systems.

<table>
<thead>
<tr>
<th>B. Student Learning Outcomes. Upon successful completion of this course, students will be able to:</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the implementation and use of machine and computer vision for automation and interaction.</td>
<td>Exams, quizzes, assignments, class projects</td>
</tr>
<tr>
<td>2. Demonstrate methodologies used in the design of machine and computer vision systems</td>
<td>Exams, quizzes, assignments, class projects</td>
</tr>
<tr>
<td>3. Construct the hardware and software components for computer and machine vision systems, test their operation, and report results.</td>
<td>Class projects</td>
</tr>
<tr>
<td>4. Demonstrate recognition of the engineering tradeoffs necessary in the design of production machine vision systems.</td>
<td>Exams, quizzes, assignments, class projects</td>
</tr>
</tbody>
</table>

VII. Suggested Texts


VIII. Bibliography and Resources

1a. School or College
EN SOENGR

1b. Department
Computer Science & Engineering

2. Complete Program Title/Prefix
Minor, Computer Systems Engineering

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

This program is a Gainful Employment Program: □ Yes or □ No

4. Type of Action:
PROGRAM
☐ Add
☒ Change
☐ Delete

PREFIX
☐ Add
☐ Change
☐ Inactivate

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

6a. Coordination with Affected Units
Department, School, or College: SOE
Initiator Name (typed): Kenrick Mock
Initiator Signed Initials: _________

Date:________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu) Date: 12-10-12

6c. Coordination with Library Liaison Date: 12-10-12

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

8. Justification for Action
The CSE minor is being updated to reflect the new CSCE prefix, cover core concepts in Computer Systems Engineering, remove a large number of hidden prerequisites, and share courses with the Computer Science program.

Initiator (faculty only) Date
Kenrick Mock
Initiator (TYPE NAME)

Dean/Director of School/College Date

Undergraduate/Graduate Academic Board Chair Date

Provost or Designee Date

Program/Prefix Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix

☐ Approved
☐ Disapproved

☐ Approved
☐ Disapproved

☐ Approved
☐ Disapproved

☐ Approved
☐ Disapproved
**Minor, Computer Systems Engineering**

Students majoring in another subject who wish to minor in Computer Systems Engineering must complete the following requirements.

1. Complete the five required courses (18 credits):
   - CSCE A201 Computer Programming I 4
   - CSCE A211 Computer Programming II 4
   - CSCE/EE A241 Computer Hardware Concepts 4
   - CSCE A248 Computer Organization and Assembly Language Programming 3
   - CSCE A311 Data Structures and Algorithms 3

2. Complete 6 credits of additional upper division CSCE-prefixed courses.

3. A total of 24 credits are required for the minor.
Minor, Computer Systems Engineering

Students majoring in another subject who wish to minor in Computer Systems Engineering must complete the following requirements. An * indicates a recommended set of courses for the minor.

1. Complete the five required courses (18 credits):
   - CSCE A201 Computer Programming I 4
   - CSCE A211 Computer Programming II 4
   - CSCE/EE A241 Computer Hardware Concepts 4
   - CSCE A248 Computer Organization and Assembly Language Programming 3
   - CSCE A311 Data Structures and Algorithms 3

2. Complete 6 credits of additional upper division CSCE-prefixed courses.

3. A total of 24 credits are required for the minor.

   1. A minimum of 18 credits must be selected from:
      - CS A330 Algorithms and Data Structures (3)
      - CS A331 Programming Language Concepts (3)
      - CS A401 Software Engineering (3)
      - CS A405 Artificial Intelligence (3)
      - CSE A335* Operating Systems Engineering (3)
      - CSE A342 Digital Circuits Design (3)
      - CSE A355* Computer Networking for Engineers (3)
      - CSE A447 VLSI Circuit Design (3)
      - CSE A445* Computer Design and Interfacing (4)
      - CSE A465* Network Security (3)
      - CSE A481 Engineering Software/Hardware Systems (3)
      - EE A451* Digital Signal Processing (3)
**1a. School or College**  
EN SOENGR

**1b. Department**  
Computer Science & Engineering

**2. Complete Program Title/Prefix**  
Minor, Computer Science

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

This program is a Gainful Employment Program:  
- Yes  
- No

**4. Type of Action:**  
- PROGRAM  
  - Add  
  - 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: SOE  
Initiator Name (typed): Kenrick Mock  
Initiator Signed Initials: _________  
Date:________________

**6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)**  
Date: 12-10-12

**6c. Coordination with Library Liaison**  
Date: 12-10-12

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

**8. Justification for Action**  
The CS minor is being updated to reflect the new CSCE prefix and reflect shared courses between the CS and CSE programs.

---

**Initiator (faculty only)**  
Kenrick Mock  
Initiator (TYPE NAME)

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

**Undergraduate/Graduate Academic**  
Date

**Board Chair**  
Date

**Provost or Designee**  
Date
Minor, Computer Science

Students majoring in another subject who wish to minor in Computer Science must complete the following requirements:

1. Complete the five required courses (17 credits):
   - CSCE A201 Computer Programming I 4
   - CSCE A202 Object-Oriented Programming 3
   - CSCE A211 Computer Programming II 4
   - CSCE A311 Data Structures and Algorithms 3
   - MATH A211 Introduction to Discrete Mathematics 3

2. Complete 9 credits of additional CSCE-prefixed courses, 3 credits of which may be lower division.

3. A total of 26 credits are required for the minor.
Minor, Computer Science

Students majoring in another subject who wish to minor in Computer Science must complete the following requirements:

1. Complete the five required courses (15 credits):
   CSCE A201 Computer Programming I 4
   CSCE A202 Object-Oriented Programming 3
   CSCE A211 Computer Programming II 4
   CSCE A311 Data Structures and Algorithms 3
   CS A201 Programming Concepts I 3
   CS A202 Programming Concepts II 3
   CS A221 Computer Organization and Assembly Programming 3
   CS A330 Algorithms and Data Structures 3
   MATH A231 Introduction to Discrete Mathematics 3

2. Complete 9 credits of additional Computer Science CSCE-prefixed courses, 3 credits of which may be lower division.

3. A total of 264 credits are required for the minor.
Program/Prefix Action Request  
University of Alaska Anchorage  
Proposal to Initiate, Add, Change, or Delete a Program of Study or Prefix

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN SOENGR</td>
<td>Computer Science &amp; Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Complete Program Title/Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts, Computer Science</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Type of Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose one from the appropriate drop down menu:</td>
</tr>
<tr>
<td>Undergraduate: Bachelor of Arts or Graduate: CHOOSE ONE</td>
</tr>
<tr>
<td>This program is a Gainful Employment Program:</td>
</tr>
<tr>
<td>☐ Yes or ☒ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Type of Action:</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Add</td>
<td></td>
</tr>
<tr>
<td>☒ Change</td>
<td></td>
</tr>
<tr>
<td>☐ Delete</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Type of Action:</th>
<th>PREFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Add</td>
<td></td>
</tr>
<tr>
<td>☐ Change</td>
<td></td>
</tr>
<tr>
<td>☐ Inactivate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Implementation Date (semester/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From: Fall/2013 To: 99/9999</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6a. Coordination with Affected Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department, School, or College: SOE</td>
</tr>
<tr>
<td>Initiator Name (typed): Kenrick Mock</td>
</tr>
<tr>
<td>Initiator Signed Initials: _________</td>
</tr>
<tr>
<td>Date:________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6b. Coordination Email submitted to Faculty Listserv (<a href="mailto:uaa-faculty@lists.uaa.alaska.edu">uaa-faculty@lists.uaa.alaska.edu</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 12-10-12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6c. Coordination with Library Liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 12-10-12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Title and Program Description - Please attach the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ Cover Memo</td>
</tr>
<tr>
<td>☒ Catalog Copy in Word using the track changes function</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Justification for Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The program revision shares core courses with the Computer Systems Engineering program and updates the curriculum. The Student Learning Outcomes for the program were updated to match ABET's outcomes for accreditation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator (faculty only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenrick Mock</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator (TYPE NAME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dean/Director of School/College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Undergraduate/Graduate Academic Board Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provost or Designee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>
The Department of Computer Science and Engineering offers courses covering the major areas of computer science. These courses constitute the basis for an undergraduate major that prepares students for a variety of professional and technical careers in business, industry and government, or for graduate work leading to advanced degrees. In addition, the department offers courses for students from other fields that will use computer science as a tool in their own areas.

The department offers two degrees in computer science: the Bachelor of Arts in Computer Science and the Bachelor of Science in Computer Science. The BA gives the student the opportunity to obtain a liberal arts background while the BS program gives the student the opportunity to pursue a sciences background. The BS is recommended for those seeking to pursue a graduate degree in computer science.

Both degrees prepare the student to pursue a professional career in the computing field and are based on the 2012-13 computing curriculum guidelines developed by the Accreditation Board for Engineering and Technology (ABET). The core of both degrees emphasizes broad fundamental principles of computer science and teaches the student the necessary skills to develop solutions using current or future technology. The core topics include computer programming, systems organization, software engineering, databases and theory. Upon completion of the core topics, the student may select electives that explore specific areas of computer science, such as computer graphics, architecture or intelligent systems.

**Accreditation**

The Bachelor of Science in Computer Science program is accredited by the Computing Accreditation Commission of ABET, www.abet.org.

**Program Objectives**

The Computer Science program has adopted the following educational program objectives for the Bachelor of Arts and the Bachelor of Science degrees in Computer Science. Graduates with these degrees will achieve some or all of these objectives within five years of graduation:

1. Make contributions to the computing profession and apply computational solutions to solve real-world problems.
2. Successfully adapt to changes in the field of computer science.
3. Meet or exceed the expectations of their employers and professional mentors as computer science professionals and advance in their career.
4. Be admitted to and successfully complete advanced degree programs.
5. Contribute to the Alaska economy through their professional accomplishments in computing.

**Student Learning Outcomes**

Upon completion of the Bachelor of Arts or Bachelor of Science program in Computer Science, graduates will be able to:

1. Apply knowledge of computing and mathematics appropriate to the discipline.
2. Analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. Function effectively on teams to accomplish a common goal.
5. Demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.
6. Communicate effectively with a range of audiences, including technical and non-technical audiences for business, end-user, client, and computing contexts.
7. Analyze the local and global impact of computing on individuals, organizations, and society.
8. Recognize the need for and an ability to engage in continuing professional development.
9. Use current techniques, skills, and tools necessary for computing practice.
10. Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
11. Apply design and development principles in the construction of software systems of varying complexity.

