EEE-296E PCB & PCA Design for Manufacturing
Syllabus Fall '02
CSUS, School of Engineering & Computer Science

Objectives of Course: A course in manufacturing design processes, with emphasis on printed circuit board and printed circuit assembly. Design for manufacturability, cost, repairability, and reliability. PCB topics include: electromagnetic noise radiation, PCB layout, construction, stackup, metal finish, specifications, and subpanel design. PCA topics include: production line and surface-mount technologies. Component technologies: Connectors, BGA, and SCI. A research paper in PCB/PCA manufacturing technologies and its presentation are also part of the course requirement. 3 units.

Lecture: 3 hours per week.

Grading: Grades will be based on your exams, project, quizzes, plus a qualitative evaluation. Quizzes will be given based on attendance.

- Midterm 30%
- Final 30%
- Quiz 5%
- Research Paper 25%
- Presentation 10%

General Course Information:

Instructor: Prof. Vu
Office hours: by appointment
Phone: 785-6969
Email: chuong_vu@hp.com

Lecture Topics:

Week 1: Syllabus & Project Requirements Review.
- 1.1. RFI/EMC Noise & PCB Layout Process
- 1.2. PCB Manufacturing Processes & Stackup Design.
- 1.3. PCA Manufacturing Processes.
- 1.4. Component Technologies (BGA, connectors, IC packages)

Week 1: Noise-ElectroMagnetic Radiation
Week 2: PCB Layout Process: Schematics to Artwork.
Week 3: PCB Construction-PCB Process. Project Proposal Due.
Week 4: PCB Construction-Stackup-1 Project TOC Due
Week 5: Stackup-2
Week 6: PCB Metal Finish & PCB Specs
Week 7: Subpanel Design Project Status Review 1
Week 8: **Exam Review, Exam**
Week 9: Exam Review, Depanelization
Week 10: PCA Line-1 Project Status Review 2
Week 11: PCA Line-2, SMT Processes-1
Week 12: SMT Processes-2, Connector Tech.
Week 13: BGA & SCI Project Status Review 3
Week 14: Presentation-1

Week 15: Presentation-2, Final Review
Week 16: **Final.** Research Project Paper Due