

CLASS SYLLABUS EEE 296J: INTEGRATED CIRCUIT FABRICATION TECHNOLOGY

Lecture 3 hours/week

Team Projects 10-20 hours/week

Meetings with instructor: Mandatory meetings of each group will be scheduled every Monday.

Instructor: Prof. Colinge

Required Material: The Science and Engineering of Microelectronic Fabrication

edition by Stephen Cambell, Oxford University Press, USA; 2
(February 15, 2001)

Grading: Laboratory project (80%), Final Oral Report (20%)

Topics:

Week 1-2 Overview of Fabrication
Assign projects

Week 3 Photolithography and patterning (lithography)
Project reports

Week 4-5 Gate oxidation, ellipsometry, oxide etching
Project reports

Week 5 Diffusion processing, sheet resistance, junction depth
Project reports

Week 6-7 Diffusion processing, sheet resistance, junction depth continued
(homework problems)

Interim oral report - Project reports

Week 8-9 Ion implantation
Project reports

Week 10 Physical vapor deposition, thin films
Project reports

Week 11 Metal to semiconductor interfaces, metallization, liftoff processes,
damascene
Project reports

Week 12-13 Parametric testing, device probing, process monitoring, yield dicing, bonding, packaging, failure, yield modeling and MOS processing
Project reports

Week 14-15 **Project Presentations and Demonstrations**

Weekly Project Reports:

The weekly reports must include evidence of the accomplishments for the week, the number of hours each team member worked, where the work was performed, How the work fits into your timeline. Weekly reports should not be any longer than 3 pages.

Projects:

The project comprises most of the course and therefore it is important that your group's work is well documented. Weekly project updates are required. The updates should include what progress was made for the week, the contribution of **EACH** member for the week, what times the group met, where the group met. A hard copy is due by Friday noon in the department office submitted to my mailbox **AND** a soft copy mailed to the class's web CT account. Label your e-mails with the group name, progress report and week number (there will be 14 weeks total).

In addition to progress reports, your group will have a notebook assigned. The notebook is the full documentation for the selected course project. It will include the results of the previous semester's group as well as your additions. The notebook will be divided into sections:

Description and goal of the project.

Timeline for accomplishing the goal.

Weekly Reports

Literature search

A final report including your accomplishments, written paper, and recommendations for next semester's group.

In the last week the notebook will be turned in for final grading after you've given your presentation. However, periodically throughout the semester you may be asked to turn the notebook in for grading and review.

Periodic reviews will be conducted and written/oral questions and answers will be a large part of the review. You will be required to fill out the following review form for each presenting group:

**Peer Review
Fall 2007**

Project Title:

Group Names:

Answer the following questions as completely as possible. This review will be used to aid the group in finding strengths and weaknesses of their project. In addition, you will be graded on your written responses and your participation during the project reviews.

- 1. How well is the project presented? Did you understand what the group is proposing?**
- 2. Are the goals substantial enough? Is the project too difficult or too easy.**
- 3. What problems or potential problems did you see with the project?** For example -
--- Are the experiments feasible? Is the timetable reasonable?
- 4. What solutions or suggestions do you have for this group?**