Undergraduate Academic Board
Agenda

October 18, 2013
2:00-5:00
ADM 204

I. Roll

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

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

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

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

IV. Administrative Report

A. Vice Provost for Undergraduate Academic Affairs Susan Kalina

B. University Registrar Lora Volden

V. Chair's Report

A. UAB Chair- Francisco Miranda

B. GERC

VI. Program/Course Action Request- Second Readings

Add	MUS A216	World Music (GER) (Cross Listed with AKNS A216)(3 cr)(3+0)(pg. 5-8)
Add	AKNS A216	World Music (GER) (Cross Listed with MUS A216)(3 cr)(3+0)(pg. 9-12)
Chg	CHEM A411	Biophysical Chemistry (Stacked with CHEM A611) (3 cr)(3+0)(pg. 13-22)
Chg	CHEM A450	Environmental Chemistry (Stacked with (CHEM A650)(3 cr)(3+0)(pg. 23-33)
Chg	CHEM A477	Bioanalytical Chemistry (Stacked with CHEM A677)(3 cr)(3+6)(pg. 34-44)
Add	CHEM A480	Nuclear Magnetic Resonance (stacked with CHEM A680)(3 cr)(3+0)(pg. 45-53)
Add	CHEM A490	Selected Lecture Topics in Chemistry (Stacked with CHEM A690) (1-3 cr)(1-3+0)(pg. 54-63)
Add	CHEM A495	Chemistry Internship (3 cr)(0+9)(pg. 64-68)

VII. Program/Course Action Request- First Readings

Chg		BS, Chemistry (pg. 69-80)
Chg	ART A270	Beginning Alaska Native Art (Stacked with ART A370/A470) (3 cr)(0+6)9pg. 81-85)

Chg	ART A370	Intermediate Alaska Native Art (Stacked with ART A270/A470) (3 cr)(0+6)9pg. 86-91)
Chg	ART A470	Advanced Alaska Native Art (Stacked with ART A270/A370) (3 cr)(0+6)9pg. 92-97)

VIII. Old Business

IX. New Business

X. Informational Items and Adjournment

Undergraduate Academic Board
Summary

October 11, 2013
2:00-5:00
ADM 204

I. Roll

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

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

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

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

IV. Administrative Report

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

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

V. Chair's Report

A. UAB Chair- Francisco Miranda

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

VI. Program/Course Action Request- Second Readings

Add	MUS A216	World Music (GER) (Cross Listed with AKNS A216)(3 cr)(3+0)(pg. 4-7)
Add	AKNS A216	World Music (GER) (Cross Listed with MUS A216)(3 cr)(3+0)(pg. 9-11)

Postponed until GERC approval is received

VII. Program/Course Action Request- First Readings

Del	OEC, Bookkeeping Support (pg. 11-14)
Del	OEC, Medical Office Support (pg. 15)
Del	OEC, Office Digital Media (pg. 16)
Del	OEC, Technical Support (pg. 17-30)

Waive first reading, approve for second

VIII. Old Business

A. Transfer Policy related to upper/lower division equivalencies (pg. 31)

Motion to approve the proposed policy:

Lower division transfer courses with a course description that matches the course description of an upper division UAA course will be brought in as a departmental elective at the level of institution, i.e. at the lower-division level. In the case where a department determines that a lower division course from another institution satisfies the learning outcomes of an upper division degree requirement of their program, the department may request to have the lower division course meet the degree requirement via petition; however the course will not be allowed to be applied towards the general university requirement of 42 upper-division credits.

Unanimously Approved

IX. New Business

A. Incoming Transcripts from Study Abroad Agencies (pg. 32)

Motion to approve the proposal that UAA adopt a policy which limits the amount of credit awarded for a study abroad experience through an outside agency to 15 credits per semester. This will allow the student to be enrolled as a full-time student with complete financial aid, while still reducing the possible negative ramifications of surplus credits and maintaining compliance with current policy.

Unanimously Approved

X. Informational Items and Adjournment

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

1a. School or College	1b. Division	1c. Department
AS CAS	AFAR Division of Fine Arts	Music

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

6. Complete Course Title
World Music

Abbreviated Title for Transcript (30 character)

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

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

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

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☒ Cross Listed with AKNS A216

☐ Stacked with _____ Cross-Listed Coordination Signature

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

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

Impacted Program/Course	*Catalog Page(s) Impacted*	*Date of Coordination*	*Chair/Coordinator Contacted*
1.			
2.			
3.			

Initiator Name (typed): Christopher Sweeney

Initiator Signed Initials: _____ Date:_____

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

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

14. General Education Requirement
Mark appropriate box:

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

15. Course Description *(suggested length 20 to 50 words)*
Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and culture.

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

16b. Test Score(s)

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

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

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

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Christopher Sweeney
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved
Department Chairperson Date

☐ Approved
☐ Disapproved
Curriculum Committee Chairperson Date

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

☐ Approved
☐ Disapproved
Undergraduate/Graduate Academic Board Chairperson Date

☐ Approved
☐ Disapproved
Provost or Designee Date

COURSE CONTENT GUIDE

University of Alaska Anchorage

College/Unit: **Date: 9/19/2013**
College of Arts and Sciences/Department of Music

Course Title: MUS A216: **Credits:**
World Music 3
Cross Listed with Dept. of AKNS A216

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

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

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

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

IV. Instructional Goals and Student Learning Outcomes:

Instructional Goals:

Teacher will:

A. Help students develop the skills necessary to analyze various world music traditions with regard to rhythm and form/structure, as well as cultural contextual information.

B. Assist the student in learning concepts of music, and music terminology.

C. Teach how to understand and hear the differences and similarities in the music of various music cultures and be able to discuss issues of music, change, and cultural context.

D. Provide an overview of different music cultures of the world and identify the unique musical characteristics in each major region.

Defined Student Learning Outcomes: Student will be able to:

Student Outcomes	**Assessment procedures**
Identify and compare/contrast various musical styles from both musical and cultural viewpoints	Exams
Apply aural skills and knowledge of styles necessary to recognize the music of the different world cultures	Exams
Discuss issues of music, change, and cultural context	Exams; research paper
Learn and use music terminology	Exams; research paper; oral presentation

V. Course Outline:

A. Cultural Perspective

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

B. Theoretical Perspective

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

C. Characteristics of Global Indigenous Music by Region

1. Europe
2. The Americas
3. Asia
4. Africa
5. Oceania
6. Near East/Middle East

VI. Suggested Text:

Wade, B. (2012). *Thinking musically: Experiencing music, expressing culture* (3rd ed.). New York: Oxford University Press.

VII. Bibliography

Brinner, B. (2008). *Music in central Java*. New York: Oxford University Press.

Feld, S. (1990). *Sound and sentiment*. Philadelphia: University of Pennsylvania Press.

Heth, C. (1992). *Native American dance: Ceremonies and social traditions*. Washington, DC: Smithsonian National Museum of the American Indian.

Heth, C. (Ed.) (1980). *Selected reports in ethnomusicology, vol. 3, no. 2.* Los Angeles: UCLA Ethnomusicology Department.

Marcus, S. (2007). *Music in Egypt*. New York: Oxford University Press.

May, E. (Ed.). *Musics of many cultures: An introduction*. Berkeley, CA: University of California Press.

Patterson, W. (2001). *Introduction to African music: Resource manual and compact disc.* Albuquerque, NM: University of New Mexico Press.

Sadie, S. (Ed.) (2001). *The new Grove dictionary of music and musicians* (2nd ed.). New York: Oxford University Press.

Stevenson, R. (1968). *Music in Aztec and Inca territory*. Berkeley, CA: University of California Press.

Stone, R. (2005). *Music in West Africa*. New York: Oxford University Press.

Titon, J. T. (Ed.). *Worlds of music* (2nd ed.). New York: Schirmer.

Williams, M. (2007). "Native American Music." In *Ethnic and border music*, N. Cohen, Ed. Westport, CT: Greenwood Press.