Honors in Computer Science

Students majoring in Computer Science are eligible to graduate with departmental honors if they satisfy the following requirements:
1. Meet the requirements for Graduation with Honors as listed in Chapter 7 of this catalog.
2. Meet the requirements for a BA/BS degree in Computer Science.
3. Earn a grade point average of 3.50 or above in the major requirements.
4. Complete a minimum of 12 upper division credits required for the major in residence.

Bachelor of Arts, Computer Science

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

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. Major Requirements

1. Complete the following breadth courses in the liberal arts (27-29 credits):
   a. Cultural Heritages
      Comparative Cultures 3
      (ANTH A250)
      Western Culture 6
      (HIST A101 and HIST A102)
      American Culture 3
      (HIST A131, HIST A132, PS A101)
   b. Arts and Letters
      Introduction to Literature 3
      (ENGL A121, ENGL A301, ENGL A302, ENGL A305, ENGL A306, ENGL A307)
      Language/Humanities 6-8
      Any two-semester sequence in one of the following humanities sequences or in a language other than English: [AKNS A101-AKNS A102 (with same letter suffix), ART A261-ART A262, ENGL A201-ENGL A202, MUS A221-MUS A222*, PHIL A211-PHIL A212, PHIL A313-PHIL A314, PS A332-PS A333, THR A311-THR A312, THR A411-THR A412]
c. Ways of Knowing  
(ENGL A120, PHIL A101, PHIL A201, PHIL A301, PHIL A421)  
d. Social Behavior  
Double majors must choose one of the following not in the major:  
(ANTH A101, COMM A101, ECON A201, JPC A101, PS A102, PSY A111, SOC A101, SWK/HUMS A106)

2. Complete the following core courses (42 credits):
   
   CSCE A201 Computer Programming I 4
   CSCE A202 Object-Oriented Programming 3
   CSCE A211 Computer Programming II 4
   CSCE/EE A241 Computer Hardware Concepts 4
   CSCE A248 Computer Organization and Assembly Language Programming 3
   CSCE A311 Data Structures and Algorithms 3
   CSCE A320 Operating Systems 3
   CSCE A331 Programming Language Concepts 3
   CSCE A351 Automata, Algorithms, and Complexity 3
   CSCE A360 Database Systems 3
   CSCE A365 Computer Networks 3
   CSCE A401 Software Engineering 3
   CSCE A470 Computer Science and Engineering Capstone Project 3

3. Complete the following required support courses (16-17 credits):
   
   ENGL A312 Advanced Technical Writing (3) 3
   or
   ENGL A414 Research Writing (3)
   MATH A200 Calculus I (4) 3-4
   or
   MATH A272 Applied Calculus (3)
   MATH A231 Introduction to Discrete Mathematics 3
   PHIL A305 Professional Ethics (3) 3
   STAT A253 Applied Statistics for the Sciences (4) 4
   or
   STAT A307 Probability and Statistics (4)

4. Complete an additional 12 upper division credits in Computer Science/Computer Systems Engineering (CSCE prefix), Mathematics (excluding MATH A420 and MATH A495), or Statistics. Nine of these credits must be in courses with a CSCE prefix. A maximum of 3 credits of CSCE A395, a maximum of 3 credits of CSCE A495, and a maximum of 6 credits of CSCE A498 may be applied to degree requirements.

5. A grade of C or higher must be received in all CSCE, MATH, and STAT courses required to satisfy the above program requirements.

6. All Computer Science majors must take a standardized test of knowledge of computer science approved by the CS faculty for the purpose of evaluating program effectiveness. There is no minimum score required for graduation. This test will normally be taken during the senior year.

7. Students are encouraged to develop their program with a Computer Science advisor.

8. A total of 120 credits are required for the degree, of which 42 credits must be upper division.
The Department of Computer Science and Engineering offers courses covering the major areas of computer science. These courses constitute the basis for an undergraduate major that prepares students for a variety of professional and technical careers in business, industry and government, or for graduate work leading to advanced degrees. In addition, the department offers courses for students from other fields that will use computer science as a tool in their own areas.

The department offers two degrees in computer science: the Bachelor of Arts in Computer Science and the Bachelor of Science in Computer Science. The BA gives the student the opportunity to obtain a liberal arts background while the BS program gives the student the opportunity to pursue a sciences background. The BS is recommended for those seeking to pursue a graduate degree in computer science.

Both degrees prepare the student to pursue a professional career in the computing field and are based on the 2012-13 computing curriculum guidelines developed by the Accreditation Board for Engineering and Technology (ABET). The core of both degrees emphasizes broad fundamental principles of computer science and teaches the student the necessary skills to develop solutions using current or future technology. The core topics include computer programming, systems organization, software engineering, databases and theory. Upon completion of the core topics, the student may select electives that explore specific areas of computer science, such as computer graphics, architecture or intelligent systems.

Accreditation

The Bachelor of Science in Computer Science program is accredited by the Engineering Computing Accreditation Commission of ABET, www.abet.org.

Program Objectives

The Computer Science program has adopted the following educational program objectives for the Bachelor of Arts and the Bachelor of Science degrees in Computer Science. Graduates with these degrees will achieve some or all of these objectives within five years of graduation:

1. Graduates will make contributions to the computing profession and apply computational solutions to solve real-world problems.
2. Graduates will successfully adapt to changes in the field of computer science.
3. Graduates will meet or exceed the expectations of their employers and professional mentors as computer science professionals and advance in their career.
4. Graduates who choose to pursue advanced degrees will be admitted to and successfully complete their advanced degree programs.
5. Graduates will contribute to the Alaska economy through their professional accomplishments in computing.

Student Learning Outcomes

Upon completion of the Bachelor of Arts or Bachelor of Science program in Computer Science, graduates will be able to:

1. Apply knowledge of computing and mathematics appropriate to the discipline.
2. Analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. Function effectively on teams to accomplish a common goal.
5. Demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.
6. Communicate effectively with a range of audiences, including technical and non-technical audiences for business, end-user, client, and computing contexts.
7. Analyze the local and global impact of computing on individuals, organizations, and society.
8. Recognize the need for and an ability to engage in continuing professional development.
9. Use current techniques, skills, and tools necessary for computing practice.
10. Demonstrate oral communications skills consistent with a career in computer science. Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
11. Apply design and development principles in the construction of software systems of varying complexity.

Honors in Computer Science

Students majoring in Computer Science are eligible to graduate with departmental honors if they satisfy the following requirements:

1. Meet the requirements for Graduation with Honors as listed in Chapter 7 of this catalog.
2. Meet the requirements for a BA/BS degree in Computer Science.
3. Earn a grade point average of 3.50 or above in the major requirements.
4. Complete a minimum of 12 upper division credits required for the major in residence.

Bachelor of Arts, Computer Science

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

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. Major Requirements

1. Complete the following breadth courses in the liberal arts (27-29 credits):
   a. Cultural Heritages
      Comparative Cultures 3
      (ANTH A250)
      Western Culture 6
      (HIST A101 and HIST A102)
      American Culture 3
      (HIST A131, HIST A132, PS A101)
b. Arts and Letters

Introduction to Literature  
(ENGL A121, ENGL A301, ENGL A302, ENGL A305, ENGL A306, ENGL A307)  
Language/Humanities  
Any two-semester sequence in one of the following humanities sequences or in a language other than English: [AKNS A101-AKNS A102 (with same letter suffix), ART A261-ART A262, ENGL A201-ENGL A202, MUS A221-MUS A222*, PHIL A211-PHIL A212, PHIL A313-PHIL A314, PS A332-PS A333, THR A311-THR A312, THR A411-THR A412]

c. Ways of Knowing  
(ENGL A120, PHIL A101, PHIL A201, PHIL A301, PHIL A421)

d. Social Behavior  
Double majors must choose one of the following not in the major: 
(ANTH A101, COMM A101, ECON A201, JPC A101, PS A102, PSY A111, SOC A101, SWK/HUMS A106)

2. Complete the following core courses (33-42 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE A201</td>
<td>Programming Concepts Computer Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A202</td>
<td>Programming Concepts II OOP Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A211</td>
<td>Computer Programming II</td>
<td>4</td>
</tr>
<tr>
<td>CSCE/EE A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>CSCE A2424</td>
<td>Computer Organization and Assembly Language Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A311</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A320</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS A330</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A331</td>
<td>Programming Language Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CS A342</td>
<td>Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A351</td>
<td>Automata, Algorithms, and Complexity</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A360</td>
<td>Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A365</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A401</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A470</td>
<td>Applied Software Development Capstone Project</td>
<td>3</td>
</tr>
<tr>
<td>CS A495</td>
<td>Internship Project (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Complete the following required support courses (136-147 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL A312</td>
<td>Advanced Technical Writing (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL A414</td>
<td>Research Writing (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH A200</td>
<td>Calculus I (4)</td>
<td>3-4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH A272</td>
<td>Applied Calculus (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH A231</td>
<td>Introduction to Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHIL A305</td>
<td>Professional Ethics (3)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT A253</td>
<td>Applied Statistics for the Sciences (4)</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Complete an additional 152 upper division credits in Computer Science/Computer Systems Engineering (CSCE prefix) Computer Science, Mathematics (excluding MATH A420 and MATH A495), or Statistics. Nine of these credits must be in courses with a CSCE prefix Computer Science. A maximum of 3 credits of CSCE A395, a maximum of 3 credits of CSCE A495, and a maximum of 6 credits of CSCE A498 may be applied to degree requirements.

5. A grade of C or higher must be received in all CSCE, MATH, and STAT courses required to satisfy the above program requirements.

6. All Computer Science majors must take a standardized test of knowledge of computer science approved by the CS faculty for the purpose of evaluating program effectiveness. There is no minimum score required for graduation. This test will normally be taken during the senior year.

7. Students are encouraged to develop their program with a Computer Science advisor.

8. A total of 120 credits are required for the degree, of which 42 credits must be upper division.
1a. School or College
EN SOENGR

1b. Department
Computer Science & Engineering

2. Complete Program Title/Prefix
Bachelor of Science, Computer Science

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

This program is a Gainful Employment Program:
- Yes
- No

4. Type of Action:
- PROGRAM
  - Add
  - 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: SOE
Initiator Name (typed): Kenrick Mock
Initiator Signed Initials: _________
Date:________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)
Date: 12-10-12

6c. Coordination with Library Liaison
Date: 12-10-12

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

8. Justification for Action
The program revision shares core courses with the Computer Systems Engineering program and updates the curriculum. The Student Learning Outcomes for the program were updated to match ABET's outcomes for accreditation.

