



# Industrial Technology Industrial Control Systems

## An Associate of Applied Science Degree Program

### PROGRAM DESCRIPTION

The Industrial Control Systems (ICS) concentration is designed to provide students with an effective blending of diverse industrial skill sets through various specializations. Skills emphasized in the program include but are not limited to advanced manufacturing applications, industrial equipment programming, electrical and mechanical systems maintenance, computer networking, and security. The ICS concentration in Industrial Technology prepares students with the skills needed for immediate entrance into the industrial workforce.

### APPLICATION PROCEDURE

A student desiring to enroll in the Associate of Applied Science degree program in Industrial Technology – Concentration: Industrial Control Systems must:

1. Submit the Northeast State Application for Admission to the Office of Admissions and Records.
2. Indicate Industrial Technology – Concentration: Industrial Control Systems as the desired major on the Northeast State application form.
3. See a faculty advisor from the Industrial Control Systems program prior to registering for classes.

### TYPICAL PROGRAM OF STUDY

| Course No.         | Course Title  | Credit |
|--------------------|---|--------|
| <b>FALL</b>        |   |        |
| CITC 1302          | Introduction to Networking  | 3      |
| ELEC 1110          | DC Fundamentals   | 4      |
| EDUC 1030          | College and Lifelong Learning   | 3      |
| MATH 1530          | Introductory Statistics   | 3      |
| MMEL 1232          | Instrumentation and Control Fundamentals  | 2      |
| <b>SPRING</b>      |   |        |
| CITC 1303          | Database Concepts   | 3      |
| CITC 2326          | Network Security  | 3      |
| COMM 2025          | Fundamentals of Communication   | 3      |
| ELEC 1120          | AC Fundamentals   | 4      |
| ENGL 1010          | English Composition I   | 3      |
| <b>FALL</b>        |   |        |
| CITC 1320          | A+ Hardware & Software  | 3      |
| CITC 2320          | Windows Server Administration   | 3      |
| ELEC 2350          | Industrial Electronics  | 4      |
| ELEC 2400          | Siemens PLC Programming   | 4      |
| MFGT 2870          | Programming and Robotics  | 4      |
| <b>SPRING</b>      |   |        |
| Elective           | Behavioral/Social Science Elective (an approved elective from the general education core) | 3      |
| CITC 2390          | CIT Capstone  | 3      |
| ELEC 2410          | Allen-Bradley PLC Programming   | 4      |
| HUM 2350           | Technology in Society   | 3      |
| MMEL 1241          | Mechanical and Electric Control Systems   | 2      |
| MMEL 1252          | Instrumentation and Control   | 1      |
| Total Credit Hours |   | 65     |

Additional learning support courses may be required for degree completion.

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## TYPICAL JOB OPPORTUNITIES

Industrial Controls Technician  
Instrumentation and Controls Technician  
Process Controls Technician  
Electrical Controls Technician

## INDUSTRY PARTNERS

Northeast State has worked closely with the following industry to develop the Industrial Control Systems program and the curriculum was developed to facilitate the skills, knowledge, and attitudes necessary for success in the industrial setting of process operations.

Eastman Chemical Company

## PROGRAM COMPETENCIES

The graduate is competent to:

1. Install, maintain, repair, troubleshoot, and connect computers and networks. Topics include the internal components of a computer, installing an operating system, troubleshooting using system tools and diagnostic software, connecting to a network, implementing security best practices on a workstation, and peripheral setup and troubleshooting.
2. Utilize modern engineering and technology graphics that are used in determining space relations of points, lines, planes, and their combination.
3. Calculate values of Resistance (R), Inductance (L), and Capacitance (C) required to produce any desired voltage, current, and impedance in AC circuits.
4. Create data modeling, database design concepts, tables and queries, and other database

objects using the tools provided in a relational DBMS.

5. Understand the basic fundamentals of computer and network security.
6. Understand robot configurations and industrial applications computer programming, application software, and robotics
7. Understand Siemens PLC Programming operation and applications.
8. Understand Allen-Bradley PLC Programming operation and applications.
9. Understand Mechanical and Electrical Control Systems design and have an understanding of electrical schematics, transformers, and three-phase electrical fundamentals.

## FOR FURTHER INFORMATION CONTACT:

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Northeast State Community College is part of the Tennessee Board of Regents system, Tennessee's largest higher education system, governing 40 post-secondary educational institutions with over 200 teaching locations. The TBR system includes 13 two-year colleges, 27 colleges of applied technology, and TN eCampus, providing programs to students across the state, country, and world.

Northeast State Community College does not discriminate on the basis of race, color, religion, creed, ethnic or national origin, sex, disability, age status as a protected veteran or any other class protected by Federal or State laws and regulations and by Tennessee Board of Regents policies with respect to employment, programs, and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Linda W. Calvert, Vice President for Inclusive Excellence and Sponsored Programs, AffAct@NortheastState.edu, P.O. Box 246, Blountville, TN 37617-0246, 423.323.0222.

Northeast State Community College's policy on nondiscrimination can be found at <https://apps.northeaststate.edu/ie/policymanual/pol.asp?p=254>.

Northeast State Community College is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award the associate degree. Northeast State also may offer credentials such as certificates and diplomas at approved degree levels. Questions about the accreditation of Northeast State Community College may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, by calling (404) 679-4500, or by using information available on SACSCOC's website ([www.sacscoc.org](http://www.sacscoc.org)).