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

1a. School or College	1b. Division	1c. Department
AS CAS	AHUM Division of Humanities	AKNS

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

6. Complete Course Title
World Music

Abbreviated Title for Transcript (30 character)

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

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

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

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☒ Cross Listed with MUS A216

☐ Stacked with _____ Cross-Listed Coordination Signature

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

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

Impacted Program/Course	*Catalog Page(s) Impacted*	*Date of Coordination*	*Chair/Coordinator Contacted*
1.			
2.			
3.			

Initiator Name (typed): Christopher Sweeney

Initiator Signed Initials: _____ Date:_____

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

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

14. General Education Requirement
Mark appropriate box:

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

15. Course Description *(suggested length 20 to 50 words)*
Survey course on indigenous music cultures of the world. Musical traditions of Europe, the Americas, Africa, Asia, Oceania and the Near/Far East are examined within the context of musical styles and culture.

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

16b. Test Score(s)

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

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

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

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Christopher Sweeney
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved
Department Chairperson Date

☐ Approved
☐ Disapproved
Curriculum Committee Chairperson Date

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

☐ Approved
☐ Disapproved
Undergraduate/Graduate Academic Board Chairperson Date

☐ Approved
☐ Disapproved
Provost or Designee Date

COURSE CONTENT GUIDE

University of Alaska Anchorage

College/Unit:	**Date:**
College of Arts and Sciences/Alaska Native Studies	***9/19/2013***
Course Title: AKNS A216: World Music Cross Listed with Dept. of MUS A216	**Credits:** 3

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

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

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

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

IV. Instructional Goals and Student Learning Outcomes:

Instructional Goals: Teacher will:

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

Defined Student Learning Outcomes: Student will be able to:

Student Outcomes	**Assessment procedures**
Identify and compare/contrast various musical styles from both musical and cultural viewpoints	Exams
Apply aural skills and knowledge of styles necessary to recognize the music of the different world cultures	Exams
Discuss issues of music, change, and cultural context	Exams; research paper
Learn and use music terminology	Exams; research paper; oral presentation

V. Course Outline:

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

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

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

VI. Suggested Text:

Wade, B. (2012). *Thinking musically: Experiencing music, expressing culture* (3rd ed.). New York: Oxford University Press.

VII. Bibliography

Brinner, B. (2008). *Music in central Java*. New York: Oxford University Press.

Feld, S. (1990). *Sound and sentiment*. Philadelphia: University of Pennsylvania Press.

Heth, C. (1992). *Native American dance: Ceremonies and social traditions*. Washington, DC: Smithsonian National Museum of the American Indian.

Heth, C. (Ed.) (1980). *Selected reports in ethnomusicology, vol. 3, no. 2.* Los Angeles: UCLA Ethnomusicology Department.

Marcus, S. (2007). *Music in Egypt*. New York: Oxford University Press.

May, E. (Ed.). *Musics of many cultures: An introduction*. Berkeley, CA: University of California Press.

Patterson, W. (2001). *Introduction to African music: Resource manual and compact disc.* Albuquerque, NM: University of New Mexico Press.

Sadie, S. (Ed.) (2001). *The new Grove dictionary of music and musicians* (2nd ed.). New York: Oxford University Press.

Stevenson, R. (1968). *Music in Aztec and Inca territory*. Berkeley, CA: University of California Press.

Stone, R. (2005). *Music in West Africa*. New York: Oxford University Press.

Titon, J. T. (Ed.). *Worlds of music* (2nd ed.). New York: Schirmer.

Williams, M. (2007). "Native American Music." In *Ethnic and border music*, N. Cohen, Ed. Westport, CT: Greenwood Press.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A411	A311	3	(3+0)

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
- ☒ Title
- ☐ Grading Basis
- ☒ Course Description
- ☐ Test Score Prerequisites
- ☐ Other Restrictions
  - ☐ Class ☐ Level
  - ☐ College ☐ Major
- ☒ Other CCG (please specify)
- ☒ 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 semester/year
From: Spring/2014 To: /9999

12. ☐ Cross Listed with

☒ Stacked with CHEM A611

Signature Cross-Listed Coordination

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

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. Chemistry	10/3/2013	Holmberg
2. Physics (PHYS A124)	2/21/2013	Pantaleone
3. Math (MATH A201)	2/26/2013	Thiru

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) Date

Holmberg
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 A411**

University of Alaska Anchorage

College of Arts and Sciences

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

II. **Course information:**

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

B. **Course Subject**: CHEM

C. **Course Number**: A411

D. **Number of Credits**: 3

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

F. **Course Title**: Biophysical Chemistry

G. **Grading Basis**: A – F

H. **Implementation Date**: Fall 2013

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

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

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

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

M. **Corequisites**: N/A

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

O. **Course Fee**: No

P. **Stacked With**: CHEM A611

III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

Instructor will:

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

B. Student Learning Outcomes:

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

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, medium to advanced level mathematics and attention to detail.

VII. Course Outline

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

VIII. Suggested Texts

1. Atkins, Physical Chemistry For the Life Sciences, 3rd edition, W H Freeman & Co, 2005.

2. Engel, Reid, Drobny. Physical Chemistry For the Life Sciences, 1st edition, Prentice Hall, 2007.

3. Tinoco, Sauer, Wang, and Puglisi. Physical Chemistry: Principles and Applications In Biological Sciences, 5th edition, Prentice Hall, 2012.
4. Scientific Journals such as (not a comprehensive list):
    Biological Chemistry
    Biochemistry
    Biophysical Journal
    Cell
    Journal of Biological Chemistry
    Journal of Molecular Biology
    Molecular Biology
    Molecular Cell
    Nature
    Nature Structure
    Science

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A611		3	(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 *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)
- ☐ 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 semester/year
From: Fall/2013 To: /9999

12. ☐ Cross Listed with
☒ Stacked with CHEM A411
Signature Cross-Listed Coordination

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. Interdisciplinary Masters Program		
2.		
3.		

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

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

13c. Coordination with Library Liaison Date: _____

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

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

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) Date
Holmberg
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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

P. **Stacked With**: CHEM A411

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:

Student Learning Outcomes Students will:	Assessment Methods
Demonstrate critical thinking skills for explanation and prediction of biophysical/bio-chemical phenomena using thermodynamics and chemical kinetics.	Quizzes, Exams, Class Activities
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.	Quizzes, Exams, Class Activities
Apply a range of spectroscopic and computational techniques for bio-molecular characterization and applications to biochemical problems.	Quizzes, Exams, Research Paper
Apply the knowledge of kinetics to design methods for determination of reactions' mechanisms.	Quizzes, Exams, Research Paper

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

1. Atkins, Physical Chemistry For the Life Sciences, 3rd edition, W H Freeman & Co, 2005.

2. Engel, Reid, Drobny. Physical Chemistry For the Life Sciences, 1st edition, Prentice Hall, 2007.

3. Tinoco, Sauer, Wang, and Puglisi. Physical Chemistry: Principles and Applications In Biological Sciences, 4th edition, Prentice Hall, 2012.

Additional bibliography for instructors:

Methods of Enzymology, http://www.sciencedirect.com/science/bookseries/00766879

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

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

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A450	N/A	3	(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 *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 CCG (please specify)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☒ Cross-Listed/Stacked
- ☒ Course Prerequisites
- ☐ Co-requisites
- ☒ Registration Restrictions

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with

☒ Stacked with CHEM A650

Signature Cross-Listed Coordination

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

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

Impacted Program/Course	*Catalog Page(s) Impacted*	*Date of Coordination*	*Chair/Coordinator Contacted*
1. B.S. Chemistry		2/22/2013	Eric Holmberg
2. CHEM 450 course listing	p. 390	2/22/2013	Eric Holmberg
3. B.S. Environment and Society	p. 109	10/3/2013	Dorn Dommelen
4. Minor Environmental Studies	p 109	10/3/2013	Dorn Dommelen
5. B.S. Natural Sciences	p. 126	10/3/2013	Fred Rainey
6. M.S. AEST	p. 335	10/3/2013	Osama Abaza

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.