Initiator (faculty only) Kenrick Mock
Initiator (TYPE NAME)

<table>
<thead>
<tr>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean/Director of School/College</td>
<td>Date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate/Graduate Academic Board Chair</td>
<td>Date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approved</th>
<th>Disapproved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provost or Designee</td>
<td>Date</td>
</tr>
</tbody>
</table>
Bachelor of Arts, Computer Science

... no changes to this degree in the scope of this document

Bachelor of Science, Computer Science

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

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. Major Requirements

1. Complete the following breadth courses designed to equip students with the technical competencies needed in scientific disciplines (23-25 credits):
   a. Mathematics and Statistics
      MATH A200 Calculus I 4
      STAT A307 Probability and Statistics 4
   b. Language/Humanities  6-8
      Any two-semester sequence in French, German, Japanese, Russian or Spanish, or one of the following humanities sequences:
      (ART A261-ART A262, ENGL A201-ENGL A202,
      MUS A221-MUS A222, PHIL A211-PHIL A212,
      PHIL A313-PHIH A314, PS A332-A333, THR A311-A312, THR A411-A412)
   c. Natural Sciences 9*
      To be selected from the following list:
      (ASTR A103, ASTR A104, BIOL A102, BIOL A103, BIOL A111, BIOL A112, BIOL A113, BIOL A114, BIOL A115,
      BIOL A116, CHEM A103/L, CHEM A104/L, CHEM A105/L, CHEM A106/L, GEOL A111, GEOL A221, PHYS A123/L,
      PHYS A124/L, PHYS A211/L, PHYS A212/L)
      *The total natural science requirement of each student includes 16 credits (7 credits from the General Education natural science requirement and 9 credits from the list above). These two requirements may be met by any combination of applicable courses that combine to 16 credits. The total must include two laboratory courses and at least 6 credits in each of two disciplines.

2. Complete the following core courses (42 credits):
   CSCE A201 Computer Programming I 4
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE A202</td>
<td>Object-Oriented Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A211</td>
<td>Computer Programming II</td>
<td>4</td>
</tr>
<tr>
<td>CSCE/EE A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>CSCE A248</td>
<td>Computer Organization and Assembly Language Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A311</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A320</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A331</td>
<td>Programming Language Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A351</td>
<td>Automata, Algorithms, and Complexity</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A360</td>
<td>Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A365</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A401</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A470</td>
<td>Computer Science and Engineering Capstone Project</td>
<td>3</td>
</tr>
</tbody>
</table>

3. Complete the following required support courses (21 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL A312</td>
<td>Advanced Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>ENGL A414</td>
<td>Research Writing</td>
</tr>
<tr>
<td>MATH A201</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH A231</td>
<td>Introduction to Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>PHIL A305</td>
<td>Professional Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A123/L</td>
<td>Basic Physics I with laboratory</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>PHYS A124/L</td>
<td>Basic Physics II with laboratory</td>
</tr>
<tr>
<td>PHYS A211/L</td>
<td>General Physics I with laboratory</td>
<td>4</td>
</tr>
<tr>
<td>PHYS A212/L</td>
<td>General Physics II with laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Complete an additional 12 upper division credits in Computer Science/Computer Systems Engineering (CSCE prefix), Mathematics (excluding MATH A420 and MATH A495), or Statistics. Nine of these credits must be in courses with a CSCE prefix. A maximum of 3 credits of CSCE A395, a maximum of 3 credits of CSCE A495, and a maximum of 6 credits of CSCE A498 may be applied to degree requirements.

5. A grade of C or higher must be received in all CSCE, MATH, and STAT courses required to satisfy the above program requirements.

6. All Computer Science majors must take a standardized test of knowledge of computer science approved by the CS faculty for the purpose of evaluating program effectiveness. There is no minimum score required for graduation. This test will normally be taken during the senior year.

7. Students are encouraged to develop their program with a Computer Science advisor.

8. A total of 120 credits are required for the degree, of which 42 credits must be upper division.
Bachelor of Arts, Computer Science

... no changes to this degree in the scope of this document

Bachelor of Science, Computer Science

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7, Academic Standards and Regulations.

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. Major Requirements

1. Complete the following breadth courses designed to equip students with the technical competencies needed in scientific disciplines (23-25 credits):
   a. Mathematics and Statistics
      MATH A200  Calculus I  4
      STAT A307  Probability and Statistics  4
   b. Language/Humanities  6-8
      Any two-semester sequence in French, German, Japanese, Russian or Spanish, or one of the following humanities sequences:
      (ART A261-ART A262, ENGL A201-ENGL A202,
      MUS A221-MUS A222, PHIL A211-PHIL A212,
      PHIL A313-PHIL A314, PS A332-A333, THR A311-A312, THR A411-A412)
   c. Natural Sciences  9*
      To be selected from the following list:
      (ASTR A103, ASTR A104, BIOL A102, BIOL A103, BIOL A111, BIOL A112, BIOL A113, BIOL A114, BIOL A115,
      BIOL A116, CHEM A103/L, CHEM A104/L, CHEM A105/L, CHEM A106/L, GEOL A111, GEOL A221, PHYS A123/L,
      PHYS A124/L, PHYS A211/L, PHYS A212/L)
      *The total natural science requirement of each student includes 16 credits (7 credits from the General Education natural science requirement and 9 credits from the list above). These two requirements may be met by any combination of applicable courses that combine to 16 credits. The total must include two laboratory courses and at least 6 credits in each of two disciplines.

2. Complete the following core courses (37-42 credits):
   CSCE A201 Computer Programming I  4
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE A202</td>
<td>Object-Oriented Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A211</td>
<td>Computer Programming II</td>
<td>4</td>
</tr>
<tr>
<td>CSCE/EE A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>CSCE A248</td>
<td>Computer Organization and Assembly Language</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A311</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A320</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A331</td>
<td>Programming Language Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A351</td>
<td>Automata, Algorithms, and Complexity</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A360</td>
<td>Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A365</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A401</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A470</td>
<td>Computer Science and Engineering Capstone Project</td>
<td>3</td>
</tr>
<tr>
<td>CS A201</td>
<td>Programming Concepts I</td>
<td>3</td>
</tr>
<tr>
<td>CS A202</td>
<td>Programming Concepts II</td>
<td>3</td>
</tr>
<tr>
<td>CS A221</td>
<td>Computer Organization and Assembly Programming</td>
<td>3</td>
</tr>
<tr>
<td>CS/EE A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>CS A320</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS A330</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS A331</td>
<td>Programming Language Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CS A342</td>
<td>Networks</td>
<td>3</td>
</tr>
<tr>
<td>CS A351</td>
<td>Automata, Algorithms, and Complexity</td>
<td>3</td>
</tr>
<tr>
<td>CS A360</td>
<td>Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS A401</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CS A470</td>
<td>Applied Software Development Project</td>
<td>3</td>
</tr>
</tbody>
</table>

3. Complete the following required support courses (1821 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL A312</td>
<td>Advanced Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL A414</td>
<td>Research Writing</td>
<td>3</td>
</tr>
<tr>
<td>MATH A201</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH A231</td>
<td>Introduction to Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>PHIL A305</td>
<td>Professional Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS A123/L</td>
<td>Basic Physics I with laboratory</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS A211/L</td>
<td>General Physics I with laboratory</td>
<td>4</td>
</tr>
<tr>
<td>PHYS A124/L</td>
<td>Basic Physics II with laboratory</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS A212/L</td>
<td>General Physics II with laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Complete an additional 12 upper division credits in Computer Science/Computer Systems Engineering (CSCE prefix), Mathematics (excluding MATH A420 and MATH A495), or Statistics. Nine of these credits must be in courses with a CSCE prefix. A maximum of 3 credits of CSCE A395, a maximum of 3 credits of CSCE A495, and a maximum of 6 credits of CSCE A498 may be applied to degree requirements.
Complete an additional 12 upper-division credits in Computer Science, Mathematics (excluding MATH A420 and MATH A495), or Statistics. Nine of these credits must be in Computer Science. A maximum of 3 credits of CS A395 may be applied to degree requirements.

5. A grade of C or higher must be received in all CSCE, MATH, and STAT courses required to satisfy the above program requirements.

6. All Computer Science majors must take a standardized test of knowledge of computer science approved by the CS faculty for the purpose of evaluating program effectiveness. There is no minimum score required for graduation. This test will normally be taken during the senior year.

7. Students are encouraged to develop their program with a Computer Science advisor.

8. A total of 120 credits are required for the degree, of which 42 credits must be upper division.
Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College: EN SOENGR
1b. Division: No Division Code
1c. Department: Electrical Engineering

2. Course Prefix: EE
3. Course Number: A307
4. Previous Course Prefix & Number: N/A
5a. Credits/CEUs: 3
5b. Contact Hours (Lecture + Lab): (3+0)

6. Complete Course Title:
Introduction to Power Systems

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
[ ] Contact Hours
[ ] Repeat Status
[ ] Cross-Listed/Stacked
[ ] Co-requisites
[ ] Registration Restrictions

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

10. Grading Basis: ☑ A-F ☐ P/NP ☐ NG

11. Implementation Date: semester/year
From: Fall/2013 To: 99/9999

12. ☐ Cross Listed with
[ ] Stacked with

Cross-Listed Coordination Signature

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

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

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

Initiator Name (typed): Mathew Kupilik
Initiator Signed Initials: _________ Date: __________

13b. Coordination Email: Date: 2/8/2013
Submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison: Date: 02/8/2013

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

15. Course Description (suggested length 20 to 50 words)
An analysis of electric power systems, including topologies, ideal power transformers, balanced three phase systems, symmetrical components, transmission line parameter calculation, and power flow.

