

Department of Electrical Engineering, Ira A. Fulton School of Engineering

Spring 2009

Any and all parts of this syllabus are subject, at any time to alteration, deviation or omission, according to the needs and/or progress of the class.

SES 598: MEMS for Earth and Space Exploration

Instructor:

Assistance Professor: Hongyu Yu, Ph.D Office: GWC338

EE and SESE

Phone (480) 7277454

Fax: (480) 9650616

Email: hongyuyu@asu.edu

Course Hours Location:

Tu Th 12:00PM - 1:15PM Physical Science A 113 (Tempe)

Office Hours

Thur: 1:30PM-3:30PM

Course Description:

MicroElectroMechanical System (MEMS) stands for a class of batch-fabricated devices, consisting of mechanical, electrical and other components to simulate macroscopic functions on a micro scale. This interdisciplinary technology offers the great potential of reducing the cost, size and power consumption for the scientific instruments, which will benefit Earth research and Space mission tremendously.

In this class, a variety of potential Earth and Space applications for MEMS will be demonstrated. At the same time, the challenges to fit MEMS to Earth and Space exploration will be discussed.

Course Goals and Objectives:

The main objective of this course is to expose the specific Earth and Space exploration applications and requirements for MEMS devices. The students will understand various MEMS devices, such as wireless sensor array, flexible sensor textile, microfluidic sample handling, fuel cells, and mass spectrometry. At the same time, the students will study the strict requirements from Space mission and harsh scientific research environments.

Credit Hours: Lecture 3

Textbook: Lecture notes

Suggested Readings and Lesson Plan and Topics:

Will be posted online or distributed in the class.

Attendance Policy:

If a student misses a total of four credit hours Lecture, an attendance warning will be issued. If eight credit hours are missed the instructor will academically withdraw

the student. Students who are absent from classes are responsible for all materials covered in that class.

Assignments/Submitted Work/Late Work:

Makeup exams will be offered to those students with college excused absences. Only in rare circumstances will makeups be offered to those with unexcused absences. It is the responsibility of the student to notify me of his or her absence (and desire to take a makeup), and to provide documentation of the reason for absence. Ordinary school commitments (e.g., other exams, projects) are not sufficient reason for a special exam. Makeup exams will be different from regular exams, but will cover the same material. Under no circumstances will the same exam be given on different days. Makeup exams are difficult to administer, and they are never fair.

Grading and Student Evaluation System:

GRADING POLICY (No scoring curve)

4 Home works 40%

One Final Project (including presentation and reports: 40%)

One Midterm 20%

ACADEMIC DISHONESTY!

In the “Student Academic Integrity Policy” manual, ASU defines “Plagiarism” [as] using another’s words, ideas, materials or work without properly acknowledging and documenting the source.

Students are responsible for knowing the rules governing the use of another’s work or materials and for acknowledging and documenting the source appropriately.”

You can find this definition at:

http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm#definitions

Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty