Washington State University
MAJOR CURRICULAR CHANGE FORM - - COURSE
(Submit original signed form and ten copies to the Registrar’s Office, zip 1035.)

<table>
<thead>
<tr>
<th>Future Effective Date: 08/16/2013</th>
<th>☑ New course</th>
<th>☐ Temporary course</th>
<th>☐ Drop service course</th>
</tr>
</thead>
<tbody>
<tr>
<td>(effective date cannot be retroactive)</td>
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<tr>
<td>☑ Variable credit 39 credit hours</td>
<td>☑ Repeat credit (cumulative maximum 44 hours)</td>
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<tr>
<td>☐ Increase credit (former credit ___)</td>
<td>☐ Lecture-lab ratio (former ratio ___)</td>
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<tr>
<td>☐ Number (former number ___)</td>
<td>☐ Prefix (former prefix ___)</td>
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<tr>
<td>☐ Crosslisting (between WSU departments) (Must have both departmental signatures)</td>
<td>☐ Cooperative listing (UI prefix and number ____ taught by: WSU ☐ UI ☐ jointly taught ☐)</td>
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<tr>
<td>☐ Conjoint listing (400/500)</td>
<td>☐ S, F grading</td>
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<td>☐ Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)</td>
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<tr>
<td>☐ Request to meet GER in ________ (Must have GenEd Committee Approval) ☐ Fulfills GER lab (L) requirement</td>
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<tr>
<td>☐ Professional course (Pharmacy &amp; Vet Med only) ☐ Graduate credit (professional programs only)</td>
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<td>☐ Other (please list request)</td>
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<tr>
<th>T&amp;L course prefix</th>
<th>598 course no.</th>
<th>Research Seminar in Mathematics and Science Education title</th>
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<tbody>
<tr>
<td>T&amp;M course prefix</td>
<td>598 course no.</td>
<td>Research Seminar in Mathematics and Science Education title</td>
</tr>
<tr>
<td>credit lecture hrs lab hrs studio hrs per week per week per week</td>
<td>None</td>
<td>prerequisite</td>
</tr>
</tbody>
</table>

Description (20 words or less)
Through targeted readings and discussion, students will develop knowledge base proficiencies related to areas of mathematics/science education.

Instructor: Janet Frost
Contact: Kelly LaGrutta
Campus Zip Code: 1495

Phone number: (509) 358-7595
Email: frost@wsu.edu
Phone number: (509) 358-7942
Email: lagutta@wsu.edu

- Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).
- Secure all required signatures and provide 10 copies to the Registrar’s Office.

Chair/date Dean/date General Education Com/date
Chair (if crosslisted/interdisciplinary) * Dean (if crosslisted/interdisciplinary) * Graduate Studies Com/date

All-University Writing Com/date Academic Affairs Com/date Senate/date

*If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.
Course Rationale

T & L 598: Research Seminar in Mathematics and Science Education

The seminar course serves multiple purposes. Through targeted readings and discussion, students enrolled in the seminar will develop knowledge base proficiencies related to specific areas of mathematics and science education. Current and commonly-used theoretical frameworks for developing and conducting research will also be explored in these ways.

On some occasions, faculty will present current research for group discussion; students will also be asked to lead discussions of their own or of work in their current area of interest. Other seminar activities include reading, analyzing, and critiquing literature; working individually or in groups to design and carry out a mini-research study; designing a literature review; presenting critiques and research work to the seminar class; learning how to review manuscripts for journals; developing proposals for national and international conferences; writing up research and/or submitting research for publication; and applying for jobs.

The seminar will enhance the learning community among doctoral students and faculty affiliated with the PhD in Mathematics and Science Education program. The seminar will bring together doctoral students from around the state, through teleconferencing and other technologies, to further develop a community of professional collaborators.

