Instructor: J.F. Conley, (737-9874, KEC 3089, jconley@eecs.oregonstate.edu)
Office hours: After class or by appointment.

Prerequisite: ECE 511, or Fundamentals of Semiconductor Materials Processing equivalent


Software
1. Statgraphics (statistical quality control commercial software package)
2. Silvaco (process simulation commercial software package)

Course Outline
1. Process integration overview / statistical background (1 class, W Ch. 1, M. Ch. 1, 2-1, 2-3.1)
2. Statistical process control (SPC) – (2 classes, M Ch. 3, 4, 5, 7.3)
3. Design of experiments (DOE) – (3 classes, M Ch. 12, 13-1)
4. Process simulation (1 class, W Ch. 9)
5. Isolation Technologies (1 class, W Ch. 2)
6. Metallization technology (2 classes, W Ch. 3 + Wolf/Tauber Ch. 15)
7. Multilevel interconnection (1 class, W Ch. 4 + Wolf/Tauber Ch. 15)
8. NMOS process integration (1 class, W Ch. 5)
9. CMOS process integration (1 class, W Ch. 6 + Wolf/Tauber Ch. 16)
10. Bipolar / BiCMOS process integration (1 class, W Ch. 7)
11. Semiconductor memory process integration (1 class, W Ch. 8)
12. Process integration (1 class, guest lecture)
13. Reliability (1 class, class notes)

Grading
1. SPC / DOE Project (Due Thursday, Jan. 31st @ 5:00 pm) 25%
2. SUPREM Project (Due Thursday, Mar. 13th @ 5:00 pm) 25%
3. Midterm (closed book), Tuesday, Feb. 12th (SPC, DOE, process simulation) 25%
4. Final (closed book), Monday, Mar. 17th @ 9:30am 25%
   (isolation, metallization, interconnection, process integration, reliability)