

ENMT - MECHATRONICS ENGINEERING

ENMT301 Structural Dynamics (3 Credits)

An introduction to modeling and structural analysis of mechatronic structures subject to dynamic loading. It deals with preliminary analysis of primary structure for mechatronics components, including such topics as load determination, torsion, bending, shear, buckling, fatigue and thermal analysis of thin-walled structures. Emphasis is placed on solving problems by finding the differential equations of motion of model systems and solving these equations analytically or numerically in Matlab.

Prerequisite: Minimum grade of C- in ENES220.

Restriction: Must be in the Mechatronics Engineering program.

ENMT322 Discrete Signal Analysis (3 Credits)

Analysis techniques for simulating resonances and impedances in systems that couple physical interactions electrical, mechanical, magnetic and piezoelectric domains. Analysis applied to modeling the electro-magneto-mechano-acoustic domain interactions in traditional loudspeaker designs, and can be extended to the design of sensors, energy harvesters and actuators.

Prerequisite: Minimum grade of C- in MATH246.

Restriction: Must be in the Mechatronics Engineering program.

ENMT361 Mechatronics and Controls I (3 Credits)

Basic instrumentation electronics including DC electronics, AC electronics, semiconductors, electro-optics and digital electronics. Sensing devices used to carry out experiments including meteorology, machine tool measurements, bridge circuits, optical devices, and introduction to computer based data acquisition.

Prerequisite: Minimum grade of C- in PHYS270 and PHYS271.

Restriction: Must be in the Mechatronics Engineering program.

ENMT380 Intro to Robotics (3 Credits)

Introduces basic concepts for deployment of robotic systems in mechatronics. This course will introduce students to the elementary concepts in robotics, with emphasis on robotic manipulators. It will encompass both theory and laboratory components with programming on real manipulators.

Prerequisite: Minimum grade of C- in ENME202 or ENAE202; and minimum grade of C- in ENES221 and MATH246.

Restriction: Must be in the Mechatronics Engineering program.

Credit Only Granted for: ENMT380 or ENME480.