Initiator (faculty only)	Date	☐ Approved ☐ Disapproved	Dean/Director of School/College — Date
John M. Kennish Initiator (TYPE NAME)			
☐ Approved ☐ Disapproved	Department Chairperson — Date	☐ Approved ☐ Disapproved	Undergraduate/Graduate Academic Board Chairperson — Date
☐ Approved ☐ Disapproved	Curriculum Committee Chairperson — Date	☐ Approved ☐ Disapproved	Provost or Designee — Date

Course Content Guide for **CHEM A450**

University of Alaska Anchorage

College of Arts & Sciences

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

II. **Course Information**:

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

B. **Course Subject**: CHEM

C. **Course Number**: A450

D. **Number of Credits**: 3

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

F. **Course Title**: Environmental Chemistry

G. **Grading Basis**: A – F

H. **Implementation Date**: Fall 2013

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

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

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

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

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

N. **Registration Restrictions**: Instructor approval required.

O. **Course Fee**: No

P. **Stacked With**: CHEM A650

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

A. **Instructional Goals**:

The instructor will:

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

B. **Student Learning Outcomes**:

Student Learning Outcomes Students will:	Assessment Methods
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.	Assigned problems and Exam
Use quantitative chemical principles to evaluate the interrelationships of anthropomorphic influences on changes occurring in the atmosphere, hydrosphere and biosphere.	Assigned problems and Exam
Demonstrate appropriate ability to communicate problems and verify solutions.	Assigned problems and Exam
Design and submit a written research proposal testing a hypothesis answering a specific question concerning a current contamination mechanism.	Research Proposal

IV. Course Activities

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

V. Guidelines for Evaluation

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

VI. Course Level Justification

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

VII. Course Outline

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

VIII. Suggested Text

Spiro, T.G. and Stigliani, W.M., *Chemistry of the Environment,* 2nd ed. *Prentice Hall*, 2003.

IX. Bibliography

1. Brasseur, G.P., Orlando, J.J., and Tyndall, G.S., *Atmospheric Chemistry and Global Change*. Oxford University Press, 1999.

2. Hemond, H.F. and Fechner-Levy, E.J., *Chemical Fate and Transport in the Environment*, 2nd ed. Academic Press, 2000.

3. Pankow, J.F., *Aquatic Chemistry Concepts*. Lewis Publishers, 1991.

4. Schwarzenbach, R.P., Gschwend, P.M., and Imboden, D.M., *Environmental Organic Chemistry,* 2nd Ed. Wiley Interscience, 2003.

5. Stumm, W. and Morgan, J.J., *Aquatic Chemistry*. Wiley Interscience, 1996.

6. Thibodeaux, L.J., *Environmental Chemodynamics*. Wiley Interscience, 1996.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A650	reinstate	3	(3+0)

6. Complete Course Title
Advanced Environmental Chemistry
Adv 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 *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☒ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☒ Registration Restrictions

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with
☒ Stacked with CHEM A450
Signature Cross-Listed Coordination

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

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

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

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

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

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

15. Course Description *(suggested length 20 to 50 words)*
Detailed examination of structure and function of 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. Special Note: Not available for credit to students who have taken CHEM A450.

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

16b. Test Score(s)

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

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

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

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
John M. Kennish
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chairperson Date

☐ Approved
☐ Disapproved Curriculum Committee Chairperson Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chairperson Date

☐ Approved
☐ Disapproved Provost or Designee Date

Course Content Guide for **CHEM A650**

University of Alaska Anchorage

College of Arts & Sciences

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

II. **Course Information**:

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

B. **Course Subject**: CHEM

C. **Course Number**: A650

D. **Number of Credits**: 3

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

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

G. **Grading Basis**: A – F

H. **Implementation Date**: Spring 2014

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

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

K. **Prerequisites**: N/A

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

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

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

O. **Course Fee**: No

P. **Stacked With**: CHEM A450

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

A. **Instructional Goals**:

The instructor will:

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

B. **Student Learning Outcomes**:

Student Learning Outcomes Students will:	Assessment Methods
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.	Assigned problems and Exam
Use quantitative chemical principles to evaluate the interrelationships of anthropomorphic influences on changes occurring in the atmosphere, hydrosphere and biosphere.	Assigned problems and Exam
Communicate problems and verify solutions.	Assigned problems and Exam
Students will be able to propose a hypothesis and design a research proposal that addresses a specific question concerning a current contamination mechanism.	Research Proposal

Students will be able to make in-class presentation of their proposals	Presentation

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**

Spiro, T.G., Purvis-Roberts, K.L. and Stigliani, W.M., *Chemistry of the Environment,* 3rd ed. *University Science Books, 2011*.

IX. **Bibliography**

1. Brasseur, G.P., Orlando, J.J., and Tyndall, G.S., *Atmospheric Chemistry and Global Change*. Oxford University Press, 1999.

2. Brezonik, P.L.; Arnold, W.A. Water Chemistry: An Introduction to the Chemistry of Natural and Engineered Systems, Oxford University Press. 2011.

3. Hemond, H.F. and Fechner-Levy, E.J., *Chemical Fate and Transport in the Environment*, 2nd ed. Academic Press, 2000.

4. Houghton, J., Global Warming: The Complete Briefing, 4th Edition, Cambridge University Press, 2009.

3. Pankow, J.F., *Aquatic Chemistry Concepts*. Lewis Publishers, 1991.

8. Seinfeld, J.H. and Pandis, S. Atmospheric Chemistry and Physics: From Air pollution to Climate Change, 2nd Edition, 2006, Wiley.

4. Schwarzenbach, R.P., Gschwend, P.M., and Imboden, D.M., *Environmental Organic Chemistry,* 2nd Ed. Wiley Interscience, 2003.

5. Stumm, W. and Morgan, J.J., *Aquatic Chemistry*. Wiley Interscience, 1996.

6. Thibodeaux, L.J., *Environmental Chemodynamics*. Wiley Interscience, 1996.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A477	N/A	5	(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 *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions
- ☐ General Education Requirement

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with

☒ Stacked with CHEM A677

Signature Cross-Listed Coordination

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

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. B.S. Chemistry	2/22/2013	Eric Holmberg
2. Chem A312	2/22/2013	Eric Holmberg
3. Chem A441	2/22/2013	Eric Holmberg

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) Date
Mark McCoy
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 A477**

University of Alaska Anchorage

College of Arts & Sciences

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

II. **Course Information:**

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

B. **Course Subject:** CHEM

C. **Course Number:** A477

D. **Number of Credits:** 5

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

F. **Course Title:** Bioanalytical Chemistry

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

H. **Implementation Date:** Fall 2013

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

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

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

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

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

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

O. **Course Fee:** Yes

P. **Stacked with:** CHEM A677

III. Instructional Goals and Student Learning Outcomes:

A. Course Activities:

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

B. Instructional Goals:

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

The instructor will:

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

C. Student Learning Outcomes:

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

The student will:

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

D. **Guidelines for Assessment and Evaluation:**

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

IV. Course Level Justification:

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

V. Topical Course Outline:

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

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

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

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

b. Whole proyein 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:

1. Gault, V., McClenaghan, N., *Understanding Bioanalytical Chemistry*, John Wiley & Sons, 2009.

2. Manz, A., Pamme, N., Lossifidis, D., *Bioanalytical Chemistry,* Imperial College Press, 2004.

3. Mikkelsen, S.R., Corton, E., *Bioanalytical Chemistry*, Wiley-Interscience, 2004.

VII. Bibliography:

1. Cunico, R.L., Gooding, K.M., Wehr, T., *Basic HPLC and CE of Biomolecules*, Bay Bioanalytical Laboratory, 1998.

2. Harris, D.C., *Quantitative Chemical Analysis.* W.H. Freeman and Company, 2010.

3. Hermenson, G.T., *Bioconjugate Techniques*, Academic Press, 2008.

4. Rubinson, K.A., Rubinson, J.F., *Contemporary Instrumental Analysis*, Prentice Hall, 1999.

5. Skoog, D.A., Holler, F.J., Crouch, S.R., *Principles of Instrumental Analysis*, Brooks Cole Publishers, 2006.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A677	N/A	5	(3+6)

6. Complete Course Title
Advanced Bioanalytical Chemistry
Adv 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 *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions
- ☐ General Education Requirement

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with
☒ Stacked with CHEM A477 _____ Cross-Listed Coordination
Signature

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. Interdisciplinary Masters Program	8/28/13	
2.		
3.		

