I. Roll Call
   () Arlene Schmuland   () Hsing-Wen Hu   () Sam Thiru
   () Susan Garton      () Peter Olsson     () COH Vacancy
   () Greg Protasel     () Anthony Paris    () GSA Vacancy
   () Dennis Drinka     () Patricia Sandberg () FSAL vacancy
   () Jervette Ward     () Clayton Trotter  () Lora Volden
   Ex-Officio Members:
   () Greg Protasel     () Anthony Paris
   () Patricia Sandberg () Lora Volden
   () COH Vacancy       () GSA Vacancy
   () FSAL vacancy      () Scheduling & Publications

II. Approval of Agenda (pg. 1)

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

IV. Program/Course Action Request – Second Reading
   Add CHEM A611 Advanced Biophysical Chemistry (Stacked with CHEM A411)
   (3 cr)(3+0)(pg. 4-13)
   Chg CHEM A650 Advanced Environmental Chemistry (Stacked with CHEM A450)
   (3 cr)(3+0)(pg. 14-24)
   Add CHEM A677 Advanced Bioanalytical Chemistry (Stacked with CHEM A477)
   (3 cr)(3+6)(pg. 25-35)
   Add CHEM A680 Advanced Nuclear Magnetic Resonance (Stacked with CHEM A480)
   (3 cr)(3+0)(pg. 36-44)
   Add CHEM A690 Advanced Lecture Topics in Chemistry (Stacked with CHEM A490)
   (3 cr)(1-3+0)(pg. 45-54)
   Chg CHEM A698 Graduate Research (1-6 cr)(0+3+18)(pg. 55-58)

V. Program/Course Action Request - First Readings
   Add EDCN A643 Grief Trauma Counseling with Families (3 cr)(3+0)(pg. 59-65)
   Add EDCN A695F Counseling Internship: Marriage/Family (3-6 cr)(1+15-30)(pg. 66-71)

VI. Administrative Reports
   A. Associate Dean of the Graduate School David Yesner
   B. Graduate Student
   C. University Registrar Lora Volden

VII. Chair’s Report
   A. GAB Chair- Arlene Schmuland
   B. Faculty Alliance
   C. Graduate Council

VIII. Old Business

IX. New Business
   A. Curriculum Handbook text regarding stacked courses (pg. 72-74)
   B. Credit Hour Audit

X. Informational Items and Adjournment
I. Roll Call
   (x) Arlene Schmuland  (x) Hsing-Wen Hu  () CAS vacancy
   (e) Susan Garton  (x) Peter Olsson  () FSAL vacancy
   (x) Greg Protasel  (x) Anthony Paris  () FSAL vacancy
   () Dennis Drinka  () GSA Vacancy  () FSAL vacancy
   () Laura Kelly  (x) Jervette Ward

Visiting Members
   (x) Patricia Sandberg
   (x) Sam Thiru
   () Clayton Trotter

II. Approval of Agenda (pg. 1)
   Approved

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

IV. Program/Course Action Request – Second Reading

V. Program/Course Action Request - First Readings
   Chg  BA A686  Management Simulation (3 cr)(3+0)(pg. 4-9)
   Waive first reading, approve for second

VI. Administrative Reports
   A. Associate Dean of the Graduate School David Yesner
      Graduate Council had their first meeting this month; new business included graduate faculty, revisions to the Graduate Council constitution, and various Graduate School processes
      Discussed the application process at UAA and UAF for doctoral programs
   
   B. Graduate Student
      No Representative
   
   C. University Registrar Lora Volden
      An invitation email was sent out to faculty and staff this week inviting them to the October 8th CourseLeaf presentation
      BOR approved a change to the residency credit policy; any course taken within the UA system will be counted as a residency credit

VII. Chair’s Report
   A. GAB Chair- Arlene Schmuland
   
   B. Faculty Alliance
   
   C. Graduate Council

VIII. Old Business

IX. New Business
   A. 2013-2014 Goals (pg. 10)
      Discussed the process/standards of graduate /undergraduate stacked courses and added it as a goal for this academic year; discussion will continue at the next meeting
      Motion to approve the 2013-2014 goals as amended.
      Unanimously Approved
B. Minor changes to CAR box 8 and box 16c. (pg. 11)
   Motion to approve changes to the CAR boxes 8 and 16c.
   Unanimously Approved

C. Standard Catalog Language
   Standard language for special topics courses:
   Special note: May be repeated [number of times] for credit with change of subtitle.
   Special note: May be repeated for a maximum of [number of] credits with change of subtitle.
   Special note: May be repeated [number of times] for a maximum of [number of] credits with change of subtitle.

   Standard language for stacked graduate courses:
   Special note: Not available for credit to students who have completed [undergraduate stacked course].

   Motion to approve the standard language for special topics and stacked graduate courses.
   Unanimously Approved

X. Informational Items and Adjournment
   A. Library Resource Costs (pg. 12-13)
1a. School or College  
AS CAS

1b. Division  
AMSC Division of Math Science

1c. Department  
Chemistry

2. Course Prefix  
CHEM

3. Course Number  
A611

4. Previous Course Prefix & Number  

5a. Credits/CEUs  
3

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

6. Complete Course Title  
Advanced Biophysical Chemistry
Adv Biophysical Chemistry

Abbreviated Title for Transcript (30 character)  

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

8. Type of Action:  
[ ] Add  [ ] Change  [ ] Delete

If a change, mark appropriate boxes:

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

If a change, mark appropriate boxes:

- Prefix
- Course Number
- Contact Hours
- Repeat Status
- Cross-Listed/Stacked
- Course Prerequisites
- Co-requisites
- Registration Restrictions

9. Repeat Status No  
# of Repeats 0  Max Credits

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

11. Implementation Date  
From: Fall/2013  To: /9999

12. [ ] Cross Listed with
[ ] Stacked with CHEM A411

Cross-Listed Coordination

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

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

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

Date: __________

13c. Coordination with Library Liaison  
Date: __________

14. General Education Requirement  
Mark appropriate box:

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

15. Course Description (suggested length 20 to 50 words)  
Advanced study of Biophysical Chemistry through the principles of thermodynamics, kinetic concepts and spectroscopic analysis. Examination of the current literature in Biophysical Chemistry.

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

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

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

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

17. [ ] Mark if course has fees  

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

19. Justification for Action  
Addition of graduate level course stacked with CHEM A411 for inclusion in the Interdisciplinary Masters Program.

