College of Engineering Teaching Committee Final Report

April 2, 2010

Members: Jia Lu (chair), Gary Christensen, Michelle Scherer

Charge 1: *Review nominations and recommend a faculty member for the College of Engineering Teaching Award.*

The committee met and reviewed the four applications for the Collegiate Teaching Award. The committee made its recommendation for the award to the Associate Dean of Academic Affairs.

Charge 2: *Review nominations and recommend nominees from the College of Engineering for the President & Provost Award for Teaching Excellence.*

The committee did not received applications from the College of Engineering. The Dean's Office solicited nominations and sent applications directly to the Council of Teaching.

Charge 3: *Examine the current practice of peer evaluation of teaching in each department and recommend how it can be used to help each faculty improve the quality of teaching.*

The frequency and format of the peer evaluation of teaching varies among departments. Each department appears to have developed their own version of a peer evaluation form. We have included examples of these in Appendix A. All departments meet the guidelines put forth by College of Engineering requiring three observations per re-appointment or promotion, but some require more frequent observations and some require two observers per visit. A brief summary by department is given below.

CEE: Each observation consists of one observer visiting one lecture for a total of three classroom visits per re-appointment or promotion.

ECE: Each observation consists of two observers visiting two, consecutive lectures for a total of twelve classroom visits per re-appointment or promotion.

MIE and BME: Each observation consists of two observers visiting one lecture for a total of six classroom visits per re-appointment or promotion.

CBE: For pre-tenure faculty, three observations are conducted each year. Each observation consists of one observer visiting one lecture for a total of nine classroom visits. For tenured faculty, three visits are made by single observers before promotion to full professor.

After discussing the different practices, the committee felt that the practice of visiting two consecutive classes and providing feedback after the first visit that could be implemented during the second visit was successful at helping faculty improve the quality of the teaching. In addition, we felt that a follow up meeting after the visit between the observer and the faculty being observed, particularly for pre-tenure faculty, might be considered as it provides

a mechanism for some feedback and discussion of teaching strategies beyond what is recorded on the form. Finally, we note that encouraging junior faculty to peer observe faculty with strong teaching skills is something that should be implemented more widely.

Charge 4: *Examine the effect of removing CGA on the ACE completion rate and recommend additional strategies for increasing the completion rate.*

The average completion rate of the ACE forms after removing the CGA for Fall 2009 was 40.18 percent (1661 undergraduate students completed the survey out of a total of 4134). This completion rate was up significantly over the previous year of approximately 30 percent. The ACE completion rate varied slightly across the departments and ranged from a low of 36 percent to a high of 49 percent. The Teaching committee is cautiously optimistic that the increase return rate is due to removing the CGA.

The Teaching committee has the following recommendations to further increase the ACE completion rate.

1. It is recommended that all ACE surveys for a particular student be combined into a single survey for that student. This will reduce student's confusion as to whether or not they have completed all of their surveys. Second, it will make it easier to track which students have and have not completed their survey. Tracking survey completion could be done at the college level or at the department level.

2. It is recommended that the ACE surveys be distributed in week 12 or 13 of the semester. Currently, the surveys are distributed in week 15 which is very busy for the students due to final projects and studying for finals. It is felt that by moving the survey a little earlier in the semester that the students have enough information to evaluate the effectiveness of the instructor, and will be more apt to complete the ACE survey during a less busy time of the semester. The professors will not be able to see the results of the survey until after they have submitted grades.

3. It is recommended that the professors and college advertise to the students that they should complete the ACE survey.

Charge 5: *Evaluate the need for coordination of energy and sustainability related EFA's. Identify EFA's with energy and sustainability themes and recommend strategies to collaborate among them.*

There are four EFAs with an energy or sustainability theme. These include ME *Energy and Environment* EFA, CBE *Energy and Environment* EFA, and CEE *Engineering for a Sustainable World* EFA. The ECE department has developed an EFA to allow students to earn the University of Iowa certificate in sustainability. We have included the EFA documents in Appendix B.

After examining the contents of the EFAs, the committee felt that there is no immediate need for coordination between them. Each of the established EFAs appears to have its own emphasis. There is a moderate overlap in course work. The EFAs of CBE, CEE and ME do not overlap in required courses. Among the technical electives, there are only two courses common to all three EFAs (053:159/052:235 Air Pollution Control Technology and

053:107/052:107 Sustainable Systems). Five other courses are common to two EFAs. The ECE's EFA has a different course structure; it is designed to allow student to combine GED courses and technical electives to satisfy the certificate requirement.

While reviewing the College of Engineering EFAs the committee became aware of the University of Iowa certificate in sustainability. The certificate aims to provide students with the knowledge and skills they will need to contribute to the development of sustainable systems and to understand the complex interplay among them and society, culture, energy, economics, environment, and health. The sustainability certificate requires 24 s.h. of course work, including completion of three introductory courses; four breadth electives - one from each of the certificate's four elective areas - and one project course. Students may be able to count some courses taken for the certificate toward requirements for their major or for a minor. No more than three certificate courses may be taken from any single department or program, and no more than 6 s.h. of approved transfer credit may be counted toward the certificate. The requirements are described at the program website:
http://registrar.uiowa.edu/registrar/catalog/universitycollege/sustainability/

The certificate lists the following College of Engineering courses:

Introductory Core

- 057:013 Introduction to Sustainability

Breadth Electives

Changing Environments and Human Health

- 053:050 Natural Environmental Systems

Energy, Climate, and Built Environments (one of these)

- 052:030 Energy and Society
- 053:055/152:162 Principles of Environmental Engineering
- 053:102 Groundwater
- 053:103 Water Quality
- 053:105/012:179 Geology for Engineers
- 053:126/046:126 International Perspectives: Xicotepec
- 053:157 Environmental Engineering Design
- 053:158/175:198 Solid and Hazardous Wastes
- 053:159/052:235 Air Pollution Control Technology
- 053:192 Environmental Engineering Seminar
- 053:195 Contemporary Topics in Civil and Environmental Engineering (when topic is public transit operations and planning)
- 056:155 Wind Power Management
- 058:048 Energy Systems Design

The Power of Culture and Society

- 052:030 Energy and Society

Project Courses (one of these)

- 053:107/052:107 Sustainable Systems
- 053:141 Design for the Developing World

The committee felt that the certificate program presents an opportunity for engineering students. It may be difficult for engineering students to satisfy the required 24sh without taking additional course work due to prerequisites and other special requirements (such as no more than three courses may be taken from a single department), but not impossible. The committee recommends the departments (particularly ones which do not have an energy-sustainability EFA) examine the program requirements and develop strategies to allow student to earn the certificate.

