



Department	Course Name	Course Number	Semester
Mechanical Engineering	Micro Electro Mechanical Systems (MEMS)	0994508	

2025 Course Catalog Description

Fabrication and design fundamentals for Micro Electro Mechanical Systems (MEMS): on-chip sensor and actuator systems having micron-scale dimensions. Basic principles covered include microstructure fabrication, mechanics of silicon and thin-film materials, electrostatic force, capacitive motion detection, fluidic damping, piezoelectricity, piezo resistivity, and thermal micromechanics. Applications covered include pressure sensors, micromirror displays, accelerometers, and gas microsensors and microfluidic systems.

Instructors

Name	E-mail	Section	Office Hours	Lecture Time

Prerequisites

Prerequisites by topic	
Prerequisites by course	0904441 + 0994471
Co-requisites by course	
Prerequisite for	

Topics Covered

Week	Topics
1	
2	
3	
4	
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14	
15	



Evaluation													
Assessment Tools		Expected Due Date			Weight								
Contribution of Course to Meet the Professional Components													
Relationship to Student Outcomes													
SOs	1	2	3	4	5	6	7						
Availability													
Relationship to Aeronautical Engineering Program Objectives (AEPOs)													
AEPO1	AEPO2	AEPO3	AEPO4	AEPO5									
ABET Student Outcomes (SOs)													
1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics												
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors												
3	An ability to communicate effectively with a range of audiences												
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts												
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives												
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions												
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies												
Updated by ABET Committee, 2025													