Initiator (faculty only)  
Holmberg

Initiator (TYPE NAME)  

[ ] Approved  
[ ] Disapproved

Dean/Director of School/College  
Date

[ ] Approved  
[ ] Disapproved

Undergraduate/Graduate Academic Board Chair  
Date

[ ] Approved  
[ ] Disapproved

Provost or Designee  
Date
Course Content Guide for CHEM A611
University of Alaska Anchorage
College of Arts and Sciences

I. Date of Initiation: February 22, 2013

II. Course information

A. College: College of Arts and Sciences
B. Course Subject: CHEM
C. Course Number: A611
D. Number of Credits: 3
E. Contact Hours: 3+0
F. Course Title: Advanced Biophysical Chemistry
G. Grading Basis: A – F
H. Implementation Date: Spring 2014

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

J. Course Attributes: N/A
K. Prerequisites: N/A
L. Test Scores: N/A
M. Corequisites: N/A

N. Registration Restrictions: Instructor permission and graduate standing.

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

A. Instructional Goals:

The instructor will:

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

B. Student Learning Outcomes:

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

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

V. Guidelines for Evaluation

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

VI. Course Level Justification

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

VII. Course Outline

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


Additional bibliography for instructors:


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

Journal of Physical Chemistry pubs.acs.org/journal/jpcafh
Course Action Request
University of Alaska Anchorage
Proposal to Initiate, Add, Change, or Delete a Course

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Chemistry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>A411</td>
<td>A311</td>
<td>3</td>
<td>Lecture + Lab (3+0)</td>
</tr>
</tbody>
</table>

6. Complete Course Title
Biophysical Chemistry

Abbreviated Title for Transcript (30 character)

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

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

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

9. Repeat Status No
- # of Repeats: 0
- Max Credits: ?

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

11. Implementation Date
- Semester/year: Summer/2014
- To: /9999

12. Cross Listed with
- [ ] Stacked with CHEM A611

Cross-Listed Coordination

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

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

<table>
<thead>
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<th>Chair/Coordinator Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chemistry</td>
<td>10/3/2013</td>
<td>Holmberg</td>
</tr>
<tr>
<td>2. Physics (PHYS A124)</td>
<td>2/21/2013</td>
<td>Pantaleone</td>
</tr>
<tr>
<td>3. Math (MATH A201)</td>
<td>2/26/2013</td>
<td>Thiir</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Holmberg
Initiator Signed Initials: ________ Date: __________

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

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

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

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

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

16a. Course Prerequisite(s) (list prefix and number or test code and score)
- CHEM A106, MATH A201, and PHYS A124) with minimum grade of C.

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

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

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

17. Mark if course has fees
- [ ]

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

19. Justification for Action

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

Initiator (faculty only)
Holmberg
Initiator (TYPE NAME)

Approved
- [ ]

Disapproved
- [ ]

Department Chair

Date

Approved
- [ ]

Disapproved
- [ ]

Board Chair

Date

Approved
- [ ]

Disapproved
- [ ]

Provost or Designee

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

II. **Course information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A411

D. **Number of Credits:** 3

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

F. **Course Title:** Biophysical Chemistry

G. **Grading Basis:** A – F

H. **Implementation Date:** Summer 2014

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

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

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

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

M. **Corequisites:** N/A

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

P. Stacked With: CHEM A611

III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

Instructor will:

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

B. Student Learning Outcomes:

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

IV. Course Activities

A. Lecture
B. Assignments
C. Critical Thinking Questions
D. Quizzes
E. Exams
F. Comprehensive Final

V. Guidelines for Evaluation

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

VI. Course Level Justification

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

VII. Course Outline

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

VIII. Suggested Texts


IX. Bibliography

Scientific Journals such as (not a comprehensive list):
  - Biological Chemistry
  - Biochemistry
  - Biophysical Journal
  - Cell
  - Journal of Biological Chemistry
  - Journal of Molecular Biology
  - Molecular Biology
  - Molecular Cell
  - Nature
  - Nature Structure
  - Science
Advanced Environmental Chemistry

Detailed examination of structure and function of planer Earth as a living chemical system as constructed around the atmosphere, hydrosphere, lithosphere, and biosphere. The system will be examined as driven energetically by solar energy and energy provided by human technology. Chemical models will be detained along with the mathematical concepts required to understand the integration of the global system with resource utilization by humans.

Addition of graduate level course stacked with CHEM A450 for inclusion into the Interdisciplinary Masters Program.
Course Content Guide for **CHEM A650**

University of Alaska Anchorage

College of Arts & Sciences

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

II. **Course Information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A650

D. **Number of Credits:** 3

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

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

G. **Grading Basis:** A – F

H. **Implementation Date:** Spring 2014

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

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

K. **Prerequisites:** N/A

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

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

O. **Course Fee**: No

P. **Stacked With**: CHEM A450

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

A. **Instructional Goals**: 

The instructor will:

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

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

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

B. **Student Learning Outcomes**: 

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

IV. **Course Activities**

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

V. **Guidelines for Evaluation**

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

VI. **Course Level Justification**

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

VII. **Course Outline**

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

4. Biosphere  

VIII. Suggested Texts  


IX. Bibliography  


1a. School or College: AS CAS  
1b. Division: AMSC Division of Math Science  
1c. Department: CHEMISTRY  

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

6. Complete Course Title: Environmental Chemistry  
Abbreviated Title for Transcript (30 character):  

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

8. Type of Action:  
- ☘ Add  
- ☐ Change  
- ☐ Delete  

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

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

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

11. Implementation Date:  
- ☑ From:  
- ☑ To:  
- ☐ /9999  

12. ☑ Cross Listed with:  
- CHEM A650  
- Cross-Listed Coordination  

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

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Catalog Page(s)</th>
<th>Impacted</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tbody>
<tr>
<td>1. B.S. Chemistry</td>
<td></td>
<td>☑</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
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<td>2. CHEM 450 course listing</td>
<td>p. 390</td>
<td>☑</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
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<td>5. B.S. Natural Sciences</td>
<td>p. 126</td>
<td>☑</td>
<td>10/3/2013</td>
<td>Fred Rainey</td>
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<td>6. M.S. AEST</td>
<td>p. 335</td>
<td>☑</td>
<td>10/3/2013</td>
<td>Osama Abaza</td>
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Initiator Name (typed): John M. Kennish  
Initiator Signed Initials:  
Date:________________  

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

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

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

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

16a. Course Prerequisite(s) (list prefix and number):  
- CHEM A106 with grade of C or better.  
16b. Test Score(s):  
16c. Co-requisite(s) (concurrent enrollment required):  

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

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

19. Justification for Action:  
- Course now stacked with the newly created CHEM A650, identify critical prerequisite, and include registration restriction.
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<td>Provost or Designee</td>
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</table>
I. **Date of Initiation:** February 22, 2013

II. **Course Information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A450

D. **Number of Credits:** 3

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

F. **Course Title:** Environmental Chemistry

G. **Grading Basis:** A – F

H. **Implementation Date:** Summer 2014

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

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

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

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

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

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

P. **Stacked With:** CHEM A650

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

A. **Instructional Goals:**

The instructor will:

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

B. **Student Learning Outcomes:**

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

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

V. **Guidelines for Evaluation**

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

VI. **Course Level Justification**

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

VII. **Course Outline**

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

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

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

4. Biosphere  
   a. Distribution  
   b. Fate
VIII. **Suggested Text**


IX. **Bibliography**


## Course Action Request

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

<table>
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<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<td>AMSC Division of Math Science</td>
<td>Chemistry</td>
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<table>
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<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<tr>
<td>CHEM</td>
<td>A677</td>
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<td>(3+6)</td>
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### 6. Complete Course Title

**Advanced Bioanalytical Chemistry**

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

Advanced Bioanalytical Chemistry

### 7. Type of Course

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

### 8. Type of Action:

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

#### If a change, mark appropriate boxes:

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

### 9. Repeat Status

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

### 10. Grading Basis

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

### 11. Implementation Date

- From: Spring/2014
- To: 9/9999

### 12. Cross Listed with

- [ ] CHEM A477

### 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>
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<th>Impacted Program/Course</th>
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<th>Chair/Coordinator Contacted</th>
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<td>Interdisciplinary Masters Program</td>
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**Initiator Name (typed): Mark McCoy**

**Initiator Signed Initials: _________**

**Date:____________**

### 13b. Coordination Email

- Date: 8/28/13
- submitted to Faculty Listserv: uaa-faculty@lists.uaa.alaska.edu

### 13c. Coordination with Library Liaison

- Date: 8/28/13

### 14. General Education Requirement

Mark appropriate box:

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

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

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

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

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

### 16c. Other Restriction(s)

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

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

- Graduate standing and instructor approval.

