A SURVEY OF FACULTY TEACHING AND STUDENT LEARNING IN ENGINEERING

(SPONSORED BY ABET)

Instructions: If circles are provided, please completely fill in the circle next to your answer (example: ● Yes ○ No ***). If boxes are provided, please write inside the box (example:*** 03 ***). If you are asked to specify an answer, please clearly print your answer on the line provided.***

1. How many years have you been teaching as an engineering faculty member? ☐☐ Years

2. How many years have you been a faculty member at this institution? ☐☐ Years

3. In what engineering discipline are you employed? (If you hold a joint appointment please indicate that area as well.)

- ○ Aerospace Engineering
- ○ Chemical Engineering
- ○ Civil Engineering
- ○ Computer Engineering
- ○ Electrical Engineering
- ○ Industrial Engineering
- ○ Mechanical Engineering
- ○ Other (please specify) _____ _____

Part I Faculty Teaching

Please think about a particular undergraduate course that you teach more or less regularly. With that course in mind, please answer the following questions.

4. Please indicate the level of students in that course.

- ○ Mainly lower division
- ○ Mainly upper division
- ○ Mixed

5. Approximately how many students are enrolled in that course?

- ○ Under 20
- ○ 21-40
- ○ 41-60
- ○ More than 60

6. Indicate the category that best describes that course. (Select all that apply.)

- ○ First-year design course
- ○ Required engineering course
- ○ Capstone course
- ○ Elective/Optional engineering course
- ○ Other (specify) _____

7. In what year did you most recently teach that course (approximately)? ☐☐☐☐

8. In what year did you first teach that course (approximately)? ☐☐☐☐

Keeping that course in mind, please answer questions 9 through 14.

9. Compared to the first time you taught that course how, if at all, has the emphasis on the following changed?

Change in emphasis on:	Not Applicable	Significant Decrease	Some Decrease	No Change	Some Increase	Significant Increase
Engineering design	○	○	○	○	○	○
Teamwork	○	○	○	○	○	○
Engineering in global/social contexts	○	○	○	○	○	○
Professional ethics	○	○	○	○	○	○
Professional responsibility	○	○	○	○	○	○
Technical writing	○	○	○	○	○	○
Verbal communication	○	○	○	○	○	○
Knowledge of contemporary issues	○	○	○	○	○	○
Experimental methods	○	○	○	○	○	○
Foundational math	○	○	○	○	○	○
Basic science	○	○	○	○	○	○
Basic engineering science	○	○	○	○	○	○
Modern engineering tools	○	○	○	○	○	○
Project management	○	○	○	○	○	○
Other (please specify)_____	○	○	○	○	○	○

10. To what extent has each of the following influenced the **course changes** above?

Extent of influence on curricular change:	Not At All	Slightly	Moderately	A Great Deal
Collective faculty decision	○	○	○	○
Change in program goals	○	○	○	○
Organizational restructuring	○	○	○	○
ABET accreditation	○	○	○	○
Student feedback	○	○	○	○
Increased resources	○	○	○	○
Decreased resources	○	○	○	○
Industry/employer feedback	○	○	○	○
Decision by Dean or other administrator	○	○	○	○
NSF coalition	○	○	○	○
Research on undergraduate engineering education	○	○	○	○
My own initiative	○	○	○	○

11. Compared to the first time you taught that course how, if at all, has the emphasis you place on the following **teaching methods** changed?

Change in emphasis on:	**Not Applicable**	**Significant Decrease**	**Some Decrease**	**No Change**	**Some Increase**	**Significant Increase**
Use of groups in class	○	○	○	○	○	○
Design projects	○	○	○	○	○	○
Assignments or exercises focusing on application	○	○	○	○	○	○
Open-ended problems	○	○	○	○	○	○
Student presentations	○	○	○	○	○	○
Hands-on experiences	○	○	○	○	○	○
Case studies or real world examples	○	○	○	○	○	○
Lectures	○	○	○	○	○	○
Computer simulations	○	○	○	○	○	○
Problems from the textbook	○	○	○	○	○	○

12. How has each of the following influenced your use of **active teaching methods**, such as group work, projects, and student presentations?

