REPORT OF EGSC ACTIVITIES FOR  
FALL 2009 and SPRING 2010

The committee reviewed and approved the following courses:  
ECE 924: Power Electronic Systems for Renewable Energy, Transportation, and Utility Applications  
ECE 868: Signal Compression

The committee evaluated and rank ordered candidates for Outstanding Graduate Students Award and Fitch H. Beach Award. The committee discussed some issues related to the evaluation process.

The committee evaluated candidates for the College of Engineering Graduate Fellowships.

The committee discussed various TA models for gaining teaching experience by COE graduate students. Because of University guidelines on TA responsibilities, the committee found these models difficult to implement.

The committee discussed initiating a College Teaching Certificate Program (CTCP) for COE based on the MSU Certification in College Teaching (CCT).

The Committee had a long discussion with Kevin Johnston, Director of MSU TA programs, to gather information on various issues related to the MSU-CCT.

The committee listened to ideas and issues on CTCP from Drs. Sticklen and Briedis.

The Committee reviewed other College Teaching Certificate Programs in the country as well as past College Teaching Certificate programs at COE.

The committee recommended that the college of engineering initiates a College Teaching Certificate Program.

The committee discussed issues related to college-wide course(s) on teaching methodologies, research ethics and proposal writing.

The committee discussed various models of a college-wide teaching course(s). One suggestion was a college-wide course on teaching methodologies followed by hands-on teaching experience with departmental participation. The committee reviewed similar courses offered by the College of Natural Science and the College of Agriculture and Natural Resources.

Dr. Neeraj Buch of CEE updated the progress that the course committee has made on college-wide teaching course. Dr. Buch was informed by the EGSC about various teaching models discussed at EGSC meetings.
A survey questionnaire was prepared by the committee to gather feedback from individual departments on college-wide teaching course. Responses to this survey questionnaire are attached with this report.
Spring 2010
Survey questionnaire on college-level course(s) for Research Methods and Ethics, Proposal Writing, Teaching Methods and Experience

1. Does your department currently have this type of course(s)?

   BE: Yes
   CE(Ri): Yes
   CHE: Yes
   CSE: Yes
   ECE: No

   If the answer is yes, please give course number(s), course title(s) and the number of credits.

   BE: BE892, Biosystems Engineering Seminar. 1 credit hour. The course syllabus was attached.

   CE(Ri): Get from Ron/Tom

   CE(Voice): We have a research course that covers these with the exception of the teaching topic. It is offered as ENE 890/CE 899, but we are proposing to use ENE 800 and a new CE number in the future.
   CHE: CHE/MSE 802: Research Methods, 3 crt.
   CSE: We offered one in Spring 2009 as CSE 891, but have not had resources to offer it again. A course will be offered as part of BEACON, but it will be targeted to evolutionary sciences.

2. If your department does not have such a course(s), how are these areas currently covered by the department?

   CSE: Our graduate student orientation covers some topics lightly. Currently, these areas are mainly covered the adviser in working with Ph.D students and in laboratory meetings. Students write papers with their adviser write papers and help with writing proposals. Discussion of research methods goes on in lab meetings. Students present their research in lab meetings. Advisers coach their students before giving presentations at professional meetings and job talks. Students who are interested in teaching sometimes assist adviser in teaching and preparing course materials.

   ECE: At this point, these areas are covered within each research group and dictated by the culture established by the advisor/group.

3. What are the topics that should be included in the course(s)?
BE: Research/teaching methods and research ethics

CE(Ri): Get from Ron/Tom

CE(Voice): The topics we have chosen to include in the research course are shown in the attached document. I think the material on teaching should be in a separate course, because a) it is fundamentally different subject material, and b) different students will be motivated to take these courses at different points in their graduate careers.

CHE:

Presentation of faculty research projects
Effective use of electronic and library resources
Plagiarism, Professional ethic and Ethical-Moral perspectives in academic research
Defining research problems, creative problem solving and project management
Research and scholarly activities in industry
Effective technical writing and presentation slides
Managing laboratory notebook, organization of research data and effective record keeping
Intellectual property
Setting up of a research laboratory

CSE: General research methods. Experimental design techniques.
   Research and publication ethics.
   Expectations of faculty in order to succeed, including service and teaching missions.
   Technical writing and oral communication skills.

ECE: If one is offered, it should foster technical writing, communication and presentation skills.

4. **What would your department expect to achieve from this course(s)?**

BE: To familiarize students with research/teaching skills and scholarly integrity.

CE(Ri): Get from Ron/Tom

CE(Voice): For the research course, we hope to provide students with the knowledge, skills and attitudes to begin their research with an understanding of context in which quality research is done.

CHE: Improve critical reading skills of first year graduate students
   Improve scientific writing and oral presentation
   Develop laboratory habits in maintaining record keeping, safety, and time management
   Develop scientific ethics and professional perspectives of R&D
CSE: It would better prepare beginning students to engage in research and also to succeed in an academic career. Expose to a broad view of engineering research.

ECE: Better technical writing and presentation skills!

5. Should such a course be offered? If the answer is yes, should it be at the College level or Department level.

BE: Yes. It should be at department level.

CE(Ri): Department level (my opinion)

CE(Voice): I feel strongly that a research course should be at the department level, because I think that one can only understand these concepts in the context of their own research area. I would expect anything broad enough to cover the College, would be so generic that it would be boring and probably viewed as not useful. I can imagine a teaching course at the college level.

CSE: Opinion varies. Most committee members feel a course would be useful and should be offered. Many feel it could be successfully done at the College level. Some feel a formal course is not needed. All feel more specifics (e.g., syllabus, credit hours, frequency, etc.) are needed before answering for this question.

ECE: If offered, then at the College level; but this opens another can of worms in terms of discipline specificity. That said, not all of us are sold on the idea of using a course to deliver the content. There may be other forums, say workshops that may achieve the same objectives.

6. Should such a course(s) be required or an elective for Ph.D. students?

BE: It is required by BE department.

CE(Ri): Required (my opinion)

CE(Voice): We have decided to require our research course of all PhD students because they all do research. I support this, but if it were to be college wide, I would not. I would not require a teaching course of all students because not all students will teach.

CHE: This class is required for all graduate students including MS students that are enrolled in the non-thesis option.

CSE: Not required, but highly recommended, at least until we know that the course will be of value for all students.

ECE: Elective
7. Please write any other comments or concerns on this matter that are not covered by the above questions.

BE: One universal comment from BE faculty is that due to the diversity of the college different courses have to be assigned to different topics. Such as, ethic and teaching methods could be taught at the college level; research methods and proposal writing should be taught at the department level.

CE(Voice): I can see the value in a set of College-level expectations for either or both types of courses, as long as they can be justified as things all PhD students should have, as opposed to things that would be nice. I can also see where some elements of a research course could offered at the College level, but I would rather see result from demand on the part of departments rather than as a requirement coming down from the College.

CSE: One suggestion advanced: Why not have a few 1-hour Friday seminars where we discuss some of these topics, particularly those dealing with ethics, career opportunities, publication venues (impact factor of journals, citation indices), funding agencies,..

ECE: a. Networking and negotiation skills
    b. entrepreneurship skills (business plan writing).
    Proposal writing is too specific.