16a. Course Prerequisite(s): (list prefix and number)
EE A353 with a minimum grade of C
16b. Test Score(s):
N/A
16c. Co-requisite(s): (concurrent enrollment required)
N/A

16d. Other Restriction(s):
College ☐ Major ☐ Class ☐ Level
N/A

16e. Registration Restriction(s) (non-codable)
N/A

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

19. Justification for Action
This course is being added in response to constituent feedback.

Initiator (faculty only)
Mathew Kupilik
Initiator (TYPE NAME)

[ ] Approved ☐ Disapproved

Dean/Director of School/College Date

[ ] Approved ☐ Disapproved

Undergraduate/Graduate Academic Board Chairperson Date

[ ] Approved ☐ Disapproved

Provost or Designee Date

112
I. Initiation Date: February 2013

II. Course Information
A. College/School: School of Engineering
B. Course Title: Introduction to Power Systems
C. Course Subject/Number: EE A307
D. Credit Hours: 3.0 Credits
E. Contact Time: 3+0 Contact Time
F. Grading Information: A-F
G. Course Description: An analysis of electric power systems, including topologies, ideal power transformers, balanced three phase systems, symmetrical components, transmission line parameter calculation, and power flow.
H. Status of course relative to degree or certificate program: Required for BSE students seeking the Electrical Engineering specialization.
I. Course Fees: Yes, standard SOE fee
J. Coordination: SOE and Faculty Listserv
K. Course Prerequisites: EE A353 with a minimum grade of C.
L. Registration Restrictions: None

III. Evaluation
Grading is A-F. Grading is based on assignments, exams, quizzes, projects, and class discussions.

IV. Course Level Justification
This course builds upon earlier coursework and requires familiarity of electrical engineering topics discussed in earlier courses.

V. Course Outline
1. Review of AC power circuits
   a) Sinusoidal sources
   b) Complex power
   c) Maximum power transfer
2. Three phase systems
   a) Balanced/unbalanced
   b) Delta/wye topologies and conversions
3. Symmetric components
4. Power transformers
   a) Ideal circuit models
   b) Equivalent circuits
   c) Per unit ratings
   d) Three phase
5. Transmission
a) Approximate circuit models
b) Steady state operation
c) Voltage regulation
d) Load limits

6. Power flow
   a) Models and setup
   b) Solution methods
   c) Simulation

VI. Instructional Goals and Student Learning Outcomes

<table>
<thead>
<tr>
<th>A. <strong>Instructional Goals.</strong> The instructor will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Present models and methods of analysis of common power systems.</td>
</tr>
<tr>
<td>2. Motivate the use of three phase systems and provide methods for analysis of balanced systems.</td>
</tr>
<tr>
<td>3. Introduce power transformers and their use in the electrical grid.</td>
</tr>
<tr>
<td>4. Discuss and analyze power transmission and solution to load flow simulations with respect to meeting loads, frequency and voltage requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. <strong>Student Learning Outcomes.</strong> Upon successful completion of this course students will be able to analyze:</th>
<th>Assessment methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Simple AC power systems.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
<tr>
<td>2. Three phase topologies, including conversions.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
<tr>
<td>3. Power systems with transformers using ideal circuit equivalents.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
<tr>
<td>4. Transmission lines using circuit approximations in steady state.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
<tr>
<td>5. Power flow with respect to load, frequency, and voltage requirements.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
</tbody>
</table>
VII. Suggested Texts

VIII. Bibliography
## Course Action Request

**University of Alaska Anchorage**

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

### 1a. School or College
EN SOENGR

### 1b. Division
No Division Code

### 1c. Department
Electrical Engineering

### 2. Course Prefix
EE

### 3. Course Number
A333

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

### 5a. Credits/CEUs
4

### 5b. Contact Hours
(3+3)

### 6. Complete Course Title
Electronic Devices

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

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

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

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

### 11. Implementation Date
semester/year

- From: Fall/2013
- To: 99/9999

### 12. Cross Listed with
☐ Stacked with

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

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

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

Initiator Name (typed): Todd Petersen  Initiator Signed Initials: _________  Date:

### 13b. Coordination Email Date: 2/8/2013
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

### 13c. Coordination with Library Liaison Date: 02/8/2013

### 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)
An introduction to the analysis of electronics and electrical devices including semiconductors, diodes, field effect transistors (FETs), bipolar junction transistors (BJTs), large signal and small signal analysis techniques, and common electrical circuit topologies and analysis.

### 16a. Course Prerequisite(s) (list prefix and number)
EE A353 with a minimum grade of C or concurrent enrollment.

### 16b. Test Score(s)
N/A

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

### 16d. Other Restriction(s)

- ☐ College
- ☐ Major
- ☐ Class
- ☐ Level

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

### 17. Mark if course has fees
☐ standard SOE fee

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

### 19. Justification for Action
This course has been added in response to constituent feedback and program outcome assessment feedback results.

---

Initiator (faculty only)
Todd Petersen

Initiator (TYPE NAME)

☑ Approved  ☐ Disapproved

Dean/Director of School/College

☐ Approved  ☐ Disapproved

Undergraduate/Graduate Academic

☐ Approved  ☐ Disapproved

Board Chairperson

☐ Approved  ☐ Disapproved

Provost or Designee

Date

Date

Date

Date
I. Initiation Date: February 2013

II. Course Information
A. College/School: School of Engineering
B. Course Title: Electronic Devices
C. Course Subject/Number: EE A333
D. Credit Hours: 4.0 Credits
E. Contact Time: 3+3 Contact Time
F. Grading Information: A-F
G. Course Description: An introduction to the analysis of electronics and electrical devices including semiconductors, diodes, field effect transistors (FETs), bipolar junction transistors (BJTs), large signal and small signal analysis techniques, and common electrical circuit topologies and analysis.
H. Status of course relative to degree or certificate program: Required for BSE students seeking the electrical engineering specialization.
I. Lab Fees: Yes
J. Coordination: SOE and Faculty Listserv
K. Course Prerequisites: EE A353 with a minimum grade of C or concurrent enrollment.
L. Registration Restrictions: None

III. Evaluation
Grading is A-F. Grades are based on satisfactory completion of homework assignments, exams, and laboratory projects.

IV. Course Level Justification
This course builds off of knowledge gained in earlier engineering courses and relies upon knowledge of electrical engineering terms and methods used in previous courses.

V. Course Outline
1. Signals and Amplifiers
   a. Signals
   b. Frequency spectrum of signals
   c. Analog and digital signals
   d. Amplifiers
2. Semiconductors
   a. Electrical current flow in semiconductors
   b. The $pn$ junction
3. Diodes
   a. The ideal diode
   b. The diode equation
   c. The piecewise linear model
d. Operation in circuits, forward and reverse biased
e. Rectifier circuits
f. Special diodes

4. Field Effect Transistors (FETs)
   a. Device structure and physical operation
   b. Current voltage characteristic
   c. Large signal operation and analysis
   d. The small-signal model
e. Amplifier design

5. Bipolar Junction Transistors (BJTs)
   a. Device structure and physical operation
   b. Current voltage characteristic
   c. Large signal operation and analysis
d. The small-signal model
e. Amplifier design

6. Building Blocks of Integrated Circuit Amplifiers
   a. The basic gain cell
   b. The cascade amplifier
   c. Current-mirror circuits
d. Transistor amplifier pairings

7. Differential and Multistage Amplifiers
   a. The MOS differential pair
   b. Small signal operation of the MOS differential pair
c. The BJT differential pair
d. Small signal operation of the BJT differential pair
e. Diff amp with an active load
f. Multistage amplifiers

8. Feedback
   a. General principle of feedback structures
   b. Properties of negative feedback
c. Four basic feedback topologies
   i. Voltage amplifiers
   ii. Current amplifiers
   iii. Transconductance amplifiers
   iv. Transresistance amplifiers

VI. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The instructor will:
   1. Present concepts of electrical signals and amplifiers to the students.
   2. Introduce the fundamental operation and analysis of diodes.
   3. Examine properties of MOSFET and BJT transistor technologies and operation.
   4. Introduce students to common circuit topologies for transistor circuits such as amplifiers and oscillators.
   5. Examine concepts of differential amplifiers and multistage amplifiers.
6. Introduce common industry tools in the laboratory setting.

7. Give hands on experience designing, building and analyzing circuits in the laboratory setting.

<table>
<thead>
<tr>
<th>B. Student Learning Outcomes. Upon successful completion of this course students will be able to:</th>
<th>Assessment methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analyze and design amplifier circuits.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>2. Analyze and design electric circuits containing diodes.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>3. Analyze and design electric circuits containing FETs.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>4. Analyze and design electric circuits containing BJT.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>5. Analyze and design electric circuits containing multiple stages.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>6. Design, build, and test a simple electronic device circuit to given specifications.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions, Labs</td>
</tr>
<tr>
<td>7. Utilize common industry tools for circuit analysis.</td>
<td>Assignments, Exams, Quizzes, Projects, Class Discussions</td>
</tr>
</tbody>
</table>

VII. Suggested Text

VIII. Bibliography
1a. School or College
EN SOENGR

1b. Department
Electrical Engineering (EE)

2. Complete Program Title/Prefix
Minor, Electrical Engineering

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

This program is a Gainful Employment Program: ☐ Yes or ☑ No

4. Type of Action:
PROGRAM
☑ Add
☑ Change
☐ Delete

PREFIX
☐ Add
☐ Change
☐ Inactivate

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

6a. Coordination with Affected Units
Department, School, or College: School of Engineering
Initiator Name (typed): Jens Munk
Initiator Signed Initials: _________ Date:________________

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu) Date: 2/11/2013

6c. Coordination with Library Liaison Date: 2/11/2013

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

8. Justification for Action
Updated course options for Minor to coincide with changes made to the Major based on constituent feedback.

Initiator (faculty only) Date
Jens Munk
Initiator (TYPE NAME)

☑ Approved ☐ Disapproved
☐ Approved ☐ Disapproved
☑ Approved ☐ Disapproved
☐ Approved ☐ Disapproved

Dean/Director of School/College Date
Undergraduate/Graduate Academic Date
Board Chair
Provost or Designee Date

Department Chair Date
College/School Curriculum Committee Chair Date

120
Minor, Electrical Engineering

Students majoring in another subject who wish to minor in Electrical Engineering must complete the following requirements. An * indicates a recommended set of courses for the minor.

1. A minimum of 18 credits must be selected from:

- **EE A203**: Fundamentals of Electrical Engineering I (4)
- **EE/CS A241**: Computer Hardware Concepts (4)
- **EE A307**: Introduction to Power Systems (3)
- **EE/ME A308**: Instrumentation and Measurement (3)
- **EE A314**: Electromagnetics (3)
- **EE A324**: Electromagnetics II (3)
- **EE A324L**: Electromagnetics Laboratory II (1)
- **EE A333**: Electronic Devices (4)
- **EE A353**: Circuit Theory (3)
- **EE A407**: Power Distribution (3)
- **EE A441**: Integrated Circuit Design (3)
- **EE A451**: Digital Signal Processing (3)
- **EE A458**: Antenna Theory (3)
- **EE A462**: Communication Systems (3)
- **EE A465**: Telecommunications (3)
- **EE/ME A471**: Automatic Control (3)
**Minor, Electrical Engineering**

Students majoring in another subject who wish to minor in Electrical Engineering must complete the following requirements. An * indicates a recommended set of courses for the minor.