### 17. Mark if course has fees

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

### 19. Justification for Action

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

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

**Initiator Signed Initials: _________**

**Date:____________**

### Course Action Request

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<td>Disapproved</td>
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25
Course Content Guide for **CHEM A677**  
University of Alaska Anchorage  
College of Arts & Sciences

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

II. **Course Information:**
   A. **College:** College of Arts & Sciences  
   B. **Course Subject:** CHEM  
   C. **Course Number:** A677  
   D. **Number of Credits:** 5  
   E. **Contact Hours:** 3 + 6  
   F. **Course Title:** Advanced Bioanalytical Chemistry  
   G. **Grading Basis:** A-F  
   H. **Implementation Date:** Spring 2014  

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

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

K. **Prerequisites:** None.

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

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

N. **Registration Restrictions:** Graduate standing and instructor approval.  

O. **Course Fee:** Yes  

P. **Stacked with:** CHEM A477
III. Instructional Goals and Student Learning Outcomes:

A. Course Activities:

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

B. Instructional Goals:

The instructor will:

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

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

The student will:

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

D. Assessment Measures:

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

E. Guidelines for Evaluation:

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

IV. Course Level Justification:

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

1. Biomolecules

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

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

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

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

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

7. Protein Sequencing

VI. Suggested Texts:


VII. Bibliography:


1a. School or College  
AS CAS  

1b. Division  
AMSC Division of Math Science  

1c. Department  
Chemistry  

2. Course Prefix  
CHEM  

3. Course Number  
A477  

4. Previous Course Prefix & Number  
N/A  

5a. Credits/CEUs  
5  

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

6. Complete Course Title  
Bioanalytical Chemistry  

Abbreviated Title for Transcript (30 character)  

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

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

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

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

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

11. Implementation Date  
From: Spring/2014  
To:  

12. ☐ Cross Listed with  
 STACKED with CHEM A677  

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

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<th>Impacted Program/Course</th>
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<th>Chair/Coordinator Contacted</th>
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<td>2/22/2013</td>
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<td>2. CHEM A312</td>
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<td>Eric Holmberg</td>
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<td>3. CHEM A441</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
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Initiator Name (typed): Mark McCoy  
Initiator Signed Initials:  
Date:  

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

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

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

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

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
CHEM A312 with minimum grade of C or CHEM A441 with a minimum grade of C.  

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

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

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

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

19. Justification for Action  
Creating an elective course for science majors due to student demand.  

Initiator (faculty only)  
Mark McCoy  
Initiator (TYPE NAME)  

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

☐ Approved  ☐ Disapproved  
Undergraduate/Graduate Academic  Date  

☑ Approved  ☐ Disapproved  
Board Chair  Date  

☑ Approved  ☐ Disapproved  
Provost or Designee  Date  

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

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

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

16a. Course Prerequisite(s) (list prefix and number or test code and score)  
CHEM A312 with minimum grade of C or CHEM A441 with a minimum grade of C.  

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

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

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

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

19. Justification for Action  
Creating an elective course for science majors due to student demand.  

Initiator (faculty only)  
Mark McCoy  
Initiator (TYPE NAME)  

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

☐ Approved  ☐ Disapproved  
Undergraduate/Graduate Academic  Date  

☑ Approved  ☐ Disapproved  
Board Chair  Date  

☑ Approved  ☐ Disapproved  
Provost or Designee  Date  

31
Course Content Guide for **CHEM A477**
University of Alaska Anchorage
College of Arts & Sciences

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

II. **Course Information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A477

D. **Number of Credits:** 5

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

F. **Course Title:** Bioanalytical Chemistry

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

H. **Implementation Date:** Spring 2014

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

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

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

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

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

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

O. **Course Fee:** Yes

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

A. Course Activities:

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

B. Instructional Goals:

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

The instructor will:

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

C. Student Learning Outcomes:

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

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

D. Guidelines for Assessment and Evaluation:

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

IV. Course Level Justification:

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

V. Topical Course Outline:

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

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

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

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

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

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

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

VI. Suggested Texts:


VII. Bibliography:


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

1a. School or College
AS CAS

1b. Division
AMSC Division of Math Science

1c. Department
Chemistry

2. Course Prefix
CHEM

3. Course Number
A680

4. Previous Course Prefix & Number

5a. Credits/CEUs
3

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

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

Abbreviated Title for Transcript (30 character)

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

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

If a change, mark appropriate boxes:

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

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

10. Grading Basis
☐ A-F
☐ P/NP
☐ NG

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

12. Cross Listed with
☐ Stacked with CHEM A480

Cross-Listed Coordination

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

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

<table>
<thead>
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<th>Impact Program/Course</th>
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<th>Chair/Coordinator Contacted</th>
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Initiator Name (typed): Vugmeyster
Initiator Signed Initials: _________
Date: __________________

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

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

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

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

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

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

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

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

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

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

19. Justification for Action

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

Initiator (faculty only) Date

Initiator (TYPE NAME)

Approved
☐ Disapproved
☐ Approved
☐ Disapproved
☐ Approved
☐ Disapproved
☐ Approved

Dean/Director of School/College Date

Undergraduate/Graduate Academic Board Chair Date

Provost or Designee Date
I. Date of Initiation: February 22, 2013

II. Course Information

A. College: College of Arts and Sciences

B. Course Subject: CHEM

C. Course Number: A680

D. Number of Credits: 3

E. Contact Hours: 3 + 0

F. Course Title: Advanced Nuclear Magnetic Resonance

G. Grading Basis: A – F

H. Implementation Date: Spring 2014

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

J. Course Attributes: N/A

K. Prerequisites: N/A

L. Test Scores: N/A

M. Corequisites: N/A

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

P. **Stacked With:** CHEM A480

### III. Instructional Goals and Student Learning Outcomes

#### A. Instructional Goals:

The Instructor will:

