

UNIVERSITY OF CALIFORNIA
College of Engineering
Department of Electrical Engineering
and Computer Sciences

C. SPANOS **Special Issues in Semiconductor Manufacturing**
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EECS 290H
Spring 1999

Choose a project and send a 500 word abstract to spanos@eecs by Tuesday 3/30/99
Send a 2 page progress report to spanos@eecs by Thursday 4/22/99
Semester Projects, Reports due on Friday, 5/14/99
Project Presentations planned for Tuesday, 5/18/99

At the end of the semester you will give a short presentation on your approach, implementation and results. At that time you will also submit a written report (see **instructions on web site**). The written report will be submitted electronically to spanos@radon.

What follows is a list of suggested course projects. You can also suggest your own project, as long as it is distinct from your main research subject. You should see me for references and other details. **You are expected to choose your project by Tuesday (3/30/99), and send to spanos@eecs.berkeley.edu a brief abstract (~500 words) describing it.**

Proposed Projects:

1. Employ SPC on: Litho, dry etching, LPCVD, metrology, etest, etc.
For example: do a gauge analysis of the newly installed spectroscopic ellispometer at UCB.
2. Produce and analyze a RSM model for a process of your choice.
This project will involve modeling a semiconductor manufacturing process using classical response surface methodology. The investigation is usually done in three stages, starting with a simple two-level factorial screening experiment, followed by a more complex experiment that leads to a quadratic surface. During the final stage the surface is explored using "canonical analysis" in order to improve the process. An excellent candidate for this work is the new CMP process in the Microlab.
3. Model and Improve a Process of your choice using the Robust Design Methodology.
In this project you will use Taguchi's orthogonal array to explore a process and improve on it. This will involve the decision on the number of important variables and their levels, the completion of the experiments and the choice of the optimum combination and the completion of the confirmation experiment.
4. Propose your own Statistical Process Control project
Design, *apply* and discuss an SPC procedure in your VLSI research domain. Use *actual* data.
5. Propose you own Experimental Design project
Design, *execute* and analyze an experiment in your VLSI research domain. Use *actual* data.
6. Endpoint CMP literature search
Do a literature survey and produce a report on possible end-point schemes for chemical mechanical processing.