

ECE 438 Knowledge Probe – Fall 2008

Course Coordinator: Howard Pollard

ABET Outcome probed: B

Relevant pre-and co-requisite classes: ECE 337L, ECE 338, ECE 344L

1. Instrument

The knowledge probe (KP) consisted of two questions on the final exam. These questions were created to give information about how well the students could design experiments and analyze and interpret data.

Question A (question 7 on the exam)

This question addresses the ability of the students to carry out a calculation involving computer systems and based on that calculation determine a performance metric. This is a relatively simple system, and I expected approximately 90% of the students to provide correct answers.

Question B (question 6 on the exam)

This question addressed the ability of the students to represent the values in an appropriate number system, then manipulate that number system to provide correct results. This question requires not only overview type of information, but also detailed knowledge of bit representations and manipulations; therefore, I expected 65-75% of the students to provide correct answers.

2. Results

Nine people took the final exam. The results may be skewed somewhat, since the two questions involved in the Knowledge Probe were the last two questions on the exam. Better planning in the future will make sure the questions are not hastily answered.

Question A (question 7 on exam)

Five of the nine students answered completely and correctly. Of the remaining students, all received partial credit and only one demonstrated distinct lack of knowledge. Two of the students had a language problem, since they were exchange students with English understanding problems.

Question B (question 6 on the exam)

The students demonstrated a lack of completeness on this question. While they all knew the basic things to do, the details clouded the responses. Hence, this kind of detailed question may not be appropriate for the knowledge probe.

3. Analysis.

When the question is kept simple and direct, probing a single aspect of the desired principle, then the students were able to grasp what was wanted and how to supply that knowledge. However, when the details cloud the issues, then the students do not do as well. These details are required for real systems, but some other mechanism should be used to test the knowledge of concepts.

4. Suggested Actions and Follow-up

- The presentations of the information should be done in such a way that the details support the engineering principles. That is, the details should not confuse the issue, but rather reinforce it. More care needs to be taken in the presentation of the material to assure that this happens.
- Questions should be used in the testing environment that query the technique, not the details.