Certificate in Unmanned Vehicle Systems (Mechanical and Aerospace Engineering)

About This Program

The Certificate in Unmanned Vehicle Systems (UVS), offered through the Mechanical and Aerospace Engineering Department, will educate undergraduate students in the knowledge and skills required for design, development and operation of UVS including Unmanned Aircraft Systems (UAS), Unmanned Ground Systems (UGS) and Unmanned Maritime Systems (UMS). The certificate program will emphasize the common aspects of UVS such as sensors, actuators, communications, and more importantly, decision-making capabilities (autonomy), while also covering development of domain-specific mobile platforms such as airplane, rotorcraft, Ackerman steering car and boat. This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants. To this end, the Certificate in UVS will be awarded concurrently with an undergraduate degree.

Competencies

1. Upon completion, the students will be able to apply "systems thinking" to design an autonomous vehicle to satisfy specific mission requirements
2. Upon completion, the students will be able to integrate sensors, actuators, and software on a mobility platform.

Admissions Criteria

The certificate is open to all degree-seeking students. Students should see the certificate advisor for admission to the program.

Curriculum

Foundations		
MAE 4378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	3
MAE 4379	UNMANNED VEHICLE SYSTEM DEVELOPMENT	3
Electives		
Select 9 hours from the following:		9
Mechanical and Aerospace Engineering		
MAE 2312	SOLID MECHANICS	
MAE 2315	FLUID DYNAMICS	
or MAE 3313	FLUID MECHANICS	
MAE 3309	THERMAL ENGINEERING	
or MAE 3310	THERMODYNAMICS I	
MAE 3315	AEROSPACE STRUCTURAL STATICS	
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES	
MAE 3405	FLIGHT DYNAMICS	
MAE 3306	FLIGHT PERFORMANCE, STABILITY & CONTROL	
MAE 4315	INTRODUCTION TO COMPOSITES	
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION	
MAE 4301	SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING [2]	
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL	
MAE 4314	MECHANICAL VIBRATIONS	
MAE 3242	MECHANICAL DESIGN I	
MAE 4350	AEROSPACE VEHICLE DESIGN I	
MAE 4307	FINITE ELEMENT METHODS	
MAE 4345	INTRODUCTION TO ROBOTICS	
Electrical Engineering		
EE 2341	DIGITAL CIRCUITS AND SYSTEMS	
EE 3318	ANALOG AND DIGITAL SIGNAL PROCESSING	
EE 3317	LINEAR SYSTEMS	
EE 4314	CONTROL SYSTEMS	
EE 4318	DIGITAL SIGNAL PROCESSING	
EE 4315	INTRODUCTION TO ROBOTICS	

EE 4330	FUNDAMENTALS OF TELECOMMUNICATIONS SYSTEMS
Computer Science and Engineering	
CSE 3313	INTRODUCTION TO SIGNAL PROCESSING
CSE 3442	EMBEDDED SYSTEMS I
CSE 4342	EMBEDDED SYSTEMS II
CSE 4308	ARTIFICIAL INTELLIGENCE
CSE 4360	AUTONOMOUS ROBOT DESIGN AND PROGRAMMING
Industrial Engineering	
IE 2305	COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING
IE 3314	ENGINEERING RESEARCH METHODS
IE 4325	AUTOMATION AND ROBOTICS FOR SERVICE AND MANUFACTURING SYSTEMS
IE 4339	MANUFACTURING PROCESS & SYSTEM ANALYSIS
General Engineering	
ENGR 4302	ENGINEERING ENTREPRENEURSHIP
Physics	
PHYS 2321	COMPUTATIONAL PHYSICS
PHYS 3445	OPTICS
PHYS 3455	ELECTRONICS
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS
PHYS 4319	ADVANCED MECHANICS
Relevent special topics courses in any of the above disciplines with prior approval of certificate advisor.	
Total Hours	**15**

Program Completion

All courses used to satisfy the certificate requirements must be passed with a grade of B or better.

Advising Resources

First time in college students meet with engineering advisors in the UAEC (UAECengineering@uta.edu). Transfer students are advised prior to New Maverick Orientation by the department. Students, please read all student emails carefully and consult the department advising webpage for additional contact information and answers to common questions.

Location:

204 Woolf Hall

Email:

maeundergrad@uta.edu

Phone:

817-272-2561

Web:

Additional Advising Information (https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/mechanical-aerospace/students/ugadvising/)