6.042 Assessment Survey

Instructions

The EECS Department is trying to develop a system to monitor and improve teaching effectiveness. Part of this effort involves formulating and checking an Educational Objectives and Outcomes statement like the one for 6.042 on the course web page.

We would like your feedback on how well you feel these objectives and outcomes were achieved for you personally. We need your name on your survey submission to crosscheck self-assessments against grades; we think the cross-check will be helpful in improving the course. No one on the 6.042 staff will look at any survey results until after grades are assigned, so you need not be concerned that what you say in your self-assessment will impact your grade at all.

In the indicated space next to each item, please enter a digit from one (1) to five (5) where

<table>
<thead>
<tr>
<th></th>
<th>means</th>
<th>1 means “this objective/outcome was <strong>excellently</strong> achieved in my case.”</th>
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<tbody>
<tr>
<td>2</td>
<td>means</td>
<td>“... reasonably well ...”</td>
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<td>3</td>
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<td>“... somewhat ...”</td>
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<td>5</td>
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**Please hand this in at the beginning of the final exam.**
Objectives

On completion of 6.042, students will be able to explain and apply the basic methods of discrete (noncontinuous) mathematics to Computer Science problems. They will be able to use these concepts in subsequent courses in the design and analysis of algorithms, computability theory, software engineering, and computer systems.

In particular, students will be able to:

1. **Reason mathematically about basic data types and structures** used in computer algorithms and systems; distinguish rigorous definitions and conclusions from merely plausible ones; synthesize elementary proofs, especially proofs by induction. 

2. **Model and analyze computational processes** (algorithms and systems) using analytic and combinatorial methods.

3. **Apply principles of discrete probability** to model and solve elementary problems of reliability and estimation.

4. **Work in small teams** to accomplish all the objectives above.

Learning Outcomes

Students will be able to:

1. **Evaluate elementary mathematical arguments** and identify fallacious reasoning (not just fallacious conclusions).

2. **Synthesize induction hypotheses and simple proofs** in discrete mathematics using the terminology of elementary mathematical logic.

3. **Apply graph theory models** of data structures and state machines to solve elementary problems of scheduling and connectivity.

4. **Prove basic properties of numbers**; calculate GCD’s and evaluate arithmetic expressions in modular arithmetic.

5. Apply the method of invariants and well-founded ordering to **prove correctness and termination of algorithms** and state machines.

6. **Derive closed-form and asymptotic expressions** from series and recurrences for growth rates of processes.

7. **Calculate numbers of possible outcomes** of elementary combinatorial processes such as permutations and combinations.

8. **Calculate probabilities** and discrete distributions for simple combinatorial processes; calculate means and variances.

9. Solve problems of estimation and error tolerance by **applying theorems on deviation from the mean**.

10. **Problem-solve and study in a small team** with fellow students.
Further Comments

• One the same scale of one (1) to five (5), how helpful overall was the course in helping you achieve the Objectives and Outcomes? _____

• We would be interested in hearing any other comments or suggestions you may have about the course: