Computer Electronics

CEL 104 Introduction to Robotics and Mechatronics

3.0 units

Acceptable for credit: Transfer CSU

An introduction to robotic control applications. Basic electronics including digital, analog, and microcontroller devices, sensors and transducers, and actuators will be emphasized for automation control. Topics include Basic, Assembly and C language programming for robotic control; interfacing of indicators, switches, sensors and transducers; controlling motion and motors; monitoring and measurement of rotation; measuring light, temperature and conductance; application of navigation and measurement techniques; remote control applications; mechanical systems; and the control of frequency and sound. This course is not open to students who are enrolled in or have received credit for EL 104 or ET 104. (Fall, Spring) (Letter Grade Only)

CEL 128 Introduction to Renewable Energy

3.0 units

Acceptable for credit: Transfer CSU

Prerequisite: CEL 104 - Introduction to Robotics and Mechatronics or EL 104 or ET 104

A study of the principles behind energy generation and conversion that can be applied to modern electrical, mechanical, and chemical devices that use or produce power. Special emphasis will be given to the study of electricity as a renewable energy source. This course is not open to students who are enrolled in or have received credit for EL 128 or ET 128. (Letter Grade Only)

CEL 131 Programmable Logic Controllers and Control Design

3.0 units

Acceptable for credit: Transfer CSU

Prerequisite: EL 125 - Digital Devices and Circuits

A study of the purpose and operating features of a programmable logic controller (PLC). Topics include PLC terminology, architecture, input/output modules, memory, commands for internal relays, on/off timers, up/down counters, use of subroutines, program control, and math instructions. Relay schematics, ladder logic diagrams, and programming of logic controllers are emphasized. Sensing devices and time-driven process sequences will be studied and integrated into control systems. This course is not open to students who are enrolled in or have received credit for EL 131 or ET 131. (Letter Grade Only)

CEL 133 Mechatronic Systems 1

3.0 units

Acceptable for credit: Transfer CSU

Prerequisite: CEL 104 - Introduction to Robotics and Mechatronics ; or EL 104 - Introduction to Robotics and Mechatronics ; or ET 104 - Introduction to Robotics and Mechatronics

This is a hands-on mechatronic systems course that focuses on the electromechanical concepts (mechanics, electronic, and programming) of automated systems. Emphasis is placed on how industrial grade sensors and transducers function and upon how they are interfaced into control systems. Study topics include: transducers and sensors for light, heat, motion, pressure, and position control; switching devices; input and output signal conditioning; continuous, closed-loop, and proportional integral derivative process control; and safety. This course is not open to students who have received credit for, or are enrolled in ET 133 or EL 133. (Letter Grade Only)

CEL 139 Electrical Power, Motors, and Controls

3.0 units

Acceptable for credit: Transfer CSU

Prerequisite: EL 122 - Electronic Devices and Circuits ; and EL 125 - Digital Devices and Circuits

A study of electronics, signal communication and power technology that support efficient manufacturing processes for various industries. Topics include motors, their drives and controls, power electronics, PLCs, and communications networks used to monitor industrial processes. This course is not open to students who are enrolled in or have received credit for EL 139 or ET 139. (Letter Grade Only)

CEL 162 Fluid Power and Control

2.0 units

Acceptable for credit: Transfer CSU

An introduction to the generation, control and basic applications of hydraulics and pneumatics force and motion systems. Topics include safety, properties of and forces in liquids, pumps, motors, valves, reservoirs, strainers, filers, accumulators, basic diagramming, system design and troubleshooting. This course is not open to students who are enrolled in or have received credit for EL 162 or ET 162. (Letter Grade Only)