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) Date
Mark McCoy
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 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:

1. Gault, V., McClenaghan, N., *Understanding Bioanalytical Chemistry*, John Wiley & Sons, 2009.

2. Manz, A., Pamme, N., Lossifidis, D., *Bioanalytical Chemistry*, Imperial College Press, 2004.

3. Mikkelsen, S.R., Corton, E., *Bioanalytical Chemistry*, Wiley-Interscience, 2004.

VII. Bibliography:

1. Cunico, R.L., Gooding, K.M., Wehr, T., *Basic HPLC and CE of Biomolecules*, Bay Bioanalytical Laboratory, 1998.

2. Harris, D.C., *Quantitative Chemical Analysis.* W.H. Freeman and Company, 2010.

3. Hermenson, G.T., *Bioconjugate Techniques*, Academic Press, 2008.

4. Skoog, D.A., Holler, F.J., Crouch, S.R., *Principles of Instrumental Analysis*, Brooks Cole Publishers, 2006.

5. Rubinson, K.A., Rubinson, J.F., *Contemporary Instrumental Analysis*, Prentice Hall, 1999.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A480	N/A	3	(3+0)

6. Complete Course Title
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 *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with

☒ Stacked with CHEM A680

Signature Cross-Listed Coordination

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

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. MATH A201	2/26/2013	Sam Thiru
2. CHEM A411	2/22/2013	Eric Holmberg
3. PHYS A212	2/22/2013	Jim Pantaleone

Initiator Name (typed): Vugmeyster 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)*
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

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 class for science majors due to student demand.

Initiator (faculty only) Date
Vugmeyster
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 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:

Student Learning Outcomes Students will:	Assessment Methods
Demonstrate understanding of principles of nuclear magnetic resonance spectroscopy.	Quizzes, Exams
Demonstrate knowledge of main experimental approaches to NMR.	Quizzes, Exams
Demonstrate critical thinking in applying spectroscopic principles to problems in biological and earth sciences.	Oral presentations, Quizzes

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 bio-molecular structure and function, protein folding, metabolomics, and advanced analysis of soil matrix.

VIII. Suggested Text

1. Freeman Ray, *Spin Choreography: Basic Steps in High Resolution NMR*, New Edition, Oxford University Press 2004. 1st Edition 1998.

IX. Bibliography

1. Cavanagh John, Fairbrother Wayne J., Palmer III Arthur G., Skelton Nicholas J., Editors, *Protein NMR Spectroscopy: Principles and Practice*, 2nd Edition, Academic Press 2006.

2. Duer Melinda J., *Introduction to Solid-State NMR Spectroscopy*, Blackwell Publishers 2005.

3. Szyperski Thomas, Atreya Hanudatta S., *Projection NMR Spectroscopy: Theory and Applications*, World Scientific Publishing Company, April 2012.

4. Teng Quincy, *Structural Biology: Practical NMR Applications*, Springer Verlag 2005.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A680		3	(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 *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions

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
Signature

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. Interdisciplinary Masters Program	08/29/2013	
2.		
3.		

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 Mmgnetic 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
Vugmeyster
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 A680**

University of Alaska Anchorage

College of Arts and Sciences

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

II. **Course Information**

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

B. **Course Subject**: CHEM

C. **Course Number**: A680

D. **Number of Credits**: 3

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

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

G. **Grading Basis**: A – F

H. **Implementation Date**: Spring 2014

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

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

K. **Prerequisites**: N/A

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

M. **Corequisites**: N/A

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

O. **Course Fee**: No

P. **Stacked With**: CHEM A480

III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

The Instructor will:

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

B. Student Learning Outcomes:

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

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 bio-molecular 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

1. Freeman Ray, *Spin Choreography: Basic Steps in High Resolution NMR*, New Edition, Oxford University Press 2004.

IX. Bibliography

1. Cavanagh John, Fairbrother Wayne J., Palmer III Arthur G., Skelton Nicholas J., Editors, *Protein NMR Spectroscopy: Principles and Practice*, 2nd Edition, Academic Press 2006.

2. Duer Melinda J., *Introduction to Solid-State NMR Spectroscopy*, Blackwell Publishers 2005.

3. Szyperski Thomas, Atreya Hanudatta S., *Projection NMR Spectroscopy: Theory and Applications*, World Scientific Publishing Company, April 2012.

4. Teng Quincy, *Structural Biology: Practical NMR Applications*, Springer Verlag 2005.

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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A490	N/A	1-3	(1-3+0)

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: ☒ 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 CCG (please specify)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions

9. Repeat Status Yes # of Repeats 11 Max Credits 12

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with
☒ Stacked with CHEM A690
Signature Cross-Listed Coordination

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

Impacted Program/Course	*Catalog Page(s) Impacted*	*Date of Coordination*	*Chair/Coordinator Contacted*
1. B.S. Chemistry		2/22/2013	Eric Holmberg
2.			
3.			

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

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

13c. Coordination with Library Liaison Date:

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

15. Course Description *(suggested length 20 to 50 words)*
Detailed coverage of a selected lecture topic in chemistry presented at a breadth and depth appropriate for undergraduate studies. Activities will vary according to the topic. Exposure to the topic will rely principally on text, lecture, and directed review of selected articles in the literature. For students in chemistry and allied fields. Special Notes: See schedules for specific subtitles to be offered. With changes in subtitles, course may be repeated for credit although course prerequisites and corequisites may vary with topic.

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

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

18. ☒ 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 Department Chairperson Date

☐ Approved
☐ Disapproved Curriculum Committee Chairperson Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chairperson Date

☐ Approved
☐ Disapproved Provost or Designee Date

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

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

II. **Course Information**

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

B. **Course Subject**: CHEM

C. **Course Number:** A490

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

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

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

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

H. **Implementation Date:** Fall 2013

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

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

K. **Prerequisites**: N/A

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

M. **Corequisites:** N/A

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

O. **Course Fee:** No

P. **Stacked With**: CHEM A690

III. Instructional Goals and Student Learning Outcomes

A. Instructional Goals:

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

The instructor will:

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

B. Student Learning Outcomes:

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

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

IV. **Course Activities**:

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

V. **Guidelines for Evaluation**

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

VI. **Course Level Justification**

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

VII. **Topic Course Outline**

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

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

VIII. **Suggested Texts**

1. Garrett, R.H. and Grisham, C.M., *Biochemistry*, 4th ed. Brooks Cole, 2008.
2. Voet, D., Voet, J.G. and Pratt, C.W., *Fundamentals of Biochemistry: Life at the Molecular Level*, 3rd ed. Wiley, 2008.
3. Voet, D. and Voet, J.G., *Biochemistry*, 4th ed. Wiley, 2010.
4. Vranken, D.V. and Weiss, G., *Introduction to Bioorganic Chemistry and Chemical Biology*. Garland Science, 2012.
5. Wade, L.G., *Organic Chemistry*,8th ed. Pearson, 2012.

IX. **Bibliography**

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P., *Molecular Biology of the Cell*. Garland Publishing, 2002.
2. Fersht, A., *Structure and Mechanism in Protein Science: A Guide to Enzyme Catalysis and Protein Folding*. W.H. Freeman and Company, 1999.
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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A690	N/A	1-3	(1-3+0)

6. Complete Course Title
Advanced Lecture Topics in Chemistry
Adv Lecture Topics 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
- ☐ Title
- ☐ Grading Basis
- ☐ Course Description
- ☐ Test Score Prerequisites
- ☐ Other Restrictions
  - ☐ Class ☐ Level
  - ☐ College ☐ Major
- ☐ Other CCG (please specify)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions

9. Repeat Status Yes # of Repeats 11 Max Credits 12

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

11. Implementation Date semester/year
From: Spring/2014 To: 00/9999

12. ☐ Cross Listed with
☒ Stacked with CHEM A490
Signature Cross-Listed Coordination

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

Impacted Program/Course	*Catalog Page(s) Impacted*	*Date of Coordination*	*Chair/Coordinator Contacted*
1. Interdisciplinary Masters Program		08/28/2013	
2.			
3.			