Charge 6: *Participate in redefining EDPC's role in supporting the college's teaching mission.*

The teaching committee agreed to participate in an *ad hoc* committee led by the Associate Dean of Academic Affairs.

Charge 7: *Recommend specific charges for the 2010-11 Teaching Committee.*

We recommend the following charges for next year's committee:

1. Review nominations and recommend a faculty member for the College of Engineering Teaching Award.
2. Continue to examine the ACE completion rate. If the strategies recommended by this committee are implemented, evaluate their effect. If necessary, recommend additional strategies for increasing the completion rate.
3. Evaluate the need for coordination of energy and sustainability related EFA's within the College.
4. Examine the University of Iowa certificate in sustainability. Evaluate the feasibility for engineering students to earn the certificate using GED and EFA courses.
5. Participate in defining EDPC's role in supporting the college's teaching mission.

Charge 8. *Submit an interim report by January 31, 2010, and final report by April 1, 2010*

The interim report was submitted in February. This document is the final report.

Appendix A. Examples of peer evaluation forms

BME

Policy on Peer Observation of Class Room Teaching

by E.L. Dove, V.K. Goel, and J.B. Park (Chair)
Department of Biomedical Engineering
The University of Iowa
February, 2000

Introduction

The purpose of this document is to define the Department of Biomedical Engineering policy for conducting peer observation of teaching. With regards to peer observation of teaching, the following statement appears in the College of Engineering, promotion and tenure document (CoE, 1999) on p. 5:

Observation by peers of classroom teaching. At minimum, three sessions must be observed as part of the peer evaluation of teaching for every reappointment, tenure, or promotion review. At least two observers, who will be faculty qualified to be members of the candidate's AFG unless circumstances dictate otherwise, will participate in the visits. The Department Executive Office, after consulting with the candidate, shall arrange for selection of the observers. Classroom visits need not take place during the semester in which the review is conducted but may take place during the preceding four academic-year semesters. Visits will be scheduled with appropriate advance notice and in consultation with the candidate. Unless prohibited by written department policy, video observation may, with the candidate's consent, be substituted for direct observation for classroom teaching. Unless department policy specifies a particular method of recording observation, individual observers may use their own discretion in recording their findings. The conclusions of the observers shall be incorporated into the peer evaluation of teaching report, a copy of which is provided to the candidate. If provided for by department policy, observers may individually or jointly draft a separate report which is shared with the candidate. Although classroom observations are a required part of the peer evaluation of teaching, it is desirable that the observations also serve to help the candidate improve his or her teaching.

In a Memo dated October 14, 1999, Professor Steve M. Collins, Chair, Engineering Faculty Council, noted that the word "sessions" refers to class sessions or lectures.

Peer observation of teaching is an evaluation of the teaching process and its relationship to student learning and is not an evaluation of the course content and organization. It is a review of the instructor's performance through classroom observation and is an assessment that will serve as input for making appointment, promotion, and tenure decisions.

The guidebook by The Center for Teaching Effectiveness at The University of Texas at Austin (UTA) states that peer observation of teaching involves classroom observations and a review of instructional materials and course design and may be formative or summative. This guidebook is a good reference for background on issues about peer observation of teaching.

Policy

Selection of observers:

The Department Executive Officer in consultation with the candidate will select the observers. There will be two observers performing each peer observation of teaching. If it is necessary to conduct observations for more than one semester, the observers may be, and more than likely will be, different for each semester that an observation is conducted.

Video observations:

Video observations will be considered on a case-by-case basis by two observations. The Appropriate Faculty Group in consultation with the DEO and candidate will consider each case and make a

recommendation. The videos, however, must be of high quality so that the observers can make evaluations equivalent to those in a classroom setting or other settings that are typical of the class.

Recording of observations:

The observers may select any tool that is convenient for recording their observations. The observers must inform the instructor of the tool to be used so as not to disrupt the instructor's teaching. The method for recording the observations must allow the observers to complete the form entitled PEER OBSERVATION OF CLASS ROOM TEACHING REPORT (see section Reports).

Timing of observations:

Both observers will be present at the same time when peer observation of teaching is performed. The observers are expected to consult with the instructor with regard to a time when the observations should occur. The observers should meet with the instructor before the classroom observations to discuss the instructor's objectives for her/his class. The observed instructor should be able to ask questions about the process. Observations should be made of the instructor for activities that are typical of the course level (core, required program, intermediate, graduate) and course type (lecture, discussion, laboratory, etc.). The observers are expected to conduct their evaluation in a manner that minimizes disruptions to the classroom environment The instructor, if he or she chooses, may inform the class the day before of the visitors who will attend the next class period.

Number of observations:

A minimum of two observations is required.

Reports:

The observers must prepare a single report using the form entitled PEER OBSERVATION OF TEACHING REPORT. The report must be submitted to the instructor within three working days after the last visit. A follow-up meeting for the accuracy of report and to provide additional comments may be appropriate.

References

CoE, Criteria and Procedures for Faculty Appointment, Evaluations, and Promotion in The College of Engineering, The University of Iowa, 1999.

UTA, Preparing for Peer Observation: A Guidebook, The Center for Teaching Effectiveness, The University of Texas at Austin.

PEER OBSERVATION OF CLASS ROOM TEACHING REPORT
Department of Biomedical Engineering

Instructor: _____ Session: _____

Course number and name: _____

Course level (circle one): Core, Req Program, Int, Grad (Efforts should be made to select every level of courses)

Number of students present: _____

Date (s) of observations: _____

Observers: (1) _____ (2) _____

Using the following attributes, provide written responses to the following items:

1. Clarity of written material: _____
2. Clarity of spoken words to the level of students: _____
3. Positive classroom environment : _____
4. Instructor's enthusiasm for subject matter: _____
5. Instructor's command of subject matter: _____

A. What were the instructor's major strengths and weaknesses as demonstrated in this observation?

B. How organized and clear is the presentation?

C. What overall impressions do you think students left this lesson with in terms of the teaching process and its relationship to their learning?

D. Describe the level of student interest and participation.

E. What specific suggestions would you make concerning how this particular class could have been improved?

Provide any additional comments that may help to assess the instructor's teaching capabilities:

In the opinion of the observer, did the presence of the observers disrupt the class?