1. A minimum of 18 credits must be selected from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE A203 *</td>
<td>Fundamentals of Electrical Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>EE A204 *</td>
<td>Fundamentals of Electrical Engineering II</td>
<td>4</td>
</tr>
<tr>
<td>EE/CS A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>EE A307</td>
<td>Introduction to Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE/ME A308</td>
<td>Instrumentation and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>EE A314 *</td>
<td>Electromagnetics</td>
<td>3</td>
</tr>
<tr>
<td>EE A324</td>
<td>Electromagnetics II</td>
<td>3</td>
</tr>
<tr>
<td>EE A324L *</td>
<td>Electromagnetics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>EE A333 *</td>
<td>Electronic Devices</td>
<td>4</td>
</tr>
<tr>
<td>EE A353 *</td>
<td>Circuit Theory</td>
<td>3</td>
</tr>
<tr>
<td>EE A407</td>
<td>Power Distribution</td>
<td>3</td>
</tr>
<tr>
<td>EE A441</td>
<td>Integrated Circuit Design</td>
<td>3</td>
</tr>
<tr>
<td>EE A451</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>EE A458</td>
<td>Antenna Theory</td>
<td>3</td>
</tr>
<tr>
<td>EE A462</td>
<td>Communication Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE A465 *</td>
<td>Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>EE/ME A471</td>
<td>Automatic Control</td>
<td>3</td>
</tr>
</tbody>
</table>
1a. School or College
EN SOENGR

1b. Department
CS&E and EE

2. Complete Program Title/Prefix
Bachelor of Science in Engineering (BSE)

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

This program is a Gainful Employment Program:
☐ Yes or ☑ No

4. Type of Action:
PROGRAM
☐ Add
☑ Change
☐ Delete

PREFIX
☐ Add
☐ Change
☐ Inactivate

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

6a. Coordination with Affected Units
Department, School, or College: School of Engineering
Initiator Name (typed): Kenrick Mock
Initiator Signed Initials: 
Date:

6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)
Date: 12/10/2012

6c. Coordination with Library Liaison
Date: 12/10/2012

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

8. Justification for Action
The Computer Systems Engineering track curriculum has been updated to harmonize with the Computer Science degrees. The Electrical Engineering track curriculum has been modified to include power systems as part of the core curriculum based on constituent feedback.

Initiator (faculty only)
Kenrick Mock
Initiator (TYPE NAME)

Approved
Disapproved
Date

Dean/Director of School/College

Approved
Disapproved
Date

Undergraduate/Graduate Academic Board Chair

Approved
Disapproved
Date

Provost or Designee

Approved
Disapproved
Date

College/School Curriculum Committee Chair
ENGINEERING: COMPUTER SYSTEMS, ELECTRICAL AND MECHANICAL ENGINEERING

Bachelor of Science, Engineering

The Computer Science and Engineering, Electrical Engineering, and Mechanical Engineering departments offer a Bachelor of Science in Engineering, with concentrations in Computer Systems Engineering, Electrical Engineering or Mechanical Engineering.

Computer Systems Engineering

The Department of Computer Science and Engineering offers a Bachelor of Science in Engineering with a concentration in Computer Systems Engineering (BSE CSE), and a minor in Computer Systems Engineering. The program is a fully-accredited Bachelor of Science in Engineering, Computer Systems Engineering degree program. Students are introduced to principles of mathematics and physics during the first two years of study along with introductory courses in fundamentals of computer hardware and programming. The third and fourth years consist of upper division courses applicable to computer systems along with computer systems engineering electives in the area of the students’ interests. Students complete a project-oriented capstone course where they will apply their knowledge in computer systems engineering to solve challenging problems. Students also take courses on written and oral communication, humanities, social sciences, and fine arts to improve their communication skills and to put their profession into a broader societal context.

Electrical Engineering

The Department of Electrical Engineering offers a Bachelor of Science in Engineering with a concentration in Electrical Engineering (BSE EE), and a minor in Electrical Engineering. The program is a fully-accredited Bachelor of Science in Engineering, Electrical Engineering degree program. During the first two years of study, students are introduced to principles of mathematics, chemistry and physics, as well as basic circuit theory, digital logic and electrical devices. The third year of study largely focuses on fundamental electrical engineering concepts, including courses in signal analysis, electromagnetism, instrumentation and telecommunication. During the fourth year, students take more advanced courses, including technical electives that are more focused on electrical engineering analysis and design. Upper division electives include courses in computer design, antenna theory, communication theory, power distribution, and control systems. Students also take courses on written and oral communication, humanities, social sciences, and fine arts to improve their communication skills and to put their profession into a broader societal context.

Mechanical Engineering

. . . no changes to this track

Accreditation

Computer Systems Engineering

The Bachelor of Science in Engineering, Computer Systems Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Electrical Engineering

The Bachelor of Science in Engineering, Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Mechanical Engineering

. . . no changes to this track
Program Objectives

Computer Systems Engineering

1. Graduates are successful practitioners of computer engineering in a variety of industries, government agencies, and research/academic institutions, serving the State of Alaska as well as national/international needs.
2. Graduates exhibit high standards regarding ethical behavior and social responsibility.
3. Graduates successfully engage in life-long learning experiences such as graduate education, short courses, technical talks, conferences, training program, community groups, and writing and/or publishing papers.

Electrical Engineering

1. To produce electrical engineering graduates with the training and skills to enter the job market or to continue their education by attending graduate school.
2. To produce graduates who will become business and community leaders in Alaska and throughout the world.
3. To produce graduates who will, through their training in electrical engineering and their commitment to their continuing education, become the entrepreneurs driving Alaska’s growth in the future.
4. To produce graduates in electrical engineering who conduct themselves and practice their profession with the highest of professional standards.

Mechanical Engineering

... no changes to this track

Student Learning Outcomes

The program has chosen the following set of program outcomes. It is expected that graduates from the program will have:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and the ability to engage in, lifelong learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Departmental Honors

Undergraduate students in the program may be recognized for exceptional performance by earning Departmental Honors. The award will be noted on their permanent university transcript. In order to receive Departmental Honors, a student must meet each of the following requirements.

1. Complete all program requirements.
2. Be an active member for at least one year of both a national and an on-campus student chapter of a professional engineering society that addresses issues relevant to the engineering profession.
3. Earn a GPA of 3.50 or above in the courses required for the major.
4. Gain approval for, complete, and present a design/research project prior to applying for graduation. The project proposal, presentation, and final written report must be approved by the program faculty.
Preparation

While in high school, students can prepare for entering and succeeding in the university engineering program. In order to be the best prepared, students should complete the following high school courses with grades of C or better:

- Algebra: 2 years
- Chemistry: 1 year
- English: 3 years
- Physics: 1 year
- Trigonometry: 1/2 year

Students successfully completing the above courses should be prepared to enroll in the first year of courses that count towards the engineering degree. Students without the above preparatory courses will need to take equivalent university courses before taking some of the first year of courses that count towards the engineering degree.

Admission Requirements

Admission to the program is to one of two levels: Pre-Engineering or Engineering. Students admitted to either of the two levels are considered to be degree-seeking engineering students majoring in Engineering.

Pre-Engineering Level

Applicants for admission who have completed only the Admission to Baccalaureate Programs requirements in Chapter 7 of this catalog are admitted to the program at the Pre-Engineering level.

Engineering Level

Applicants for admission who, in addition to the Admission to Baccalaureate Programs requirements, have completed at least the level of high school courses listed above under Preparation (or their university equivalents) with grades of C or better will be admitted to the program at the Engineering level.

Advancement

Pre-Engineering to Engineering

To advance from the Pre-Engineering level to the Engineering level, students must meet the admission requirements to the Engineering level and complete and submit a Change of Major form.

Academic Progress

All prerequisites for engineering courses must be completed with a grade of C or higher, and all courses in the major requirements must be completed with a grade of C or higher. A student who is unable to earn a grade of C or higher in a CSE, EE, ES, ENGR or ME course may attempt to earn a satisfactory grade one additional time, on a space-available basis. Failure to earn a grade of C or higher on the second attempt may result in removal from the program. Re-admittance requires a letter of appeal from the student requesting re-admittance with an explanation of any mitigating factors and how these factors have been addressed. Re-admittance is subject to approval by the department chair of the program.

A student who has a semester GPA below 2.00 in the major requirements will be placed on academic warning by the program. If a student on academic warning status receives a semester GPA of at least 2.00 in the major requirements, that student will be removed from academic warning status by the program. Otherwise, if a student on academic warning status receives a semester GPA below 2.00 in the major requirements, the student will be dropped from the program and must reapply in order to continue in the program.

Academic Integrity

The program requires its students to abide by the principles of academic integrity described in the Student Code of Conduct. Should suspected cases of academic misconduct occur, these cases may be submitted to the UAA Dean of Students Office, where the Assistant Director of Student Conduct reviews all allegations of academic misconduct. At the conclusion of the review, the Assistant Director of Student Conduct issues a notification of the findings and conclusions to the reporting faculty member, department chair, and dean. Should a student from the program be found responsible for a case of academic misconduct by the UAA Dean of
Students Office on two separate occasions, that student will be dropped from the program. Re-admittance requires a letter of appeal from the student requesting re-admittance with an explanation of any mitigating factors and how these factors have been addressed. Re-admittance is subject to approval by the department chair of the student’s degree program.

**Graduation Requirements**

Students must complete the following graduation requirements.

A. **General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees listed at the beginning of this chapter.

B. **General Education Requirements**

Complete the General Education Requirements (GER) for Baccalaureate Degrees listed at the beginning of this chapter.

C. **Major Requirements**

Students must choose Computer Systems Engineering, Electrical Engineering or Mechanical Engineering. All courses in the major requirements must be completed with a grade of C or higher.