The course has no anticipated impacts on other units in Pullman. The course will be available to students at all campuses who are interested in mathematics and/or science educational research. The course will be taught on a rotating basis by faculty on the Pullman, Spokane, Tri-Cities and Vancouver campuses to ensure equitability in faculty load.
T&L 598: Research Seminar in Mathematics and Science Education

Instructor: The instructor of record will rotate on a semester basis. The following are a list of potential faculty instructors:

Kathy Baldwin, baldwink@wsu.edu, 509-335-1631
Andy Cavagnetto, andy.cavagnetto@wsu.edu, 509-335-6391
Janet Frost, frost@wsu.edu, 509-358-7595
Kristin Lesseig, kristin.lesseig@vancouver.wsu.edu, 360-546-9496
Amy Roth McDuffie, mcduffie@tricity.wsu.edu, 509-372-7384
Judy Morrison, jmorriso@tricity.wsu.edu, 509-372-7176
Tamara Holmlund Nelson, tnelson1@vancouver.wsu.edu, 360-546-9663
Jo Olson, jcolson@wsu.edu, 509-335-5651
David Slavit, dslavit@wsu.edu, 360-546-9653

Purpose of the Course
The overall purpose of the Research Seminar in Mathematics and Science Education is two-fold. First, the course will enhance the learning community among doctoral students and faculty affiliated with the PhD in Mathematics and Science Education program. The seminar will bring together doctoral students from around the state, through teleconferencing and other technologies, to further develop a community of professional collaborators. As the PhD program is multi-campus in nature, the seminar will serve as an important cross-campus conduit. Second, the seminar will provide an opportunity for all faculty and students affiliated with the degree to engage in meaningful dialogue and collaboration about research in mathematics and science education. Further details are found below.

WSU College of Education Conceptual Framework
The WSU College of Education’s conceptual framework is based on six proficiencies:

1. Knowledge Base Proficiencies
2. Theory and Practice in Education Proficiencies
3. Learners in Cultural Contexts
4. Engaged Learning with Meaning and Purpose
5. Ethical Leadership
6. Local and Global Responsibilities toward a Sustainable and Just Future
The research seminar will address each of these competencies as they relate to the areas of mathematics and science education. Through targeted readings and discussion, students enrolled in the seminar will develop knowledge base proficiencies related to specific areas of mathematics and science education. Current and commonly-used theoretical frameworks for developing and conducting research will also be explored in these ways. The remaining competencies will arise through specific readings targeting these areas.

**Course Topics and Requirements**

The requirements and grading criteria described below are consistent with a 1-credit seminar-type course. In the atypical case in which students enroll in the course for more than 1 credit, additional requirements and grading criteria will be determined.

**Topics and Activities:**

During the initial meeting of the seminar, the group will collectively decide on the semester’s overarching theme. The instructor of record will oversee the final selection of the theme. The course will combine reading of current literature with workgroup-style activity around that theme.

Once each month, a mathematics or science education faculty member or student will be invited by the seminar instructor to present their current research. Advance readings will be provided. The purpose of the meeting will be to provide supportive critique of the study to the presenter and model research presentations for the students. The remainder of the meetings in a given month will be devoted to a variety of activities arising from the needs and interests of the seminar participants. These will include reading, analyzing, and critiquing literature; working individually or in groups to design and carry out a mini-research study; designing a literature review; presenting critiques and research work to the seminar class; learning how to review manuscripts for journals; developing proposals for national and international conferences; writing up research and or submitting research for publication; and applying for jobs.

**Requirements:**

- Completion of all assignments, including advance reading assignments and papers
- Attendance at all seminar meetings
- Participation in and contribution to seminar discussions and activities
- Completion of research seminar journal by the end of the semester
- Use of APA style for all written work

**Evaluation**

Students are expected to complete all assignments and actively participate in all activities. Many assignments will be group-based, while some will involve working independently.

Points will be awarded as follows:

**Research Seminar Journal (20 points possible)**
The instructor of record will collect the students' research journal twice each semester. The journal will serve as an informational repository for the student and will contain notes, reflections, and information from all seminar meetings.

**Course activities (20 points possible)**
The instructor of record will provide a grade to each student related to their work and participation in the seminar course activities throughout the semester. Students will be scored by assigning 1-4 points to the following five criteria, as appropriate:

- Preparedness as evidenced by attendance and advanced knowledge of required readings
- Meaningful contributions to seminar discussions
- Purposeful and timely feedback to presenters
- Possible presentation of current research work (if enacted)
- Leadership and major contributions to small group projects and activities (if enacted)

**Peer evaluation (10 points possible)**
Each student will be required to identify two other seminar attendees who will evaluate the student on the above five criteria. These will be averaged and then halved, and constitute the peer evaluation portion of the grade.

