Course Form (revised 5/1/12)
(Instructions: http://www.umt.edu/facultysenate/documents/forms/courseform_instructionsX.aspx)

<table>
<thead>
<tr>
<th>Summary of Proposed Changes</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Dept / Program</th>
<th>Chem and Biochem</th>
<th>Prefix and Course #</th>
<th>CHMY 652</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title</td>
<td>Original Research Proposal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please check one or more of the following:

- [x] New course
- [ ] Delete course

Course Changes:

- [ ] Course Title
- [ ] Description
- [ ] Learning Outcomes
- [ ] Prerequisites
- [ ] Cross-listing
- [ ] Other
- [ ] Credits from ______ to ______
- [ ] Number / Level from ______ to ______
- [ ] Repeatability from ______ to ______

Justification / explanation (required for ALL proposals): For new courses please provide rationale for why the course is needed, how it fits with existing curriculum and whether there are curricular adjustments.

We are formalizing an existing Ph.D. program requirement, the out-of-field research proposal, by creating a specific course for the requirement. CHMY 652 will be a required course for all of our Ph.D. students and will be used to designate a specific period during which each member of a cohort will be required to complete an original research proposal. The course will include guidance on how to write a successful research proposal and how to use existing internet proposal systems, e.g. NSF Fastlane. See attached syllabus.

Has the Department gone through common course Review?

- [ ] Yes
- [ ] No
- [ ] In process

Syllabus / Assignment Information (Required for new courses,变更, new degree changes and course changes from 0 to 0):

- [ ] Please spell out learning goals and learning outcomes clearly in the syllabus.
- [ ] Learning Goals: a list of what students should know, understand, or be able to do at the end of the course, including essential information and knowledge or skills relevant to the subject area.
- [ ] Learning Outcomes: measures of performance or behaviors that indicate, to the teacher and the student, what constitutes mastery of the material, and what criteria differentiate among different levels of understanding. An example is at the end of the document.

Syllabus / Assignments

Complete the form and attach signature sheet to Department and Faculty Senate Office.

<table>
<thead>
<tr>
<th>Please type / print name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requestor: Mike DeGrandpre</td>
<td>Mike DeGrandpre</td>
<td>9/10/12</td>
</tr>
<tr>
<td>Phone/email: <a href="mailto:michael.degrandpre@umontana.edu">michael.degrandpre@umontana.edu</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Chair(s)/Director: Mark Cracolice</td>
<td>9/13/12</td>
<td></td>
</tr>
<tr>
<td>Dean(s): Chris Comer</td>
<td>9/14/12</td>
<td></td>
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<tr>
<td>All other affected programs: none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are other departments/programs affected by this modification because of:

(a) required courses including prerequisites or corequisites,
(b) perceived overlap in content areas
(c) cross-listing of coursework

Please obtain signature(s) from the Chair/Dean of any such department/program (above) before submission.

Signatory Comments (required for disapproval):
### IV. New/Modified Courses

<table>
<thead>
<tr>
<th>Common Course Numbering Review (Department Chair Must Initial):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does an equivalent course exist elsewhere in the MUS? Check all relevant disciplines if course is interdisciplinary. <a href="http://www.mus.edu/Qtools/CCN/ccn_default.asp">http://www.mus.edu/Qtools/CCN/ccn_default.asp</a></td>
</tr>
<tr>
<td>YES</td>
</tr>
</tbody>
</table>

If YES: Do the proposed abbreviation, number, title and credits align with existing course(s)? Please indicate equivalent course/campus."

N/A this is a grad course not subject to common course numbering

If NO: Course may be unique, but is subject to common course review. The course number may be changed at the system level.

<table>
<thead>
<tr>
<th>Short Title (max. 26 characters incl. spaces)</th>
<th>Original Research Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 652 Original Research proposal 1cr. Offered fall. Prereq. CHMY 640 and CHMY 650, Preparation and presentation of original research proposals for third year graduate students</td>
<td></td>
</tr>
<tr>
<td>Complete for UG courses (UG courses should be assigned a 400 number).</td>
<td></td>
</tr>
<tr>
<td>Describe graduate increment - see procedure 301.30. <a href="http://www.umt.edu/facultysenate/procedures/default.aspx">http://www.umt.edu/facultysenate/procedures/default.aspx</a></td>
<td></td>
</tr>
</tbody>
</table>

Complete for Co-convened courses

<table>
<thead>
<tr>
<th>Companion course number, title, and description (include syllabus of companion course in section V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>See procedure 301.20 <a href="http://www.umt.edu/facultysenate/procedures/default.aspx">http://www.umt.edu/facultysenate/procedures/default.aspx</a></td>
</tr>
</tbody>
</table>

New fees and changes to existing fees are only approved once each biennium by the Board of Regents. The coordination of fee submission is administered by the Administration and Finance. Fees may be requested only for courses meeting specific conditions according to Policy 940.12.1 [http://mus.edu/borpol/bor900/940-12-1.pdf](http://mus.edu/borpol/bor900/940-12-1.pdf). Please indicate whether this course will be considered for a fee.