**Computer Systems Engineering**

1. Complete the following core courses (86 credits):

   - CSCE A201  Computer Programming I 4
   - CSCE A211  Computer Programming II 4
   - CSCE/EE A241 Computer Hardware Concepts 4
   - CSCE A248  Computer Organization and Assembly Language Programming 3
   - CSCE A311  Data Structures and Algorithms 3
   - CSCE A320  Operating Systems 3
   - CSCE A342  Digital Circuits Design 3
   - CSCE A365  Computer Networks 3
   - CSCE A448  Computer Architecture 3
   - CSCE A465  Computer and Network Security 3
   - CSCE A470  Computer Science and Engineering Capstone Project 3
   - EE A203  Fundamentals of Electrical Engineering I 4
   - EE A333  Electronic Devices 4
   - EE A353  Circuit Theory 3
   - ENGL A212  Technical Writing 3
   - ESM A450  Economic Analysis and Operations 3
   - MATH A200  Calculus I 4
   - MATH A201  Calculus II 4
   - MATH A202  Calculus III 4
   - MATH A231  Introduction to Discrete Mathematics 3
   - MATH A302  Ordinary Differential Equations 3
   - PHIL A305  Professional Ethics 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
   - STAT A307  Probability and Statistics 4

2. Advanced engineering electives: 15
Students are required to take 15 credits from the following list of approved CSE electives. Of the 15, at least 6 credits must be from classes with a CSCE prefix. A maximum of 3 credits from CSCE A395, a maximum of 3 credits from CSCE A495, and a maximum of 6 credits from CSCE A498 may be applied toward this degree requirement. Other relevant courses may be accepted by approved petition.

Any upper division elective with a CSCE prefix (1-4 per course)

EE/PHYS A314 Electromagnetics (3)
EE/PHYS A324 Electromagnetics II (3)
EE A324L Electromagnetics Laboratory II (1)
EE A354 Engineering Signal Analysis (3)
EE A441 Integrated Circuit Design (3)
EE A451 Digital Signal Processing (3)
EE A462 Communication Systems (3)
EE A465 Telecommunications (3)

3. A total of 120 credits are required for the degree, of which 42 credits must be upper division.

**Electrical Engineering**

1. Complete the following core courses (95 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM A105</td>
<td>General Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM A105L</td>
<td>General Chemistry I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CSE A205</td>
<td>Introduction to C Programming for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CSCE A248</td>
<td>Computer Organization and Assembly Language Programming</td>
<td>3</td>
</tr>
<tr>
<td>EE A203</td>
<td>Fundamentals of Electrical Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>EE/CSCE A241</td>
<td>Computer Hardware Concepts</td>
<td>4</td>
</tr>
<tr>
<td>EE A261</td>
<td>Matlab for Electrical Engineers</td>
<td>1</td>
</tr>
<tr>
<td>EE A307</td>
<td>Introduction to Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE/ME A308</td>
<td>Instrumentation and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>EE/PHYS A314</td>
<td>Electromagnetics</td>
<td>3</td>
</tr>
<tr>
<td>EE/PHYS A324</td>
<td>Electromagnetics II</td>
<td>3</td>
</tr>
<tr>
<td>EE A324L</td>
<td>Electromagnetics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>EE A333</td>
<td>Electronic Devices</td>
<td>4</td>
</tr>
<tr>
<td>EE A353</td>
<td>Circuit Theory</td>
<td>3</td>
</tr>
<tr>
<td>EE A353L</td>
<td>Circuit Theory Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EE A354</td>
<td>Engineering Signal Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EE A438</td>
<td>Design of Electrical Engineering Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE A441</td>
<td>Integrated Circuit Design</td>
<td>3</td>
</tr>
<tr>
<td>EE A465</td>
<td>Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>EE A471</td>
<td>Automatic Control</td>
<td>3</td>
</tr>
<tr>
<td>ENGL A212</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>ENGR A105A</td>
<td>Engineering Computer-Aided Design I</td>
<td>1</td>
</tr>
<tr>
<td>ENGR A105B</td>
<td>Engineering Computer-Aided Design II</td>
<td>1</td>
</tr>
<tr>
<td>ENGR A151</td>
<td>Introduction to Engineering</td>
<td>1</td>
</tr>
<tr>
<td>ES A208</td>
<td>Engineering Statics and Dynamics</td>
<td>5</td>
</tr>
<tr>
<td>ES A302</td>
<td>Engineering Data Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>
2. Choose from the following advanced mathematics electives:

- MATH A314  Linear Algebra (3)
- MATH A321  Analysis of Several Variables (3)
- MATH A371  Stochastic Processes (3)
- MATH A407  Mathematical Statistics I (3)
- MATH A410  Introduction to Complex Analysis (3)
- MATH A422  Partial Differential Equations (3)
- MATH A423  Advanced Engineering Mathematics (3)
- MATH A426  Numerical Methods (3)

3. Choose from the following advanced engineering electives: 12 credits

Students are required to take 12 credits from the following list of approved advanced engineering electives. Of the 12 credits, at least 6 of them must be from classes with the EE prefix.

- CE A403/A603  Arctic Engineering (3)
- or
- ES A411  Northern Design (3)

*Note: Only one of CE A403 or CE A603 or ES A411 can apply to the degree.*

- CSCE A365  Computer Networks (3)
- CSCE A445  Computer Design and Simulation (4)
- CSCE A465  Computer and Network Security (3)
- EE/ME A306  Dynamics of Systems (3)
- EE A407  Power Distribution (3)
- EE A451  Digital Signal Processing (3)
- EE A458  Antenna Theory (3)
- EE A462  Communication Systems (3)

4. A total of 131 credits is required for the degree, of which 42 credits must be upper division.

**Mechanical Engineering**

... no changes to this track
Bachelor of Science, Engineering

The Computer Science and Engineering, Electrical Engineering, and Mechanical Engineering departments offer a Bachelor of Science in Engineering, with concentrations in Computer Systems Engineering, Electrical Engineering or Mechanical Engineering.

Computer Systems Engineering

The Department of Computer Science and Engineering offers a Bachelor of Science in Engineering with a concentration in Computer Systems Engineering (BSE CSE), and a minor in Computer Systems Engineering. The program is a fully-accredited Bachelor of Science in Engineering, Computer Systems Engineering degree program. Students are introduced to principles of mathematics and physics during the first two years of study along with introductory courses in fundamentals of computer hardware and programming. The third and fourth years consist of upper division courses applicable to computer systems along with computer systems engineering electives in the area of the students’ interests. Students complete a project-oriented capstone course where they will apply their knowledge in computer systems engineering to solve challenging problems. Students also take courses on written and oral communication, humanities, social sciences, and fine arts to improve their communication skills and to put their profession into a broader societal context.

Electrical Engineering

The Department of Electrical Engineering offers a Bachelor of Science in Engineering with a concentration in Electrical Engineering (BSE EE), and a minor in Electrical Engineering. The program is a fully-accredited Bachelor of Science in Engineering, Electrical Engineering degree program. During the first two years of study, students are introduced to principles of mathematics, chemistry and physics, as well as basic circuit theory, digital logic and electrical devices. The third year of study largely focuses on fundamental electrical engineering concepts, including courses in signal analysis, electromagnetism, instrumentation and telecommunication. During the fourth year, students take more advanced courses, including technical electives that are more focused on electrical engineering analysis and design. Upper division electives include courses in computer design, antenna theory, communication theory, power distribution, and control systems. Students also take courses on written and oral communication, humanities, social sciences, and fine arts to improve their communication skills and to put their profession into a broader societal context.

Mechanical Engineering

. . . no changes to this track

Accreditation

Computer Systems Engineering

The Bachelor of Science in Engineering, Computer Systems Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Electrical Engineering

The Bachelor of Science in Engineering, Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Mechanical Engineering

. . . no changes to this track
Program Objectives

Computer Systems Engineering
1. Graduates are successful practitioners of computer engineering in a variety of industries, government agencies, and research/academic institutions, serving the State of Alaska as well as national/international needs.
2. Graduates exhibit high standards regarding ethical behavior and social responsibility.
3. Graduates successfully engage in life-long learning experiences such as graduate education, short courses, technical talks, conferences, training program, community groups, and writing and/or publishing papers.

Electrical Engineering
1. To produce electrical engineering graduates with the training and skills to enter the job market or to continue their education by attending graduate school.
2. To produce graduates who will become business and community leaders in Alaska and throughout the world.
3. To produce graduates who will, through their training in electrical engineering and their commitment to their continuing education, become the entrepreneurs driving Alaska’s growth in the future.
4. To produce graduates in electrical engineering who conduct themselves and practice their profession with the highest of professional standards.

Mechanical Engineering
... no changes to this track

Student Learning Outcomes
The program has chosen the following set of program outcomes. It is expected that graduates from the program will have:
1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and the ability to engage in, lifelong learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Departmental Honors
Undergraduate students in the program may be recognized for exceptional performance by earning Departmental Honors. The award will be noted on their permanent university transcript. In order to receive Departmental Honors, a student must meet each of the following requirements.
1. Complete all program requirements.
2. Be an active member for at least one year of both a national and an on-campus student chapter of a professional engineering society that addresses issues relevant to the engineering profession.
3. Earn a GPA of 3.50 or above in the courses required for the major.
4. Gain approval for, complete, and present a design/research project prior to applying for graduation. The project proposal, presentation, and final written report must be approved by the program faculty.
Preparation

While in high school, students can prepare for entering and succeeding in the university engineering program. In order to be the best prepared, students should complete the following high school courses with grades of C or better:

- Algebra: 2 years
- Chemistry: 1 year
- English: 3 years
- Physics: 1 year
- Trigonometry: 1/2 year

Students successfully completing the above courses should be prepared to enroll in the first year of courses that count towards the engineering degree. Students without the above preparatory courses will need to take equivalent university courses before taking some of the first year of courses that count towards the engineering degree.

Admission Requirements

Admission to the program is to one of two levels: Pre-Engineering or Engineering. Students admitted to either of the two levels are considered to be degree-seeking engineering students majoring in Engineering.

Pre-Engineering Level

Applicants for admission who have completed only the Admission to Baccalaureate Programs requirements in Chapter 7 of this catalog are admitted to the program at the Pre-Engineering level.

Engineering Level

Applicants for admission who, in addition to the Admission to Baccalaureate Programs requirements, have completed at least the level of high school courses listed above under Preparation (or their university equivalents) with grades of C or better will be admitted to the program at the Engineering level.

Advancement

Pre-Engineering to Engineering

To advance from the Pre-Engineering level to the Engineering level, students must meet the admission requirements to the Engineering level and complete and submit a Change of Major form.

Academic Progress

All prerequisites for engineering courses must be completed with a grade of C or higher, and all courses in the major requirements must be completed with a grade of C or higher. A student who is unable to earn a grade of C or higher in a CSE, EE, ES, ENGR or ME course may attempt to earn a satisfactory grade one additional time, on a space-available basis. Failure to earn a grade of C or higher on the second attempt may result in removal from the program. Re-admittance requires a letter of appeal from the student requesting re-admittance with an explanation of any mitigating factors and how these factors have been addressed. Re-admittance is subject to approval by the department chair of the program.

