# Program Modification Form

## I. Summary of Proposed Changes

<table>
<thead>
<tr>
<th>Department/program</th>
<th>Geosciences – Option in Earth Science Education</th>
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</table>

**Summary**
The courses required for the earth science teaching major option in Geosciences were modified to more closely align with Professional Educator Preparation Program Standards (PEPPS) as required for accreditation by the Montana Board of Public Education and the Office of Public Instruction.

## II. Cosigners and Sponsorship

<table>
<thead>
<tr>
<th>Requestor: Requestor</th>
<th>Johnnie Moore, Geosciences Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone:</td>
<td>243-2341</td>
</tr>
<tr>
<td>Program Chair/Director</td>
<td>Same as above</td>
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<tr>
<td>Department Deans</td>
<td>CAS</td>
</tr>
<tr>
<td></td>
<td>Dean Chris Comer</td>
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<td></td>
<td>CoEHS &amp; PEU</td>
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<td></td>
<td>Dean Roberta Evans</td>
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<tr>
<td>Other affected Programs: (Use additional sheet if needed)</td>
<td>Charles Janson, Division of Biological Sciences</td>
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<tr>
<td></td>
<td>Mark Cracolice, Chemistry and Biochemistry</td>
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<tr>
<td></td>
<td>Yolanda Reimer, Computer Science (email attached)</td>
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<td></td>
<td>Sarah Halvorson, Geography</td>
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<td></td>
<td>Andrew Ware, Physics and Astronomy</td>
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<td></td>
<td>Leonid Kalachev, Mathematical Sciences</td>
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</tbody>
</table>

Are other departments/programs affected by this modification because of
(a) required courses incl. prerequisites or corequisites,
(b) perceived overlap in content areas
(c) cross-listing of coursework

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

## III. Type of Program Modification

(e.g. adding a writing course required of all majors.) Please X check the appropriate box.

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Option</th>
<th>Teaching major/minor</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>Please describe</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## IV. Catalog Language

If you are proposing a change to an existing program or major, please cut and paste the requirements as they appear in the current catalog below.

[www.umt.edu/catalog](http://www.umt.edu/catalog)

**Option in Earth Science Education**

Major Teaching Field of Earth Science: A student

**Option in Earth Science Education**

Major Teaching Field of Earth Science: A
must complete GEO 101N, 102N, 105N, 231, 226, 211 or 228, 310, 315, 3 additional credits from any geosciences course numbered 100 or above and 12 credits from any geosciences courses numbered 300 or above. Also required are ERTH 303N, ASTR 131N-132N, M 151, STAT 341, CSCI 100, CHMY 485, and EDU 497. One of BIOE 172N or CHMY 121N/123N or PHSX 205N/206N, 207N/208N; must be completed. For endorsement to teach earth science, a student also must gain admission to Teacher Education Program and meet the requirements for teaching licensure (see the College of Education section of this catalog). Students must complete the requirements for the required second teaching endorsement (major or minor). Students should develop their course of study with an Education advisor.

Please explain/justify the new proposal or change.

The earth science teaching major option in Geosciences has not been reviewed for a few years and some of the content in the geoscience and cognate science courses have changed over time. Consequently, the courses required for the earth science teaching major were modified to more closely align with Professional Educator Preparation Program Standards (PEPPS) as required for accreditation by the Montana Board of Public Education and the Office of Public Instruction. This proposal reflects those changes and alignment with PEPPS and provides a stronger foundation for those teaching earth science in grades 5-12. All of the proposed courses currently exist so no additional resources are required.

GEO 105N Oceanography became GEO 105N or GEO 108N Climate Change.
Both GEO 211 Earth History and Evolution and GEO 228 Earth Surface Processes are now required.
GEO 304 Science and Society was added as a requirement to meet PEPPS.
GEO 310 Invertebrate Paleontology is no longer offered and is replaced by GEO 311 Paleobiology.
GEO 315 Structural Geology was deleted.
The number of GEO credits was reduced and additional cognate sciences were added to meet PEPPS and still align with the other geoscience degree options.
CHMY 121 Intro to General Chemistry and CHMY 123 Intro to Organic and Biochemistry were added.
PHSX 205N/206N Physics I with lab and PHSX 207N/208N Physics II with lab were added.
STAT 341 Intro Probability and Stats was replaced with STAT 216 Intro to Stats as this meets PEPPS and does not require the calculus pre-requisite.
ASTR 132N was deleted as ASTR 131N is still required and will meet PEPPS.
ERTH 303N Weather and Climate was deleted as the content to meet PEPPS exists in other required courses.
CSCI 100 Intro to Programming was deleted.
BIOE 172 Introductory Ecology was deleted as one option of cognate sciences.
Hi Kristi,
If someone drops off this proposal to the computer science office on Thursday morning, I can sign it before noon. Also let me know where I should send it once I've signed.

Best,

Yolanda Reimer
Chair, Assoc. Professor
Computer Science Department, University of Montana
(Phone) 406.243.4618

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From: Murphy, Kristine
Sent: Monday, September 17, 2012 4:51 PM
To: Janson, Charles; Cracolice, Mark; Reimer, Yolanda; Halvorson, Sarah; Ware, Andrew; Kalachev, Leonid
Cc: Moore, Johnnie; Tompkins, Jon; Harper-Whalen, Susan
Subject: Earth Science Teaching Major Revisions

Hello All,

Last semester, Geosciences and Curriculum & Instruction started a conversation about revision of the earth sciences teaching major requirements (an option within the BS in Geosciences). The attached Program Modification Form reflects proposed changes to more closely align the requirements with the Professional Educator Preparation Program Standards and provide a stronger foundation for those teaching earth science in grades 5-12. Each of your programs is impacted by these changes and a list is included on the second page. Consequently, each of your signatures is required prior to submission to the Deans' offices and Faculty Senate/ASCRC. Please look over the proposal and let Johnnie Moore and me know if you have any questions or concerns. In addition, please let me know the most expedient way to obtain your signature (office hours or availability) in the next few days.

Thank you,

Kristi Murphy
Licensure Specialist
College of Education and Human Sciences
The University of Montana
32 Campus Drive
Missoula, MT 59812
406.243.2032 (main office)
406.243.2121 (direct)
406.243.4908 (fax)