

CH 727: Biological Mass Spectrometry

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In Workflow

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12. Grad Final Review (george_hodge@ncsu.edu; lian_lynch@ncsu.edu; mlnosbis@ncsu.edu)
13. PeopleSoft (none)

Approval Path

1. Mon, 14 Sep 2015 14:10:30 GMT
David Shultz (shultz): Approved for 17CH GR Director of Curriculum
2. Fri, 25 Mar 2016 19:39:02 GMT
David Shultz (shultz): Approved for 17CH Grad Head
3. Fri, 25 Mar 2016 21:02:57 GMT
Gerald LeBlanc (gal): Approved for 17BSC Grad Head
4. Mon, 28 Mar 2016 12:36:46 GMT
Cheryll Bowman-Medhin (clbowma2): Approved for COS CC Coordinator GR
5. Mon, 28 Mar 2016 12:58:22 GMT
Cheryll Bowman-Medhin (clbowma2): Approved for COS CC Meeting GR
6. Mon, 02 May 2016 14:03:02 GMT
Alun Lloyd (alun_loyd): Approved for COS CC Chair GR
7. Mon, 02 May 2016 14:05:14 GMT
Alun Lloyd (alun_loyd): Approved for COS Final Review GR
8. Mon, 02 May 2016 19:02:07 GMT
Jo-Ann Cohen (cohen): Approved for COS Dean GR
9. Thu, 12 May 2016 13:15:56 GMT
George Hodge (george_hodge): Approved for ABGS Coordinator
10. Fri, 12 Aug 2016 18:36:11 GMT
Melissa Nosbis (mlnosbis): Approved for ABGS Meeting

Date Submitted: Fri, 11 Sep 2015 21:36:48 GMT

Viewing: CH 727 : Biological Mass Spectrometry

Changes proposed by: jllubisc

Also Known As: BIO 727

Change Type

Major

Course Prefix

CH (Chemistry)

Course Number

727

Course ID

003475

Dual-Level Course

Dual-Level Course Number:

Cross-listed Course

Yes

Cross-listed with Subject Code(s)

Course Prefix:

BIO

Title

Biological Mass Spectrometry

Abbreviated Title

Bio Mass Spectrometry

College

College of Sciences

Academic Org Code

Chemistry (17CH)

CIP Discipline Specialty Number

40.0501

CIP Discipline Specialty Title

Chemistry, General.

Term Offering

Fall Only

Year Offering

Offered Every Year

Specify:

Effective Date

Fall 2015

Previously taught as Special Topics?

No

Number of Offerings within the past 5 years

Course Delivery

Face-to-Face (On Campus)

Remote Location/Site

Grading Method

Graded/Audit

Credit Hours

3

Course Length

16

weeks

Contact Hours

(Per Week)

Component Type

Contact Hours

Lecture

3.0

Course Attribute(s)

Please explain why you selected Service Learning:

If your course includes any of the following competencies, check all that apply.

University Competencies

Course Is Repeatable for Credit

No

Total number of completions allowed including the initial offering.

Maximum total credit hours allowed

Instructor Name

David Muddiman / Michael Bereman

Instructor Title

Distinguished Professor / Assistant Professor

Grad Faculty Status

Full

Anticipated On-Campus Enrollment

Open when course_delivery = campus OR course_delivery = blended OR course_delivery = flip

Enrollment Component	Per Semester	Per Section	Multiple Sections?	Comments
Lecture	18	18	No	NA

DELTA/Online Enrollment:

Open when course_delivery = distance OR course_delivery = online OR course_delivery = remote

Course Prerequisites, Corequisites, and Restrictive Statement

Prerequisite: CH 223 or CH 227

Is the course required or an elective for a Curriculum?

No

Which Curricula are Affected?

Catalog Description

Fundamentals of mass spectrometry including topics such as: mass, isotopic distributions, resolving power, mass accuracy. Ionization source topics: electron impact, chemical ionization, matrix-assisted laser desorption ionization, electrospray ionization and contemporary methods. Instrumentation and mass analyzers: quadrupole, time-of-flight, Fourier transform based mass analyzers; hybrid instruments such as a quadrupole orbitrap. Tandem mass spectrometry and dissociation. Applications: quantitation, small molecule analysis and peptide sequencing.

Justification for each revision:

Add BIO prefix: Dr. Muddiman (Dept of Chemistry) and Dr. Bereman (Dept of Biological Sciences) have arranged to alternate teaching of this course, so it is appropriate to list the course under both prefixes.