A student who has a semester GPA below 2.00 in the major requirements will be placed on academic warning by the program. If a student on academic warning status receives a semester GPA of at least 2.00 in the major requirements, that student will be removed from academic warning status by the program. Otherwise, if a student on academic warning status receives a semester GPA below 2.00 in the major requirements, the student will be dropped from the program and must reapply in order to continue in the program.

Academic Integrity

The program requires its students to abide by the principles of academic integrity described in the Student Code of Conduct. Should suspected cases of academic misconduct occur, these cases may be submitted to the UAA Dean of Students Office, where the Assistant Director of Student Conduct reviews all allegations of academic misconduct. At the conclusion of the review, the Assistant Director of Student Conduct issues a notification of the findings and conclusions to the reporting faculty member, department chair, and dean. Should a student from the program be found responsible for a case of academic misconduct by the UAA Dean of
Students Office on two separate occasions, that student will be dropped from the program. Re-admittance requires a letter of appeal from the student requesting re-admittance with an explanation of any mitigating factors and how these factors have been addressed. Re-admittance is subject to approval by the department chair of the student’s degree program.

**Graduation Requirements**

Students must complete the following graduation requirements.

**A. General University Requirements**

Complete the General University Requirements for All Baccalaureate Degrees listed at the beginning of this chapter.

**B. General Education Requirements**

Complete the General Education Requirements (GER) for Baccalaureate Degrees listed at the beginning of this chapter.

**C. Major Requirements**

Students must choose Computer Systems Engineering, Electrical Engineering or Mechanical Engineering. All courses in the major requirements must be completed with a grade of C or higher.

**Computer Systems Engineering**

1. Complete the following core courses (85 credits):
   
   - CSCE A201 Computer Programming I
   - CSCE A211 Computer Programming II
   - CSCE EE A241 Computer Hardware Concepts
   - CSCE A248 Computer Organization and Assembly Language Programming
   - CSCE A311 Data Structures and Algorithms
   - CSCE A320 Operating Systems
   - CSCE A330 Algorithms and Data Structures
   - CSCE A342 Digital Circuits Design
   - CSCE A345 Computer Networking for Engineers
   - CSCE A448 Computer Architecture
   - CSCE A445 Computer Design and Interfacing
   - CSCE A465 Computer and Network Security
   - CSCE A470 Computer Science and Engineering Capstone Project
   - EE A203 Fundamentals of Electrical Engineering I
   - EE A333 Electronic Devices
   - EE A341 Computer Hardware Concepts
   - EE PHYS A331 Electromagnetics
   - EE A353 Circuit Theory
   - ENGL A212 Technical Writing
   - ENGR A151 Introduction to Engineering
   - ES A202 Engineering Data Analysis
ESM A450  Economic Analysis and Operations  3
MATH A200  Calculus I  4
MATH A201  Calculus II  4
MATH A202  Calculus III  4
MATH A231  Introduction to Discrete Mathematics  3
MATH A302  Ordinary Differential Equations  3
PHIL A305  Professional Ethics  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
STAT A307  Probability and Statistics  4

Choose from the following engineering science, advanced mathematics and statistics electives:  3-5
ES A208  Engineering Statics and Dynamics (5)
MATH A314  Linear Algebra (3)
MATH A371  Stochastic Processes (3)
MATH A410  Introduction to Complex Analysis (3)
MATH A422  Partial Differential Equations (3)
MATH A423  Advanced Engineering Mathematics (3)
STAT A307  Probability and Statistics in Science (4)

Choose from the following advanced engineering electives:  15
Students are required to take 15 credits from the following list of approved CSE electives. Of the 15, at least 6 credits must be from classes with the CSE prefix. A maximum of 3 credits is allowed from CSCE A395, a maximum of 3 credits from CSCE A495, and a maximum of 6 credits from CSCE A498 may be applied toward this degree requirement. Other relevant courses may be accepted by approved petition upon advisor approval.
CS A304  Object-Oriented Analysis and Modeling (3)
CS A331  Programming Language Concepts (3)
CS A351  Automata, Algorithms, and Complexity (2)
CS A360  Database Systems (3)
CS A385  Computer Graphics (3)
CS A401  Software Engineering (3)
CS A405  Artificial Intelligence (2)
CS A407  Evolutionary Computing (2)
CS A412  Computer and Data Security (2)
CS A431  Compiler Concepts and Techniques (2)
CS A448  Computer Architecture (2)
CS A480  Topics in Computer Science (3)
CS A671  Advanced Software Engineering (3)
CSE A442  VLSI Circuit Design (3)
CSE A481  Engineering Software/Hardware Systems (3)
Any upper division elective with a CSE prefix (1-4 per course)
EE/PHYS A314  Electromagnetics (3)
EE/PHYS A324  Electromagnetics II (3)
Electrical Engineering

1. Complete the following core courses (95 credits):

   - CHEM A105  General Chemistry I  3
   - CHEM A105L  General Chemistry I Laboratory  1
   - CSE A205  Introduction to C Programming for Engineers  3
   - CSE A215  Object-Oriented Programming for Engineers  3
   - CSE A248  Computer Organization and Assembly Language Programming for Engineers  3
   - CSE A275  Assembly Language Programming for Engineers using Xilinx  3
   - EE A203  Fundamentals of Electrical Engineering I  4
   - EE A204  Fundamentals of Electrical Engineering II  4
   - EE/CSCE A241  Computer Hardware Concepts  4
   - EE A261  Matlab for Electrical Engineers  1
   - EE A267  Introduction to Power Systems  3
   - EE/ME A308  Instrumentation and Measurement  3
   - EE/PHYS A314  Electromagnetics  3
   - EE/PHYS A324  Electromagnetics II  3
   - EE A324L  Electromagnetics Laboratory II  1
   - EE A333  Electronic Devices  4
   - EE A353  Circuit Theory  3
   - EE A353L  Circuit Theory Laboratory  1
   - EE A354  Engineering Signal Analysis  3
   - EE A438  Design of Electrical Engineering Systems  3
   - EE A441  Integrated Circuit Design  3
   - EE A465  Telecommunications  3
   - EE A471  Automatic Control  3
   - ENGL A212  Technical Writing  3
   - ENGR A105A  Engineering Computer-Aided Design I  1
   - ENGR A105B  Engineering Computer-Aided Design II  1
   - ENGR A151  Introduction to Engineering  1

Additional credits not shown above are necessary to satisfy General University Requirements and General Education Requirements. A total of 124-126 credits are required for the degree, of which 42 credits must be upper division.
2. Choose from the following advanced mathematics electives: 3

   MATH A314  Linear Algebra (3)
   MATH A321  Analysis of Several Variables (3)
   MATH A371  Stochastic Processes (3)
   MATH A407  Mathematical Statistics I (3)
   MATH A410  Introduction to Complex Analysis (3)
   MATH A422  Partial Differential Equations (3)
   MATH A423  Advanced Engineering Mathematics (3)
   MATH A426  Numerical Methods (3)

3. Choose from the following advanced engineering electives: 12

   Students are required to take 12 credits from the following list of approved advanced engineering electives. Of the 12 credits, at least 6 of them must be from classes with the EE prefix.

   CE A403/A603  Arctic Engineering (3)
   or
   ES A411  Northern Design (3)

   Note: Only one of CE A403 or CE A603 or ES A411 can apply to the degree.

   CSCE A365  Computer Networks (3)
   CSCE A445  Computer Design and Interfacing Simulation (4)
   CSCE A465  Computer and Network Security (3)
   EE/ME A306  Dynamics of Systems (3)
   EE A407  Power Distribution (3)
   EE A451  Digital Signal Processing (3)
   EE A458  Antenna Theory (3)
   EE A462  Communication Systems (3)

4. A total of 131 credits is required for the degree, of which 42 credits must be upper division.

**Mechanical Engineering**

. . . no changes to this track
To: Undergraduate Academic Board
From: Catherine H. Sullivan, School of Nursing
Date: March 20, 2013
Re: Proposed Deletion of Practical Nursing Certificate Program

Please briefly address each of the following items. Please mark “not applicable” for any items which do not apply to the program. This cover memo should be no longer than one page.

**Program Background:** How long has the program been offered? If admission is currently suspended, please indicate the length of the suspension.

The Practical Nursing Certificate Program has been suspended since 2005.

**Justification for Program Deletion:** Why is this program deletion proposed? Some examples might include enrollment trends, employment data, or shifting priorities within the department, school, or college.

The need for licensed practical nurses (LPNs) has decreased. Our partner institutions prefer to hire RNs over LPNs.

**Impact on Other Programs:** How will the deletion affect other UA programs? Please include the GERs, programs on other campuses, and programs whose requirements include courses offered within the program proposed for deletion. How have you coordinated with those departments?

No other UAA programs will be impacted by this deletion. The BS and AAS Programs in the School of Nursing approved of the deletion of the Practical Nursing Certificate Program.

**Impact on Students:** How many students are currently enrolled (admitted to the program and taking classes)? How many students are currently admitted (admitted to the program but not currently taking classes)? How does the department plan to accommodate those students?

There are no students currently enrolled in the Practical Nursing Certificate Program.

**Impact on Stakeholders:** Describe any input received from relevant stakeholders, such as industry advisory groups or communities served.

There is a program in the community (AVTEC), which trains LPNs and produces sufficient numbers of graduates to meet community need.

**Plans for Program Deletion:** What is the planned timeline for the deletion? Will the deleted program be replaced by a new or modified program?

Fall 2013

**Alignment with Strategic Plans:** Describe alignment with UA Academic Master Plan and UAA Strategic Plan. In most cases, this will be Strategic Plan Priority A (Systematic program review and consolidating programs where indicated by review to assure best use of limited resources).

The Provost requested that the UAA School of Nursing delete this certificate program because it has been suspended since 2005, and there is no student interest in it.

