

MAE 4305-001, ME 5352-001, 002 & 003, Fall 2018
M W 7:00 – 8:20 pm, WH 402

Instructor: Professor Dereje Agonafer

Phone: metro 817-272-7377

Email: agonafer@uta.edu

Office & Office Hours: Woolf Hall Room 211A, 3:00 p.m. - 4:30 p.m.

Course Syllabus

Fundamentals of electronic packaging primarily focusing on single chip modules, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing.

Prerequisites: Heat Transfer, Material Science, and Fluid Dynamics (will be covered in class).

Textbook

Essentials of Electronic Packaging: A Multidisciplinary Approach (Required Book)

Author: Puligandla Viswanadham, Editor in Chief: Agonafer, Publisher: McGraw Hill

Fundamentals of Microsystems Packaging (Reference Book)

Author: Rao Tummala, Editor: McGraw Hill

Syllabus

Introduction to Microsystems Packaging

Role of Packaging in Microelectronics

Fabrication of Integrated Circuits

Review of Fluid Mechanics & Heat Transfer

Fundamentals of Chip Packaging

Fundamentals of Reliability – First Level Package

- *Manufacturing Process complemented by In class videos*
- *Presentation on current ongoing industry-funded projects work from student researchers in my team*
- *Contemporary challenges in first level packaging*
- *Guest Lecturer: Dr. Viswanadham Puligandla*

Fundamentals of Reliability – 2nd Level Package (Board Level)

- *Discussion about PCB manufacturing process and various materials used*
- *Presentation on recently published Journal/Conference Articles from my team*
- *Manufacturing Process complemented by In class videos*
- *Presentation on current ongoing industries projects from student researchers in our group*
- *Guest Lecturer: Gary Tanel, QCG Inc.*

Fundamentals of Thermal Management

State of the Art in IC and its impact on Packaging – 2.5D & 3D Packages

- *Introduction to advanced packages*
- *Challenges and Problem mitigation techniques*
- *Guest Lecturer 1: Data Center Thermal Management*
- *Guest Lecture 2: 2.5D and 3D Packaging*

Internet of Things & Packaging

- *Guest Lecturer: TBD*

Examinations and Grade:

Class participation/attendance:	15%
Assignments:	10%
Special Project:	20%
Mid Term:	25%
Final Exam:	30%

Attendance and Drop Policy: [See University's Rules and Regulations](#)

Student Evaluation of Teaching

Online.

Americans With Disabilities Act (Required by University as below):

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112-The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of The Rehabilitation Act, here is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide reasonable accommodation to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels. If you require an accommodation based on disability, I would like to meet with you in the privacy of my office during the first week of the semester to make sure that you are properly accommodated.

Academic Dishonesty (Required by University as below):

<http://www.uta.edu/engineering/current-students/academic-honesty.php>

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspensions or expulsion from the University. Scholastic dishonesty includes but is not limited to cheating, plagiarism collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. (Regents Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)