

Hagerstown Community College Master Syllabus

ELE 235: Adv. Concepts and Applications of Instrumentation and Control

Course Information

Course #: ELE 235 Adv. Concepts and Applications of Instrumentation and Control
3 Credits
Fall 2018

Instructor Information

Instructor: Juan C Luna

Course Description

This course explores the basic problems of Data Acquisition Systems (DAQ) like signal conditioning, Analog to Digital conversion, Digital to Analog conversion, communication, and DAQ software; along with new paradigms like FPGA design, and mobile processing devices. Students will analyze and troubleshoot DAQ circuits and systems, as well as, design and build DAQ circuits typically found in industry. Topics include Processes Decision and Control, and Process Automation Applications. Total of 45 hours of lecture.

Textbook and Course Materials

Advanced Instrumentation and Computer I/O Design: Defined Accuracy Decision, Control, and Process Applications. 2nd Edition. Garret, Patrick. Wiley-IEEE. ISBN: 9781118504796.

Hands-On Introduction to LabVIEW for Scientists and Engineers. 4th Edition. Essick, John. Oxford University Press. ISBN: 9780190853068.

HCC Library-Ebook Central: Data Acquisition Systems: From Fundamentals to Applied Design. 1st Edition. Di Paolo, Maurizio. Springer. ISBN: 9781461442134.

Student Learning Outcomes

- Explain electronic signal conditioner circuits for sensor data acquisition.
- Distinguish between different DAQ techniques along with its corresponding software integration.
- Understand typical design constraints of a Data Acquisition System (software and hardware).

Definition of Credit Hour: Classroom Courses

To earn one academic credit at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute academic hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours in the classroom and hours outside the classroom. Certain

courses may require more than the 37.5 minimum hours of coursework per credit. For most classes, students should expect to complete at least 2 hours of coursework outside of class for each hour of in-class coursework.

Classwork type	Direct Faculty Instruction In-class 37.5 hours required	Student Work Out of Classroom 75 hours required
In-class lecture and discussion	45 hours	
Reading		48 hours
Quiz/exam studying		12 hours
Reading question completion		8 hours
Paper writing		18 hours
Total	45 hours	86 hours

Services for students with disabilities: Students may receive reasonable accommodations if they have a diagnosed disability and present appropriate documentation. Students seeking accommodations are required to contact the Disability Support Services (DSS) office as early as possible. Students may contact a DSS staff member for an appointment at dss@hagerstowncc.edu or at 240-500-2530.