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

#### B. Student Learning Outcomes:

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

### IV. Course Activities

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

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

VI. Course Level Justification

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

VII. Course Outline

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

VIII. Suggested Text


IX. Bibliography


### Course Action Request

**University of Alaska Anchorage**

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

### 1a. School or College
AS CAS

### 1b. Division
AMSC Division of Math Science

### 1c. Department
Chemistry

### 2. Course Prefix
CHEM

### 3. Course Number
A480

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

### 5a. Credits/CEUs
3

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

### 6. Complete Course Title
Nuclear Magnetic Resonance

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

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

If a change, mark appropriate boxes:

- ☐ Prefix
- ☐ Credits
- ☐ Title
- ☐ Grading Basis
- ☐ Course Description
- ☐ Test Score Prerequisites
- ☐ 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
From: Spring/2014 To: /9999

### 12. Cross Listed with
☐ ☐ Cross-Listed Coordination

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

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

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
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<td>MATH A201</td>
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<td>Sam Thiru</td>
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<td>CHEM A411</td>
<td>2/22/2013</td>
<td>Eric Holmberg</td>
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<tr>
<td>PHYS A212</td>
<td>2/22/2013</td>
<td>Jim Pantaleon</td>
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</table>

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

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

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

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

### 15. Course Description (suggested length 20 to 50 words)
Introduction to nuclear magnetic resonance spectroscopy and basic application to problems in biology and earth sciences.

### 16a. Course Prerequisite(s) (list prefix and number or test code and score)
[MATH A201 and (CHEM A411 or PHYS A212)] with a grade of C or better.

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

### 16c. Other Restriction(s)

- ☐ College
- ☐ Major
- ☐ Class
- ☐ Level

- ☐ Mark if course has fees

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

- ☐ Mark if course is a selected topic course

### 17. Justification for Action
Creating an elective class for science majors due to student demand.

### 18. Initiator Name (typed): Vugmeyster
Initiator Signed Initials: ____________________________ Date:________________

### 19. Justification for Action

<table>
<thead>
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<th>Initiator (faculty only)</th>
<th>Date</th>
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Initiator (TYPE NAME)

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<th>Date</th>
<th>Approved</th>
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### 20. Course Description

**Course Description**

Introduction to nuclear magnetic resonance spectroscopy and basic application to problems in biology and earth sciences.

**Course Prerequisites:**

- MATH A201
- CHEM A411 or PHYS A212

**Course Requirements:**

*Grading Basis: A-F*

**Implementation Date:**

From: Spring/2014 To: 9999

**Cross Listing:**

- CHEM A680

**Other Restrictions:**

- Mark if course has fees

**Registration Restriction:**

- Mark if course is a selected topic course

**Justification for Action:**

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

**Initiator Name:** Vugmeyster

**Initiator Signed Initials:** ____________________________ Date:________________

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

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**Department Chair:**

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**Undergraduate/Graduate Academic:**

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**Course Action Request:**

University of Alaska Anchorage

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

---

**Course Description**

Introduction to nuclear magnetic resonance spectroscopy and basic application to problems in biology and earth sciences.

**Course Prerequisites:**

- MATH A201
- CHEM A411 or PHYS A212

**Course Requirements:**

*Grading Basis: A-F*

**Implementation Date:**

From: Spring/2014 To: 9999

**Cross Listing:**

- CHEM A680

**Other Restrictions:**

- Mark if course has fees

**Registration Restriction:**

- Mark if course is a selected topic course

**Justification for Action:**

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

**Initiator Name:** Vugmeyster

**Initiator Signed Initials:** ____________________________ Date:________________

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

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**Department Chair:**

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**College/School Curriculum Committee Chair:**

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<th>Disapprove</th>
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**Undergraduate/Graduate Academic:**

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**Board Chair:**

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

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

II. **Course information**

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

B. **Course Subject:** CHEM

C. **Course Number:** A480

D. **Number of Credits:** 3

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

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

G. **Grading Basis:** A – F

H. **Implementation Date:** Spring 2014

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

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

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

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

M. **Corequisites:** N/A

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

O. **Course Fee:** No

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

A. Instructional Goals:

The instructor will:

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

B. Student Learning Outcomes:

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

IV. Course Activities

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

V. Guidelines for Evaluation

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

VI. Course Level Justification

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

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

VIII. Suggested Text


IX. Bibliography

1. Cavanagh John, Fairbrother Wayne J., Palmer III Arthur G., Skelton Nicholas J., Editors, 

   2005.


### Course Action Request

**University of Alaska Anchorage**

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

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
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<tr>
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<th>4. Previous Course Prefix &amp; Number</th>
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<th>5b. Contact Hours</th>
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<td>(Lecture + Lab) (1-3+0)</td>
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### Complete Course Title

**Advanced Lecture Topics in Chemistry**  
Adv Lecture Topics Chemistry

Abbreviated Title for Transcript (30 character)

<table>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
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<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours</th>
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<td>CHEM</td>
<td>A690</td>
<td>N/A</td>
<td>1-3</td>
<td>(Lecture + Lab) (1-3+0)</td>
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</table>

### Type of Course

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

### Type of Action:

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

### Repeat Status

- [x] Yes  
- [ ] No  

### Credits/CEUs

1 to 3 credits

### Contact Hours

Lecture + Lab: 1 to 3 + 0 hours

### Course Description

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

### Course Prerequisite(s) (list prefix and number)

16b. Test Score(s)

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

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

### Other Restriction(s)

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

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

- [x] Mark if course is a selected topic course

### General Education Requirement

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

### Course Action Request

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

**Initiator (faculty only): Colin McGill**  
Initiator Signed Initials: __________ Date: __________

**Initiator (TYPE NAME)**

- [x] Approved  
- [ ] Disapproved  

**Dean/Director of School/College**

- [x] Approved  
- [ ] Disapproved  

**Undergraduate/Graduate Academic**

- [x] Approved  
- [ ] Disapproved  

**Board Chairperson**

- [x] Approved  
- [ ] Disapproved  

**Provost or Designee**

- [x] Approved  
- [ ] Disapproved
Course Content Guide for **CHEM A690**  
University of Alaska Anchorage  
College of Arts & Sciences

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

II. **Course Information**

   A. **College:** College of Arts & Sciences
   B. **Course Subject:** CHEM
   C. **Course Number:** A690
   D. **Number of Credits:** 1-3
   E. **Contact Hours:** 1-3 + 0
   F. **Course Title:** Advanced Lecture Topics in Chemistry
   G. **Grading Basis:** A-F
   H. **Implementation Date:** Spring 2014

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

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

K. **Prerequisites:** N/A

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

M. **Corequisites:** N/A

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

O. **Course Fee:** No

P. **Stacked With:** CHEM A490

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

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

The instructor will:

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

B. **Student Learning Outcomes:**

Student learning outcomes will vary according to topic.

