Course Assessment Summary
COE 360 Principles of VLSI Design (3-0-3)
Term 061

Course Learning Outcomes

1. Ability to apply knowledge of mathematics, science, and engineering in the design, analysis and modeling of digital integrated circuits.

2. Ability to design and conduct experiments using SPICE to characterize and optimize digital integrated circuits.

3. Ability to Design, Verify, Analyze and Evaluate the performance (speed, Power, Area, Noise margins) of different MOS digital integrated circuits for different design specifications

4. Ability to use CAD tools in the design and verification of digital integrated circuits.

5. Ability to function as an effective team member.

6. Ability to communicate effectively.

Section#	Source of Outcome Data	Outcome1	Outcome2	Outcome3	Outcome4	Outcome5	Outcome6
1	Instructor Evaluation	Needs Improvement	Achieved	Achieved	Not Achieved	Not Achieved	Needs Improvement
	Student Survey	82.6%	75.6%	80.8%	77.4%	90.4%	87%
Overall	Assessment Rating	Needs Improvement	Achieved	Achieved	Not Achieved	Not Achieved	Needs Improvement

Observations:

1. Outcome 1 was marginally achieved due to the following reason: Students math abilities are very weak.
2. Outcome 4 was not achieved due to the following reason: Students are used to spoon feeding. Though they were given several tutorials on the CAD tools used in the course, they still could not master them and kept complaining about "needing someone to teach us these tools".

3. Outcome 5 was not achieved due to the following reason: Students were not formally trained on team work. They tend to dysfunction in teams.

4. Outcome 6 was marginally achieved due to the following reason: Students' composition skills are very weak! There is no room in this course to strengthen these skills. These skills should be sharpened in all courses that require students to write reports (i.e. labs).

5. Students' perception of course outcomes achievement is very high. Students believed that the course outcomes were all achieved (minimum student score was 75.6%!). This is an indication of lack of understanding of what these outcomes mean.

Recommendations:

1. Next time an on-line math quiz will be administered in the first week of the semester to point out the basic math skills required by the students in this course
2. More emphasis in using CAD/Simulation/Analysis software tools should be included in lower courses. This will enhance the student's ability to learn new tools.

3. Next time a tutorial will be given on team work. It would also be much better if team work is stressed out through lab courses, which will eliminate the need for such tutorial.

4. The course outcomes need to be mapped to the taught topics much closer. Though this will increase the number of outcomes, but it will make it much easier to evaluate and assess. More importantly, it will make the students know exactly what they are expected to learn or achieve in this course.
5. Instructors need to talk with students about course learning outcomes and what they mean.