Observer l: Yes: ____ No: ____ Comment: _____

Observer 2: Yes: ____ No: ____ Comment: _____

Observers' signatures: _____Date:_____

Date report sent to candidate:
M:\Peer Evaluation\Evaluation Form.doc

Policy on Peer Observation of Teaching
Department of Electrical and Computer Engineering
The University of Iowa

(Adopted the ECE Faculty on 01/23/01)

The Department of Electrical and Computer Engineering (ECE) adheres to the general policy on peer observation of teaching as set out on pages five and six of the document *Criteria and Procedures for Faculty Appointments Evaluations and Promotions in the College of Engineering.* The following provides further details on the goals and procedures to be employed by ECE in implementing the College policy.

All faculty at the ranks of assistant and associate professor will undergo peer observations of their teaching. In conducting these observations and in their evaluation, the observers must recognize that the same material can be effectively conveyed to students in multiple ways, that each instructor has his/her own style, and that these differences in style must be respected in the evaluation.

Goals: The goals of these observations will be as follows:

(a) Peer observations will serve to supplement existing mechanisms that assess student perceptions of classroom teaching.
(b) They will focus primarily on aspects of classroom teaching that are better evaluated by faculty members than by students.
(c) They will be used, where appropriate, to interpret and explain student evaluation of classroom teaching.

Procedures: For each probationary faculty member, one course will be targeted each year for peer observations, including one in the fall semester of his/her reappointment/tenure review. For each tenured associate professor being reviewed for promotion, the Departmental Consulting Group (DCG) will target one course in the calendar year of his/her review. The DEO will select two members of the DCG as observers for each candidate, in consultation with the candidate and the DCG chair. These observers may change from year to year. Each observer shall visit two class periods of the selected course so that a total of four distinct class periods are observed. The observers will select the class periods in consultation with the candidate. It is desirable that the selected periods be consecutive.

Each observer shall fill out the questionnaire overleaf after each classroom visit. The DCG will summarize the contents of these questionnaires and incorporate the summary in its Annual/Reappointment/Promotion review report. The individual questionnaires will not be shared with the candidate.

Questionnaire for Peer Observation of Teaching

Instructor being observed	Course number/name	Observer	Date of observation

Please give detailed answers to the questions below. Do not restrict yourself to yes and no answers. If you have inadequate data to answer a particular question, please so indicate.

(1) How many students were present in the class on the day of the observation?

(2) Was the lecture well organized and paced?

(3) Was the material covered correct and at an appropriate level?

(4) Were concepts emphasized and was there an appropriate balance between different concepts?

(5) Was the instructor well prepared?

(6) Did the instructor foster a classroom environment that was conducive to learning?

(7) Please provide any other comments you deem appropriate.

Policy on Peer Observation of Teaching

Department of Mechanical Engineering
The University of Iowa

As adopted by the faculty of the Department of Mechanical Engineering
at the November 23, 1999 meeting

Introduction

The purpose of this document is to define the Department of Mechanical Engineering policy for conducting peer observation of teaching. With regards to peer observation of teaching, the following statement appears in the College of Engineering promotion and tenure document (CoE, 1999) on p. 5:

> 6. Observation by peers of classroom teaching. At minimum, three sessions must be observed as part of the peer evaluation of teaching for every reappointment, tenure, or promotion review. At least two observers, who will be faculty qualified to be members of the candidate's AFG unless circumstances dictate otherwise, will participate in the visits. The Department Executive Office, after consulting with the candidate, shall arrange for selection of the observers. Classroom visits need not take place during the semester in which the review is conducted but may take place during the preceding four academic-year semesters. Visits will be scheduled with appropriate advance notice and in consultation with the candidate. Unless prohibited by written department policy, video observation may, with the candidate's consent, be substituted for direct observation for classroom teaching. Unless department policy specifies a particular method of recording observation, individual observers may use their own discretion in recording their findings. The conclusions of the observers shall be incorporated into the peer evaluation of teaching report, a copy of which is provided to the candidate. If provided for by department policy, observers may individually or jointly draft a separate report which is shared with the candidate. Although classroom observations are a required part of the peer evaluation of teaching, it is desirable that the observations also serve to help the candidate improve his or her teaching.

In a Memo dated October 14, 1999, Professor Steve M. Collins, Chair, Engineering Faculty Council, noted that the word "sessions" refers to class sessions or lectures.

Peer observation of teaching is an evaluation of the teaching process and its relationship to student learning and is not an evaluation of the course content and organization. It is a review of the instructor's performance through classroom observation and is an assessment that will serve as input for making appointment, promotion, and tenure decisions.

The guidebook by The Center for Teaching Effectiveness at The University of Texas at Austin (UTA) states that peer observation of teaching involves classroom observations and a review of instructional materials and course design and may be formative or summative. This guidebook is a good reference for background on issues about peer observation of teaching.

Policy

Selection of observers:

The candidates who will be observed for that semester will meet at the beginning of the semester and will submit to the DEO a pool of faculty names of potential observers. The pool should contain names of at least 50 % of the faculty qualified in the Department of Mechanical

Engineering to perform the observations. The DEO will maintain confidentiality of the names and will appoint a single team of two observers from the selection pool. The peer observation team will perform the observations of all candidates during that semester.

Video observations:

Video observations will be considered on a case-by-case basis. The Appropriate Faculty Group in consultation with the DEO and candidate will consider each case and make a recommendation. The videos, however, must be of high quality so that the observers can make evaluations equivalent to those in a classroom setting or other settings that are typical of the class. A video can only be viewed once by the peer observation team and must be returned to the candidate.

Recording of observations:

The observers may select any tool that is convenient for recording their observations. The observers must inform the instructor of the tool to be used so as not to disrupt the candidate's teaching. The method for recording the observations must allow the observers to complete the form entitled PEER OBSERVATION OF TEACHING REPORT (see section title Reports).

Timing of observations:

Both observers will be present at the same time when peer observation of teaching is performed. The observers are expected to consult with the instructor with regard to a time when the observations should occur. The observers should meet with the instructor before the classroom observations to discuss the instructor's objectives for her/his class. The observed instructor should be able to ask questions about the process. Observations should be made of the instructor for activities that are typical of the course level (core, required program, intermediate, graduate) and course type (lecture, discussion, laboratory, etc.). The observers are expected to conduct their evaluation in a manner that minimizes disruptions to the classroom environment. The instructor, if he or she chooses, may inform the class the day before of the visitors who will attend the next class period.

