Course Inventory Change Request

New Course Proposal

Date Submitted: 11/24/15 2:46 pm

Viewing: EDUC 5050: Force in STEM Education

Last edit: 11/24/15 2:46 pm

Changes proposed by: D00171154

Catalog Pages referencing this course

Elementary STEM Endorsement

<table>
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<th>Course Prefix:</th>
<th>EDUC</th>
<th>Course Number:</th>
<th>5050</th>
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</thead>
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<tr>
<td>Effective Semester:</td>
<td>Spring 2017</td>
<td>Department:</td>
<td>Education (EDUC)</td>
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<td>School:</td>
<td>School of Education</td>
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<td>Course Title:</td>
<td>Force in STEM Education</td>
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<td>Short Course Title:</td>
<td>Force in STEM Education</td>
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<td>Credits:</td>
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<td>Workload Factors:</td>
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In Workflow
1. EDUC Chair
2. ED Dean
3. University Curriculum Committee Chair
4. Banner

Approval Path
1. 11/24/15 2:51 pm Chizu Matsubara (matsubara): Approved for EDUC Chair
2. 12/10/15 8:47 am Robyn Whipple (whipple): Approved for ED Dean
Primary Grade Type: Standard Letter

Secondary Grade Type:

Instructor Permission Required: Yes

Repeatable for Credit: No

Schedule Type: Lecture Hrs/Wk: 5

Catalog Prerequisites: No

Corequisites: No

Course/Lab Fee: No

Instruction Index Code: FED214

Catalog Description: This course provides teachers with a deep and useful understanding of force and the nature of how students use concepts of force to make sense of phenomena across life, earth, and physical science. This understanding enhances teacher insights into: 1) how force, matter and energy interact, 2) the relationship of force to energy and interactions within fields, and 3) pedagogical content knowledge around teaching and learning about force. The course provides teachers with knowledge of how concepts of force may be used by students with the Crosscutting Concepts, and Engineering and Science practices as outlined in the Next Generation Science Standards. STEM content professors will be involved in the instruction of this course.

Course Rotation: Spring (odd)

Justification for course/change: School of Education received a grant to develop and teach a six-course cycle in STEM Education for the new STEM Teaching Endorsement offered by the Utah State Office of Education. The grant will pay the tuition for 20 teachers to take all six courses. This course will become part of the STEM Strand for the new Masters in Education Program. Contact hours 2 per week lecture, 3 per week
practicum.

Library Resources Adequate: Yes
Tech Resources Adequate: Yes

Comparable Courses: (use USHE course first)

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<tr>
<th>Institution</th>
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Course Learning Outcomes:

1. Understand the role of force in systems in the natural and material world and relate it to STEM instruction in elementary classrooms including:
   a. Gravity and its role in the solar system
   b. Forces that impact Earth’s materials and systems
   c. The relationship between force, mass, acceleration, inertia, and energy transfer
2. Understand and apply the crosscutting concept of cause and effect to learn about and teach disciplinary core ideas related to force.
3. Improve the skills and dispositions to be a teacher leader in STEM including using model instruction, reflection, planning with colleagues, completing presentations for local and statewide efforts, etc.
4. Improve assessment skills by using student achievement data to design authentic, innovative, problem-based learning experiences, using formative assessment to inform instruction, using a variety of assessment strategies to collect student achievement data.
5. Engage students in integrated technology to enhance their learning, achievement, and college career readiness.
6. Explore and implement innovative, research-based, engaging curriculum, especially around the Utah Core academic standards and college and career readiness, geared towards increasing student achievement for ALL students.
7. Apply the disciplinary core ideas when planning lessons and teaching. Use crosscutting concepts when planning lessons and teaching. Implement scientific and engineering practices into lesson planning and teaching.