

Hagerstown Community College
OFFICIAL MASTER SYLLABUS DOCUMENT

COURSE: ELE 213 Instrumentation and Process Control II 3 Credits

INSTRUCTOR:

SEMESTER: Spring 2018

COURSE DESCRIPTION:

Students will study instrumentation applications, techniques, adjustment and calibration of various systems. PLC, PC, and SCADA based system control of basic processes are covered in detail. Topics such as computerized data acquisition and evaluation are incorporated into the lab environment. Students will use hands-on training systems to build and control processes. Students will be able to identify the signal processing capabilities, apply major features of smart transmitters. Students will practice the techniques of system calibration using process simulation and real world lab equipment. Pre-requisite: ELE 113 Total of 45 hours of lecture.

TEXTBOOK:

Industrial Automated Systems, 1st Edition; Terry Bartelt, 2011 Cengage. ISBN 9781435488885

HCC Library-Ebook Central: Practical SCADA for Industry, 1st Edition, David Bailey and Edwin Wright, Elsevier Science. eBook ISBN 9780080473901

STUDENT LEARNING OUTCOMES:

On successful completion of this course, students should be able to:

- Identify the various types of instrumentation used in industry.
- Understand basic control techniques, specifically PID loop control.
- Understand control systems and terminology.
- Select and implement various instrumentation devices required to accomplish a task within a control system.
- Identify needed parameters and set to desired values within a control system.
- Evaluate collected data from an instrumentation system.
- Identify security risk and determine standard precautionary measures.
- Select program and graphics required to implement a SCADA system.
- Commission an Instrumentation System including SCADA.

Total Hours of Coursework:

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 within 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 do at least 2 hours of coursework outside of class for each hour of in-class coursework.

Minimum clock hours required for this course

	DIRECT Faculty Instruction In-class 37.5 hours required	Student Work Out of Classroom 75 hours required
In-class "lecture"	37.5 hours	
Reading chapters		15 hours
Quiz/activity for each chapter	Included in lecture time	10 hours prep
Lab Activities Prep		10 hours
3 lecture exams		30 hours exam prep
Cumulative final exam (Academic Testing Center)	Included in lecture time	10 hours exam prep
Total Hours	37.5 hours	75 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.