Number of observations:

A minimum of three observations is required for each reappointment, promotion, or tenure review (only one observation is required for reappointment, promotion, and tenure decisions for the 1999-2000 academic year: This is under consideration by College of Engineering).

Reports:

The observers must prepare a single report using the form entitled PEER OBSERVATION OF TEACHING REPORT. The report must be submitted to the candidate within three working days after the last visit and must be discussed with the candidate prior to submission of the report to the Appropriate Faculty Group.

References

CoE, Criteria and Procedures for Faculty Appointment, Evaluations, and Promotion in The College of Engineering, The University of Iowa, 1999.

UTA, Preparing for Peer Observation: A Guidebook, The Center for Teaching Effectiveness, The University of Texas at Austin.

PEER OBSERVATION OF TEACHING REPORT
Department of Mechanical Engineering

Instructor: _____ Session: _____

Course number and name: _____

Course level (Core, Req Program, Int, Grad): _____

Course type (Lect, Lab, Disc, etc.): _____

Number of students present: _____

Date (s) of observations: _____

Observers: (1) _____ (2)_____

Using a rating of 1 to 10 with 1 = poor, 5 = average, 10 = excellent, and NO = not observed, rate the instructor on the following attributes of the instruction:

1. Clarity of written material: _____ ☐
2. Clarity of spoken words to the level of students: _____ ☐
3. Instructor's enthusiasm for subject matter: _____ ☐
4. Organization of presentation: _____ ☐
5. Perception of instructor's command of subject matter: _____ ☐
6. Perception of interest and participation of students: _____ ☐

- Provide written comments regarding the observations:

Observers' signatures: _____

Dates: Report _____ Discussed with candidate _____ Sent to AFG _____

3 per year pre-tenure ⇝ 3 in year b14 go up for promotion to Full.

CBE

RATING FORM FOR
PEER EVALUATION OF TEACHING – CLASSROOM OBSERVATION

Instructor: _____ Date: _____
Course Number: _____ Course Title: _____
Number of Students Present: _____ Number of Students in Course: _____
Reviewer: _____

Brief Narrative Log (time line) of Lecture (use back of page if additional space is needed). Some topics that can focus this section include: *What is the instructor speaking about? What specific comments are being made? How are the classroom learning activities organized? What is the level of student interaction? What teaching strategies are being used?*

Lecture Evaluation (provide written comments for each of the following items)
Instructor Organization. Issues to focus on include: *Was the instructor well-prepared for class? Were the objectives of the class clearly stated? Did the instructor state the relation of the lecture to the previous one? Did the instructor use class time efficiently? Were the learning activities well organized? Did the class remain focused on its objectives? Did the instructor summarize periodically and at the end of class?*
Comments (use back of page if additional space is needed):

Instructional Strategies. Issues to focus on include: *Were the instructor's choice of teaching techniques appropriate for the goals? Does the instructor have good questioning skills? Does the instructor raise stimulating and challenging questions? Does the class schedule proceed at an appropriate pace? Is board work legible and organized? Does the instructor effectively hold class attention? Does the instructor provides an effective range of challenges?*
Comments (use back of page if additional space is needed):

Content Knowledge. Issues to focus on include: *Is the instructor knowledgeable about the subject matter? Is the instructor confident in explaining the subject matter? Does the instructor focus on important content in the field? Does the instructor demonstrate intellectual curiosity toward new ideas or perspectives?*
Comments (use back of page if additional space is needed):

Presentation Skills. Issues to focus on include: *Is the instructor an effective speaker? Does the instructor employ an appropriate rate of speech? Is the instructor enthusiastic about the subject matter? Does the instructor make the subject matter interesting? Is the instructor's command of English adequate?*
Comments (use back of page if additional space is needed):

Rapport With Students. Issues to focus on include: *Does the instructor address students by name? Does the instructor attend to student comprehension or puzzlement? Does the instructor provide feedback at given intervals? Does the instructor use positive reinforcement? Does the instructor incorporate student ideas into the class?*
Comments (use back of page if additional space is needed):

Clarity. Issues to focus on include: *Does the instructor define new terms or concepts? Does the instructor clearly elaborate complex information, and repeat it when necessary? Does the instructor use examples to explain content? Does the instructor respond to questions clearly? Does the instructor pause during explanations to allow students to ask questions? Does the instructor relate course material to practical situations?*
Comments (use back of page if additional space is needed):

CEE

2/24/2010

Policy on Peer Observation of Teaching (DRAFT 1)

Department of Civil & Environmental Engineering
The University of Iowa

October 1999

Introduction

The purpose of this document is to define the Department of Civil and Environmental Engineering policy for conducting peer observation of teaching. With regards to peer observation of teaching, the following statement appears in the College of Engineering promotion and tenure document (CoE, 1999) on p. 5:

> 6. Observation by peers of classroom teaching. At minimum, three sessions must be observed as part of the peer evaluation of teaching for every reappointment, tenure, or promotion review. At least two observers, who will be faculty qualified to be members of the candidate's AFG unless circumstances dictate otherwise, will participate in the visits. The Department Executive Office, after consulting with the candidate, shall arrange for selection of the observers. Classroom visits need not take place during the semester in which the review is conducted but may take place during the preceding four academic-year semesters. Visits will be scheduled with appropriate advance notice and in consultation with the candidate. Unless prohibited by written department policy, video observation may, with the candidate's con-sent, be substituted for direct observation for classroom teaching. Unless department policy specifies a particular method of recording observation, individual observers may use their own discretion in recording their findings. The conclusions of the observers shall be incorporated into the peer evaluation of teaching report, a copy of which is provided to the candidate. If provided for by department policy, observers may individually or jointly draft a separate report which is shared with the candidate. Although classroom observations are a required part of the peer evaluation of teaching, it is desirable that the observations also serve to help the candidate improve his or her teaching.

In a Memo dated October 14, 1999, Professor Steve M. Collins, Chair, Engineering Faculty Council, noted that the word "sessions" refers to class sessions or lectures.

Peer observation of teaching is an evaluation of the teaching process and its relationship to student learning. It is a review of the instructor's performance through classroom observation and is an assessment that will serve as input for making appointment, promotion, and tenure decisions. Additionally, it is intended to provide continual formative guidance to help faculty enhance teaching skills. It is not an evaluation of course content and organization.