Initiator Name (typed): Colin McGill 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 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.

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

16b. Test Score(s)

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

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

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

17. ☐ Mark if course has fees

18. ☒ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Colin McGill
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chairperson Date

☐ Approved
☐ Disapproved Curriculum Committee Chairperson Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chairperson Date

☐ Approved
☐ Disapproved Provost or Designee Date

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.

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

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

1. Garrett, R.H. and Grisham, C.M., *Biochemistry*, 4th ed. Brooks Cole, 2008.
2. Voet, D. and Voet, J.G., *Biochemistry*, 4th ed. Wiley, 2010.
3. Voet, D., Voet, J.G. and Pratt, C.W., *Fundamentals of Biochemistry: Life at the Molecular Level*, 3rd ed. Wiley, 2008.
4. Vranken, D.V. and Weiss, G., *Introduction to Bioorganic Chemistry and Chemical Biology*. Garland Science, 2012.
5. Wade, L.G., *Organic Chemistry*,8th ed. Pearson, 2012.

IX. Bibliography

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P., *Molecular Biology of the Cell*. Garland Publishing, 2002.
2. Fersht, A., *Structure and Mechanism in Protein Science: A Guide to Enzyme Catalysis and Protein Folding*. W.H. Freeman and Company, 1999.
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

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

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
CHEM	A495	N/A	3	(0+9)

6. Complete Course Title
Chemistry Internship

Abbreviated Title for Transcript (30 character)

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

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

If a change, mark appropriate boxes:

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

9. Repeat Status Yes # of Repeats 1 Max Credits 6

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with
☐ Stacked with

Cross-Listed Coordination Signature

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

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. B.S. Chemistry	2/22/2013	Eric Holmberg
2.		
3.		

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

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)*
Junior or senior standing and Department Chair approval.

17. ☐ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
John M. Kennish
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

☐ 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 A495**

University of Alaska Anchorage

College of Arts and Sciences

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

II. **Course Information**

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

B. **Course Subject**: CHEM

C. **Course Number**: A495

D. **Number of Credits**: 3

E. **Contact Hours**: 0+9

F. **Course Title**: Chemistry Internship

G. **Grading Basis**: A – F

H. **Implementation Date**: Fall 2013

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

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

K. **Prerequisites**: None.

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

M. **Corequisites**: N/A

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

O. **Course Fee**: No

III. Instructional Goals and Defined Student Outcomes

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

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

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

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

C. The internship will provide a program orientation.

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

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

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

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

The Student will:
- Gain clear understanding of his/her employment responsibilities.
- Help define his/her course/employment objectives.
- Gain understanding of the employer's role in this process.

- Gain approval from the Chemistry Faculty Internship Coordinator underwriting the academic value of the proposed internship objectives.

F. The internship will provide practical learning experience.

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

IV. Evaluation

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

Criteria for Grading:

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

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

C. To receive a grade of C:
- Job performance as evaluated by the on-the-job review and Technical Report as evaluated by the Faculty Coordinator must both be scored as average.

- Individual improvement - must demonstrate average mastery of on-the-job techniques.
- Individual improvement in writing skills - must demonstrate average mastery of report writing.

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

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

V. Course Level Justification

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

VI. Outline

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

B. Interview Process and Selection
- Student interview.

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

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

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

VII. Suggested Text and Bibliography

Not applicable.

DATE December 20, 2012

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

RE: B.S. Chemistry/Biochemistry Option Change

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

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

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

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

1a. School or College	1b. Department
AS CAS	Chemistry

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

3. Type of Program

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

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

4. Type of Action:

PROGRAM	PREFIX
☐ Add	☐ Add
☒ Change	☐ Change
☐ Delete	☐ Inactivate

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

6a. Coordination with Affected Units Department, School, or College: Math, Biological Sciences, Physics

Initiator Name (typed): Eric Holmberg Initiator Signed Initials: _____
Date:_____

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

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

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

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

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

Initiator (faculty only) Date

Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chair Date

☐ Approved
☐ Disapproved Provost or Designee Date

1. A total of 122-125 credits is required for the degree, 42 credits of which must be upper division.

Bachelor of Science, Natural Sciences

The Department of Biological Sciences also oversees the Bachelor of Science in Natural Sciences. This curriculum emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree, and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation. Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

For a complete program description see the Natural Sciences section of this chapter.

Minor, Biological Sciences

Students majoring in another subject who wish to minor in Biological Sciences must complete the following requirements. A total of 28 credits is required for the minor, 12 of which must be upper division.

BIOL A115	Fundamentals of Biology I	4
BIOL A116	Fundamentals of Biology II	4
BIOL A242	Fundamentals of Cell Biology	4
BIOL A252	Principles of Genetics	4
Upper division Biological Sciences electives		12

FACULTY

Lilian Alessa, Professor, lalessa@uaa.alaska.edu
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Jonathan Stecyk, Assistant Professor
Bjartmar Sveinbjörnsson, Professor, bsveinbjornsson@uaa.alaska.edu
Ian van Tets, Associate Professor, igvantets@uaa.alaska.edu
Frank von Hippel, Professor, favonhippel@uaa.alaska.edu

CHEMISTRY

ConocoPhillips Integrated Sciences Building (CPSB), Room 101Q, (907) 786-1238
www.uaa.alaska.edu/chemistry

Chemistry is the science concerned with substances and their properties, composition, and reactions. Recent advances in chemistry have exerted a profound influence on the progress of medicine, agriculture, industry, and commerce.

The undergraduate courses in Chemistry offered at UAA are designed primarily to provide a broad knowledge of the field as a part of the program of liberal education offered by the College of Arts and Sciences. They are also designed to provide a substantial foundation in chemistry for students interested in post-graduate studies in chemistry or the other sciences, preparation for professional degrees, teaching, or a career in government or industry. Students majoring in Chemistry will meet basic course requirements in inorganic, analytical, organic, physical chemistry and biochemistry.

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

High School Preparation

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

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

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

Program Student Learning Outcomes

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

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

Honors in Chemistry

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

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

Bachelor of Science, Chemistry

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Academic Progress

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

Graduation Requirements

Students must complete the following graduation requirements:

A. General University Requirements

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

B. General Education Requirements

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

D. Major Requirements

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

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

Chemistry Option (82-83 credits)

Complete the following required courses:

BIOL A115	Fundamentals of Biology I	4
CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A253	Principles of Inorganic Chemistry	3
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A331	Physical Chemistry I	3
CHEM A332	Physical Chemistry II	3
CHEM A333L	Physical Chemistry Laboratory	2
CHEM A434	Instrumental Methods	5
CHEM A441	Principles of Biochemistry I	3
CHEM A453	Advanced Inorganic Chemistry	5
CHEM A492	Undergraduate Seminar (1)	2
CHEM A498	Individual Research (3)	6
MATH A200	Calculus I	4
MATH A201	Calculus II	4
MATH A202	Calculus III	4
MATH A314	Linear Algebra	3
PHYS A211	General Physics I	3
PHYS A211L	General Physics I Laboratory	1
PHYS A212	General Physics II	3
PHYS A212L	General Physics II Laboratory	1

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

BIOL A310	Principles of Physiology (3)
BIOL A415	Comparative Animal Physiology (4)
BIOL A461	Molecular Biology (3)
CHEM A442	Principles of Biochemistry II (3)
CHEM A450	Environmental Chemistry (3)

CHEM A456	Non-linear Dynamics and Chaos (3)
CHEM A460	Chemical Ecotoxicology (3)
CHEM A471	Immunochemistry (4)
GEOL A321	Mineralogy (4)
GEOL A360	Geochemistry (3)
GEOL A460	Environmental Geochemistry (3)
MATH A302	Ordinary Differential Equations (3)
MATH A422	Partial Differential Equations (3)
PHYS A303	Modern Physics (3)
PHYS A320	Simulation of Physical Systems (3)
PHYS A403	Quantum Mechanics (3)
PHYS A413	Statistical Methods (3)

