Communication in the Major Application Template

Name of the Major*: Physics, Physics Major with Applied Mechanics Emphasis, Physics Major with Applied Electronics Emphasis, Physics Major for Teacher Certification

Department/Unit: Physics and Astronomy

Contact Person: Mick Veum

Report of Dept. Vote: 9 Approve 0 Oppose 0 Abstain Date: May 11, 2012

*Note: Each major must have Communication in the Major. Majors with multiple concentrations or options may need to have distinct Communication in the Major plans (and hence applications) if the relevant courses are not shared by the different options. Conversely, one application may suffice for multiple majors in a department/unit that share the Communication in the Major portion of the curriculum.

Communication in the Major Learning Outcomes (Step 4)

Communication in the Major courses provide students with systematic opportunities to develop oral and written communication skills in the context of their chosen fields, beginning the process of learning to communicate effectively in discipline-specific formats and styles.

Upon completing this requirement, students will be able to:

- Apply discipline-specific standards of oral and written communication to compose an articulate, grammatically correct, and organized presentation/piece of writing with properly documented and supported ideas, evidence, and information suitable to the topic, purpose, and audience.
- Critique their own and others' writing/oral presentations to provide effective and useful feedback to improve their communication.

Communication in the Major Course/Instructor Criteria (Step 5)

1. The Communication in the Major requirement addresses discipline-specific communication that builds on the Written and Oral Communication learning outcomes of the Foundation level.

2. Departments or units will designate a minimum of six credits at the 200-level or above within each major to meet the Communication in the Major requirement. Departments may distribute this requirement over any number of courses. These courses may, when appropriate, come from other departments but must be included as part of the major. List the course(s) designated as the Communication in the Major component for this major:

Phys 315 (Computational Physics, 4 cr) and Phys 470 (Experimental Physics, 2 cr)
OR
Phys 370 (Electronics, 4 cr) and Phys 470 (Experimental Physics, 2 cr)

3. These courses must include a plan for how student achievement of the approved Communication in the Major learning outcomes will be assessed. Please describe the overall plan for how Communication in the Major will be assessed within your major:

Phys 315 – Students use computational methods to solve a problem or to model a physical system. Students submit written reports documenting and communicating their approach and the results. Students also give oral presentations to communicate approach and results.
Phys 370 – This is a laboratory course in basic electronics. Students submit written lab reports. They also are required to give oral presentations related to the course material. Students are graded on both forms of communication.
Phys 470 -- Phys 470 is a course focusing on methods in contemporary experimental physics. Students turn in lab reports and a formal paper (in the style of American Physical Society journals). Students also present a research talk.

4. All instructors teaching Communication in the Major courses must complete a workshop coordinated by the Center for Academic Excellence and Student Engagement.

A. The General Education Committee will work with Bill Lawlor (current WE coordinator) and a representative from the Division of Communication to develop a Communication in the Major training (combining both written and oral communication skills). This will be handled similarly to how WE is handled now. **We will rely on departments to comply with the requirement to ensure that those who teach Communication in the Major components have the required training.**
B. Anyone who is currently WE certified will be asked to complete an abbreviated training (focusing on the oral communication aspect of the new Communication in the Major requirement). This will allow existing WE instructors to migrate into the new GEP fairly easily.
C. New instructors completing the new Communication in the Major training will be "reverse grandfathered" and be granted WE certification. (WE classes will need to be offered beyond 2013 for those students who are completing their degrees under the GDR system.)

5. Communication in the Major courses should have sufficiently small enrollments so that students will receive adequate personal feedback, from both instructors and their peers, on their communication skills. Please describe the approximate enrollments in the various courses that will be included in your Communication in the Major requirement:

Phys 315 – Approximate enrollment is 18.
Phys 370 and Phys 470 – Approximate enrollment is 12 for each

6. Assignments should be based on the kinds of communication typical of the relevant discipline or profession. Describe the oral and written work that students will do in your Communication in the Major courses and explain how these reflect what is typical in your discipline. Attach a representative syllabus and assignment for at least one course.

Laboratory reports, journal publications, and research talks are typical modes of communication in physics and engineering. Our assignments are designed specifically to closely mirror what is typical in our discipline. For example, Phys 470 requires students to write a formal research paper as though it will be submitted for publication to a journal of the American Physical Society (APS). Students also give a research talk in the style of an APS conference.

7. Both writing and speaking instruction should be integrated into course discussions and activities and include grading criteria, revision experiences, and opportunities for student peer review. Writing and speaking instruction can be taught together in a single course or divided among courses. Describe (or attach) the grading criteria for the oral and written assignments in your Communication

in the Major courses and describe the way that peer review and revision will be incorporated into these courses.

See attached rubrics for written and oral communication projects.