The guidebook by The Center for Teaching Effectiveness at The University of Texas at Austin (UTA) states that peer observation of teaching involves classroom observations and a review of instructional materials and course design and may be formative or summative. This guidebook is a good reference for background on issues about peer observation of teaching.

Policy

Selection of observers

The Department Executive Office in consultation with the candidate will select the observers. There will be two observers performing each peer observation of teaching. If it is necessary to conduct observations for more than one semester, the observers may be, and more than likely will be, different for each semester that an observation is conducted.

Video observations:

Video observations will be considered on a case-by-case basis. The Appropriate Faculty Group in consultation with the DEO will consider each case and make a recommendation. The videos, however, must be of high quality so that the observers can make evaluations equivalent to those in a classroom setting or other settings that are typical of the class.

Recording of observations

The observers may select any tool that is convenient for recording their observations. The observers must inform the instructor of the tool to be used so as not to disrupt the instructor's teaching. An example of the type of tool to be used is appended (PEER OBSERVATION OF TEACHING REPORT). Alternative forms may also be used.

Timing of observations

Both observers may be present at the same time when peer observation of teaching is performed. The observers shall ~~are expected to~~ consult with the instructor with regard to a time when the observations should occur. The observers should meet with the instructor before the classroom observations to discuss the instructor's objectives for her/his class. The observed instructor should be able to ask questions about the process. Observations should be made of the instructor for activities that are typical of the course level (core, required program, intermediate, graduate) and course type (lecture, discussion, laboratory, etc.). The observers are expected to conduct their evaluation in a manner that minimizes disruptions to the classroom environment. The instructor, if he or she chooses, may inform the class the day before of the visitors who will attend the next class period.

Number of observations

In accordance with College/University policy, a minimum of three observations is required between promotion consideration dates. An exception will be for the promotion cases considered in the transitional period, AY99-00, in which only one observation need be made.

Reports

The observers may prepare a single report or may file separate reports. A form such as the appended PEER OBSERVATION OF TEACHING REPORT may be used. Alternatively a general written report could be filed. The report must be submitted to the instructor within three working days after the visit.

References

CoE, Criteria and Procedures for Faculty Appointment, Evaluations, and Promotion in The College of Engineering, The University of Iowa, 1999.

UTA, Preparing for Peer Observation: A Guidebook, The Center for Teaching Effectiveness, The University of Texas at Austin.

PEER OBSERVATION OF TEACHING REPORT
Department of Civil & Environmental Engineering

Instructor: _____ Session: _____

Course Number and Name: _____

Course Level (Core, Req. Program, Int., Grad): _____

Course Type (Lect., Lab, Disc, etc.): _____

Number of Students Present: _____

Date(s) of Observations: _____

Observers: (1) _____ (2) _____

Provide written responses to the following items:

A. What were the instructor's major strengths and weaknesses as demonstrated in this observation?

B. How organized and clear is the presentation?

C. What overall impressions do you think students left this lesson with in terms of the teaching process and its relationship to their learning?

D. Describe the level of student interest and participation.

E. What specific suggestions would you make concerning how this particular class could have been improved?

Provide any additional comments that may help to assess the instructor's teaching capabilities:

Observer's Signatures: _____

Date Report Sent to Candidate: _____

Appendix B. College of Engineering FEAs with energy and sustainability theme

Chemical Engineering

Elective Focus Area

Energy & Environment

General Education Components (15 semester hours)

Take 15 s.h. of courses consistent with career goals

consider the following courses:

52:030 Energy and Society (3 s.h.)

06E:133 Environmental Economics (3 s.h.; pre-reqs: 06E:001 and 06E:002 or only one of these courses with instructor consent)

044:125 Environmental Impact Analysis (3 s.h.)

Statistics Elective (3 semester hours)

(Recommended: 22S:039)

22S:039	Probability and Statistics for Engineering and Physical Sciences	3 s.h.

Engineering Elective (3 semester hours)

052:237	Green Chemical and Energy Technologies (formerly Green Chemical Engineering)	3 s.h.

Advanced Chemistry Electives (6 semester hours)

(Choose the Analytical, Physical, or Biochemical sequence)

	Advanced Chemistry Course (1 of sequence of 3)	3 s.h.
	Advanced Chemistry Course (2 of sequence of 3)	3 s.h.

Advanced Bio-, Geo-, or Chemical Sciences Elective (3 or 4 semester hours)

	Select one course from the list below	3 or 4 s.h.
	Third course from the advanced chemistry sequence	
004:143	Analytical Measurements	3 s.h.
004:144	Physical Measurements	3 s.h.
099:140	Experimental Biochemistry	3 s.h
012:152	Isotope Geochemistry	3 s.h.
002:011	Principles of Biology II	4 s.h.
053:154	Environmental Microbiology	3 s.h.
175:260	Environmental Toxicology	3 s.h.
052:231	Environmental Chemistry I	3 s.h.
004:238	Surface Chemistry and Heterogeneous Processes	3 s.h.

Chemical Engineering

Elective Focus Area

Energy & Environment

Free Electives (9 or 8 semester hours from the following list)
Choose at least 3 s.h. from the Engineering course list and 3 s.h. from the Science course list.

Engineering Electives

053:050	Natural Environmental Systems	3 s.h.
052:133	Eng Analysis Alternative Energy Systems	3 s.h.
052:235	Air Pollution Control Technology	3 s.h.
053:107	Sustainable Systems	3 s.h.
058:048	Energy Systems Design	4 s.h.
058:148	Combustion and Propulsion	3 s.h.
058:147	Fuel Cells	3 s.h.
(100-level or higher)	Other Advanced Engineering courses – consult with academic advisor	

Science Electives -

various	Any course from the list (see above) of Advanced Bio-, Geo-, or Chemical Sciences Elective	
052:236	Atmospheric Chemistry & Physics	3 s.h.
012:149	Elements of Geochemistry	3 s.h.
002:010	Principles of Biology I	4 s.h.
004:173	Atmospheric and Environmental Chemistry	3 s.h.
012:114	Energy and the Environment	3 s.h.
053:101	Climatology	3 s.h.
044:105	Introduction to Environmental Remote Sensing	3 s.h.
044:110	GIS for Environmental Studies	3 s.h.
053:195	Fundamentals of Atmospheric Science	3 s.h.
175:197	Environmental Health	3 s.h.
175:221	Aerosol Technology	3 s.h.
175:230	Occupational Health	3 s.h.
(100-level or higher)	Other courses. Search through advanced courses in Geoscience, Occupational & Environmental Health, Chemistry, and Geography	

Civil and Environmental Engineering

Elective Focus Area (EFA)

Engineering for a Sustainable World

Civil, Environmental and Chemical Engineers who are well versed in environmental control and prevention are needed as industries evolve to deal with the development of more stringent standards for environmental protection. This need is clear in the United States but is expanding to industrially developing countries as demanded by global trade development and economies. Therefore, this Engineering Focus Area is designed to better expose undergraduate engineers to a field that is expected to grow rapidly over their careers.