If YES, what is the proposed amount of the fee?

**Justification:**

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### V. Changes to Existing Course

| 1. Current course information at it appears in catalog ([http://www.umt.edu/catalog](http://www.umt.edu/catalog)) |
| 2. Full and exact entry (as proposed) |

3. If cross-listed course: secondary program & course number


   If yes, please explain below whether the change will eliminate the common course status.

5. If co-convened course: companion course number, title, and description (include syllabus of companion course in section V) See procedure 301.20 [http://www.umt.edu/facultysenate/procedures/default.aspx](http://www.umt.edu/facultysenate/procedures/default.aspx)

6. Graduate increment if level of course is changed to UG. Reference procedure 301.30: [http://www.umt.edu/facultysenate/procedures/default.aspx](http://www.umt.edu/facultysenate/procedures/default.aspx)

   *(syllabus must be attached)*

   Have you reviewed the graduate increment guidelines? Please check (X) space provided

7. Other programs affected by the change
B: Is there a fee associated with the course?

IV. Department Summary (These forms are submitted in a separate document that contains number, title, and proposed change for all proposals)

V. Copies and Electronic Submission. After approval, submit original, one copy, summary of proposal, and electronic file to the Faculty Senate Office, B112 CUNI, senate.fees@unomaha.edu.
Chemistry 652: Original Research Proposal
Fall Semester 2013

Professor: Mike DeGrandpre, Chemistry Building 318. Office hours: Drop in anytime or phone (x4118) or email (michael.degrandpre@umontana.edu) to make an appointment.

Course objective: To develop an original research proposal based on a novel chemical problem selected by the student.

Learning goals and outcomes: In developing into a Ph.D. level scientist, students need to have opportunities to explore and “sell” their own research ideas. Students that take the course will have a better understanding of what is required to be an independent scientist with a leading role in a research program.

Course overview: During the summer prior to the course, the student will propose an original research topic to their research committee. Approval of the original research topic will be required early in the semester to successfully complete the course.

The first three weeks of the semester will be used to present strategies for effective development of a research proposal in the chemical sciences. Students will be led through federal agency-specific requirements for proposal submission, e.g. as provided by NSF Fastlane. Guidance will also be given for the preparation of other requirements such as budgets, CVs, broader impacts, etc. Preparation of the proposal should begin immediately after approval of the topic. A proposal using NSF or NIH (or other agency) required formats will be written, with feedback from the student’s research advisor and course instructor. During the last half of the semester, students will present their proposal in front of the public and their research committee. A copy of the written research proposal and abstract must be delivered to each committee member at least ten days before the presentation date. At the same time, a one-page abstract of the proposal, including key references, must be distributed to all other chemistry faculty and graduate students.

The oral research proposal examination will have the following format:

- A 30-40 minute presentation open to all faculty and students
- 15 minute question/answer period open to the general audience
- 1-2 hour question/answer period conducted by the committee and interested UM faculty (the general audience will be asked to leave)
- Candidate excused and committee votes to pass or fail (Credit/No Credit)

The examination chair (an advisory committee member other than the thesis advisor) will supervise the question period, arranging that each committee member and interested UM
faculty member has adequate opportunity to question the candidate. Although most of the questions in this examination will be concerned with the proposal, questions on cognate and minor areas may, and likely will, be asked.

**Evaluation:** The student's advisory committee determines whether the original research proposal and oral examination are acceptable in every respect: independence from dissertation topic, novelty, content, and demonstration of chemical knowledge and intuition. Only advisory committee members vote on the performance of the candidate in the examination. The candidate and guests are excused before the vote is taken. There are three possible outcomes:

- The student passes if there are three or more votes to pass.
- The student fails and the committee affords a second examination based on the same or a new research proposal.
- The student fails outright and is not afforded a second examination.

Failure of the examination outright or on a second attempt will render the student ineligible for a PhD. After passing the oral research proposal examination, the candidate will furnish a copy of the research proposal to the Department.