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

IV. **Course Activities:**

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

V. Guidelines for Evaluation

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

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

VI. Course Level Justification

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

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

VII. Topic Course Outline

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

A. Chemical origins of biology
B. DNA and RNA
   a. Structure of nucleotides
   b. Transcription
   c. Translation
C. Peptide and protein structure
   a. Fundamentals of structure
   b. Mechanisms of folding
D. Protein function and regulation at the chemical level
   a. Surface chemistry
   b. Thermodynamics and chemical regulation
E. Glycobiology
   a. Roles of carbohydrates
   b. Regulation

F. Terpenes
   a. Synthesis
   b. Modifications to lipid membranes

G. Chemical control of signal transduction
   a. Transduction basics
   b. Signal cascades

VIII. Suggested Texts


IX. Bibliography

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

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

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>CHEMISTRY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course Prefix</th>
<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>A490</td>
<td>N/A</td>
<td>1-3</td>
<td>(1-3+0)</td>
</tr>
</tbody>
</table>

### 6. Complete Course Title
**Selected Lecture Topics in Chemistry**  
**Selected Lect Topics Chemistry**

### Abbreviated Title for Transcript (30 character)

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

### 8. Type of Action:
- [X] Add  
- [ ] Change  
- [ ] Delete

#### If a change, mark appropriate boxes:
- [ ] Prefix  
- [ ] Credits  
- [ ] Course Number  
- [ ] Contact Hours  
- [ ] Title  
- [ ] Repeat Status  
- [ ] Grading Basis  
- [ ] Course Description  
- [ ] Cross-Listed/Stacked  
- [ ] Test Score Prerequisites  
- [ ] Course Prerequisites  
- [ ] Other Restrictions  
- [ ] Registration Restrictions  
- [ ] Class  
- [ ] Level  
- [ ] College  
- [ ] Major  
- [ ] Other CCG (please specify)

### 9. Repeat Status
- Yes  
- # of Repeats: 1-3  
- Max Credits: 12

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

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

### 12. Cross Listed with
- [ ] Cross Listed with  
- CHEM A690  
- Stacked with

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

Initiator Name (typed): Colin McGill  
Initiator Signed Initials:  
Date: __________

### 13b. Coordination Email
- Date: 10/3/2013

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

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

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

### 15. Course Description
- **Suggested length 20 to 50 words**

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

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

### 16b. Test Score(s)

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

### 16d. Other Restriction(s)
- [ ] College  
- [ ] Major  
- [ ] Class  
- [ ] Level

### 16e. Registration Restriction(s) (non-codable)
- Junior or senior standing and instructor approval.

### 17. Mark if course has fees
- [ ] Mark if course has fees

### 18. Mark if course is a selected topic course
- [X] Mark if course is a selected topic course

### 19. Justification for Action
- Provide additional upper-division elective opportunities for undergraduate chemistry students, by student demand.

---

**Initiator (faculty only) Date**

Colin McGill  
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

---

50
Course Content Guide for **CHEM A490**  
University of Alaska Anchorage  
College of Arts & Sciences

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

II. **Course Information**

   A. **College:** College of Arts & Sciences
   B. **Course Subject:** CHEM
   C. **Course Number:** A490
   D. **Number of Credits:** 1-3
   E. **Contact Hours:** 1-3 + 0
   F. **Course Title:** Selected Lecture Topics in Chemistry
   G. **Grading Basis:** A-F
   H. **Implementation Date:** Spring 2014

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

   J. **Course Attributes:** N/A
   K. **Prerequisites:** N/A
   L. **Test Scores:** N/A
   M. **Corequisites:** N/A

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

   O. **Course Fee:** No
   P. **Stacked With:** CHEM A690
III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

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

The instructor will:

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

B. Student Learning Outcomes:

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

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

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

V. Guidelines for Evaluation

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

VI. Course Level Justification

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

VII. Topical Course Outline

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

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

VIII. Suggested Texts

IX. **Bibliography**


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

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

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<th>3. Course Number</th>
<th>4. Previous Course Prefix &amp; Number</th>
<th>5a. Credits/CEUs</th>
<th>5b. Contact Hours (Lecture + Lab)</th>
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<td>CHEM</td>
<td>A698</td>
<td>reinstatement</td>
<td>1-6</td>
<td>(0+3-18)</td>
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</table>

### 6. Complete Course Title

Graduate Research

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

### 7. Type of Course

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

### 8. Type of Action:

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

If a change, mark appropriate boxes:

- [ ] Prefix
- [X] Credits
- [X] Title
- [X] Grading Basis
- [X] Course Description
- [ ] Test Score Prerequisites
- [X] Other Restrictions
- [ ] Other

### 9. Repeat Status

- [ ] Yes
- [ ] No

# of Repeats: 

Max Credits: 12

### 10. Grading Basis

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

### 11. Implementation Date

- Semester/year: 
  - 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.aa.alaska.edu/governance](http://www.aa.alaska.edu/governance).

<table>
<thead>
<tr>
<th>Impacted Program/Course</th>
<th>Date of Coordination</th>
<th>Chair/Coordinator Contacted</th>
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<tr>
<td>1. Interdisciplinary Masters Program</td>
<td>08/28/2013</td>
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<td>2.</td>
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<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initiator Name (typed): Vugmeyster

Initiator Signed Initials: __________ Date: __________

### 13b. Coordination Email

Date: 8/28/13

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

### 13c. Coordination with Library Liaison

Date: 8/28/13

### 14. General Education Requirement

Mark appropriate box:

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

### 15. Course Description

(suggested length 20 to 50 words)

Discipline-specific research for graduate students. Topic of study to be approved and directed by a faculty member.

Special Note: May be repeated for a maximum of 12 credits.

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

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

### 16c. Other Restriction(s)

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

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

Graduate standing. Permission of graduate advisor required.

### 17. Mark if course has fees

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

### 19. Justification for Action

Curriculum addition for the Interdisciplinary Masters degree program.

Initiator (faculty only) Date

Initiator (TYPE NAME)

Approved Disapproved

Dean/Director of School/College Date

Undergraduate/Graduate Academic

Approved Disapproved

Board Chair Date

Provost or Designee

Date
Course Content Guide for **CHEM A698**  
University of Alaska Anchorage  
College of Arts and Sciences

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

II. **Course Information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A698

D. **Number of Credits:** 1-6

E. **Contact Hours:** 0 + 3-18

F. **Course Title:** Graduate Research

G. **Grading Basis:** Pass/No Pass

H. **Implementation Date:** Spring 2014

I. **Course Description:** Discipline-specific research for graduate students. Topic of study to be approved and directed by a faculty member. Special Note: May be repeated for a maximum of 12 credits.

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

B. **Prerequisites:** N/A

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

D. **Corequisites:** N/A

E. **Registration Restriction:** Graduate standing.

F. **Course Fees:** Yes

G. **Stacked With:** N/A
III. **Instructional Goals and Defined Outcomes**

A. **Instructional Goals:**

The instructor will mentor the conceptualization, formulation of hypotheses based on observation and literature review, experimental or computational design, methodologies, data analyses using appropriate discipline-specific tools, refinement of hypotheses, integrating results with appropriate literature reports and writing of a research project.

