LTC LAKESHORE TECHNICAL COLLEGE

MANUFACTURING IT

Program Number 10-631-4
Associate Degree in Applied Science • Four Terms

ABOUT THE PROGRAM
This program will prepare the learner to be employed at the technician level or higher to work on the technology that is at the intersection of I.T. and Manufacturing. The program will train students on industrial computer networks, computer operating systems and servers, programmable logic controllers, and other networked manufacturing operations technology. Students will learn how to troubleshoot and integrate these technologies and help bridge a skills gap in manufacturing environments.

PROGRAM OUTCOMES
- Integrate IT systems with manufacturing equipment.
- Utilize network operating systems.
- Maintain PC and device support and security.
- Perform programming and configuration of Programmable Logic Controllers (PLCs)
- Implement computer networks to integrate manufacturing systems.
- Develop integration projects.

CAREER AND EDUCATION ADVANCEMENT OPPORTUNITIES
LTC credits transfer to over 30 universities. For more information visit gotoltc.edu/future-students/transfer.

ADMISSION TO DO'S
- Work with Career Coach to:
  - Submit application and $30 fee.
  - Submit official transcripts (high school and other colleges).

PROGRAM TO DO'S
- Work with Academic Advisor to:
  - Complete an assessment for placement (Accuplacer or ACT).
  - Meet to plan your first semester schedule, review your entire plan of study, discuss placement assessment results and complete Program To Do's.

APPROXIMATE COSTS
- $132.20 per credit tuition (WI resident) plus $7.27 per credit student activity fee. $10 per credit online fee. Material fee varies depending on course. Other fees vary by program. Visit gotoltc.edu/financial-aid/tuition-and-fees for details.

FINANCIAL AID
This program is eligible for financial aid. Visit gotoltc.edu/Financial-Aid or talk with your Career Coach about how to apply for aid.

CONTACT
LTC Career Coach
920.693.1162 • CareerCoach@gotoltc.edu

Catalog No.	Class Title	Credit(s)
	Term 1	
10154104	Intro to IT	3
10150114	Networking I	3
10154122	PC Support	3
10801195	Written Communication	3
10804113	College Technical Math 1A	3
		15
	Term 2	
10150173	Server Administration 1	3
10150176	Networking 2	3
10154124	Information Security Principles	3
10801196	Oral/Interpersonal Communication	3
10809166	Introduction to Ethics	3
		15
	Term 3	
10150129	Virtualization	2
10660105	DC Fundamentals	2
10150163	Networking 3	3
10620138	Programmable Controllers - Allen Bradley	3
10620122	Industrial Wiring	2
10150169	Network Design and Documentation	2
		14
	Term 4	
10150164	Industrial Mobile Devices	3
10660110	AC Fundamentals	2
10620140	Programmable Controllers - Allen Bradley Advanced	2
10620194	Touch Screen Applications	2
10620198	Industrial Networks	2
10150167	Introduction to Industrial IOT and ERP	2
10809198	Introduction to Psychology	3
		16
		TOTAL 60

Curriculum and Program Acceptance requirements are subject to change. Program start dates vary; check with your advisor for details. The tuition and fees are approximate based on 2017-2018 rates and are subject to change prior to the start of the academic year.

The Hire in HIGHER EDUCATION

2018-19

AC FUNDAMENTALS...prepares the student to analyze electrical circuits using AC math, analyze AC waveforms, measure and analyze AC power, analyze capacitors and inductors in DC and AC circuits, analyze AC circuits containing reactance and calculate resonance, applythe elements and properties of basic measuring circuits, and describe transformer characteristics. PREREQUISITES: 10660105 DC Fundamentals

COLLEGE TECHNICAL MATHEMATICS 1A...prepares the student to solve linear, quadratic, and relational equations; graph; formula rearrangement; solve systems of equations; percent; proportions; and operations on polynomials. Emphasis will be on the application of skills to technical problems. Successful completion of College Technical Mathematics 1A and College Technical Mathematics 1B is the equivalent of College Technical Mathematics 1. PRERQUISITES: Accuplacer Math score of 79 and Accuplacer Algebra score of 55 or equivalent or 10834110 Elementary Algebra w Apps or 31457318 Ind Mtnc Trades Math or 31420320 Machine Tool Math or equivalent

DC FUNDAMENTALS...prepares the student to convert values to scientific and engineering notations; calculate math quantities; describe basic atomic theory; identify basic electrical terms; use established symbols standards; describe DC voltage characteristics and current sources and electrical resistance; measure and analyze electrical quantities in series and parallel circuits; and desolder/solder single lead components. COREQUISITES: 10804115 College Technical Math 1 or 10804114 College Tech Math 1B

INDUSTRIAL MOBILE DEVICES...are quickly becoming indispensable tools in the production environment. This course will introduce the learner to various industry mobile technologies used to promote better decision-making, reporting, and improve manufacturing performance. Some of the devices covered are tablets, smartphones, barcode printers and readers, and radio frequency identification (RFID) readers/writers.

INDUSTRIAL NETWORKS...prepares the learner to configure, install and troubleshoot industrial communication networks. This course is highly computer based. COREQUISITES: 10620140 Programmable Controls AB Advanced

INDUSTRIAL WIRING...prepares the learner to follow safety procedures; maintain a safe and healthy work environment; construct electrical circuits; measure electrical quantities using a VOM and/or DVM; analyze measured values using electrical circuit laws; construct typical industrial control circuits; and analyze typical industrial control circuits.

