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Major: Mechatronics Engineering
Dr. Vida Vakilian and Dr. Bahareh Abbasi

Mechatronics

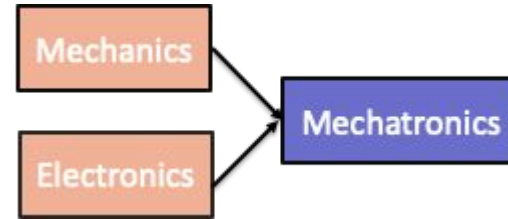


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➤ What is Mechatronics?

Mechatronics = “mecha” + “tronics”



➤ What is a Mechatronic system?

Mechatronic systems often consist of a complex interaction of mechanical parts, controlled by electronic circuits and software programs.



Mechatronic System



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Photocopier Machine



Vending Machine



Automatic Sliding Door



Automatic Garage Opener*



Disk Driver

Mechatronics Application



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C H A N N E L
I S L A N D S

➤ Why Mechatronics?

- Innovative processes, products, and system
- development of new technologies
- adds intelligence to process and systems and improve the efficiency
- ...



CAREER OPPORTUNITIES



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Top careers include:

- Mechatronics engineer
- Robotics engineer
- Control Systems engineer
- Automation engineer
- Software engineer
- Manufacturing engineer
- Project engineer
- Systems engineer
- Process engineer
- ...

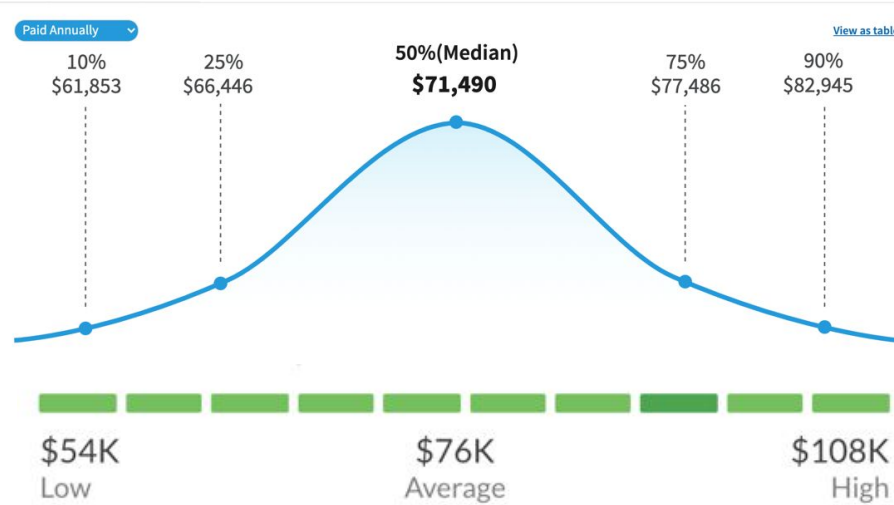


CAREER OPPORTUNITIES



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District of Columbia	\$116,420
Alabama	\$103,070
California	\$100,370
Rhode Island	\$99,090
Massachusetts	\$98,920
Virginia	\$98,630
New Mexico	\$98,620

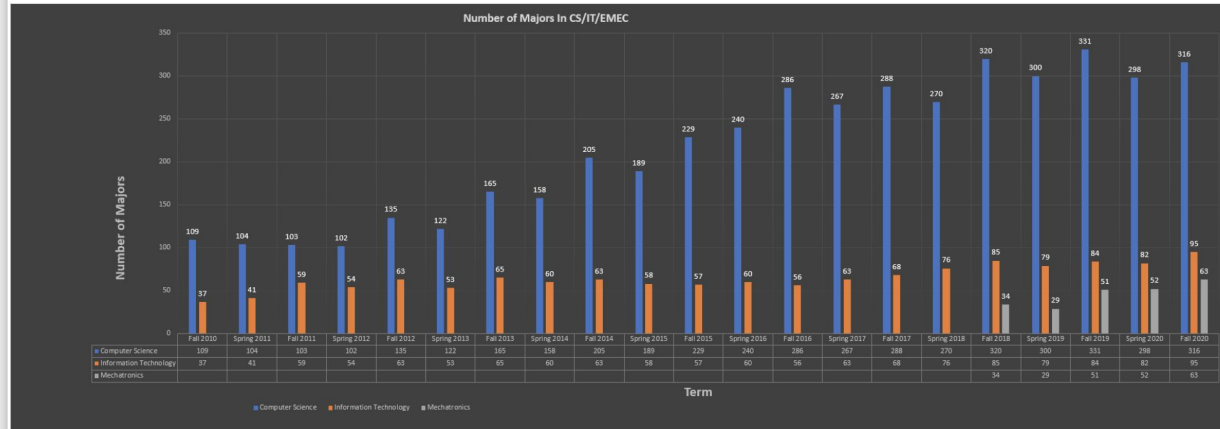
Mechatronics Engineer Salary in the United States