Update title: The instructors would like to update the course title to more accurately portray the subject matter that has been taught in the course over at least the past 10 years. Also, "spectometry" is incorrect and should be "spectrometry".

Update catalog description: Again, no change in course content -- just a more appropriate description of the course.

Does this course have a fee?

No

List amount and justification for fee:

Is this a GEP Course?

GEP Categories

Humanities Open when gep_category = HUM

Each course in the Humanities category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Humanities Objective 1:

Obj. 1) Engage the human experience through the interpretation of culture.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Humanities Objective 2:

Obj. 2): Become aware of the act of interpretation itself as a critical form of knowing in the humanities.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Humanities Objective 3:

Obj. 3) Make academic arguments about the human experience using reasons and evidence for supporting those reasons that are appropriate to the humanities.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Mathematical Sciences Open when gep_category = MATH

Each course in the Mathematical Sciences category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Mathematical Sciences Objective 1:

Obj. 1) Improve and refine mathematical problem-solving abilities.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Mathematical Sciences Objective 2:

Obj. 2) Develop logical reasoning skills.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Natural Sciences Open when gep_category = NATSCI

Each course in the Natural Sciences category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Natural Sciences Objective 1:

Obj.O 1) Use the methods and processes of science in testing hypotheses, solving problems and making decisions

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Natural Sciences Objective 2:

Obj. 2) Make inferences from and articulate, scientific concepts, principles, laws, and theories, and apply this knowledge to problem solving.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Social Sciences Open when gep_category = SOCSCI

Each course in the Social Sciences category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Social Sciences Objective 1:

Obj. 1) Examine at least one of the following: human behavior, culture, mental processes, organizational processes, or institutional processes.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Social Sciences Objective 2:

Obj. 2) Demonstrate how social scientific methods may be applied to the study of human behavior, culture, mental processes, organizational processes, or institutional processes.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Social Sciences Objective 3:

Obj. 3) Use theories or concepts of the social sciences to analyze and explain theoretical and or real-world problems, including the underlying origins of such problems.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Interdisciplinary Perspectives Open when gep_category = INTERDISC

Each course in the Interdisciplinary Perspectives category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Interdisciplinary Objective 1:

Obj. 1) Distinguish between the distinct approaches of two or more disciplines.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Interdisciplinary Objective 2:
Obj. 2) Identify and apply authentic connections between two or more disciplines.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Interdisciplinary Objective 3:
Obj. 3) Explore and synthesize the approaches or views of two or more disciplines.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

To assist CUE in evaluating this course for inclusion on the Interdisciplinary Perspectives list, please answer these additional questions.

1. Which disciplines will be synthesized, connected, and/or considered in this course?

2. How will the instructor present the material so that these disciplines are addressed in a way that allows the students "to integrate the multiple points of view into a cohesive understanding"?

Attach Additional GEP Information if applicable

Visual & Performing Arts Open when gep_category = VPA

Each course in the Visual and Performing Arts category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Visual & Performing Arts Objective 1:

Obj. 1) Deepen their understanding of aesthetic, cultural, and historical dimensions of artistic traditions.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Visual & Performing Arts Objective 2:

Obj. 2) Strengthen their ability to interpret and make critical judgements about the arts through the analysis of structure, form, and style of specific works.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Visual & Performing Arts Objective 3:

Obj. 3) Strengthen their ability to create, recreate, or evaluate art based upon techniques and standards appropriate to the genre.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Health and Exercise Studies Open when gep_category = HES

Each course in the Health and Exercise Studies category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Health & Exercise Studies Objective 1:

Obj. 1) Acquire the fundamentals of health-related fitness, encompassing cardio-respiratory and cardiovascular endurance, muscular strength and endurance, muscular flexibility and body composition.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health & Exercise Studies Objective 2:

Obj. 2) Apply knowledge of the fundamentals of health-related fitness toward developing, maintaining, and sustaining an active and healthy lifestyle.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health & Exercise Studies Objective 3:

Obj. 3) Acquire or enhance the basic motor skills and skill-related competencies, concepts, and strategies used in physical activities and sport.

&

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health & Exercise Studies Objective 4:

Obj. 4) Gain a thorough working knowledge, appreciation, and understanding of the spirit and rules, history, safety, and etiquette of physical activities and sport.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Global Knowledge Open when gep_category = GLOBAL

Each course in the Global Knowledge category of the General Education Program will provide instruction and guidance that help students to achieve objective #1 plus at least one of objectives 2, 3, and 4:

List the Instructor's student learning outcomes that are relevant to the GEP Global Knowledge Objective 1:

Obj. 1) Identify and examine distinguishing characteristics, including ideas, values, images, cultural artifacts, economic structures, technological or scientific developments, and/or attitudes of people in a society or culture outside the United States.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Please complete at least 1 of the following student objectives.

