



Department of Electrical & Computer Engineering

ECE 238L – Knowledge Probe – Spring 2011

Course Coordinator: Marios Pattichis

ABET Outcomes Probed: A, B, C, E

ABET Program Outcomes: Engineering programs must demonstrate that their students attain the following outcomes:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program. Program outcomes must foster attainment of program educational objectives.

There must be an assessment and evaluation process that periodically documents and demonstrates the degree to which the program outcomes are attained.

Relevant pre- and co-requisite classes: ECE 131 or similar introductory programming course.

Catalog Description:

Binary number systems. Boolean Algebra. Combinational, sequential and register transfer logic. VHDL. Arithmetic logic unit. Memories, computer organization. Input-output. Microprocessors.

Instrument



Department of Electrical & Computer Engineering

The knowledge probe (KP) consisted of several questions given to students in class and in take-home Quizzes/Exams. In addition, students were tested in the lab sections they attended. They had hands-on experiments and exams when checking out their projects.

Quiz1 Questions

- Question 1: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed A
 - 80% of class got it correct

Quiz2 Questions

- Question 1: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed A
 - 85% of class got it correct

Quiz3 Questions

- Question 1: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed A
 - 90% of class got it correct
- Question 3: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 4: ABET outcome(s) probed A
 - 90% of class got it correct
- Question 5: ABET outcome(s) probed A
 - 80% got it correct
- Question 6: ABET outcome(s) probed A
 - 80% of class got it correct
- Question 7: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 8: ABET outcome(s) probed A
 - 75% of class got it correct
- Question 9: ABET outcome(s) probed A
 - 75% of class got it correct

Quiz4 Questions

- Question 1: ABET outcome(s) probed C, E



Department of Electrical & Computer Engineering

- 85% of class got it correct
- Question 2: ABET outcome(s) probed C, E
 - 85% of class got it correct
- Question 3: ABET outcome(s) probed C, E
 - 80% of class got it correct
- Question 4: ABET outcome(s) probed C, E
 - 80% of class got it correct
- Question 5: ABET outcome(s) probed C, E
 - 80% got it correct
- Question 6: ABET outcome(s) probed C, E
 - 85% of class got it correct

Quiz5 Questions

- Question 1: ABET outcome(s) probed B, C
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed B, C
 - 85% of class got it correct
- Question 3: ABET outcome(s) probed B, C
 - 85% of class got it correct

Quiz6 Questions

- Question 1: ABET outcome(s) probed B, C
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed B, C
 - 80% of class got it correct

Exam1 Questions

- Question 1: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 3: ABET outcome(s) probed A
 - 85% of class got it correct
- Question 4: ABET outcome(s) probed A
 - 90% of class got it correct
- Question 5: ABET outcome(s) probed A
 - 85% got it correct
- Question 6: ABET outcome(s) probed C
 - 80% of class got it correct



Department of Electrical & Computer Engineering

- Question 7: ABET outcome(s) probed C
 - 85% of class got it correct
- Question 8: ABET outcome(s) probed C
 - 75% of class got it correct
- Question 9: ABET outcome(s) probed C
 - 75% of class got it correct
- Question 10: ABET outcome(s) probed C
 - 75% of class got it correct

Exam2 Questions

- Question 1: ABET outcome(s) probed C
 - 85% of class got it correct
- Question 2: ABET outcome(s) probed C
 - 90% of class got it correct
- Question 3: ABET outcome(s) probed C
 - 85% of class got it correct
- Question 4: ABET outcome(s) probed A
 - 90% of class got it correct
- Question 5: ABET outcome(s) probed C
 - 80% got it correct

Suggested Actions and Follow-up

- Knowledge of binary, octal, and decimal number systems should be probed more deeply in future KPs. Also, concepts from Boolean Algebra.
- Knowledge of numbers (Natural, Integers, Fractional, Irrational, Real and Complex) should be probed more deeply in the future.
- Closer and better coordination needs to be developed between ECE131 and ECE 231. Coordination in the material presented in lectures and assignments given.
- Recitation/lab sessions are needed for students to learn. Teamwork and student tutoring helps greatly.