Mechatronics at CI



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	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
CS	320	300	331	298	316
IT	85	79	84	82	95
EMEC	34	29	51	52	63



Image credit
<https://www.csuci.edu/news/releases/2017-mechatronicsengineering.htm>



Image credit <https://compsci.csuci.edu/resources/>

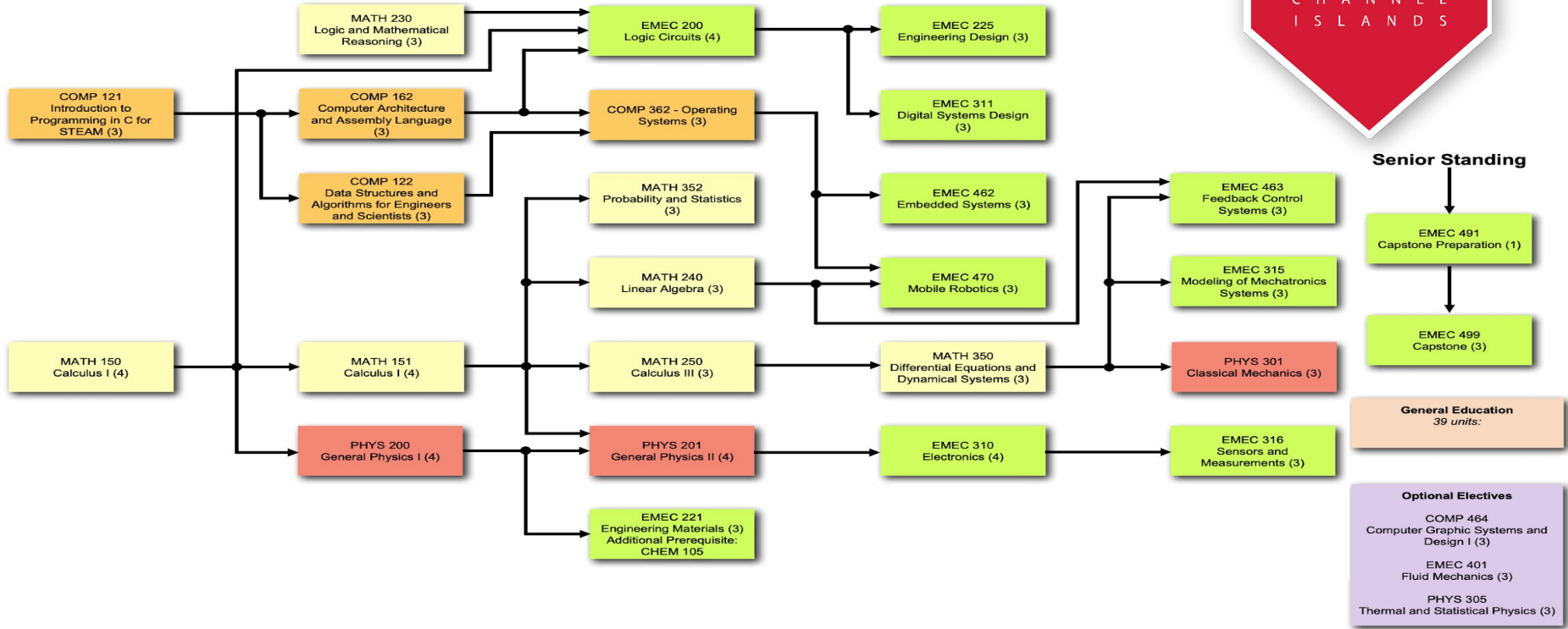
PROGRAM OVERVIEW



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CSUCI MECHATRONICS ENGINEERING B.S. DEGREE CHART

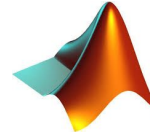


Student's Skill Set

Programming Skill:

- ❑ Matlab and Simulink
- ❑ Python
- ❑ C/C ++
- ❑ ...

