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

Future Effective Date: 09/01/2014 - - 09/01/2015 (effective date cannot be retroactive)

☐ New course ☐ Temporary course ☐ Drop service course
☐ There is a course fee associated with this course (see instructions)

☐ Variable credit __________
☐ Repeat credit (cumulative maximum 6 _ _ hours)
☐ Lecture-lab ratio (former ratio __________)
☐ Number (former number __________)
☐ Prefixed (former prefix __________)
☐ Crosslisting (between WSU departments) (Must have both departmental signatures)
☐ Cooperative listing (UI prefix and number __________)
☐ Conjoint listing (400/500)
☐ S, F grading
☐ Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)
☐ Request to meet GER in __________ (Must have GenEd Committee Approval)
☐ Professional course (Pharmacy & Vet Med only)
☐ Graduate credit (professional programs only)
☐ Other (please list request) __________

T&L course prefix 598 course no.
Research Seminar in Mathematics and Science Education
title

<table>
<thead>
<tr>
<th>credit</th>
<th>lecture hrs per week</th>
<th>lab hrs per week</th>
<th>studio hrs per week</th>
<th>prerequisite</th>
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</thead>
</table>

Description (20 words or less)
Through targeted readings and discussion in a doctoral learning community, students develop knowledge base proficiencies in mathematics and science education.

Instructor: Janet Frost
Phone number: (509) 358-7595 Email: frost@wsu.edu
Contact: Kelly LaGrutta
Phone number: (509) 358-7942 Email: lagrutta@wsu.edu
Campus Zip Code: 1495

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.

Darcy Miller 3-25-14
Chair/Date

Dean/Date
General Education Com/Date

Chair (if crosslisted/interdisciplinary)*
Dean (if crosslisted/interdisciplinary) *
Graduate Studies Com/Date

All-University Writing Cam/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.
Rationale for T&L 598 Research Seminar in Mathematics and Science Education

We have many part-time students in the Mathematics and Science Education Ph.D. Program. We would like to encourage them to participate in the 1-credit Research Seminar in Mathematics and Science Education for as many of the semesters of their program as possible. Therefore, we request that, although students will only be required to attend 4 semesters, the maximum number of credits be extended to 6 credits so that those students can receive credit for attending more semesters during their program.

This course is available to Mathematics and Science Education PhD students in Pullman, Spokane, Tri-Cities, and Vancouver, so may impact each of these campuses.
T&L 598: Research Seminar in Mathematics and Science Education (1 credit)

Wednesdays 4:30-5:30
College of Education
Washington State University

Instructor of Record: Janet Frost, Ph.D.
WSU Spokane College of Education
Spokane Academic Center 425G
Phone: 509-358-7595
Email: frost@wsu.edu Email is the most effective way to contact me.
Office Hours by appointment

Other Participating Faculty
Andy Cavagnetto, andy.cavagnetto@wsu.edu, 509-335-6391
Jonah Firestone, jonah.firestone@wsu.edu
Richard Lamb, richard.lamb@wsu.edu, 509-335-5025
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
David Slavit, dslavit@vancouver, 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 Mathematics and Science Education PhD Program. 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.

WSU College of Education (COE) Conceptual Framework
The WSU College of Education’s conceptual framework is based on six proficiencies:
1. Knowledge Base
2. Theory and Practice in Education
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.

**Course Topics and Approach**
Course topics and activities will include group discussions based on student presentations of “vexations and ventures,” faculty research presentations delivered in class or through the College of Education Research Brownbag series, and student questions and needs related to the program and/or future academic careers. An emphasis will be placed on conducting scholarly dialogue.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Activities</th>
<th>Evaluation Measures</th>
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<tbody>
<tr>
<td>- Students will demonstrate a spirit of inquiry and scholarly dialogue.</td>
<td>-Class discussions</td>
<td>-Participation in class discussions</td>
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<tr>
<td>- Students will demonstrate increased understanding of the research process in general and of current mathematics and science education research.</td>
<td>-Attendance at College of Education Research Brownbag presentations</td>
<td>-Reflections on class discussions and COE Research Brownbag attendance -Student presentations</td>
</tr>
<tr>
<td>- Students will discuss results of their learning and research in the program, including identifying key issues on which they are focusing their work (“vexations”) and how they intend to continue their study of these issues (“ventures”).</td>
<td>-Weekly reflections -Student presentations</td>
<td></td>
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**Student Evaluation**
Students will be evaluated on the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Active participation in seminar discussions</td>
<td>60%</td>
</tr>
<tr>
<td>12 Reflections, submitted on Angel discussion board or in Reflection Log</td>
<td>20%</td>
</tr>
<tr>
<td>Seminar presentation of “vexation/venture” and associated reading(s)</td>
<td>20%</td>
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The final course grade and individual course assignment scores will be determined using the following Dept. of Teaching & Learning guidelines:

**A** 95% or above; Exceptional, consistently exceeds requirements & expectations.

**A-** 93-94%; Excellent

**B+** 91-92%; Very Good

**B** 87-90%; Good, Fully accomplished all objectives for the course/assignment;

demonstrates a complete understanding of the concepts, processes, theories, approaches of the course/assignment.