B. **Student Learning Outcomes:**

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct original research in physical sciences under the mentorship of a faculty advisor.</td>
<td>Research projects, Meetings, Scheduled reports, Research paper.</td>
</tr>
<tr>
<td>Apply appropriate analyses to generate results suitable for a publishable thesis or scientific papers.</td>
<td>Research projects, Meetings, Scheduled reports, Research paper.</td>
</tr>
<tr>
<td>Discuss and assess progress on a research project with faculty research advisor during the semester through regularly scheduled one-on-one meetings.</td>
<td>Research projects, Meetings, Scheduled reports, Research paper.</td>
</tr>
</tbody>
</table>

IV. **Course Activities**

A. Laboratory / field directed research course meeting 3 hours per week per credit up to 6 credits per semester.

B. One-on-one discussions with a faculty advisor.

V. **Guidelines for Evaluation**

Course grading is Pass/No Pass. The evaluation methods, while at the discretion of the faculty member teaching the course may include the initiation, continuation and/or successful completion of a graduate research project culminating in suitably publishable results relevant to the thesis research. Assessment is made through regularly scheduled one-on-one meetings between the student and the faculty mentor to address the continuity and degree of progress.
VI. **Course Level Justification**

Designed as a required course for the interdisciplinary M.S. degree program. This is an advanced research course in the context of formulating working hypotheses, experimental or theoretical design, and selecting appropriate research methodologies.

VII. **Course Outline**

A. Hypothesis formulation  
B. Laboratory or computational experiments  
C. Data analysis  
D. Critical review of discipline-specific review literature

VIII. **Suggested Text**

Will vary according to research topic.

IX. **Bibliography**

Will vary according to research topic.
# Proposal to Initiate, Add, Change, or Delete a Course

## Course Description (suggested length 20 to 50 words)
Examine essential knowledge for grief and trauma counseling with diverse family structures and cultures. Emphasizes counseling practices and explores family dynamics during the grief and trauma process. Investigates special types of loss including trauma-causing events. Includes a personalized examination of the effects of grief on the development of a counseling orientation.

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

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

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

### Impacted Program/Course
<table>
<thead>
<tr>
<th>Initiator Name (typed): Debra Russ/Keith Cates</th>
</tr>
</thead>
</table>

## Coordination Email
- Date: 10/10/13
- To: Faculty Listserv (faculty@lists.uaa.alaska.edu)
- Date: 10/10/13

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

## Course Prerequisite(s)
List prefix and number or test code and score.

## Co-requisite(s)
(Concurrent enrollment required)

## Registration Restriction(s)
Non-codable

## Registration Restriction(s)
(Non-codable)
Graduate Standing

## Mark if course has fees

## Mark if course is a selected topic course

## Justification for Action
This course is an elective in the MEd Program in Counselor Education. The course will allow students to deepen their knowledge of family studies. The course is aligned with national standards in the counselor education field and is also a suitable elective for students in other helping professions such as social work and psychology.
I. Date Initiated: 4/1/13

II. Information for the Course Action Request

College/School: College of Education

Department: CASE

Subject: EDCN

Course Number: A643

Title: Grief and Trauma Counseling with Families

Credits: 3

Grading Basis: A-F

Implementation Date: Spring 2014

Course Description: Examines essential knowledge for grief and trauma counseling with diverse family structures and cultures. Emphasizes counseling practices and explores family dynamics during the grief and trauma process. Investigates special types of loss including trauma-causing events. Includes a personalized examination of the effects of grief on the development of a counseling orientation.

Course Prerequisites(s): None

Test Scores(s): None

Corequisite(s): None

Registration Restrictions: Graduate Status

Course Fee: ☐ Yes ☒ No
III. Instructional Goals, Student Outcomes, and Assessment Procedures

A. Instructional Goals
The instructor will:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitate examination of contemporary issues of grief and trauma-causing events including terminology and processes of grief and trauma in diverse family cultures;</td>
</tr>
<tr>
<td>2.</td>
<td>Facilitate reflection of how personal experiences with grief and trauma-causing events impacts professional counseling orientation;</td>
</tr>
<tr>
<td>3.</td>
<td>Facilitate analysis of the current research outlining best practices and treatment modalities for working with grief, loss, and trauma in diverse family cultures;</td>
</tr>
<tr>
<td>4.</td>
<td>Identify and discuss the impact of individual grief including trauma-causing events on family dynamics;</td>
</tr>
<tr>
<td>5.</td>
<td>Motivate exploration of special types of loss.</td>
</tr>
</tbody>
</table>

B. Student Learning Outcomes/Assessment Procedures

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Procedures</th>
<th>Standards</th>
<th>Core Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon successful completion of the course, the student will be able to do the following:</td>
<td>This outcome will be assessed by one or more of the following:</td>
<td>This outcome meets the following program standard(s):</td>
<td>This outcome addresses the following core value:</td>
</tr>
<tr>
<td>1. Examine and synthesize contemporary literature including terminology and processes of grief including trauma-causing events in diverse family structures and cultures</td>
<td>Reflective Writing, Exam</td>
<td>Essential Knowledge</td>
<td>Intellectual Vitality, Inclusiveness &amp; Equity</td>
</tr>
<tr>
<td>2. Reflect on the impact that personal grief experiences</td>
<td>Grief Self-Assessments, Exercises</td>
<td>Essential Knowledge, Professional Knowledge</td>
<td>Intellectual Vitality</td>
</tr>
</tbody>
</table>
### 3. Evaluate and synthesize the current research outlining best practices and treatment modalities for working with grief, loss, and trauma-causing events in diverse family cultures

| Reflective Discussion, Exercises, Case Study | Apply Skills, Show Dispositions, Ethical and Legal | Intellectual Vitality, Inclusiveness & Equity, Collaborative Spirit |

### 4. Synthesize knowledge of individual roles, personalized grief and its impact on family dynamics

| Case Study, Class Discussion, Exam | Essential Knowledge, Apply Skills | Intellectual Vitality, Collaborative Spirit |

### 5. Synthesize and report on a special type of loss of personal interest

| Guest Speaker Reflection, Research Paper, Presentation | Essential Knowledge, Literature and Research | Intellectual Vitality, Leadership |

---

### IV. Course Level Justification

Professional standards require that entry-level career preparation to the fields of school and agency counseling be at the graduate level. This course is an elective in a graduate program and the program faculty expect students to have the basic knowledge and skills acquired through baccalaureate-level preparation. The course also requires the ability to interpret and evaluate primary literature in the field. Students will be expected to analyze and articulate independent conclusions.

### V. Course Topic Outline

1. Grief and Trauma-Causing Events Concepts Including Terminology and Contemporary Issues
1. Bereavement, Trauma, Grief, Loss, Depression
1.2 Lifespan Expected Trauma Events
1.3 Contemporary Unexpected Trauma Events

2. Family Cultures in the Global Context
   2.1 Trauma and its Impact on Families
   2.2 Cultural Aspects of Grief

3. Personalized Grief
   3.1 Models of Mourning, Grief, Death, Trauma
   3.2 Uncomplicated Grief vs. Complicated Grief
   3.3 Counselor’s Own Grief/Trauma
   3.4 Training Issues in Grief/Trauma Counseling

4. Grief Counseling Practices
   4.1 Grief/Trauma Therapy Models
   4.2 Grief/Trauma Therapy Techniques
   4.3 Grief/Trauma Therapy Processes

5. Family Subcultures Dynamics
   5.1 Death of Child(ren)
   5.2 Death of Parent(s)
   5.3 Death of Significant Other
   5.4 Interrelationship of Death, Culture, and Family Systems

6. Special Types of Loss/Trauma
   6.1 Military
   6.2 Violence
   6.3 Disability Diagnosis
   6.4 Substance Abuse
   6.5 Chronic/Terminal Illness
   6.6 Homicide
   6.7 Suicide

VI. Suggested Texts:


Additional readings from professional journals as required by the instructor.
VII. Bibliography


Sandler, I., Ayers, T., & Romer, A. (2002). Fostering resilience in families in which a parent has died. *Journal of Palliative Medicine, 5*(6), 945-956.