Biochemistry Option (87 credits)

Complete the following required courses:

BIOL A115	Fundamentals of Biology I	4
BIOL A116	Fundamentals of Biology II	4
BIOL A242	Fundamentals of Cell Biology	4
BIOL A252	Principles of Genetics	4
BIOL A461	Molecular Biology	3
CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A253	Principles of Inorganic Chemistry	3
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A311	Physical Chemistry/Biological Orientation	3
	or	
CHEM A331	Physical Chemistry I	3
CHEM A441	Principles of Biochemistry I	3
CHEM A442	Principles of Biochemistry II	3
CHEM A443	Biochemistry Laboratory	2
CHEM A492	Undergraduate Seminar (1)	2
CHEM A498	Individual Research (3)	6
MATH A200	Calculus I	4
MATH A201	Calculus II	4
(either Physics sequence)		
PHYS A123	Basic Physics I	3
PHYS A123L	Basic Physics I Lab	1
PHYS A124	Basic Physics II	3
PHYS A124L	Basic Physics II Lab	1
	or	
PHYS A211	General Physics I	3
PHYS A211L	General Physics I Laboratory	1
PHYS A212	General Physics II	3
PHYS A212L	General Physics II Laboratory	1
Upper Division Elective (choose from the following)		*9*
BIOL A310	Principals of Physiology (3)	
BIOL A340/L	General Microbiology (5)	

BIOL A415	Comparative Animal Physiology (3)
BIOL A451	Applied Microbiology (3)
BIOL A452	Human Genome (3)
BIOL A461L	Molecular Biology Lab (1)
BIOL A462	Virology (3)
BIOL A471	Immunochemistry (4)
BIOL A488	Developmental Biology (4)
CHEM A332	Physical Chemistry II (3)
CHEM A333L	Physical Chemistry Lab (1)
CHEM A434	Instrumental Methods (5)
CHEM A450	Environmental Chemistry (3)
CHEM A453	Adv Inorganic Chemistry (5)
CHEM A460	Chemical Ecotoxicology (3)
CHEM A471	Immunochemistry (4)

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

Minor, Chemistry

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

CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A311	Physical Chemistry:	3
	A Biological Orientation (3)	
	or	
CHEM A331	Physical Chemistry I (3)	

FACULTY

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Liliya Vugmeyster, Assistant Professor, lvugmeyster@uaa.alaska.edu

1. A total of 122-125 credits is required for the degree, 42 credits of which must be upper division.

Bachelor of Science, Natural Sciences

The Department of Biological Sciences also oversees the Bachelor of Science in Natural Sciences. This curriculum emphasizes the interrelationships among the sciences. A program of study in the Natural Sciences requires that students select an option within the degree, and complete all courses required within the option, as well as sufficient science elective courses to meet minimum unit requirements for graduation. Students accepted into this flexible degree program select one of three options: the General Sciences Option is designed for students who are interested in understanding the interrelationships among various scientific fields, or in teaching science at the secondary level. The Pre-Health Professions Option is designed to meet the admission requirements of specific professional schools in medicine, dentistry, and veterinary medicine. The Environmental Sciences Option is designed to prepare students for graduate school or for employment in the private or public sector.

For a complete program description see the Natural Sciences section of this chapter.

Minor, Biological Sciences

Students majoring in another subject who wish to minor in Biological Sciences must complete the following requirements. A total of 28 credits is required for the minor, 12 of which must be upper division.

BIOL A115	Fundamentals of Biology I	4
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BIOL A242	Fundamentals of Cell Biology	4
BIOL A252	Principles of Genetics	4
Upper division Biological Sciences electives		12

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CHEMISTRY

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

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

Program Student Learning Outcomes

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

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

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Honors in Chemistry

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

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

Bachelor of Science, Chemistry

Admission Requirements

Complete the Admission to Baccalaureate Programs Requirements in Chapter 7.

Academic Progress

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

Graduation Requirements

Students must complete the following graduation requirements:

A. General University Requirements

Complete the General University Requirements for All Baccalaureate Degrees located at the beginning of this chapter.

B. General Education Requirements

Complete the General Education Requirements for Baccalaureate Degrees listed at the beginning of this chapter.

C. College of Arts and Sciences Requirements

Complete the College of Arts and Sciences Requirements listed at the beginning of the CAS section.

D. Major Requirements

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

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

Chemistry Option (82-83 credits)

Complete the following required courses:

BIOL A115	Fundamentals of Biology I	4
CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A253	Principles of Inorganic Chemistry	3
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A331	Physical Chemistry I	3
CHEM A332	Physical Chemistry II	3
CHEM A333L	Physical Chemistry Laboratory	2
CHEM A434	Instrumental Methods	5
CHEM A441	Principles of Biochemistry I	3
CHEM A453	Advanced Inorganic Chemistry	5
CHEM A492	Undergraduate Seminar (1)	2
CHEM A498	Individual Research (3)	6
MATH A200	Calculus I	4
MATH A201	Calculus II	4
MATH A202	Calculus III	4
MATH A314	Linear Algebra	3
PHYS A211	General Physics I	3
PHYS A211L	General Physics I Laboratory	1
PHYS A212	General Physics II	3
PHYS A212L	General Physics II Laboratory	1
Upper Division Elective (choose one of the following)		*3-4*

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

Biochemistry Option (~~86~~ 87 credits)

Complete the following required courses:

BIOL A115	Fundamentals of Biology I	4
BIOL A116	Fundamentals of Biology II	4
BIOL A242	Fundamentals of Cell Biology	4
BIOL A252	Principles of Genetics	4
~~*Upper Division Biology (choose one of the following)*~~		~~3-4~~
~~BIOL A310~~	~~Principles of Physiology (3)~~	
	~~or~~	
~~BIOL A415~~	~~Comparative Animal Physiology (4)~~	
	~~or~~	
BIOL A461	Molecular Biology ~~(3)~~	3
CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A253	Principles of Inorganic Chemistry	3
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A311	Physical Chemistry/Biological Orientation	3
	or	
CHEM A331	Physical Chemistry I	3
~~CHEM A434~~	~~Instrumental Methods~~	~~5~~
CHEM A441	Principles of Biochemistry I	3
CHEM A442	Principles of Biochemistry II	3
CHEM A443	Biochemistry Laboratory	2
CHEM A492	Undergraduate Seminar (1)	2
CHEM A498	Individual Research (3)	6
MATH A200	Calculus I	4
MATH A201	Calculus II	4
~~MATH A202~~	~~Calculus III~~	~~4~~
(either Physics sequence)		
PHYS A123	Basic Physics I	3

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PHYS A123L	Basic Physics I Lab	1
PHYS A124	Basic Physics II	3
PHYS A124L	Basic Physics II Lab	1
	or	
PHYS A211	General Physics I	3
PHYS A211L	General Physics I Laboratory	1
PHYS A212	General Physics II	3
PHYS A212L	General Physics II Laboratory	1

Upper Division Elective (choose from the following)		*9*
BIOL A310	Principals of Physiology (3)	
BIOL A340/L	General Microbiology (5)	
BIOL A415	Comparative Animal Physiology (3)	
BIOL A451	Applied Microbiology (3)	
BIOL A452	Human Genome (3)	
BIOL A461L	Molecular Biology Lab (1)	
BIOL A462	Virology (3)	
BIOL A471	Immunochemistry (4)	
BIOL A488	Developmental Biology (4)	
CHEM A332	Physical Chemistry II (3)	
CHEM A333L	Physical Chemistry Lab (1)	
CHEM A434	Instrumental Methods (5)	
CHEM A450	Environmental Chemistry (3)	
CHEM A453	Adv Inorganic Chemistry (5)	
CHEM A460	Chemical Ecotoxicology (3)	
CHEM A471	Immunochemistry (4)	

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

Minor, Chemistry

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

CHEM A105	General Chemistry I	3
CHEM A105L	General Chemistry I Laboratory	1
CHEM A106	General Chemistry II	3
CHEM A106L	General Chemistry II Laboratory	1
CHEM A312	Quantitative Analysis	5
CHEM A321	Organic Chemistry I	3
CHEM A322	Organic Chemistry II	3
CHEM A323L	Organic Chemistry Laboratory	2
CHEM A311	Physical Chemistry:	3
	A Biological Orientation (3)	
	or	
CHEM A331	Physical Chemistry I (3)	

FACULTY

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Colin McGill, Assistant Professor, cmmcgill@uaa.alaska.edu
Mark McCoy, Assistant Professor, mrmccoy@uaa.alaska.edu
Liliya Vugmeyster, Assistant Professor, ~~AFLV@uaa.alaska.edu~~ lvugmeyster@uaa.alaska.edu

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

1a. School or College	1b. Division	1c. Department
AS CAS	AFAR Division of Fine Arts	ART

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
ART	A270	NA	3	(0+6)

6. Complete Course Title
Beginning Alaska Native Art

Abbreviated Title for Transcript (30 character)

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

8. Type of Action: ☐ Add *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 Update CCG (please specify)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☒ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions
- ☐ General Education Requirement

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☐ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with _____ Cross-Listed

☒ Stacked with ART A370 & ART A470
Coordination Signature

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. BA ART	9/20/2013	Mariano Gonzales
2. ART A370	9/20/2013	Mariano Gonzales
3.		

