COURSE INFORMATION FORM

DISCIPLINE: Industrial Technology
COURSE TITLE: Networking for Automated Systems
CR.HR: 3  LECT HR: 2  LAB HR: 2  CLIN/INTERN HR:  CLOC  HR:  CLOCK HR:  

CATALOG DESCRIPTION

This course gives students the tools and resources to design and maintain industrial communications systems used in industrial and automated building facilities. Underlying principles behind industrial communication systems will be discussed for protocols such as Modbus, Data Highway Plus, Ethernet, and TCP/IP. Basic IT concepts and technology relating to industrial and building automation such as networking, switches, routers, servers, firewalls and wireless Ethernet will be covered. The student will learn to effectively communicate with IT personnel as needed for day to day plant maintenance operations.

PREREQUISITES

INTE 271 with a C grade or higher

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

Upon completion of this course, the student will be able to:

1. Create a Serial network.
2. Create an Ethernet network.
3. Demonstrate TCP/IP networking.
4. Demonstrate serial communication protocols.
5. Demonstrate the skill to use applications for various communication protocols.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
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<tr>
<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. The ability to exhibit competency in the entry-level skills of technical profession in Industrial Technology.
2. The ability to exhibit competency in the entry-level skills of Programmable Logic Controllers.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Written exam (1 - 5)
2. Practical Exam (1 - 5)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Overview of Data Communications for Automated Systems
II. Networking Principles
   A. Serial Communication Protocols
   B. EtherNet/IP
   C. Wireless Principles for Industrial Systems
III. Distributed Control Systems
IV. Industrial Automation Systems
   A. Levels of Functionality of industrial Networks
   B. DeviceNet
   C. FieldBus
   D. Profibus
   E. ControlNet
   F. Modbus
   G. Remote I/O
V. Building Automation System (BAS)
   A. Building Automation and Control Networks (BACnet) Systems
   B. Building Systems Integration
VI. Tools and resources needed for success and survival
VII. Continuing education and professional development
VIII. Industry accepted certifications offered by:
   A. NICET
   B. ISA
   C. CISCO