Course Change Request

Date Submitted: 01/26/24 3:04 pm

Viewing: CHEM 460 : Chemistry in the Kitchen

Last approved: 11/03/22 6:04 am

Last edit: 02/14/24 3:16 pm

Changes proposed by: rjones22

Catalog Pages referencing this course

Chemistry (CHEM)

Department of Chemistry and Biochemistry

Select modification type:

~~Specialized Course Designation~~

Substantial

Are you completing this form on someone else's behalf?

No

Effective Term: Fall 2024

In Workflow

1. **CHEM Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 01/03/24 1:02 pm Andre Clayborne (aclaybo): Rollback to Initiator
2. 02/13/24 6:20 pm Andre Clayborne (aclaybo): Approved for CHEM Chair

History

1. May 6, 2022 by Rebecca Jones (rjones22)
2. Nov 3, 2022 by Rebecca Jones (rjones22)

Subject Code: CHEM - Chemistry **Course Number:** 460

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Chemistry in the Kitchen

Banner Title: Chemistry in the Kitchen

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture w/Lab

Hours of Lecture or Seminar per week: 2

Hours of Lab or Studio per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 9

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

~~CHEM 211/213 and CHEM 212/214 (or CHEM 271/272), CHEM 313/315 (or CHEM 310), and CHEM 463, or permission of instructor.~~

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

CHEM 211/213 and CHEM 212/214 (or CHEM 271/272), and CHEM 313/315 (or CHEM 310), CHEM 463 or permission of instructor.

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

minimum 85 ~~60~~ earned credit hours

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Include

Limited to students with a class of Junior (SCRRCLS_ONLY_JR)

Limited to students with a class of Senior (SCRRCLS_ONLY_SR)

Level(s):

Degree(s):

School(s):

Catalog Description:

One semester capstone ~~synthesis~~ course exploring the chemistry observed and experienced in household kitchens. As chemistry is the study of matter and its changes, this course explores the chemistry of the food we eat and cook on a molecular level. Students will participate in a creative and scholarly project, practice scientific communication skills, and learn to apply a chemical perspective to real world situations.

Justification:

What: changing all pre-reqs from recommended to required, updating minimum credits to 85, changing the word "synthesis" to "capstone" in course description.

Why: In the original course proposal, the prerequisites were entered incorrectly and need to be updated to assure students are prepared to take this course. This submission will fix that error.

Also, the course has now been given the Capstone designation, which requires 85 credit hours completed to enroll. This submission will add this updated requirement.

This submission will also amend the catalogue description to identify this course as a Capstone rather than synthesis.

Does this course cover material which crosses into another department? Yes

Impacted Departments:

Department
NUTR - Nutrition & Food Studies

Learning Outcomes:

In this capstone course, students will:

1. Experience applied and integrative learning

2. ~~• Communicate effectively in both oral and written forms, applying appropriate rhetorical standards (e.g., audience adaptation, language, argument, organization, evidence, etc.) • Use perspectives from two or more disciplines, connect issues in a given field to wider intellectual, community or societal concerns • Course-Specific Outcomes After completing this course, students will be able to • Identify and describe the chemical characteristics of many of the molecules in our food • Use the language and vocabulary of chemistry to describe food and cooking • Describe and explain how food molecules interact with each other and how they change when subjected to different physical and chemical processes • Employ scientific reasoning and experimentation skills in the context of a kitchen lab • Design and execute a kitchen-based research project • Effectively communicate results from an independent research project via oral and written methods Mason Core Outcomes Upon completing this synthesis course, students will be ableto:~~ Apply critical thinking skills to evaluate the quality, credibility and limitations of an argument or a solution using appropriate evidence or resources. ~~resources and~~ Evaluation of critical thinking outcomes will include assessment of the following factors.

a. Explanation of Issues

b. Evidence

c. Selecting and using information to investigate a point of view or conclusion

d. Influence of Context and Assumptions

e. Student's Position (perspective, thesis/hypothesis)

f. Conclusions and Related Outcomes (implications and consequences)

3. Meet specific learning outcomes defined by the degree program and described below.

Course Specific Learning Outcomes

After completing this course, students will be able to

1. ~~Course-Specific Outcomes After completing this course, students will be able to •~~ Identify and describe the chemical characteristics of many of the molecules in our food

2. ~~• Use the language and vocabulary of chemistry to describe food and cooking • Describe and explain how food molecules interact with each other and how they change when subjected to different physical and chemical processes • Employ scientific reasoning and experimentation skills in the context of a kitchen lab • Design and execute a kitchen-based research project • Effectively communicate results from an independent research project via oral and written methods Mason Core Outcomes Upon completing this synthesis course, students will be able to:~~ Use the language and vocabulary of chemistry to describe food and cooking

3. Describe and explain how food molecules interact with each other and how they change when subjected to different physical and chemical processes

4. Employ scientific reasoning and experimentation skills in the context of a kitchen lab

5. Design and execute a kitchen-based research project

6. Effectively communicate results from an independent research project via oral and written methods

Will this course be scheduled as a cross-level cross listed section?