Werner-Lin, A., & Blank, N. M. (2012-2013). Holding parents so they can hold their children: Grief work with surviving spouses to support parentally bereaved children. *Omega, 66*(1), 1-16.

## Course Action Request

**University of Alaska Anchorage**

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

<table>
<thead>
<tr>
<th>1a. School or College</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EA COE</td>
<td>No Division Code</td>
<td>CASE</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>EDCN</td>
<td>A695F</td>
<td></td>
<td>3-6</td>
<td>(1+15-30)</td>
</tr>
</tbody>
</table>

### 6. Complete Course Title
Counseling Internship: Marriage/Family

### 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
- Co-requisites
- Other Restrictions
- Class
- Level
- College
- Major
- Other

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

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

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

### 12. Cross Listed with
- Stacked
- 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>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>UAA School of Social Work</td>
<td>courtesy notification</td>
<td>10/10/13</td>
<td>Beth Sirles</td>
</tr>
<tr>
<td>UAA Department of Psychology</td>
<td>courtesy notification</td>
<td>10/10/13</td>
<td>Patt Sandberg</td>
</tr>
<tr>
<td>UAF School of Education</td>
<td>courtesy notification</td>
<td>10/10/13</td>
<td>Susan Renes</td>
</tr>
</tbody>
</table>

Initiator Name (typed): Debra Russ/Keith Cates

Initiator Signed Initials: _________ Date:________

### 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)
Provides supervised counseling in an approved setting that emphasizes marriage and/or family counseling.

### Special Notes:
Students must apply for placement in advance. Students are expected to have adequate academic preparation in family counseling.

See advisor for deadlines and procedures.

### 16a. Course Prerequisite(s)
(list prefix and number)
- EDCN A627, EDCN A637, EDCN A680, EDSE A632

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

### 16e. Registration Restriction(s)
(non-codable)
Department approval required; Admission to internship.

### 17. Mark if course has fees

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

### 19. Justification for Action
The addition of this course will allow students interning at a marriage and/or family center to have it noted on their transcript. This designation may benefit students seeking credentials in family counseling inside/outside Alaska.

Initiator (faculty only)

Debra Russ/Keith Cates

Initiator (TYPE NAME)

Approved

[ ] Disapproved

Dean/Director of School/College

Date

[ ] Approved

[ ] Disapproved

Undergraduate/Graduate Academic

Date

[ ] Approved

[ ] Disapproved

Board Chairperson

Date

[ ] Approved

[ ] Disapproved

Provost or Designee

Date

[ ] Approved

[ ] Disapproved

Department Chairperson

Date

[ ] Approved

[ ] Disapproved

Curriculum Committee Chairperson

Date

[ ] Approved

[ ] Disapproved

[ ] Approved

[ ] Disapproved
II. Information for the Course Action Request

<table>
<thead>
<tr>
<th>College/School:</th>
<th>College of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>CASE</td>
</tr>
<tr>
<td>Subject:</td>
<td>EDCN</td>
</tr>
<tr>
<td>Course Number:</td>
<td>A695F</td>
</tr>
<tr>
<td>Title:</td>
<td>Counseling Internship: Marriage/Family</td>
</tr>
<tr>
<td>Credits:</td>
<td>3</td>
</tr>
<tr>
<td>Grading Basis:</td>
<td>P/NP</td>
</tr>
<tr>
<td>Implementation Date:</td>
<td>Spring 2014</td>
</tr>
</tbody>
</table>

**Course Description:** Provides supervised counseling in an approved setting that emphasizes marriage and/or family counseling. Special Notes: Students must apply for placement in advance. Students are expected to have adequate academic preparation in family counseling. See advisor for deadlines and procedures.

**Course Prerequisites(s):** EDCN A680, EDCN A627, EDCN A637, EDSE A632

**Test Scores(s):** N/A

**Corequisite(s):** N/A

**Registration Restrictions:** Departmental approval required: Admission to internship

**Course Fee:** ☒ Yes ☐ No
### III. Instructional Goals, Student Outcomes, and Assessment Procedures

#### A. Instructional Goals

The instructor will:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Monitor student progress in the internship experience;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Approve student’s contract for attaining experience and competencies in marriage/family counseling;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Observe student at the internship site;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Facilitate student-led seminars;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Coordinate student presentation and defense of portfolio including convening an evaluation panel;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Evaluate student performance and issue the final grade.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### B. Student Outcomes/Assessment Procedures

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Procedures</th>
<th>Program Standards</th>
<th>Core Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon successful completion of the course, the student will be able to do the following:</td>
<td>This outcome will be assessed by one or more of the following:</td>
<td>This outcome aligns with the following program standard:</td>
<td>This outcome aligns with the following College value:</td>
</tr>
<tr>
<td>1. Articulate personalized goals for the internship experience</td>
<td>Internship Goals</td>
<td>Essential Knowledge</td>
<td>Intellectual Vitality</td>
</tr>
<tr>
<td>2. Coordinate internship meetings at site</td>
<td>Internship Contract</td>
<td>Professional Development</td>
<td>Collaborative Spirit</td>
</tr>
<tr>
<td>3. Identify and accurately report critical incidents, and concerns to university instructor</td>
<td>Weekly Progress Reports, Time Logs, Evaluation of Site Form</td>
<td>Ethical and Legal</td>
<td>Leadership</td>
</tr>
<tr>
<td>4. Lead discussion on a professional topic encountered during practice</td>
<td>Seminar Facilitation</td>
<td>Ethical and Legal</td>
<td>Leadership</td>
</tr>
<tr>
<td>5. Demonstrate marriage/family counseling skills</td>
<td>Skill Demonstration and Performance Reflection; Site Supervisor Evaluation</td>
<td>Apply Skills</td>
<td>Inclusiveness and Equity</td>
</tr>
<tr>
<td>6. Document attainment of competencies in marriage/family counseling</td>
<td>Portfolio Presentation and Defense</td>
<td>Apply Skills, Professional Development</td>
<td>Intellectual Vitality, Leadership</td>
</tr>
</tbody>
</table>
IV. **Course Level Justification**

National standards require that entry-level career preparation to the fields of school and community counseling be at the graduate level. This course is part of a graduate program and the program faculty expect students to have the advanced knowledge and skills acquired through core curriculum in counselor education.

