



Industrial Control Systems

A Technical Certificate Program

PROGRAM DESCRIPTION

The Industrial Control Systems (ICS) program 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 program prepares students with the skills needed for immediate entrance into the industrial workforce.

PROGRAM ARTICULATION

All courses in the ICS certificate program will articulate into the Associate of Applied Science Industrial Technology - Concentration: Industrial Control Systems degree program.

APPLICATION PROCEDURE

A student desiring to pursue a certificate in Industrial Control Systems must:

1. Submit the Northeast State Application for Admission to the Office of Admissions and Records.
2. Indicate Industrial Control Systems certificate 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
<u>FALL</u>		
CITC 1302	Introduction to Networking	3
ELEC 1110	DC Fundamentals	4
MMEL 1241	Mechanical and Electrical Control Systems	2
MFGT 2870	Programming and Robotics	4
<u>SPRING</u>		
CITC 2326	Network Security	3
CITC 1303	Database Concepts	3
ELEC 2410	Allen-Bradley PLC Programming	4
ELEC 1120	AC Fundamentals	4
<u>FALL</u>		
CITC 1320	A+ Hardware & Software	3
ELEC 2350	Industrial Electronics	4
ELEC 2400	Siemens PLC Programming	4
Total Credit Hours		38

Additional courses may be required to overcome deficiencies in mathematics, or have appropriate entrance scores.

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

TYPICAL STARTING SALARY

Although beginning salaries may vary depending on individual company policies, the typical starting salary for industrial controls technician in the Northeast Tennessee region is between \$15 and \$20 per hour.

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 Administration & Grant Development, 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).