

ME 485/MSE 485 :Electronic Packaging and Materials, Winter, 2011

Web page: <http://courses.washington.edu/mengr485/>

Lecturers: Minoru Taya (ME),

Guest Lecturers: Ketan Shah (Intel), and Blair Erbstoetzer (Boston Scientific)

Time and Place: TTh 8-9:20 am, MEB 103

Text book: Electronic Composites, by M. Taya, Cambridge University Press, 2005

Grading: home works (40%), mid-term (30%) and one final report (30%)

Prerequisites: Eng. 215, 170 and 220, or equivalent, Students targeted: seniors and first year graduates

Office hours of the instructors : Taya: tayam@u.washington.edu TTh 10 – 11:30 am , MEB 263,

Grader: TsrongYi Wen: tywen@u.washington.edu

Weeks (dates)

Subjects

1(Jan.4, 6)	Introduction: package hierarchy, design requirements, application examples
2(Jan. 11, 13)	Thermal management-1: heat transfer, channel flow, cooling, and thermal register network modeling
3(Jan. 18,20)	Thermal management-2: thermal interface materials and related issues
4(Jan. 25,27)	design-1 Signal Integrity on the packaging. SSO(Simultaneous Switching Output) Analysis, basic electrical behavior, Transmission of signals
5(Feb. 1, 3)	Electrical design-2 Transmission line characteristic and impedance of signal line, reflection and pulse propagation, cross talk among parallel and orthogonal signal lines, coupled noises ,cross talk among parallel and orthogonal signal lines, coupled noises Mechanical design-1: thermal stress analysis for bonded components
6(Feb. 8,10)	Mechanical design-2: creep and diffusion in metallic and plastic packaging materials, failure analysis: hygrothermal degradation of packages,
7(Feb. 15,17)	Mid-term Exam (Feb.15) , Guest Lecture by K Shah of Intel(Feb.17)
8(Feb. 22, 24)	Manufacturing issues
9(March 1, 3)	Electromigration issues, Electronic composites
10(March 8,10)	Lecture-2(Blair Erbstoetzer of Boston Scientific), Final Exam during the final week (March 14-18)

Both mid-term and final exams are open books, open notes, two hours