ECE414/514 MICROSYSTEM INTEGRATION & PACKAGING

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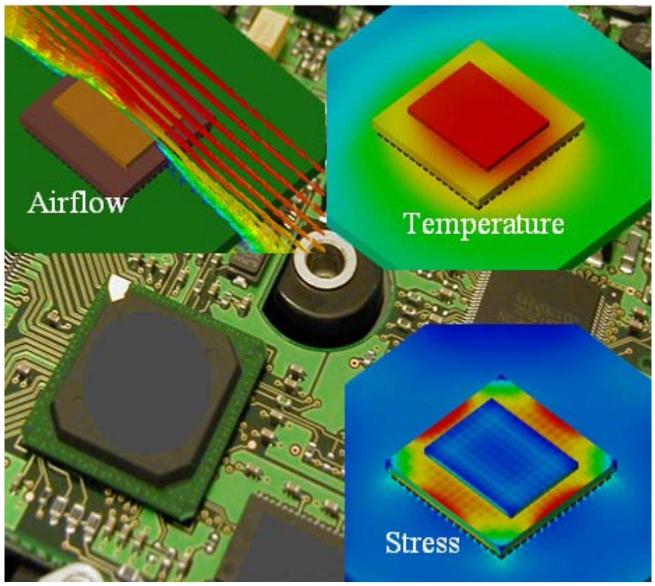
Lectures: Mon/Wed 2.00 - 3.50pm FAB-40-09

Course downloads: http://www.ece.pdx.edu/~jmorris/ECE 414 & 514 Electronics Packaging/

Prerequisite: Senior or graduate standing in ECE or MME



Topics:

1 Introduction A	2 Introduction B
3 Electrical A: CMOS, RLC, ΔI noise	4 Electrical B: Transmission lines
5 Electrical C: Reflections	6 Electrical D: Crosstalk
7 Electrical E: Electromagnetic modeling	8 Mechanical A: Basics; vibrations
9 Mechanical B: Thermomechanical	10 Mechanical C: Viscoelasticity
11 Thermal A: Conduction	12 Thermal B: Convection/Radiation
13 Materials A: Metals & solder	14 Materials B: Ceramics & polymers
15 Reliability A: Theory	16 Reliability B: Failure modes

Electronics packaging covers all technologies involved in device manufacture and design from the chip to the board. In modern devices, it is usually the package which limits system performance, and its cost can greatly exceed the cost of the silicon chip it supports. Packaging engineers are therefore much in demand, due also to the fact that the field's inherently multi-disciplinary nature creates a shortage of qualified people. Modern practice calls for chip/package co-design, making an understanding of packaging principles a must for all IC designers. This trend is especially important as microelectronics moves towards 3D integration of complete systems, including active and passive devices, optoelectronics, MEMS, and more. The primary objective of the course will be to develop the underlying principles and theory relevant to these packaging applications.