**B-** 85-86%; Proficient

**C+** 83-84%; Satisfactory

**C** 79-82%; Minimally satisfactory/ Partial accomplishment, minimal requirements of the course/assignment objectives accomplished, lack of evidence of thorough understanding of the concepts, processes, theories, approaches of the course/assignment.

**C-** 77-78%; Unsatisfactory, Little accomplishment. Course needs to be repeated for credit.
D+ 75-76%  D  69-74%  F  0-68%  I  Incomplete (Must be arranged with Instructor)
### Tentative Course Schedule (See comment below regarding readings*)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1/15</td>
<td>Faculty Position Search Discussion</td>
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<tr>
<td>1/22</td>
<td>Big Ideas Discussion: Learning from last semester</td>
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<tr>
<td>1/29</td>
<td>Ryan Seidel – vexation/venture</td>
</tr>
<tr>
<td>2/5</td>
<td>No class – replacement for Research Brownbag attendance (see description below) Reflection Log due (see Weekly Reflection description below)</td>
</tr>
<tr>
<td>2/12</td>
<td>Faculty presentation: Janet Frost on “The development of mathematical practices: Using a quadratics task to prompt increased levels of proficiency”</td>
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<tr>
<td>2/19</td>
<td>Margarita Vidrio – vexation/venture</td>
</tr>
<tr>
<td>2/26</td>
<td>Faculty presentation: Andy Cavagnetto on “Teacher learning and professional development”</td>
</tr>
<tr>
<td>3/5</td>
<td>Discussion of January &amp; February COE Research Brownbags Midcourse evaluation Reflection Log due</td>
</tr>
<tr>
<td>3/12</td>
<td>Faculty presentation: Amy Roth McDuffie on “Enacting video analysis to develop PSTs’ noticing and focus on equity: Mathematics Teacher Educators’ decisions and moves”</td>
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<tr>
<td>3/19</td>
<td>No class – Spring Break</td>
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<tr>
<td>3/26</td>
<td>Angela Witters – vexation/venture</td>
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<tr>
<td>4/2</td>
<td>Faculty presentation: Richard Lamb – “A look at 21st Century Skills through the lens of cognition” Reflection Log due</td>
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<tr>
<td>4/9</td>
<td>No class - replacement for Research Brownbag attendance (see description below)</td>
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<tr>
<td>4/16</td>
<td>Faculty presentation: Kristin Lesseig on “Supporting middle grades teachers’ attention to student conjectures, generalizations and justifications through school-based professional development”</td>
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<tr>
<td>4/23</td>
<td>Faculty presentation – Tamara Nelson on “Scientific models”</td>
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<tr>
<td>4/30</td>
<td>Discussion of March and April COE Research Brownbags Course Evaluation Reflection Log due</td>
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### Assignment Descriptions

1. **Active Participation in Seminar Discussions**

   For each seminar session, complete any assigned reading, and come prepared to reflect on the reading, ask questions, and respond to the questions and comments made by the presenter and other seminar attendees. Draw on your understanding of the literature in the field as you explore the topic.

   During their first semester, students often feel more comfortable listening than commenting during the seminar discussions. Their active participation can be shown in weekly reflections (described below). As students gain more experience in the program, they should plan to interact by asking questions, responding to others’ questions, and suggesting perspectives gained in their own studies, as well as in their weekly reflections.
2. **Attendance Policy and Professional Behavior**
   You are expected to attend all classes and to conduct yourself in a professional manner. Attendance will be taken at the beginning of class. If you are late, it is your responsibility to notify the instructor (after class) of your presence. If you must be absent from class, please let me know before the missed session if at all possible. More than one unexcused absence will result in a conversation with the course instructor. Not resolving attendance issues will result in failure of the course.

   Classes will only be worthwhile if we have all read the assigned readings and are ready to actively participate in discussions about them. Professional behavior in this course involves the following: (1) willingness to participate in and add to the quality of the instruction in this course, (2) your attendance and tardiness record, and (3) your approach to course assignments.

3. **Late Assignments**
   All assignments must be turned in on the specified due date at the beginning of class. Late assignments will be lowered one letter grade. All assignments should be typed. Details of these assignments are provided elsewhere.

4. **Required Text**
   There is no required text. Readings will be provided by each presenter one week before her or his presentation.