Grading will be assigned on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>47-50</td>
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<tr>
<td>A-</td>
<td>45-46</td>
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<tr>
<td>B+</td>
<td>43-44</td>
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<tr>
<td>B</td>
<td>41-42</td>
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<tr>
<td>B-</td>
<td>40</td>
</tr>
<tr>
<td>C+</td>
<td>38-39</td>
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<tr>
<td>C</td>
<td>37-38</td>
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<tr>
<td>C-</td>
<td>35-36</td>
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<tr>
<td>D+</td>
<td>33-34</td>
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<tr>
<td>D</td>
<td>31-32</td>
</tr>
<tr>
<td>F</td>
<td>0-30</td>
</tr>
</tbody>
</table>

**Course Schedule**

**Week 1**
Organizational meeting; selection of specific seminar theme, topics, and presenters

**Week 2**
RESEARCH PRESENTATION #1

**Week 3**
Reading and discussion of 1-2 research articles related to seminar theme

**Week 4**
Small group work time on individualized projects; or reading and discussion of research

**Week 5**
Small group work time on individualized projects; or reading and discussion of research
Week 6
RESEARCH PRESENTATION #2

Week 7
Reading and discussion of 1-2 research articles

Week 8
Small group work time on individualized projects; or reading and discussion of research

Week 9
Small group work time on individualized projects; or reading and discussion of research

Week 10
RESEARCH PRESENTATION #3

Week 11
Reading and discussion of 1-2 research articles

Week 12
Small group work time on individualized projects; or reading and discussion of research

Week 13
Small group work time on individualized projects; or reading and discussion of research

Week 14
RESEARCH PRESENTATION #4

Week 15
Reading and discussion of 1-2 research articles

Week 16
Seminar wrap-up; Plan for next semester

Required Texts

None. Assigned readings will emerge on an ongoing basis and be collectively decided by the seminar group.

SELECTED BIBLIOGRAPHY

Potential Readings


Disability Accommodation: Reasonable accommodations are available for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, we recommend that you begin the process as soon as possible. All accommodations must be approved through Disability Services. For more information, contact a Disability Specialist on your home campus.

- **Spokane**: /students/current/StudentAffairs/disability/index.html
- **Pullman**: http://accesscenter.wsu.edu
- **Tri-Cities**: http://www.tricity.wsu.edu/disability/index.html
- **Vancouver**: http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services

Academic Integrity: Academic integrity is the cornerstone of the university and will be strongly enforced in this course. Any student found in violation of the academic integrity...
policy will be given an "F" for the course and will be referred to the Office of Student Conduct. Read [http://academicintegrity.wsu.edu/](http://academicintegrity.wsu.edu/)

For additional information about WSU’s Academic Integrity policy, procedures, and definitions, please check online at [http://www.conduct.wsu.edu/default.asp?pageID=338](http://www.conduct.wsu.edu/default.asp?pageID=338) and [http://www.conduct.wsu.edu/](http://www.conduct.wsu.edu/).

Note: Plagiarism is a violation of academic integrity. Students sometimes do not realize what constitutes plagiarism. Please read the information at [http://www.wsulibs.wsu.edu/plagiarism/what.html](http://www.wsulibs.wsu.edu/plagiarism/what.html) and associated links.

**Emergency Notification System:** WSU has made an **emergency notification system** available for faculty, students and staff. Please register at myWSU with emergency contact information (cell, email, text, etc). You may have been prompted to complete emergency contact information when registering for classes on RONet.

In the event of a **Building Evacuation**, a map at each classroom entrance shows the evacuation point for each building. Please refer to it.

Finally, in case of **class cancellation campus-wide**, please check local media, the appropriate WSU web page and/or [http://www.flashalert.net/](http://www.flashalert.net/). Individual class cancellations may be made at the discretion of the instructor. Each individual is expected to make the best decision for their personal circumstances, taking safety into account.