List the Instructor's student learning outcomes that are relevant to the GEP Global Knowledge Objective 2:

Obj. 2) Compare these distinguishing characteristics between the non-U.S. society and at least one other society.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Global Knowledge Objective 3:

Obj. 3) Explain how these distinguishing characteristics relate to their cultural and/or historical contexts in the non-U.S. society.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Global Knowledge Objective 4:

Obj. 4) Explain how these distinguishing characteristics change in response to internal and external pressures on the non-U.S. society.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

US Diversity Open when gep_category = USDIV

Each course in the US Diversity category of the General Education Program will provide instruction and guidance that help students to achieve at least 2 of the following objectives:

Please complete at least 2 of the following student objectives.

List the Instructor's student learning outcomes that are relevant to the GEP U.S. Diversity Objective 1:

Obj. 1) Analyze how religious, gender, ethnic, racial, class, sexual orientation, disability, and/or age identities are shaped by cultural and societal influences.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP U.S. Diversity Objective 2:

Obj. 2) Categorize and compare historical, social, political, and/or economic processes producing diversity, equality, and structured inequalities in the U.S.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP U.S. Diversity Objective 3:

Obj. 3) Interpret and evaluate social actions by religious, gender, ethnic, racial, class, sexual orientation, disability, and/or age groups affecting equality and social justice in the U.S.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP U.S. Diversity Objective 4:

Obj. 4) Examine interactions between people from different religious, gender, ethnic, racial, class, sexual orientation, disability, and/or age groups in the U.S.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

Attach Additional GEP Information if applicable

Requisites and Scheduling

What percentage of the seats offered will be open to all students?

a. If seats are restricted, describe the restrictions being applied.

b. Is this restriction listed in the course catalog description for the course?

List all course pre-requisites, co-requisites, and restrictive statements (ex: Jr standing; Chemistry majors only). If none, state none.

List any discipline specific background or skills that a student is expected to have prior to taking this course. If none, state none. (ex: ability to analyze historical text; prepare a lesson plan)

Additional Information

Complete the following 3 questions or attach a syllabus that includes this information. If a 400-level or dual level course, a syllabus is required.

Title and author of any required text or publications.

Major topics to be covered and required readings including laboratory and studio topics.

List any required field trips, out of class activities, and/or guest speakers.

Consultation

College(s)	Contact Name	Statement Summary
College of Agriculture and Life Sciences	Mike Goshe (BCH)	I looked over both course action forms and they are fine. The BIO/CH 727 cross-listing and title upgrade are appropriate, and CH 749 is an appropriate addition to the Chemistry graduate program. These courses do not conflict with anything we currently offer.
College of Engineering	Saad Khan (CHE)	We are good here

Instructional Resources Statement

No additional resources requested in order to add a course prefix and update the title and description.

Course Objectives/Goals

Student Learning Outcomes

After completing this course, students should be able to:

•

- Explain fundamental principles of mass spectrometry and their importance.
-
- Distinguish different ionization sources.
-
- Describe different types of mass analyzers and their applications.
-
- Demonstrate applications of quantitation, small molecule analysis, and peptide sequencing.
-
- Present an overview and critique of a relevant paper.
-

Student Evaluation Methods

Evaluation Method	Weighting/Points for Each	Details
Exam	75%	3 in-class exams during the semester (15% each); one comprehensive final exam (30%)
presentation	25%	student presentations in class

Topical Outline/Course Schedule

Topic	Time Devoted to Each Topic	Activity
See attached syllabus	1	.

Syllabus

Ch727_Syllabus_Fall_2015_updated_April_2016.docx

Additional Documentation

CH_727_749_consults.pdf

Additional Comments

mInosbis 5/3/2016: No overlapping courses.

ghodge 5/12/2016 Ready for ABGS reviewers

ABGS Reviewer Comments:

-None

Justification for this request

Course Reviewer Comments

allloyd (Mon, 22 Jun 2015 14:54:24 GMT): Rollback: We have been asked by the Grad School to include student learning outcomes, student evaluation methods and topical outline in the form. A syllabus should also be attached.

Key: 1045

Preview Bridge