5. **Research Brownbag Attendance**
   Over the course of the semester, attend or watch the videorecordings of at least two of the College of Education (COE) Research Brownbag presentations. A schedule of these sessions is shown below. Two seminar sessions (2/5 and 4/9) have been cancelled to honor the time you will spend at these presentations; however, the Brownbag sessions you choose to attend can be on any of the scheduled dates. Write a weekly reflection about the presentation (see instructions below) and be prepared to discuss the presentations at the two sessions dedicated to Brownbags (3/5 and 4/30).

   **February 25** - Eric Johnson and Sarah Newcomer “Bridging community literacy practices and funds of knowledge to the classroom”
   **March 11** - Michael Dunn “Response to intervention: Researchers’ perspectives”
   **March 25** - Sola Adesope “Examining the use of animated concept maps to overcome scientific misconceptions”
   **April 8** - Kasee Hildenbrand and Katy Pietz “Understanding and application of current concussion guidelines by emergency department physicians”
   **April 22** - Jenny LeBeau and Brian French “Enhancing STEM assessment through development of a multidisciplinary teamwork instrument”
   **April 29** - Chad Gotch “The role of test scores in the parent-teacher conference”

6. **Student Presentations**
   As you move through the process of developing your own research focus, seminar presentations provide an opportunity to explore ideas with the other students and
the faculty. Once each year, you will be asked to make a presentation during a seminar session. This presentation should be based on your learning in the program up to this point and should include identification of a key issue in the literature that has drawn your attention ("vexation"), brief discussion of the current thinking in the field about this key issue and any "gaps" you have identified in the research that suggest a need for further study, and questions for the group to consider about possible directions for this further study ("venture).

7. **Weekly Reflections: Discussion Board or Reflection Log**

After each seminar session, make at least one entry on the Angel discussion board or in a reflection log. Your entries can take the form of describing important issues/ideas/points from the discussion and/or related reading, responding to the discussion/reading with your thoughts about these points, making connections between these points and other readings or experiences, explaining questions or confusion that occurred for you during the discussion, or identifying ideas with which you take issue and explaining why you take issue with them. If you choose to participate in the discussion board, these entries can be responses to other participants’ entries, although at least five 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 or presenter(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.

If you choose to keep a Reflection Log instead of participating in the discussion board, submit it to Janet at the beginning of each month, as shown in the Course Schedule. Each student is responsible for submitting 12 reflections through the discussion board or Reflection Log.

**General Information**

**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 a failing grade for the course and will be referred to the Office of Student Conduct. Please take time to read the full statement on student conduct at [http://www.conduct.wsu.edu/](http://www.conduct.wsu.edu/).

**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. For more information, contact a Disability Specialist on your home campus.

- **Spokane** /students/current/StudentAffairs/disability/index.html
- **Pullman** [http://accesscenter.wsu.edu](http://accesscenter.wsu.edu)
- **Tri-Cities:** [http://www.tricity.wsu.edu/disability/index.html](http://www.tricity.wsu.edu/disability/index.html)
Inclusion statement. The instructor of this course is committed to teaching equitably and inclusively, addressing the academic needs, concerns, and interests of every student, regardless of age, gender, race/ethnicity, religion, social class, sexual orientation, English language proficiency, or disability.

Instructional approach. The primary instructional approach used in this course will be small and large group discussions. An emphasis will be placed on active student participation in discussions and activities.

Professional communication. The faculty members of the Teaching & Learning Department and the College of Education emphasize the importance of effective written and oral communication for teachers. Students of the program are expected to demonstrate that they can meet standards of professional communication on all of their assignments. A student who fails to adhere to the conventions of writing (e.g. makes consistent grammatical and/or spelling errors, frequently misuses words or phrases, fails to organize writing in an effective manner) may be required to work with the Writing Center or complete additional coursework. Students who fail to meet expectations after being provided with opportunity for remediation and improvement may be removed from the program. Students will also be held accountable for demonstrating that they are capable of clear and professional verbal communication.

Safety on Campus. All faculty, staff, and students are asked to take the following steps to become familiar with campus safety and emergency management information.

- Review the Campus Safety Plan (http://safetyplan.wsu.edu/) and visit the Office of Emergency Management web site (http://oem.wsu.edu/) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

- Everyone should also become familiar with the WSU ALERT site (http://alert.wsu.edu/) where information about emergencies and other issues affecting WSU will be found. This site also provides information on the communication resources WSU will use to provide warning and notification during emergencies. It should be bookmarked on computers.

- Finally, all faculty, staff, and students should go to the zzusis portal at http://zzusis.wsu.edu and register their emergency contact information for the Crisis Communication System (CCS). Enter your network ID and password and you will be taken to the zzusis portal page. Look for the Pullman Emergency Information box on the left side of the page and click on Update Now to be taken to the registration page where you can enter your cell, landline, and email contact information as well as arrange for emergency text messages to be sent to your cell phone.

SELECTED BIBLIOGRAPHY

American Educational Research Association, American Psychological Association, and