---

1 Please contact the Office of the Registrar (786-1560) for assistance identifying these data.
**1a. School or College**  
CH College of Health

**1b. Department**  
School of Nursing

**2. Complete Program Title/Prefix**  
Certificate, Practical Nursing

**3. Type of Program**

Choose one from the appropriate drop down menu:
- Undergraduate: or Graduate: CHOOSE ONE

This program is a Gainful Employment Program:  
- Yes or No

**4. Type of Action:**

- PROGRAM
  - Add
  - Change
  - Delete

- PREFIX
  - Add
  - Change
  - Inactivate

**5. Implementation Date (semester/year)**

From: Fall/2013  
To: 9999

**6a. Coordination with Affected Units**

Department, School, or College: COH, School of Nursing - Catherine Sullivan

Initiator Name (typed): Catherine Sullivan  
Initiator Signed Initials: _________

Date: __________________

**6b. Coordination Email submitted to Faculty Listserv (uaa-faculty@lists.uaa.alaska.edu)**

Date: 2/18/13

**6c. Coordination with Library Liaison**

Date: 2/18/13

**7. Title and Program Description - Please attach the following:**

- Cover Memo
- Catalog Copy in Word using the track changes function

**8. Justification for Action**

The Practical Nursing Certificate Program has been suspended since 2005. The need for licensed practical nurses (LPNs) has decreased. Our partner institutions prefer to hire RNs over LPNs. There is a program in the community (AVTEC) which trains LPNs and produces sufficient numbers of graduates to meet community need.

---

Initiator (faculty only)  
Initiator (TYPE NAME)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

Approved  
Disapproved

Dean/Director of School/College  
Date

Approved  
Disapproved

Undergraduate/Graduate Academic  
Date

Approved  
Disapproved

Board Chair

Approved  
Disapproved

Provost or Designee  
Date

Approved  
Disapproved

Department Chair  
Date

Approved  
Disapproved

College/School Curriculum Committee Chair  
Date
1. School or College: EN SOENGR
2. Course Prefix: CE
3. Course Number: A461
4. Previous Course Prefix & Number: N/A
5. Credits/CEUs: 3
6. Complete Course Title:
   Hydraulic Analysis and Design
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: Semester/year: Fall/2013, To: 99/9999
12. Cross Listed with: Stacked with: Cross-Listed Coordination Signature
13. Impacted Courses or Programs:
<table>
<thead>
<tr>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. N/A</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
</tbody>
</table>
14. General Education Requirement:
   | Mark appropriate box: |
   | Oral Communication   | Written Communication       |
   | Fine Arts            | Social Sciences             |
   | Quantitative Skills  | Humanities                 |
   | Integrative Capstone |
15. Course Description:
   (suggested length 20 to 50 words)
   This course presents analysis and design techniques for hydraulic facilities including water storage, conveyance, and pumping systems. Industry-standard computer software for hydraulic design will also be introduced.
16a. Course Prerequisite(s):
    Prefix and number or test code and score:
    ES A341 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:
   Standard SOE fee
18. Mark if course is a selected topic course
19. Justification for Action:
   The course is proposed as the result of curriculum review by the civil engineering faculty as part of its ABET accreditation process. The course will provide essential analysis and design skills to the CE students specializing in Water Resources Engineering. Satisfies sub-discipline requirements for the BS in Civil Engineering. Will replace CE A344 in the BS CE curriculum.
UNIVERSITY OF ALASKA ANCHORAGE  
COURSE CONTENT GUIDE

I. Initiation Date: 19 March 2013

II. Course Information
   A. College: School of Engineering
   B. Course Title: Hydraulic Analysis and Design
   C. Course Subject/Number: CE A461
   D. Credit Hours: 3.0 Credits
   E. Contact Time: 3+0 Contact Time
   F. Grading Information: A-F
   G. Course Description: This course presents analysis and design techniques for hydraulic facilities including water storage, conveyance, and pumping systems. Industry-standard computer software for hydraulic design will be introduced.
   H. Status of course relative to degree or certificate program: Applies to the BS program in Civil Engineering
   I. Course Fees: Standard SOE fee
   J. Coordination: UAA/SOE/CE faculty list serves
   K. Course Prerequisites: ES A341 with a minimum grade of C
   L. Registration Restrictions: None

III. Course Activities
   Class sessions consist of lectures. Assignments are made to allow students to learn by application the principles taught in this course. Exams are administered to assess the abilities of the students to apply principles taught in the course.

IV. Evaluation
   Methods of evaluation may include, but are not limited to: assignments, exams, and quizzes. Evaluation procedures are at the discretion of the instructor and will be discussed during the first class in the semester.

V. Course Level Justification
   CE A461, Hydraulic Analysis and Design synthesizes material from ES A341, Fluid Mechanics, as well as mathematics and physics courses, and further introduces students to the design of moderately complex hydraulic systems used in civil engineering infrastructure.
VI. Outline

A. Flow in Closed Conduits
   1. Single pipelines
   2. Pipe networks
   3. Pump performance and characteristics

B. Design of Water-Distribution Systems
   1. Water demand
   2. Components of water-distribution systems
   3. Performance criteria for water-distribution systems
   4. Building water-supply systems

C. Flow in Open Channels
   1. Basic principles
   2. Water-surface profiles
   3. Design of water-supply channels
   4. Design of drainage channels
   5. Design of sanitary sewers

D. Design of Hydraulic Structures
   1. Culverts
   2. Gates and weirs
   3. Spillways and stilling basins
   4. Dams and reservoirs
   5. Hydropower systems

VII. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The Instructor will:
   1. Describe and demonstrate the concepts and methods of hydraulic analysis and design.
   2. Help students to develop skills to analyze hydraulic systems and perform moderately complex designs.

B. Student Learning Outcomes. On successful completion of course students will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyze flow in pipelines and pipe networks</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Design water distribution systems to meet given performance criteria</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Perform steady-state analysis of flow in open channels in a variety of flow conditions</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Design water supply channels</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Analyze and design drainage systems</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>----------------------------------------------------------------</td>
</tr>
<tr>
<td>Design hydraulic structures such as culverts, gates, and weirs</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Analyze and design water storage systems</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
</tbody>
</table>

**VIII. Suggested Text**


**IX. Bibliography and Resources**

* Classic text
1a. School or College  
EN SOENGR

1b. Division  
No Division Code

1c. Department  
Civil Engineering

2. Course Prefix  
CE

3. Course Number  
A464

4. Previous Course Prefix & Number  
N/A

5a. Credits/CEUs  
3

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

6. Complete Course Title  
Hydrologic Analysis and Design

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

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

If a change, mark appropriate boxes:

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

9. Repeat Status No  # of Repeats  Max Credits

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

11. Implementation Date  semester/year  
From: Fall/2013  To: 99/9999

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

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

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

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. N/A</td>
<td></td>
<td></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): Rob Lang  
Initiator Signed Initials:  
Date:

13b. Coordination Email  
Date: 2-6-13  
submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)

13c. Coordination with Library Liaison  
Date: 2/28/13

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)

Presents fundamental concepts of hydrologic cycle, including precipitation, snow cover, evaporation, and groundwater hydraulics. Explains techniques of statistical hydrology and the usage of simulation models. The design of simple hydraulic structures will also be introduced.

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
ES A341 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 Standard SOE fee

18. ☐ Mark if course is a selected topic course

19. Justification for Action

This course is proposed as the result of curriculum review by the civil engineering faculty as part of its ABET accreditation process. The course will provide essential analysis and design skills to the CE students specializing in Water Resources Engineering as a technical elective in this CE discipline area.

Initiator (faculty only)  
Rob Lang  
Initiator (TYPE NAME)  

Date

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

☐ Approved  ☐ Disapproved  
Undergraduate/Graduate Academic Board Chair  
Date

☑ Approved  ☐ Disapproved  
Provost or Designee  
Date
I. Initiation Date: 19 March 2013

II. Course Information
A. College: School of Engineering
B. Course Title: Hydrologic Analysis and Design
C. Course Subject/Number: CE A464
D. Credit Hours: 3.0 Credits
E. Contact Time: 3+0 Contact Time
F. Grading Information: A-F
G. Course Description: Presents fundamental concepts of hydrologic cycle, including precipitation, snow cover, evaporation, and groundwater hydraulics. Explains techniques of statistical hydrology and the usage of simulation models. The design of simple hydraulic structures will also be introduced.
H. Status of course relative to degree or certificate program:
   Applies to the BS program in Civil Engineering
I. Course Fees: Standard SOE fee
J. Coordination: UAA/SOE/CE faculty list serves
K. Course Prerequisites: ES A341 with a minimum grade of C
L. Registration Restrictions: None

III. Course Activities
Class sessions consist of lectures. Assignments are made to allow students to learn by application the principles taught in this course. Exams are administered to assess the abilities of the students to apply principles taught in the course.

IV. Evaluation
Methods of evaluation may include, but are not limited to: assignments, exams, and quizzes. Evaluation procedures are at the discretion of the instructor and will be discussed during the first class in the semester.

V. Course Level Justification
CE A464, Hydrologic Analysis and Design synthesizes material from ES A341, Fluid Mechanics, as well as mathematics and physics courses, and further introduces students to the analysis of moderately complex hydrologic systems and the design of associated civil engineering infrastructure.
VI. Outline

A. Hydrology
   1. Hydrologic principles, hydrologic cycle, and measurement techniques
   2. Hydrologic analysis using hydrographs for rainfall-runoff
   3. Statistical and flood frequency analysis
   4. Hydrologic and hydraulic flood routing methods

B. Hydrologic modeling and design techniques
   1. Watershed analysis
   2. Floodplain delineation
   3. Ground water
   4. Urban stormwater
   5. Design applications in hydrology

C. Advanced topics
   1. Geographic Information System (GIS) applications in hydrology
   2. Radar rainfall applications in hydrology
   3. Severe storm impacts and flood management

D. Selected case studies

VII. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The Instructor will:
   1. Describe and demonstrate the concepts and methods of hydrologic analysis and design.
   2. Help students to develop skills to analyze hydrologic data and perform simple designs of related engineering systems.

B. Student Learning Outcomes. On successful completion of this course students will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpret hydrologic data and perform water balance analyses</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Use analysis techniques to predict runoff flowrates from rainfall and snow data</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Use appropriate statistical techniques to predict precipitation and runoff from historical data</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Demonstrate the ability to use selected hydrologic and hydraulic modeling methods</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Use U.S. Army Corps of Engineers Hydrologic Engineering software to perform watershed modeling</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Use methods of analysis and design pertinent to urban hydrology</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
<tr>
<td>Demonstrate an understanding of the role that GIS and</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
</tbody>
</table>
radar rainfall data have in advancing hydrologic analysis and design

Demonstrate an understanding of new and emerging trends in flood control methods and floodplain management

<table>
<thead>
<tr>
<th>radar rainfall data have in advancing hydrologic analysis and design</th>
<th>presentations, and/or final exams.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate an understanding of new and emerging trends in flood control methods and floodplain management</td>
<td>Homework, exams, reports, presentations, and/or final exams.</td>
</tr>
</tbody>
</table>

VIII. Suggested Text


IX. Bibliography and Resources


* Classic text