Extent of influence on instruction:	**Not At All**	**Slightly**	**Moderately**	**A Great Deal**
Collective faculty decision	○	○	○	○
Change in program goals	○	○	○	○
Organizational restructuring	○	○	○	○
ABET accreditation	○	○	○	○
NSF coalition	○	○	○	○
Student feedback	○	○	○	○
Increased resources	○	○	○	○
Decreased resources	○	○	○	○
Industry/employer feedback	○	○	○	○
My own initiative	○	○	○	○

13. Approximately how much weight do you give to each of the following when **assigning grades** in that course?

Quizzes and exams ☐☐☐ %

Class participation and presentations ☐☐☐ %

Group work or team project(s) ☐☐☐ %

Individual paper(s) or project(s) ☐☐☐ %

Homework or lab problems ☐☐☐ %

Other (please specify)_____ ☐☐☐ %

TOTAL 100%

Part II Student Learning

14. What impact did the changes you made in course content and/or teaching methods have on your students' ability to do the following?

Impact of changes on students' ability to:	Does Not Apply	High Negative Impact	Some Negative Impact	No Impact	Some Positive Impact	High Positive Impact
Apply knowledge of mathematics, science, and engineering	○	○	○	○	○	○
Design and conduct experiments, as well as to analyze and interpret data	○	○	○	○	○	○
Design a system, component, or process to meet desired needs	○	○	○	○	○	○
Function on multi-disciplinary teams	○	○	○	○	○	○
Identify, formulate, and solve engineering problems	○	○	○	○	○	○
Understand professional and ethical responsibilities	○	○	○	○	○	○
Communicate effectively	○	○	○	○	○	○
Understand the impact of engineering solutions in a global and societal context	○	○	○	○	○	○
Recognize the need for and engage in life-long learning	○	○	○	○	○	○
Knowledge of contemporary issues	○	○	○	○	○	○
Use the techniques, skills, and modern engineering tools necessary for engineering practice	○	○	○	○	○	○
Manage a project	○	○	○	○	○	○

15. Think about **graduating seniors currently in your program**. On average, please rate their ability to do the following.

Graduating seniors' ability to:	No Ability	Some Ability	Adequate Ability	More than Adequate Ability	High Ability
Apply knowledge of mathematics, sciences and engineering	○	○	○	○	○
Design and conduct experiments, as well as to analyze and interpret data	○	○	○	○	○
Design a system, component, or process to meet desired needs	○	○	○	○	○
Function on multi-disciplinary teams	○	○	○	○	○
Ability to identify, formulate, and solve engineering problems	○	○	○	○	○
Understand professional and ethical responsibilities	○	○	○	○	○
Communicate effectively	○	○	○	○	○
Understand the impact of engineering solutions in a global and societal context	○	○	○	○	○
Recognize the need for, and engage in, life-long learning	○	○	○	○	○
Knowledge of contemporary issues	○	○	○	○	○
Use the techniques, skills, and modern engineering tools necessary for engineering practice	○	○	○	○	○
Manage a project	○	○	○	○	○

16. Compared to graduates 7-10 years ago, have current graduating seniors' abilities increased or decreased?

Change in graduates' abilities:	Greatly Decreased	Slightly Decreased	About the Same	Slightly Increased	Greatly Increased
To use engineering, math, science, and technical skills	○	○	○	○	○
To apply problem-solving skills	○	○	○	○	○
To communicate and work in teams	○	○	○	○	○
To understand the organizational, cultural, and environmental contexts and constraints of engineering practice, design, and research	○	○	○	○	○
To continue to learn, grow, and adapt as technology and society evolve in unpredictable directions	○	○	○	○	○

17. To what extent, in your opinion, are these changes attributable to ABET's EC2000?

- ○ Not at all
- ○ Some
- ○ Moderately
- ○ A great deal

18. During the past 12 months, have you participated in the following **professional development activities?** Compared to 5 years ago, is this less, the same, or more?

