



Channel Islands
CALIFORNIA STATE UNIVERSITY

What is Mechatronics Engineering?

Mechatronics Engineering is a rapidly growing field that combines computer hardware, electronics and mechanical engineering. Mechatronics Engineering optimizes the design and functionality of these systems while making them more economical and reliable. Industrial robots and drones are classic examples of mechatronics systems.

Modern production equipment consists of mechatronic modules that are integrated according to a suitable control architecture. Popular examples include automotive subsystems, such as anti-lock brakes and spin-assist, as well as auto-focus cameras, video, hard disks and CD players.

Mechatronics Engineering Program at CSU Channel Islands

The Mechatronics Engineering curriculum integrates project-based, experiential learning with aspects of mechanics, control theory, computer science, and electronics. By doing so, Mechatronics Engineering students will develop the skills and confidence to apply theoretical and practical knowledge to new applications in this interdisciplinary field. The complexity of Mechatronics requires at least a bachelor's degree to enter the field.

Students in Mechatronics Engineering will receive an education from world-class faculty in state-of-the-art labs that include both mobile robotics and embedded systems. Mechatronics Engineering and robotics converge seamlessly in the area of unmanned aerial vehicles (drones), which have applications in a variety of fields including agriculture, weather, package delivery, and military operations.

High Job Demand in Mechatronics Engineering

CSU Channel Islands is strategically located within the emerging I01 Tech Corridor, which includes notable companies such as Amgen, Haas, Teledyne Technologies, HRL Laboratories, as well as Naval Base Ventura County's Point Mugu and Port Hueneme locations. We are also in close proximity to other top engineering firms in the greater Los Angeles area such as Lockheed Martin and Rocketdyne.

Graduates of the Mechatronics Engineering program will be able to work effectively in all aspects of robotics, automated manufacturing, and the design of mechanical devices with embedded intelligence. The program will prepare students for jobs in fields such as automotive, aerospace, defense systems, manufacturing, and materials processing. The U.S. Department of Labor projects that openings for related jobs across the country will outpace graduates 4:1 over the next decade.

The Curriculum

Lower- and upper-division requirements for the B.S. degree in Mechatronics Engineering can be found on the reverse side of this flier. At this time, the Mechatronics Engineering program is only available to first-time freshmen.

For additional information, visit: go.csuci.edu/Mechatronics.

Curriculum for the B.S. Degree in Mechatronics

Course	Course Name	Prerequisites
CHEM 105	Introduction to Chemistry	No prerequisites
MATH 150	Calculus I	Calculus Placement Exam or MATH 105
COMP 121	Intro. to Programming in C for STEAM	MATH 105 or equivalent, COMP 105 or permission
MATH 151	Calculus II	MATH 150
MATH 250	Calculus III	MATH 151 with at least a C
COMP 122	Data Structures & Alg. for Eng. & Scientists	COMP150
COMP 162	Computer Architecture & Assembly Language	COMP 150
MATH/PHIL 230	Logic & Mathematical Reasoning	No prerequisites
MATH 240	Linear Algebra	MATH 151
COMP 232	Programming Languages	COMP 150, COMP 151, COMP 162
COMP 262	Computer Organization & Architecture	COMP 151, COMP 162
EMEC 200	Logic Circuits	MATH 150, MATH 230, COMP 162
EMEC 225	Engineering Design	EMEC 200
PHYS 200	General Physics I	MATH 150
PHYS 201	General Physics II	PHYS 200, MATH 151
EMEC/PHYS 221	Engineering Materials	CHEM 105, PHYS 200
PHYS 301	Classical Mechanics	PHYS 200, MATH 350
COMP 350	Introduction to Software Engineering	COMP 232, COMP 262
MATH 350	Differential Equations & Dynamical Systems	MATH 250
MATH 352	Probability & Statistics	MATH 351
PHYS 310	Electronics	PHYS 201
EMEC 311	Digital Systems Design	EMEC 200
EMEC 315	Modeling of Mechatronics Systems	MATH 350
EMEC 316	Sensors & Measurements	COMP 151, PHYS 310
COMP 462	Embedded Systems	COMP 350 or consent
COMP 470	Mobile Robotics	COMP 350, MATH 240 or consent
EMEC 463	Feedback Control Systems	MATH 240, MATH 350
EMEC 491	Capstone Preparation	Senior standing in Mechatronics Major
EMEC 499	Capstone	Senior standing in Mechatronics Major
Optional Electives:		
EMEC 401	Fluid Mechanics	Senior standing in Mechatronics Major
PHYS 305	Thermal & Statistical Physics	MATH 350, PHYS 201
COMP/ART/IT 464	Computer Graphic Systems & Design I	COMP 350, MATH 240