Initiator Name (typed): Deborah Tharp Initiator Signed Initials: _____ Date:_____

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

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

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

15. Course Description *(suggested length 20 to 50 words)*
Exposure to and application of indigenous production, rhythms, and attitudes toward making carved art objects. Investigate Alaska Native art history, oral experience, and lifeways. Emphasis on the development of a personal aesthetic and creative design.

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

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

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

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

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Deborah Tharp
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chair Date

☐ Approved
☐ Disapproved Provost or Designee Date

UNIVERSITIY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: September 2013

II. Course Information

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

III. Course Activities

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

IV. Evaluation

Evaluation procedures are at the discretion of the instructor and will be discussed at the first class meeting of the semester. Students will be evaluated on class projects, personal progress, attendance, and class participation. Progress and development will vary with individual students depending on previous skills, creativity and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):

1. Scholarship/Research: Strong, exceeding all instructor requirements
2. Initiative: Contributions exceed assignments and demonstrate resourcefulness
3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing

To receive a grade of B (Above Average):

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

To receive a grade of C (Average):

1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

To receive a grade of D (Below Average, but Passing):

1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

To receive a grade of F (Failure):

1. Majority of work unacceptable or missing

V. Course Level Justification

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

VI. Outline

A. Survey of Alaska Native art history and material culture
   1. Visual survey of Alaskan Native Art
      a. Prehistoric works to current trends in Alaskan art
   2. Carving history
      a. Regional application of resources and carving styles
      b. Carving techniques used by contemporary artists and works

B. Introduction to carving tools
   1. Traditional tools used in the studio
      a. Crooked knives, carving applications, safety habits, and sharpening procedures
      b. Carving adzes, application of tool safety, and sharpening procedures
   2. Contemporary tools and equipment used in the studio

D. Material resources for carving
   1. Survey of indigenous woods such as birch and alder used in carving
   2. Selection and harvesting of materials during the appropriate season

E. Carving techniques and procedures
   1. Fabrication methods and design approaches
      a. Learn about wood grain direction for carving purposes

b. Roughing out projects with an adze
c. Develop projects with crooked knives
d. Design using additive and subtractive approaches

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

VII. Instructional Goals and Student Learning Outcomes

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

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

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

VIII. Suggested Texts

Cory, Peter. *Faces, Voices, and Dreams: A Celebration of the Centennial of the Sheldon Jackson Museum 1888-1988.* Seattle, WA: University of Washington Press, 1987.

Crowel, Avon. *Living Our Cultures, Sharing Our Heritage, The First Peoples of Alaska.* Washington, D.C.: Smithsonian Institution Press, 2010.

Fair, Susan W. *Alaska Native Art: Tradition, Innovation, Continuity.* Fairbanks, AK: University of Alaska Press, 2006.

Fitzhugh, William, and Avon Crowell. *Crossroads of Continents: Cultures of Siberia and Alaska.* Washington, D.C.: Smithsonian Institution Press, 1988.

Fitzhugh, William, and Susan Kaplan. *Inua: Spirit World of the Bering Sea Eskimo.* Washington, D.C.: Smithsonian Institution Press, 1982 Institution Press.

Hall, Barbara, and Kate Ducan. Out of the North. Bristol, MA: Brown University, 1989.

Ray, Dorothy Jean. *Aleut and Eskimo Art.* Seattle, WA: University of Washington Press, 1980.

IX. Resources

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

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

1a. School or College	1b. Division	1c. Department
AS CAS	AFAR Division of Fine Arts	ART

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
ART	A370	NA	3	(0+6)

6. Complete Course Title
Intermediate Alaska Native Art

Abbreviated Title for Transcript (30 character)

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

8. Type of Action: ☐ Add *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 Update CCG (please specify)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☒ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions
- ☐ General Education Requirement

9. Repeat Status No # of Repeats Max Credits

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with _____ Cross-Listed

☒ Stacked with ART A270 & ART A470
Coordination Signature

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. BA ART	9/20/13	Mariano Gonzales
2. ART A270	9/20/13	Mariano Gonzales
3.		

Initiator Name (typed): Deborah Tharp Initiator Signed Initials: _____ Date:_____

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

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

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

15. Course Description *(suggested length 20 to 50 words)*
Workshops and presentations by visiting elders/artists will be used to explore the unique methods of indigenous production and the cultural heritage of the visiting elder/artist. Students will apply the techniques, design principles and materials of the visiting elder/artist to their projects as a point of departure to develop a personal aesthetic and creative approach to making carved objects.

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

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

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

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

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Deborah Tharp
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chair Date

☐ Approved
☐ Disapproved Provost or Designee Date

UNIVERSITIY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: September 2013

II. Course Information

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

III. Course Activities

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

IV. Evaluation

Evaluation procedures are at the discretion of the instructor and will be discussed at the first class meeting of the semester. Students will be evaluated on class projects, personal progress, participation in class and workshops, and attendance, Progress and development will vary with individual students depending on previous skills, creativity, artistic risk-taking, and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):

1. Scholarship/Research: Strong, exceeding all instructor requirements
2. Initiative: Contributions exceed assignments and demonstrate resourcefulness

3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing

To receive a grade of B (Above Average):

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

To receive a grade of C (Average):

1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

To receive a grade of D (Below Average, but Passing):

1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

To receive a grade of F (Failure):

1. Majority of work unacceptable or missing

V. Course Level Justification

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

VI. Outline

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

A. Survey of Alaska Native art history and material culture pertinent to the cultural background of the visiting elders/artists and other regional developments
   1. Visual survey of regional Alaska Native Art developments including the visiting elder/artist's cultural background Alaskan Native Art
   2. Carving History relevant to the elders/artist's region
      a. Regional application of resources and carving styles
      b. Carving techniques used by visiting elders/artists and contemporary artists and works

B The importance of visiting Alaskan elders and artists as role models of artistic expression in the Alaskan context

1. Schedule visiting elders and artists for workshop presentations. Will vary from semester to semester.

C. Introduction to carving tools pertinent to the visiting elders/artists and other artists

1. Traditional and contemporary tools used in the studio relevant to the regional characteristics of the visiting elders/artists.

D. Material resources for carving relevant to the visiting elders/artists and other artists

1. Survey of indigenous woods used in carving from the visiting elders/artist's region and other Alaska regions
2. Selection and harvesting of materials during the appropriate season.

E. Carving techniques and procedures of the visiting elders/artists and other artists

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

F. Critical evaluation skills

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

G. Sample teaching plan used by a visiting Cup'ik elder) of Nunivak Island.

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

VII. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The Instructor will:

1. Introduce indigenous materials, fabrication methods, and design principles relevant to the region of the visiting elders/artists

2. Introduce Alaska Native art history with an emphasis on the unique regional characteristics of the visiting elders/artists and his/her cultural background
3. Instruct in the distinctive uses of traditional and contemporary shop tools pertinent to the visiting elders/artist's regional approach to making art and other artists
4. Coordinate workshops and projects with visiting elders, artists, and their technology and art. Elders/artists and workshops will vary from semester to semester
5. Provide student research resources with an emphasis on the region of the visiting elders/artists and other artists. Resources may include, but are not solely limited to using elders, artists, collections, books, audio and visual media

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

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

VIII. Suggested Texts

Duncan, Kate. *Some Warmer Tone: Alaska Athabaskan Bead Embroidery.* Fairbanks, AK: University of Alaska Museum, 1984.