Critical thinking/problem solving skills
Oral/written Communication Skills
Teamwork/collaboration



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Research INTERSHIPS Competitions

- SURF Program
- Student Research Competitions
- Summer Internships
- Involvement in Clubs Activities

WISE Women for Inclusivity in Science and Engineering

Women in Tech

STEM Club



Summer SURF Research Program

Mobile Robot Localization and Mapping

- Fundamental and important problem in research on robotics.
- During 2020 Summer SURF Program, students engaged in a faculty-mentored research project over 8 weeks in the summer.

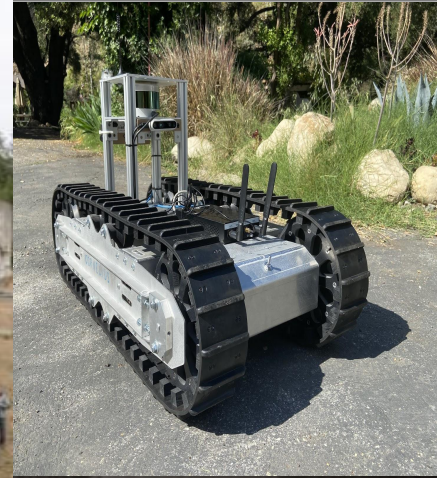


Student Competitions

DARPA SubT



URBAN CIRCUIT



Mechatronics Laboratories



Mechatronics Laboratories

Robotics Laboratory:

This laboratory provides access to industrial and collaborative robots including:



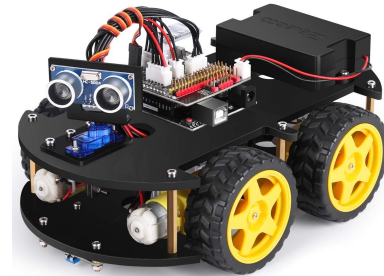
Nao Robot



Leo Rover Mobile Robotic Platform



V5 Classroom Starter Robotic Kit



Robot Car Kits

Mechatronics Laboratories

Digital Design Laboratory:

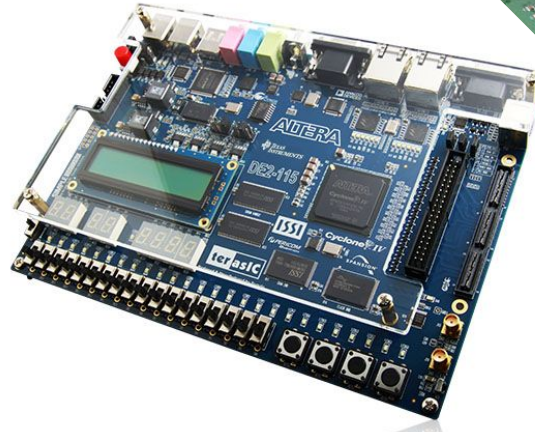
This laboratory is used for many undergraduate courses for laboratory experiments and projects.



Rigol MSO2202A Oscilloscopes



Rigol DG4062 Waveform Generator



**Altera DE2-115
Development and Education Boards**



**Altera DE4
Development Boards**

Mechatronics Laboratories

Engineering Design Laboratory:

This laboratory is used for introducing engineering design processes, methods, and decision making using team design projects .



LPKF ProtoMat Circuit Board Plotter



ProtoFlow Reflow Oven



NI myRIO Kits

Mechatronics Laboratories

Sensor/Measurement Laboratory:

We have received \$56k to purchase the National Instruments ELVIS III with QNET mechatronic boards.

This modules can be used to teach the physical properties of most sensors used today, and the techniques and limitations of their application.



NI ELVIS III & Sensor Board

Goal: Mechatronics Hub at CSUCI



Thank you!