This EFA is offered within the Environmental Subtrack of CEE and therefore **requires Environmental Engineering Design (53:157) as a design course, and Environmental Chemistry (53:152).**. The Engineering for a Sustainable World EFA consists of courses as listed in the table below.

Table 1. The following courses are required for this EFA:

Session	Courses	SH	Pre-/Co-Requisites
Fall	53:152 Environmental Chemistry	3	P- 4:012
Spring	52:107 Sustainable Systems	3	
Fall	53:141 Design for the Developing World	3	

Table 2. Choose at least 3 of the following technical courses for this EFA:

Session	Electives	SH	Pre-/Co-Requisites
Spring	52:103 Chemical Engineering Thermodynamics	3	
Spring	52:237 Green Chemical Engineering	3	
Fall	53:102 Groundwater	3	
Summer	53:103 Water Quality	3	
Spring	53:158 Solid and Hazardous Wastes	3	P- 53:050
Spring	53:159 Air Pollution Control Technology	3	P- 53:050 or consent
Spring	53:156 Physical-Chemical Process Fundamentals	3	P- 53:050, 53:152
Fall	53:154 Microbiology	3	
Spring	53:151 Biological Treatment Processes	3	Co- 53:055 and 53:156
Spring	53:170 Open Channel Flow	3	
Spring	53:171 Water Resources Engineering	3	
Fall	53:183 Intro Comp Flow in Pipes & Channels	3	53:169
All	053:198 Indiv Investigatns Civil & Environ Eng	var	

Table 3. Choose at least one of the following suggested non-engineering courses*

Session	Electives	SH	Pre-/Co-Requisites
Fall	44:019 Contemporary Environmental Issues	3	P- 4:012
Fall/Spring	44:106 Foundations of GIS	3	
Fall/Summer	44:104 Environment and Development	3	
Spring	44:174 Health and Work Environment	3	
Spring	6E:133 Environment and Natural Resource Econ.	3	
Fall	152:111 International Health	3	
All	6J:048 Introduction to Management	3	
Fall	030:170 The Politics of International Economics	3	

Sessions listed are typical, but not guaranteed.
Total EFA semester hours must equal 21, consisting typically of seven 3-sh courses

Elective Focus Area in Mechanical Engineering

Energy and Environment

The Energy and Environment (EAE) EFA provides advanced education in the increasingly important area of energy production, utilization and its environmental impact. Particular attention is given to emerging technologies such as alternative energy sources. The EFA also provides a solid foundation in transport process modeling and an introduction to environmental engineering. Workers in this area must possess not only the fluid dynamics and heat and mass transport modeling ability typical of mechanical or civil engineers, but also a level of understanding of sustainability of engineered systems.

Semester	Course	Sessi	SH	Pre-/Co-Requisites
4 (Spring)	29:30 Physics IV (with/without labs), *or*	F,S	4/3	22M:036, 22M:034
	58:111 Numerical Calculations, *or*	S	3	22M:032, 59:006
	22M:072 Elementary Numerical Analysis	F,S	3	
5 (Fall)	Elective		3	
6 (Spring)	Elective		3	
7 (Fall)	58:160 Intermediate Mechanics of Fluids *or*	F	3	57:020, 058:040
	58:145 Intermediate Heat Transfer	F	3	58:045
7 (Fall)	Elective		3	
8 (Spring)	Elective		3	
8 (Spring)	Elective		3	

Energy & Environment Electives (minimum of 2 required)	Sessi	SH	Pre-/Co-Requisites
12:114 Energy and the Environment	S	3	12:003 or CI*
53:050 Environmental Eng: Natural Systems	S	3	4:011
53:107 Sustainable Systems	S	3	None
56:155 Wind Power Management	S	3	None
58:147 Fuel Cells	F	3	58:040, 58:045 or CI*
58:148 Combustion Engineering	S	3	58:040, 58:045 or CI*
58:149 Propulsion Engineering	F	3	57:020, 58:040
General Electives	**Sessi**	**SH**	**Pre-/Co-Requisites**
Flexible Elective – Choose one from: (i) engineering courses that are required in another (non-ME) program, (ii) engineering courses at the 100-level, (iii) mathematics, physics or chemistry courses at a more advanced level than those required in the ME curriculum, or (iv) independent investigation in a mechanical engineering subject area	Any	3	*CI: Consent of Instructor
12:008 Introduction to Environmental Science	F,S	3	None
53:071 Principles of Hydraulics & Hydrology	S	3	57:020
53:102 Groundwater	F	3	04:012, 22M:032, 29:081
53:159 Air Pollution Control Technology	S	3	53:050 or CI*
56:054 Engineering Economy	S	3	/22S:039
58:140 Intermediate Thermodynamics	F	3	58:040
58:143 Computational Fluid and Thermal Engineering	F	3	58:045
58:145 Intermediate Heat Transfer	F	3	58:045
58:160 Intermediate Mechanics of Fluids	F	3	57:020, 58:040
58:186 Enhanced Design Experience	S	3	58:086

For further information, please contact: Professor L. D. Chen or Professor A. Ratner, Department of Mechanical and Industrial Engineering, University of Iowa, Iowa City, IA 52242, Tel. (319) 335-5674, e-mail: ldchen@engineering.uiowa.edu

Certificate in Sustainability - Information for EE Majors

Sustainability is broadly defined as the implementation of policies, processes, and practices that meet the needs of the present without compromising those of the future.

The University of Iowa certificate in sustainability aims to provide students with the knowledge and skills they will need to contribute to the development of sustainable systems and to understand the complex interplay among them and society, culture, energy, economics, environment, and health.