	Current Participation		Participation Compared To Five Years Ago		
Participation in:	**Yes**	**No**	**Less**	**Same**	**More**
Seminars or workshops on teaching and learning	○	○	○	○	○
Seminars or workshops on assessing student learning	○	○	○	○	○
Conference or journal submission on undergraduate education	○	○	○	○	○
Using services of on-campus instructional center	○	○	○	○	○
Developing or teaching a course with someone in another engineering discipline	○	○	○	○	○
Activities to enhance content knowledge	○	○	○	○	○
Reading materials on teaching	○	○	○	○	○
A project to improve undergraduate engineering education	○	○	○	○	○
Applying for external funding for an undergraduate engineering education project	○	○	○	○	○

19. Over the past decade, how has the **emphasis your program gives to teaching** changed?

Change in emphasis on teaching in:	**Significant Decrease**	**Some Decrease**	**No Change**	**Some Increase**	**Significant Increase**
Recruiting and hiring	○	○	○	○	○
Promotion and tenure	○	○	○	○	○
Salary and merit increases	○	○	○	○	○

20. To what extent do you agree or disagree with the following statements about **current curriculum planning and revision practices** in your program?

Statements about curriculum planning and revision:	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
Faculty in my program periodically review the program mission and objectives.	○	○	○	○	○
Faculty in my program generally resist new curricular ideas or experimentation.	○	○	○	○	○
Program faculty collaborate on curriculum development and revision.	○	○	○	○	○
The program curriculum is a frequent agenda item at program meetings.	○	○	○	○	○
Curriculum revisions are typically made in response to some problem rather than through a periodic planning process.	○	○	○	○	○
Curriculum planning in my program is systematic.	○	○	○	○	○
Curriculum decisions are usually based on opinions rather than data.	○	○	○	○	○
Faculty are knowledgeable about the program's curriculum beyond their own courses.	○	○	○	○	○

21. What is your level of enthusiasm for outcomes assessment as part of a process of program improvement?
    - ○ None at all
    - ○ Some
    - ○ Moderate
    - ○ A great deal

22. What has been your level of personal effort in student outcomes assessment?
    - ○ None at all
    - ○ Some
    - ○ Moderate
    - ○ A great deal

23. In your view, is that:
    - ○ Too much
    - ○ Too little
    - ○ About right

24. How much has ABET's EC2000 increased your knowledge of the strengths and weaknesses of your program?
    - ○ Not at all
    - ○ Some
    - ○ Moderately
    - ○ A great deal

25. How familiar are you with ABET's EC2000 Accreditation Criteria dealing with student outcomes?

- ○ Not at all
- ○ Slightly familiar
- ○ Moderately familiar
- ○ Very familiar

26. Approximately how many years have you been employed full-time as an engineer in industry or private practice?

☐☐ Years

27. What is your gender?

- ○ Male
- ○ Female

28. What is your ethnic background? (Indicate all that apply.)

- ○ White/European American
- ○ Black/African American
- ○ Hispanic or Latino
- ○ Asian
- ○ American Indian or Alaska Native
- ○ Hawaiian or other Pacific Islander
- ○ Other (please specify) _____

29. What is the major field of **your bachelor's degree**?

- ○ Aerospace Engineering
- ○ Chemical Engineering
- ○ Civil Engineering
- ○ Computer Engineering
- ○ Electrical Engineering
- ○ Industrial Engineering
- ○ Mechanical Engineering
- ○ Other

30. What is the major field of **your highest degree**?

- ○ Aerospace Engineering
- ○ Chemical Engineering
- ○ Civil Engineering
- ○ Computer Engineering
- ○ Electrical Engineering
- ○ Industrial Engineering
- ○ Mechanical Engineering
- ○ Other (please specify) _____

Thank you for your participation! Please return your completed survey in the prepaid envelope provided.