

Certificate in

Mechatronics – SMART Systems

PROFESSIONAL DEVELOPMENT

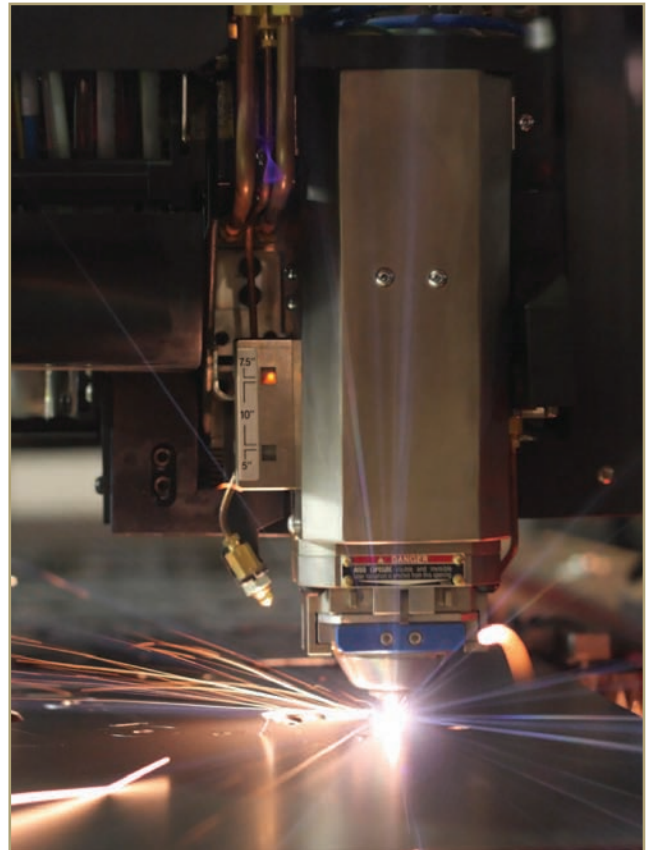
LEARN SYSTEMATIC DESIGN

Get up-to-speed on Mechatronics, a significant manufacturing design trend that incorporates “smart” and embedded systems. Completion of the NEW Certificate in Mechatronics will benefit engineers who seek leadership roles in multi-disciplinary engineering projects.

The joining of mechanical engineering, control theory, electronics and computer science is defined as mechatronics. This evolution of microelectronics, control engineering and computer science has profoundly influenced machine design.

The result has been “smart” products such as microwave ovens, VCRs, CD players, cameras, and much, much more.

Engineers who complete this program will substantially advance their career opportunities, with knowledge of the latest techniques and tools for incorporating mechatronics best practices up front in the design stage.



Register online today at www.csufextension.org. Go to the Engineering programs and click on Mechatronics.

Register today at www.csufextension.org or 657.278.2611
For more information, contact Mimi Lawson: 657.278.3313, mlawson@fullerton.edu

Cal State Fullerton
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www.csufextension.org

THE CLASSES

OVERVIEW OF MECHATRONICS – ADVANCED SMART SYSTEMS

(48 hours/4.8 CEUs)

Prerequisite: B.S. in Engineering or equivalent. This course will introduce the concepts of automatic control system design, and implementation of analytical and computer optimization techniques to address engineering design problems. Students will develop an understanding of the modeling of engineering systems, measures of performance, stability and time domain analysis, the Root Locus Method, bode diagrams, and state variable models. Additional topics will include sensors, actuators, programmable controllers, components for control systems, data acquisition and control. Emphasis will be on Mechatronics controls in automated manufacturing. Use of computer simulations, case studies and advanced design applications will be integrated into lectures and demonstrations.

HANDS-ON MECHATRONICS

(36 hours/3.6 CEUs)

Prerequisite: Overview of Mechatronics - Advanced SMART Systems. In this hands-on laboratory-based class students will learn about design and assembly of microprocessor-based mechanisms. Lab experiments encompass machine/high level programming, and interfacing of microcontrollers with sensors and actuators. Students will design and develop virtual instruments using LabVIEW programming environment. Opportunities to build applications for data acquisition, measurement, testing, and control of engineering systems.

INTELLIGENT MANUFACTURING SYSTEMS

(36 hours/3.6 CEUs)

Prerequisite: Overview of Mechatronics - Advanced SMART Systems. This course covers the basics of kinematics, dynamics, control and programming fundamentals associated with industrial robots and programmable manipulators. Topics will include trajectory planning, application of robotics in manufacturing and integration of robots into flexible manufacturing systems. Students will experience introduction to computer-aided manufacturing processes, CNC machines, robot and PLC programming. Additional topics will include design for CIM, fixed and flexible manufacturing systems and process planning and scheduling. Simulation software for manufacturing systems and laboratory experiments will be integrated in the classroom work.

ELECTRONICS PACKAGING

(30 hours/3.0 CEUs)

Prerequisite: B.S. in Engineering or equivalent. This course includes modeling, analysis, and design of simple electronic systems, and assembly operated in terrestrial and space environments. Introduction to thermal analysis and vibration analysis of electronic equipment will also be covered.

For more information www.csufextension.org or
contact Mimi Lawson: 657.278.3313, mlawson@fullerton.edu