Revise Course (CHM 473, effective Fall 2013)

Summary of Changes

Adding the course as an alternative capstone in place of CHM 499 (Independent Research). This is only for the BA in Chemistry.

Course Changes

<table>
<thead>
<tr>
<th>Current</th>
<th>Requested (Leave blank for no change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix</td>
<td>CHM</td>
</tr>
<tr>
<td>Course Number</td>
<td>473</td>
</tr>
<tr>
<td>Credit Hours</td>
<td>1</td>
</tr>
<tr>
<td>Distribution Credit</td>
<td>CAP</td>
</tr>
<tr>
<td>Schedule Type</td>
<td>LAB</td>
</tr>
<tr>
<td>Short Title (30 character maximum, including spaces)</td>
<td>Inorganic Chemistry Laboratory</td>
</tr>
<tr>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>Course Level</td>
<td></td>
</tr>
<tr>
<td>Is this same course also offered at the Grad (Undergrad) level</td>
<td>No</td>
</tr>
</tbody>
</table>

Course Listing

https://sis.umflint.edu/prod/zwcc_course_change.view_change

1/7/2013
| Current Course Listing | PR: Prior or concurrent election of CHM 472.  
Modern series of chemical experiments involving synthesis and characterization of inorganic materials. Experimental procedures may include instruction in maintaining anaerobic environments and the use of nonaqueous solvent systems. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amended Prerequisites / Corequisites / Restrictions</td>
<td></td>
</tr>
<tr>
<td>Amended Course Description</td>
<td></td>
</tr>
<tr>
<td>Grading Mode</td>
<td>Standard (ABCDE)</td>
</tr>
<tr>
<td>(N grades are not allowed for Rackham programs)</td>
<td></td>
</tr>
<tr>
<td>Repeat Status</td>
<td>Not repeatable for additional credit</td>
</tr>
<tr>
<td>Can be Y grade</td>
<td></td>
</tr>
<tr>
<td>Cross Listings (will automatically be created/changed)</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>CHM 473 is part of a 3-credit capstone suite that includes CHM 310 &amp; CHM 410.</td>
</tr>
</tbody>
</table>

**IF THIS AFFECTS PROGRAM REQUIREMENTS, A PROGRAM FORM IS REQUIRED**
<table>
<thead>
<tr>
<th>Name</th>
<th>Reviewer Type</th>
<th>Review Status</th>
<th>Review Time</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kristina Hansen</td>
<td>Catalog Editor</td>
<td>Accepted</td>
<td>01-01-2013 04:26</td>
<td></td>
</tr>
<tr>
<td>Karol Scheitler</td>
<td>Requester</td>
<td>Accepted</td>
<td>12-10-2012 02:56</td>
<td>Original Request</td>
</tr>
<tr>
<td>Jessica Tischler</td>
<td>Department Chair</td>
<td>Accepted</td>
<td>01-07-2013 12:29</td>
<td></td>
</tr>
<tr>
<td>Rhonda Broadworth</td>
<td>Previewer</td>
<td>Pending</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accept or Reject request**

- Accept Change Request
- Reject Change Request
- Reject / Amend Change Request

**RELEASE: 8.5.3**
Your form "Request for General Education Designation" has received the following response:

Submitted on: 12/14/2012 03:18:09 PM
Completion time: 7 min. 44 sec.

Q. Email:
R. karolann@umflint.edu; jtisch@umflint.edu; rbrdwrth@umflint.edu

Q. Course Title:
R. Inorganic Chemistry Laboratory

Q. Department:
R. Chemistry and Biochemistry

Q. Course Prefix:
R. CHM

Q. Course Number:
R. 473

Q. Distribution Area Requested:
R. Capstone (CAP)

Q. Rationale for Distribution Designation and Alignment of Outcomes with Distribution Designation
R. Inorganic Chemistry Laboratory (CHM 473) provides students with a research type-experience. To be successful in this course, a student must bring techniques, laboratory skills, and the ability to maintain a proper lab notebook that they have learned in previous lab courses. They also must be able to interpret the scientific literature, make significant observations during their experiments, and most importantly, interpret their date in order to write accurate conclusions. Therefore, this laboratory course, in combination with Junior Seminar (CHM 310) and Senior Seminar (CHM 410), provides a comprehensive measure of what they have learned from their courses throughout their degree.

Q. Learning Outcome No.
R. 3 - Demonstrate the ability to think critically

Q. Narrative:
R. In order to do advanced laboratory work in chemistry or biochemistry, students have to apply their knowledge from all of their coursework and use it to meet their objectives and project goals of their course project. In the advanced experiments, students have to learn how to adapt experiments, make modifications when necessary, interpret how a change in variables affects their results, and analyze the resulting data in order to reach conclusions. Because thinking critically affects all aspects of their results, the final lab report is the best indicator of this outcome.

Q. Assessment tools:
R. Final Lab Report

Q. Learning Outcome No.
R. 2 - Demonstrate facility with research methods

Q. Narrative:
R. All students doing independent research work directly with faculty to develop their laboratory and instrumental techniques (a critical aspect of research methods in chemistry and biochemistry), experimental planning, literature searching and evaluating, and interpretation of data. Direct measures of these skills is reflected in the research notebook and in the final research paper.

Q. Assessment tools:
R. Final lab report and laboratory notebook

Q. Learning Outcome No.
R. 5 - Produce competent written work

Q. Narrative:
R. One of the main objectives in both 310 and 410 is “to develop the necessary skills needed to effectively communicate within the scientific community in both oral and written form.” Specifically we focus on scientific writing, in its various forms, and how it differs from writing they may have done in other disciplines. The courses also discusses literatures searches and resources specific to chemistry and biochemistry. In order to successfully complete the writing assignment, a student must find and incorporate current, peer-reviewed journal articles within the discipline.

Q. Assessment tools:
R. Final papers in 310 and 410

Q. Learning Outcome No.
R. 12 - Apply knowledge to complex issues

Q. Narrative:
R. In the final paper of these two courses, students are asked not only to research and present the scientific content clearly and accurately but to connect the importance and impact of the research to the broader scientific community and society.

Q. Assessment tools:
R. Final paper in 310 and 410

Q. Learning Outcome No.
R. 1 - Reflect on one's own learning

Q. Narrative:
R. During the oral presentations given in 310 and 410, students must research and develop their seminars and be able to fully answer questions. In order to do this successfully, they need to have a good understanding of not only the topic on which they are giving the seminar but the chemistry/biochemistry behind those topics. Thus they have to reflect on their education and the learning process they have undergone during their entire college educational experience. This will also give an opportunity to see if the students improve from one course to the next.

^ Assessment tools:
Chemical topic Seminar for 310 and 410 oral presentations.