Attach Syllabus

~~CHEM 460 Chemistry in the Kitchen updated 10-11-22.pdf~~

CHEM 460 Chemistry in the Kitchen updated 1-20-23.pdf

Additional Attachments

Chem 460 Weekly Lab Forum Post .pdf

Chem 460 Mason Core Capstone Rational 10-12-22.pdf

CHEM 460 Capstone-Curriculum-Map.pdf

CHEM 460 Final Project Details and Rubrics.pdf

Specialized Course Categories:

Mason Core

Select the Mason Core Requirement the course is proposing to fulfill:

Foundation Courses:

Exploration Courses:

Integration Courses:

Retired Category (Registrar's Office Use Only): Capstone

Capstone

While each academic degree program defines its learning outcomes, a Capstone course or sequence should follow these guidelines:Information

- Minimum of 3 credits

- Later in the curriculum, after a student has taken at least 85 credits, and at the 400 - course level

- No more than 35 students in the course or equivalent instructional/mentored support

- Emphasis on experiential/applied/integrative learning

- Allow students to apply critical thinking skills

- Learning outcomes defined by the degree program

Explain how the course meets the expectations that the capstone experience consolidates the knowledge and understanding gained in the student's major, degree, and Mason Core Courses.

CHEM 460: Chemistry in the Kitchen is a one semester course exploring the chemistry observed and experienced in household kitchens. Approved in Spring 2022, this course was proposed with the intent of securing designation as part of the Mason Core, specifically as an Integration Course. After initially submitting this course for the Synthesis category, this request has been edited to reflect the other Integration Course option, Capstone, which better fits the course design and our departmental curriculum.

This course will enable students to apply knowledge and critical thinking skills to real-world problems in a kitchen laboratory environment. Chemistry is the study of matter and its changes, this course explores the chemistry of the food we eat and cook on a molecular level. Students will participate in a creative and scholarly project, practice scientific communication skills, and learn to apply a chemical perspective to real world situations. This course is designed to support both experiential and integrated learning, enabling students to synthesize knowledge from prior Mason Core courses and new course-specific content.

Mason Core capstone and course specific learning outcomes will be realized via class discussions, laboratory activities, weekly writing assignments (reports), and final presentations and infographics. Details and rubrics for weekly assignments and the final project, presentation, and infographic are attached to this request. Course specific rubrics have been developed from OSCAR and AAC&U templates.

Adding CHEM 460 to the Mason Core will allow this chemistry specific capstone course to strengthen and improve the undergraduate degree paths in the Department of Chemistry and Biochemistry. At present, no capstone course exists in this department; this addition will strengthen our undergraduate degree programs. CHEM 460 was designed for junior and senior level chemistry majors and it will be open to students with other majors (such as biology, community health, and bioengineering) who have successfully completed the prerequisites.

Mason Core: Capstone Course [These replace the Learning Outcomes listed above, the system isn't allowing for edits to that field.]
In this capstone course, students will:
1. Experience applied and integrative learning
2. Apply critical thinking skills to evaluate the quality, credibility and limitations of an argument or a solution using appropriate evidence or resources. Evaluation of critical thinking outcomes will include assessment of the following factors.
a. Explanation of Issues
b. Evidence
c. Selecting and using information to investigate a point of view or conclusion
d. Influence of Context and Assumptions
e. Student’s Position (perspective, thesis/hypothesis)
f. Conclusions and Related Outcomes (implications and consequences)
3. Meet specific learning outcomes defined by the degree program and described below.

Learning Outcomes

After completing this course, students will be able to

1. Identify and describe the chemical characteristics of many of the molecules in our food
2. Use the language and vocabulary of chemistry to describe food and cooking
3. Describe and explain how food molecules interact with each other and how they change when subjected to different physical and chemical processes
4. Employ scientific reasoning and experimentation skills in the context of a kitchen lab
5. Design and execute a kitchen-based research project
6. Effectively communicate results from an independent research project via oral and written methods

Additional Comments:

The Chemistry Department Curriculum committee has reviewed and unanimously approve of these proposed changes. ~~This submission is to request Mason Core designation for this course and amend the published Prerequisites.This is a second submission after receiving and responding to comments from the Mason Core committee from their meeting on 9-22-22.Documents related to the Mason Core Capstone Designation are attached.The Prerequisites for this course are currently listed as "Recommended", but some of these need to be moved to "Required".Please see the corrected Prequisites below and edit the catalogue entry to reflect the change.Required Prerequisites:Chem 211/213 and 212/214 (or Chem 271/272), Chem 313/315 (or Chem 310), and 60 earned credit hours or permission of instructor Recommended Prerequisite Chem 463 Registration Restrictions:85 earned hours~~

Reviewer Comments

Andre Clayborne (aclaybo) (01/03/24 1:02 pm): Rollback: The changes proposed are very substantial and should be discussed via the Curriculum Committee at the Department Level and then brought to the Department for vote for such a large change.

Key: 17551