The formal requirements for earning the certificate can be found in the sustainability program section of The University of Iowa general catalog. Electrical and Computer Engineering students who use carefully selected certificate courses to satisfy their General Education Component (GEC) and Elective Focus Area (EFA) requirements can earn the sustainability certificate *without taking any courses beyond those required to earn their B.S.E. degree*.

To encourage students to consider this option the Electrical and Computer Engineering department allows students who earn a sustainability certificate to replace one technical EFA course with a general EFA course satisfying sustainability certificate requirements.

The sustainability certificate requires 24 s.h. of course work, including completion of three introductory courses; four breadth electives-one from each of the certificate's four elective areas-and one project course. No more than three certificate courses may be taken from any single department or program; students must maintain a g.p.a. of at least 2.00 in all certificate course work; and no more than 6 s.h. of approved transfer credit may be counted toward the certificate.

Electrical and Computer Engineering students can satisfy these requirements in many ways. For instance, the use of the following sustainability course selections to satisfy the listed Electrical and Computer Engineering requirements allows both electrical engineering and computer engineering track students to earn the certificate without taking any additional courses.

Sustainability Certificate Requirement	**EE requirement it satisfies**
Introductory Core	
012:008 Introduction to Environmental Science	3 s.h. general EFA
044:019 Contemporary Environmental Issues	3 s.h. LL SOC EFA
057:013 Introduction to Sustainability	3 s.h. general EFA
Changing Environments and Human Health	
044:003 Introduction to Earth Systems Science	3 s.h. LL/UL SOC/HUM EFA
Energy, Climate, and Built Environments	
055:195 Topics in ECE (energy harvesting)(sr standing)	3 s.h. 100-level ECE or tech EFA
The Power of Culture and Society	
113:113 Human Impacts on the Environment	3 s.h. UL SOC/HUM EFA
Ethics, Economics, and Public Policy	

044:127 Environmental Quality (+prereq)*	3 s.h. UL SOC same dept. EFA
Project Course	
053:107 Sustainable Systems	3 s.h. technical EFA

* students whose schedules can accommodate one additional credit should consider substituting 044:125, Environmental Impact Analysis, for 044:127, Environmental Quality.

Many alternative sets of courses also satisfy the sustainability certificate and electrical engineering requirements. The following table maps courses satisfying certificate requirements to electrical engineering GEC and EFA requirements. Electrical and Computer Engineering students interested in minimizing the number of additional courses that must be taken to earn a B.S.E and a sustainability certificate should, as early as possible, begin working with their advisors to ensure that at least 8 of their 5 GEC, and 7 EFA courses are selected from the table below in such a way that the sustainability certificate requirements are met.

Sustainability Certificate Requirement	**EE requirement it satisfies**
Introductory Core (complete all three)	
012:008 Introduction to Environmental Science	3 s.h. general EFA
044:019 Contemporary Environmental Issues	3 s.h. LL SOC or general EFA
057:013 Introduction to Sustainability	3 s.h. general EFA
Changing Environments and Human Health (pick one)	
002:100 Plant Diversity and Evolution (+prereq)	4 s.h. general or technical EFA
002:103 Biogeography (+prereq)	3 s.h. general or technical EFA
002:108 Vertebrate Zoology (+prereq)	4 s.h. general or technical EFA
002:134 Ecology (+prereq)	4 s.h. general or technical EFA
002:140 Systematics: Classifying Biodiversity (+prereq)	3 s.h. general or technical EFA
004:173 Atmospheric & Environmental Chem (+prereq)	3 s.h. general or technical EFA
012:004 Evolution and the History of Life	3-4 s.h. general EFA
012:107 Marine Ecosystems and Conservation	3 s.h. general EFA
012:108 Introduction to Oceanography	3 s.h. general EFA
012:139 Integrated Watershed Analysis	3 s.h. general EFA
012:140 Natural Hazards	3 s.h. general or technical EFA
012:166 Hydrogeology (sr standing)	3 s.h. general EFA
012:170 Evolution of Ecosystems (+prereq)	3 s.h. general or technical EFA
16W:137 History of Public Health	3 s.h. UL HUM or general EFA
16W:138 History of International Health	3 s.h. UL HUM or general EFA
16W:140 Disease, Politics, and Health in South Asia	3 s.h. UL HUM or general EFA
044:003 Introduction to Earth Systems Science	3 s.h. LL SOC or general EFA
044:123 Landscape Ecology (+prereq)	3 s.h. UL SOC or general EFA
044:126 Wetlands: Function, Geograph, Mgmt(+prereq)	3 s.h. UL SOC or general EFA
044:137 Health and Environment: GIS Apps (+prereq)	3 s.h. UL SOC or general EFA
053:050 Natural Environmental Systems (+prereq)	3-4 s.h. general or technical EFA
175:101 Health, Work, and the Environment	3 s.h. general EFA
175:111 International Health	3 s.h. general EFA
175:195 Global Environmental Health (+prereq)	2 s.h. general or technical EFA