V. **Course Outline**

1. **Internship goals**
   1.1 Communicate essential knowledge and understandings of the profession of counseling including an ability to integrate knowledge into personally meaningful frameworks;
   1.2 Apply practical knowledge that is developmentally appropriate to individuals and groups in multicultural contexts;
   1.3 Utilize individual and group approaches to assessment and evaluation to support and improve counseling practices in multicultural contexts;
   1.4 Show dispositions relating to effective counseling practices for diverse populations;
   1.5 Engage in work that meets ethical standards and legal mandates in the field of counseling;
   1.6 Communicate essential knowledge and understanding of career development and related life issues;
   1.7 Utilize professional literature, research methods, and program evaluation to support and improve counseling practices;
   1.8 Communicate essential knowledge of and skills in effective group counseling practice including theoretical and experiential understanding of group approaches in a multicultural society;
   1.9 Create a plan for continued professional development in a counseling specialty area.

2. **Practical experiences (Note: Specific activities will vary by student and site)**
   2.1 Observations/Co-facilitate/Lead
      2.1a Intake
      2.1b Parenting education groups
      2.1c Record keeping
      2.1d Family planning
      2.1e Curriculum development
      2.1f Responsive services
      2.1g System support
      2.1h Referral coordination
      2.1i Advisement
      2.1j Short-term counseling
      2.1k Appraisal
      2.1l Community engagement

3. **Seminar activities**
   3.1 Gather information on professional topics
3.2 Lead discussions with peers
3.3 Role play scenarios
3.4 Report on intern activities including challenges
3.5 Offer and accept feedback from instructor and peers

4. Portfolio
4.1 Create artifacts
4.2 Present portfolio
4.3 Answer panel questions
4.4 Revise portfolio

VI. Suggested Text(s)


VII. Bibliography


Curriculum Handbook text regarding stacked courses:

p. 3: 2.1.2 Academic Considerations Addressed in Review
The faculty member initiating the curriculum action should be prepared to address the following and any other appropriate issues that members of the curriculum review committees may ask when the curriculum action is presented to the appropriate boards/committees at each level of review.

A. Academic considerations for a new course proposal:
   v. Justification for stacking or cross listing

p. 46-48: Section 9 - Step-By-Step Instructions for the Course Content Guide
When developing a new course the CCG should be developed first. Considerations are: level, title, goals and student learning outcomes, content, and bibliography. This information is then transferred to the CAR. The Course Content Guide should provide a concise description of the course.

I. Stacking (if applicable)
   i. Stacked courses are courses from the same prefix but at different levels offered at the same time and location.
   ii. Existing and new courses may not be stacked unless approved as stacked courses by UAB/GAB.
   iii. Courses may not be stacked informally for scheduling purposes.
   iv. The course description and course content guide of a stacked course must clearly articulate the difference in experience, performance and evaluation of students at different levels, including graduate students vs. undergraduate students.
   v. Courses that are at the 500 level may not be stacked with any other course.
   vi. If stacking status is requested, rationale must be provided.
   vii. Courses at the 300 level may not be stacked with 600-level courses.

All graduate-level courses must meet certain criteria established by the GAB. In addition, when 400-level courses are stacked with 600-level courses, the faculty initiator must consider the impact of stacking the course on the graduate student experience and how that affects the criteria for 600-level courses. If a graduate-level course is stacked with a 400-level course, or if undergraduate students are taking the course as part of their baccalaureate degree, the justification must clearly describe how the quality of the graduate students’ experience will be maintained in a mixed-level classroom.

The following guidelines may assist in determining whether a course is suitable for stacking according to graduate criteria:

i. Do the prerequisites (not registration restrictions) differ for the 400- vs. 600-level versions of the course?
   It is difficult to justify stacked courses in which the graduates and undergraduates have a significantly different knowledge base relevant to the course material. If the knowledge is required for the course, the prerequisites must be comparable. If the knowledge is only required for extra coursework performed by the graduate students, this difference should
be stated explicitly and addressed in the instructional goals, student learning outcomes and course activities sections of the CCG.

ii. Is the course format predominantly discussion- or seminar-based?
This type of course is not likely to be suitable for stacking, as the discussion level/theoretical base can differ significantly between graduate and undergraduate students. In addition, the ratio between undergraduate and graduate students should be addressed. Courses that are evenly divided may provide a more balanced environment than a course in which only one or two graduate students are present.

iii. Is the course format predominantly lecture-based? (Is the main intent of the course to provide a detailed knowledge set?)
   a. Is the PRIMARY source of information/reading the primary research literature of the field?
      This course is not likely to be suitable for stacking, as undergraduate students generally lack the knowledge base and experience to derive all information from the primary literature.
   b. Is the PRIMARY source of information/reading material derived from textbooks or other less-specialized literature?
      This course is likely to be suitable for stacking. However, the performance expectations for graduate students should be explicitly defined, with special emphasis on how these expectations differ from the 400-level students.

Some suggested student learning outcomes/assessments that may be appropriate for 600-level students in a stacked course:
   i. Extra reading assignments based in the primary research literature, evaluated via written critical reviews and/or oral presentations
   ii. Extra writing assignments that evince ability to synthesize research fields (comprehensive scholarly reviews or synthesis of other disciplinary areas with the course material)
   iii. Assignments to measure the ability of graduate students to integrate course material into experimental design, such as writing formal research grant proposals, or oral or written presentation of how the course material informs the student’s own thesis research
   iv. Separate exams for graduate students that measure not only comprehension of the lecture material but the ability to integrate and apply the material at more advanced levels, such as hypothesis formulation and experimental design, or the ability to interpret raw research data
   v. Teaching experiences, in which graduate students instruct undergraduates, lead discussion groups or present analysis of primary research, offer another context in which graduate students may demonstrate and more advanced knowledge and be assessed accordingly.

As a result of completing this course, students will be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Typical Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>demonstrate the ability to conduct a literature search on the course</td>
<td>written critical reviews and/or oral presentation of literature reviews</td>
</tr>
<tr>
<td>topic material</td>
<td>Synthesize research fields</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td>Integrate course material into experimental design</td>
</tr>
<tr>
<td></td>
<td>Integrate and apply the course material at advanced levels</td>
</tr>
<tr>
<td></td>
<td>Instruct undergraduates, lead discussion groups, or otherwise present the course material to other audiences.</td>
</tr>
</tbody>
</table>

**p. 61: CAR Box 12.**

2. **Stacked**
   
   A. Stacked courses are courses from the same prefix but at different levels offered at the same time and location.
   
   B. Existing and new courses may not be stacked unless approved as stacked courses by UAB/GAB.
   
   C. Courses may not be stacked informally for scheduling purposes.
   
   D. The course description and course content guide of a stacked course must clearly articulate the difference in experience, performance, and evaluation of students at different levels, including graduate students vs. undergraduate students.
   
   E. Courses at the 300 level may not be stacked with 600-level courses.
   
   F. A500-A599 level (professional development) courses may not be stacked with any other course.
   
   G. If stacking status is requested, rationale must be provided.

   If the graduate-level course is stacked with a 400-level course, or if undergraduate students are taking the course as part of their baccalaureate degree, the justification must clearly describe how the quality of the graduate students’ experience will be maintained in a mixed-level classroom. (See Section 9 for guidance on the CCG.)