INFORMATION SECURITY PRINCIPLES...introduces the learner to Information Systems Security. Students will review and analyze the control and security concerns in the information systems environment; the security challenges created from the emergence of new technology and the changing internal and external environments; and the effect of legal, regulatory, and current security technology on policy development. PREREQUISITE: 10154104 Intro to IT

INTRO TO IT...introduces student to IT field to basic concepts and terminology of a computer system hardware and software, Operating Systems (including Mac OS), and Networks; applied skills include: managing computer data files; protecting against computer viruses; creating simple web pages; producing electronic word documents, spreadsheets and presentations; examining techniques of systems analysis and design, programming languages and database systems.

INTRODUCTION TO DIVERSITY STUDIES...introduces learners to the study of diversity from a local to a global environment using a holistic, interdisciplinary approach. Encourages self-exploration and prepares the learner to work in a diverse environment. In addition to an analysis of majority/minority relations in a multicultural context, the primary topics of race, ethnicity, age, gender, class, sexual orientation, disability, religion are explored. COREQUISITE: 10838105 Intro Reading and Study Skills or equivalent

INTRODUCTION TO INDUSTRIAL IOT AND ERP...introduces students to Industrial IOT (Internet of things) and ERP (Enterprise Resource Planning) and prepares students to maintain security in the IOT and ERP component in the manufacturing industry. Learners will gain an understanding of the basic ERP within a manufacturing environment.

INTRODUCTION TO PSYCHOLOGY...introduces students to a survey of the multiple aspects of human behavior. It involves a survey of the theoretical foundations of human functioning in such areas as learning, motivation, emotions, personality, deviance and pathology, physiological factors, and social influences. It directs the student to an insightful understanding of the complexities of human relationships in personal, social, and vocational settings. COREQUISITE: 10838105 Intro Reading and Study Skills or Accuplacer Reading score of 74 or equivalent

NETWORK DESIGN AND DOCUMENTATION...is a lecture/hands-on course designed to introduce students to network design and documentation fundamentals. Topics include: needs analysis, hardware needs and analysis, network layout and design, and documenting a network. PREREQUISITE: 10150176 Networking 2

NETWORKING 1...is a lecture/hands-on course designed to introduce students to network fundamentals. Topics covered include: OSI Reference Model; LAN and WAN topologies; cabling systems; access methods; protocols; Internet working devices (e.g. hubs, bridges, routers, switches, etc.); and basic network design.

NETWORKING 2...provides the students with networking terminology, protocols, network standards, LAN's, WAN's, TCP/IP addressing, and routing. PREREQUISITE: 10150114 Networking 1

NETWORKING 3...introduces the student to switching technology, hardware and software firewalls, and virtual private networks (VPN). PREREQUISITE: 10150176 Networking 2

ORAL/INTERPERSONAL COMMUNICATION...provides students with the skills to develop speaking, verbal and nonverbal communication, and listening skills through individual speeches, group activities, and other projects. COREQUISITE: 10838105 Intro Reading and Study Skills or equivalent

PC SUPPORT...prepares you to be able to install, manage, repair, and troubleshoot PC hardware and Windows, Linux, and Mac operating systems. You will learn how to set up a new computer, identify system requirements, install or upgrade operating systems, manage external devices, troubleshoot common computer problems, and connect to a small home network.

PROGRAMMABLE CONTROLLERS - ALLEN BRADLEY...prepares the student to understand basic PLC structure and terminology; learn to create and troubleshoot basic PLC programs using the RSLOGIX 500 software and the RSLINX communication software; become familiar with communicating with programming SLC-500 PLCs. This course is highly computer based.

PROGRAMMABLE CONTROLLERS - ALLEN BRADLEY ADVANCED... prepares the student to develop applications utilizing subroutine instructions, analog modules; gain a basic understanding of creating and troubleshooting programs using the ControlLogix, RSLOGIX5000 software. This course is highly computer based. PREREQUISITE: 10620138 Prog Cntrls/AB

SERVER ADMINISTRATION 1...hands-on course designed to introduce the learner to the installation and configuration of Windows Server servers. Students will learn how to install and configure servers, configure server roles and features, configure Hyper-V, deploy and configure core network services, install and administer Active Directory (AD), and create and manage Group Policy. PREREQUISITE: 10154104 Intro to IT

TOUCH SCREEN APPLICATIONS...prepares the student to create, edit, and troubleshoot screens, objects and I/O related to the FactoryTalkME application. Students will create, edit and communicate with Allen-Bradley PLC programs for real-time control utilizing the touchscreen applications. This course is highly computer based. COREQUISITES: 10620140 Programmable Controls AB Advanced

VIRTUALIZATION...is a hands-on course designed to introduce the learner to the skills needed to install, configure, and manage a highly available and scalable virtual infrastructure. Objectives include: create, configure, migrate, manage, and monitor virtual machines and virtual appliances; manage user access to the virtual infrastructure; and configure and manage virtual network and storage systems. PREREQUISITE: 10154104 Introduction to IT

WRITTEN COMMUNICATION...teaches the writing process, which includes prewriting, drafting, revising, and editing. Through a variety of writing assignments, the student will analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Keyboarding skills are required for this course. It also develops critical reading and thinking skills through the analysis of a variety of written documents. PREREQUISITE: 10831103 Intro to College Wrtg equivalent and COREQUISITE: 10838105 Intro Rdg & Study Skills or equivalent