175:197 Environmental Health	3 s.h. general EFA
00L:031 Ecology	4 s.h. general EFA
00L:163 Conservation Biology (+prereq)	4 s.h. general or technical EFA
Energy, Climate, and Built Environments (pick one)	
01H:187 Sustainable Architecture (jr/sr standing)	3 s.h. UL HUM or general EFA
012:114 Energy and the Environment (+prereq)	3 s.h. general or technical EFA
012:136 Soil Genesis and Geomorphology (+prereq)	3 s.h. general or technical EFA
012:172 Glacial and Pleistocene Geology (+prereq)	3 s.h. general or technical EFA
012:189 Global Change Seminar	1-2 s.h. general EFA
044:101 Climatology (+prereq)	3 s.h. UL SOC or general EFA
044:125 Environmental Impact Analysis	4 s.h. UL SOC or general EFA
044:127 Environmental Quality (+prereq)	3 s.h. UL SOC or general EFA
044:135 Urban Geography	3 s.h. UL SOC or general EFA
052:030 Energy and Society	3 s.h. LL SOC or general EFA
053:055 Principles of Environmental Engr (+prereq)	4 s.h. general or technical EFA
053:102 Groundwater	3 s.h. general or technical EFA
053:103 Water Quality	3 s.h. general or technical EFA
053:105 Geology for Engineers (soph standing)	3 s.h. general or technical EFA
053:126 International Perspectives: Xicotepec	3 s.h. general or technical EFA
053:157 Environmental Engineering Design (+prereq)	3 s.h. general or technical EFA
053:158 Solid and Hazardous Wastes (+prereq)	3 s.h. general or technical EFA
053:159 Air Pollution Control Technology (+prereq)	3 s.h. general or technical EFA
053:195 Topics in CEE (public transit) (sr standing)	3 s.h. general or technical EFA
055:195 Topics in ECE (energy harvesting)(sr standing)	3 s.h. 100-level ECE EFA
056:155 Wind Power Management	3 s.h. general or technical EFA
058:048 Energy Systems Design (+prereq)	4 s.h. general or technical EFA
102:055 The Splendor of Cities	3 s.h. UL SOC or general EFA
102:101 Planning Livable Cities	3 s.h. UL SOC or general EFA
102:243 Healthy Cities and the Environment	3 s.h. UL SOC or general EFA
165:841 Intl Perspectives: Engr Water Sci & Mgmt	1-3 s.h. general EFA
175:197 Environmental Health (instructor consent)	3 s.h. general EFA
The Power of Culture and Society (pick one)	
01D:022 Probs in Design II: Form & Function (+prereq)	3 s.h. general EFA
01D:137 Environmental Design I (+prereq)	3 s.h. general EFA
01H:187 Sustainable Architecture (jr/sr standing)	3 s.h. UL HUM or general EFA
002:095 Plants and Human Affairs	2-3 s.h. general EFA
004:005 Technology and Society	3 s.h. general EFA
008:052 Lit, Cult & Women (subtitle: women's nature)	3 s.h LL HUM or general EFA
008:136 Topics in Popular Culture (food studies)	3 s.h. UL HUM or general EFA
008:175 Topics in Film and Lit (U.S. environmental lit)	3 s.h. UL HUM or general EFA
008:179 Lit & Society (when topic is capturing animals)	3 s.h. UL HUM or general EFA

08C:110 Creative Writing for the Ecologically Aware	3 s.h. UL HUM or general EFA
009:007 Nature/Ecology French Philosophy and Fiction	3 s.h. LL HUM or general EFA
010:170 Rhetoric of Sustainability	3 s.h. general EFA
032:076 American Indian Environmentalism	3 s.h. LL HUM or general EFA
044:001 Introduction to Human Geography	4 s.h. LL SOC or general EFA
044:010 The Contemporary Global System	4 s.h. LL SOC or general EFA
044:011 Population Geography	3 s.h. LL SOC or general EFA
044:104 Environment and Development	3 s.h. UL SOC or general EFA
045:147 American Disasters	3 s.h. UL SOC or general EFA
045:050 Food in America	3 s.h. LL SOC or general EFA
045:090 Seminar in American Cultural Studies	3 s.h. LL HUM or general EFA
045:150 Topics in ACS (environment & sustainability)	3 s.h. UL SOC or general EFA
045:163 American Ruins	3 s.h. UL SOC or general EFA
052:030 Energy and Society	3 s.h. LL SOC or general EFA
102:055 The Splendor of Cities	3 s.h. LL SOC or general EFA
102:244 Global Perspectives on Environmental Planning	3 s.h. UL SOC or general EFA
113:010 Anthropology and Contemporary World Probs	3 s.h. LL SOC or general EFA
113:113 Human Impacts on the Environment	3 s.h. UL SOC or general EFA
113:114 Environmentalism Cross-Culturally (+prereq)	3 s.h. UL SOC or general EFA
113:126 Animals, Culture, and Food	3 s.h. UL SOC or general EFA
113:139/032:130 Religion & Envtl Ethics(jr/sr standing)	3 s.h. UL SOC, HUM or general
113:143 Environment and Culture (+prereq)	3 s.h. UL SOC or general EFA
113:179 Pleistocene Peopling of the Americas	3 s.h. UL SOC or general EFA
169:040 The Good Society	3 s.h. LL HUM or general EFA
169:080 Introduction to Place Studies	3 s.h. LL HUM or general EFA
213:152 Primate Conservation Biology (+prereq)	3 s.h. UL SOC or general EFA
410:068 Wilderness Appreciation	1 s.h. general EFA
Ethics, Economics, and Public Policy (pick one)	
06E:133 Environmental & Nat Resource Econ (+prereq)	3 s.h. UL SOC or general EFA
06E:183 Natural Resource Economics (+prereq)	3 s.h. UL SOC or general EFA
008:179 Literature & Society (subtitle: locally grown)	3 s.h UL HUM or general EFA
030:045 Introduction to Comparative Politics	3 s.h. UL SOC or general EFA
030:060 Introduction to International Relations	3 s.h. UL SOC or general EFA
036:043 Rhetoric, Science & Technology (+prereq)	3 s.h. LL HUM or general EFA
044:030 The Global Economy	3 s.h. LL SOC or general EFA
044:112 Mapping American Cities & Regions (+prereq)	3 s.h. UL SOC or general EFA
044:125 Environmental Impact Analysis (+prereq)	4 s.h. UL SOC or general EFA
044:127 Environmental Quality (+prereq)	3 s.h. UL SOC or general EFA
044:177 Environmental Justice	3 s.h. UL SOC or general EFA
044:194 Geographic Perspectives on Development	3 s.h. UL SOC or general EFA
044:197 Special Topics (environ policy or globalization)	3 s.h. UL SOC or general EFA

091:291 International Environmental Law	3 s.h. general EFA
102:247 Environmental Management	3 s.h. UL SOC or general EFA
113:139/032:130 Religion & Environmental Ethics	3 s.h. UL SOC or HUM
129:029 1st-Year Sem (Black New Orleans & Katrina)	1 s.h. LL HUM or general EFA
175:252 Environmental Health Policy	3 s.h general or technical EFA
Project Courses (pick one)	
01D:249 Adv Probs in Design (subtitle: special issues)	3 s.h. general EFA
01J:108 Art and Ecology (sr standing)	4 s.h. general EFA
08N:145 Multimedia Writing (subtitle: green economy)	3 s.h. UL HUM or general EFA
012:193 Sustainability Project (instructor approval)	arr. general EFA
044:197 Special Topics (when topic is intl development)	3 s.h. UL SOC or general EFA
045:150 Special Topics (when topic is living locally)	3 s.h. UL HUM or general EFA
053:107 Sustainable Systems	3 s.h. general or technical EFA
053:141 Design for the Developing World	3 s.h. general or technical EFA