Force, Roland. *Arctic Art: Eskimo Ivory.* New York, NY: The Museum of the American Indian, 1980.

Hoffman, Walter. *The Graphic Art of the Eskimo.* Seattle, WA: Shorey Books, 1974.

Holm, Bill. *North West Coast Indian Art: An Analysis of Form.* Seattle, WA: University of Washington Press, 1965.

Lee, Molly. *Baleen Basketry of the North Alaskan Eskimo.* Fairbanks, AK: University of Alaska Museum, 1983.

Miller, Polly. *Early Contact Glass Trade Beads in Alaska.* Altamonte Springs, FL: Bead Society of Central Florida, 1988.

Murdoch, John. *A Study of Eskimo Bows in the United States National Museum.* Washington, D.C.: Smithsonian Annual Report (Volume 2), 1884.

Samual, Cheryl. *The Chilkat Dancing Blanket.* Norman, OK: University of Oklahoma Press, 1982.

Taylor, Samual. *Wood Benders Handbook.* New York, NY: Sterling Publishing, 2001.

IX. Resources

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

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

1a. School or College	1b. Division	1c. Department
AS CAS	AFAR Division of Fine Arts	ART

2. Course Prefix	3. Course Number	4. Previous Course Prefix & Number	5a. Credits/CEUs	5b. Contact Hours (Lecture + Lab)
ART	A470	NA	3	(0+6)

6. Complete Course Title
Advanced Alaska Native Art

Abbreviated Title for Transcript (30 character)

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

8. Type of Action: ☒ Add *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)
- ☐ Course Number
- ☐ Contact Hours
- ☐ Repeat Status
- ☐ Cross-Listed/Stacked
- ☐ Course Prerequisites
- ☐ Co-requisites
- ☐ Registration Restrictions

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

10. Grading Basis ☒ A-F ☐ P/NP ☐ NG

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

12. ☐ Cross Listed with _____ Cross-Listed

☒ Stacked with ART A270, ART A370
Coordination Signature

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

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

Impacted Program/Course	*Date of Coordination*	*Chair/Coordinator Contacted*
1. BA ART	9/20/2013	Mariano Gonzales
2. ART A270	9/20/13	Mariano Gonzales
3. ART A370	9/20/13	Mariano Gonzales

Initiator Name (typed): Deborah Tharp Initiator Signed Initials: _____ Date:_____

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

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

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

15. Course Description *(suggested length 20 to 50 words)*
Advanced investigation into the development of aesthetics involving indigenous and or contemporary materials. Emphasis will be on research design and execution of works reflecting the Native personal experience. Special Note: Maybe be stacked with ART A270 and ART A370. Can be repeated up to three times. Elders/artists will vary from semester to semester.

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

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

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

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

17. ☒ Mark if course has fees

18. ☐ Mark if course is a selected topic course

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

Initiator (faculty only) Date
Deborah Tharp
Initiator (TYPE NAME)

☐ Approved
☐ Disapproved Department Chair Date

☐ Approved
☐ Disapproved College/School Curriculum Committee Chair Date

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

☐ Approved
☐ Disapproved Undergraduate/Graduate Academic Board Chair Date

☐ Approved
☐ Disapproved Provost or Designee Date

UNIVERSITIY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Initiation Date: September 2013

II. Course Information

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

III. Course Activities

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

IV. Evaluation

Evaluation procedures are at the discretion of the instructor and will be discussed at the first class meeting of the semester. Students will be evaluated on class projects, personal progress, participation in class and workshops, and attendance, Progress and development will vary with individual students depending on previous skills, creativity, artistic risk-taking, and amount of time devoted to projects.

Criteria for Grading

To receive a grade of A (superior):

1. Scholarship/Research: Strong, exceeding all instructor requirements

2. Initiative: Contributions exceed assignments and demonstrate resourcefulness
3. Cooperation: Leader in group activities; constant and spontaneous
4. Individual Improvement: Marked and growing

To receive a grade of B (Above Average):

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

To receive a grade of C (Average):

1. Scholarship/Research: Barely meets assignments; needs encouragement
2. Initiative: Uncertain and apparent only at times
3. Cooperation: Fair at times - lacking at other times
4. Individual Improvement: Ordinary, lacking in noticeable benchmarks

To receive a grade of D (Below Average, but Passing):

1. Scholarship/Research: Not meeting all instructor requirements and assignments
2. Initiative: Lacking
3. Cooperation: Not effective and very irregular
4. Individual Improvement: Not noticeable

To receive a grade of F (Failure):

1. Majority of work unacceptable or missing

V. Course Level Justification

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

VI. Outline

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

A. Survey of Alaska Native art history and material culture as they relate students heritage and visiting elders/artists

    1. Material culture history relevant to the elders/artists regions
    2. Regional investigation of resources and aesthetics
    3. Technology and techniques used by artists of the region in traditional as well as contemporary art

B. The importance of visiting elders and artists as culture bearers and role models

1. Schedule visiting elders and artists for workshops will vary from semester to semester

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

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

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

Sample teaching Plan:

Visiting Alutiiq Sugpiaq elder of Kodiak Island

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

VII. Instructional Goals and Student Learning Outcomes

A. Instructional Goals. The Instructor will:

1. Introduce indigenous materials, fabrication methods, and design principles relevant to the region of the visiting elders/artists
2. Examine Alaska Native art history with an emphasis on the philosophical and spiritual characteristics of the visiting elders/artists and his/her cultural background
3. Demonstrate advanced instruction in the use of traditional and contemporary shop tools pertinent to the visiting elders/artist's regional approach to making art and other artists
4. Coordinate workshops and projects with visiting elders, artists, and their technology and art. Elders/artists and workshops will vary from semester to semester

5. Mentor and provide individual student research resources with an emphasis on the region of the visiting elders/artists and other artists. Resources may include, but are not solely limited to using elders, artists, collections, books, audio and visual media

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

Student Learning Outcomes	Assessment
Research and demonstrate an appreciation of the unique regional art developments in Alaska pertinent to the visiting elders/artists and other artists as it pertains to student	In-class discussions and projects
Master techniques and materials used by the visiting elders/artists and other artists to art projects	Studio projects
Employ conceptual understanding of Native art by completing projects using techniques developed in class	Studio projects
Develop and refine personal aesthetic and design sensibility	Studio projects
Demonstrate the ability to apply relevant research to the final project based on the visiting elders/artist's cultural heritage in terms of technique and design	In-class presentations and studio projects
Create and develop final projects based on students research, mastered techniques, and personal aesthetic	Final portfolio

VIII. Suggested Texts

Black, Lydia. *Glory Remembered:Wooden Headgear of Alaska Sea Hunters.* Juneau, AK: Alaska State Museum,1991.

Decker, Julie, and John Hoover. *Art and Life.* Seattle, WA: University of WashingtonPress, 2002.

Fienup-Riordan, Ann (1996) *The Living Tradition of Yup'ik Masks.* Seattle, WA: University of Washington Press, 1996.

ILiade, Mircea. *Shamanism Archial Techniques of Ecstasy.* Princeton, NJ: Bollinger Series of World Mythology #76, Princeton University Press, 2004.

Jones, Susie. *The Artists Behind the Work.* Fairbanks, AK: University of Alaska Museum, 1986.

Pelly, David. *Sacred Hunt.* Seattle, WA: University of Washington Press, 2001.

Ray, Blaker. *Eskimo Masks: Art and Ceremony.* Seattle, WA: University of Washington Press, 1967.

Watson, Mary Jo. *The James T. Balac Native Art Collection.* Norman, OK: University of Oklahoma Press, 2012.

IX. Resources

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