**Audio, video, digital, commercial note-taking and other recording during class:**

Copyright (insert year) (insert Faculty Name) as to this syllabus, all lectures, and course-related written materials. During this course students are prohibited from making audio, video, digital, or other recordings during class, or selling notes to or being paid for taking notes by any person or commercial firm without the express written permission of the faculty member teaching this course.
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**Course Topics and Objectives**
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**Course Objectives and Assessment/Evaluation**
The overarching objective of this course is for students to be active participants in the WSU mathematics and science education learning community. This participation includes the following student learning objectives:

- Preparation: Students will complete careful and complete reading of the assigned material and critical consideration of the ideas within that material
- Contribution: Students will attend all meetings and demonstrate a spirit of inquiry through active listening to others’ thoughts, questioning aimed toward elucidation and exploration, and sharing ideas and perspectives
- Application: Students will apply and share ideas learned in the PhD program, research, and teaching into future discussions and work, including selecting and leading discussion of an article at least once each semester
- Reflection: Students will share individual understanding of and response to the reading through written reflections. (Discussion board reflections are described below.)

**Evaluation**
Points will be awarded as follows:
Discussion Board Reflections (20 points possible)
Over the course of each semester, students will make at least one entry on the Angel discussion board for each reading prior to the class in which the reading will be discussed. (For information on Angel, use this link: http://angel.wsu.edu/Tutorials/STudentOrientation/STudentOrientation.html.)

Discussion board entries can take the form of describing important issues/ideas/points from the reading, responding to the reading with thoughts about these points, making connections between these points and other readings or experiences, or identifying ideas with which you take issue and explaining why you take issue with them. Additionally, these entries can be responses to other participants’ entries, although at least two entries each semester should be your own ideas, not just a response to others. The general idea is to stay focused on the ideas the author(s) present and to engage critically and creatively with them.

Although the intent of this assignment is to engage you in thinking about the reading prior to the seminar discussion of the reading, you are encouraged but not required to add further reflection after the discussion if new thoughts/responses occur to you.

Meaningful Class Discussion Contributions (30 points possible)
Students will be evaluated according to their contributions to discussions led by others (20 points) as well as their leadership in conducting the discussion (10 points), including identifying key questions for the participants to consider while completing each week’s readings.

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Reading and discussion of 1-2 research articles

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**Week 9**
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**Week 10**
RESEARCH PRESENTATION #3

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**Week 14**
RESEARCH PRESENTATION #4

**Week 15**
Reading and discussion of 1-2 research articles

**Week 16**
Seminar wrap-up; Plan for next semester

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**Required Texts**
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- **Vancouver**: http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services
Academic Integrity: Academic integrity is the cornerstone of the university and will be strongly enforced in this course. Any student found in violation of the academic integrity policy will be given an “F” for the course and will be referred to the Office of Student Conduct. Read http://academicintegrity.wsu.edu/ For additional information about WSU’s Academic Integrity policy, procedures, and definitions, please check online at http://www.conduct.wsu.edu/default.asp?PageID=338 and http://www.conduct.wsu.edu/. Note: Plagiarism is a violation of academic integrity. Students sometimes do not realize what constitutes plagiarism. Please read the information at http://www.wsulibs.wsu.edu/plagiarism/what.html and associated links.

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Christine,

Attached is the revised syllabus for T&L 598. You will now find explicit SLOs.
Also, we are willing to offer the course as 1-credit repeatable up to four times.

We continue to work on the revision to T&L 584 and will get that to you prior to your next meeting.

Thanks again,
Dave

---

From: Oakley, Christine Kay <coakley@wsu.edu>
Date: Friday, December 7, 2012 8:22 PM
To: Janet Frost <frost@wsu.edu>
Cc: David Slavit <dslavit@vancouver.wsu.edu>
Subject: T & L 598

Hello Dr. Frost,

I recently reviewed T & L 598, the course you submitted to the Catalog Subcommittee for approval by the Faculty Senate. The Subcommittee would like to suggest the following revisions before we recommend it for approval by the Senate:

1. Please include student learning outcomes for the course (as required for all WSU course syllabi)
2. Please consider offering the course as a one credit course, rather than a 1 - 3 variable credit course. Review of the proposed requirements for the Mathematics and Science Education PhD program include 598 as a one credit course, repeated four times throughout the proposed program.
3. If you would like to retain the original variable credit proposal, we request that you provide us with 2 and 3 credit course examples.
4. If you change the course credit to a one (only) credit, please limit the cum max for the course to 4 credits.

I would be happy to discuss these suggested revisions further if you would like. Don't hesitate to contact me at coakley@wsu.edu. Please send the course revision directly to me.

Take care,
Christine