Welcome to the new Sail system. We appreciate any feedback, please let us know what you think

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Proposal (proposal-index.htm)
/ 9071: New Course: SCI 440 (proposal-view.htm?proposalId=63EB5323-BA5D-DA9F-8128A56C99617B7B)
/ Syllabus of Record

Imported Proposal

This proposal was imported from the previous Curriculum Development System into the new Sail system. Because of this, there may be some questions whose answers are left blank or appear to be worded incorrectly. Please keep this in mind when reviewing this proposal.

Syllabus of Record

Purpose

The syllabus of record (SOR) serves five audiences:

1. Faculty can use the SOR as a blueprint for designing course syllabi. Faculty are free to add to the content in the SOR, but the required activities, objectives, and methods of evaluation in the SOR must be maintained.
2. Students can use the SOR to determine, before they register, the skills they can expect to engage in and what they can expect to have learned upon successful completion of a course.
3. The SOR provides a standard format that other schools can use to determine transfer credit.
4. Faculty governance (e.g., CCC, UCC) use the SOR when evaluating course-change and new course proposals.
5. Accreditation bodies may use the syllabus of record to view the content taught in every section of a course.

The syllabus of record (SOR) is a blueprint for building a course. It provides details on the minimum structure and content for the course so that units can ensure knowledge is structured throughout the curriculum. It is not necessarily meant to articulate every aspect of each week of a course. Therefore, when constructing an SOR, careful attention must be paid to what it contains. If a unit wishes to propose

a course in which content is quite rigid and fixed, then the various sections of the SOR would reflect that. On the other hand if a unit wishes to propose a course with content to be selected from a range of specified possibilities and/or a course with little fixed content with the bulk of the content being determined by the specific instructor, then the SOR would indicate that.

The SOR **guidelines (http://gvsu.edu/cms3/assets/66FDB529-EC51-DDBF-096EF6EFB7879DAA/UCC/ucc2011_12/00_sorguidelines2011.pdf)** can really help with creating a successful SOR.

Course Data

Course Code
SCI 440

Title
Physics and Chemistry in Secondary Education

Credits
3

Prerequisites
Junior Standing, PHY 221 or PHY 231, and CHM 116

Description
Introduces students to evidence based, physical science pedagogy, science education standards, and science safety practices. Students apply these ideas to lesson plan development and facilitation for physical science content.

Syllabus of Record

Objectives
After successful completion of the course the students will be able to

- Relate chemistry and physics to contemporary, historical, technological, and societal issues.
- Evaluate technology useful for teaching of chemistry and physics.
- Examine research-driven teaching practices related to chemistry and physics teaching.
- Identify common student difficulties using science education literature.
- Apply evidence driven practices in a lesson plan.
- Discuss models of conceptual change to inform a lesson plan.
- Design assessments to collect evidence to drive educational practices.
- Create a lesson plan that engages learners in science and engineering practices.

- Create a lesson plan that integrates nature of science.
- Critique, evaluate, and modify lesson plans using models of conceptual change and evidence driven practices.
- Facilitate an introductory physics or chemistry lab.
- Demonstrate a working knowledge of safety practices in physical science

Topics

Introduction to evidence based science pedagogy, including: (8-10 weeks)

- Science education literature
- Learning Theories
- Technology in science education
- Examples of evidence driven teaching practices
- Effective assessment
- Using evidence to inform instruction

Introduction to safety practices in the physical science classroom. (1 week)

Introduction to State and National Science education standards. (1 week)

Application of evidence based science pedagogy, safety practices, and science education standards to lesson plan development and facilitation. (2-4 weeks)

Methods of Evaluation

- Lesson Plan(s): Draft and Revision.
- Reflection Papers
- Presentations
- Laboratory Instruction
- Assignments

Sample Source(s) of Information

How People Learn: Brain, Mind, Experience, and School: Expanded Edition National Academies Press.

Teaching Physics with the Physics Suite: E.F. Reddish

Locally Developed Coursepack.

Trout, L. (Ed.). (2012). *POGIL Activities for High School Chemistry.* Batavia, IL: Flinn Scientific.

Orna, M. V. (Ed.). (2010). *The new ChemSource.* Washington, DC: American Chemical Society.

Taber, K. S. (2014). *Student thinking and learning in science: Perspectives on the nature and development of learners' ideas.* In N. G. Lederman (Ed.), Teaching and learning in science. New York, NY: Routledge.

Herron, J. D. (1996). *The chemistry classroom: Formulas for successful teaching.* Washington, DC: American Chemical Society.

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