

Electrical Construction Technology

Gainful Employment	Program Name	Program Type	Area of Study
	Electrical Construction Technology (9712) , ATS (https://catalog.lakelandcc.edu/degree-certificate-programs/ecta/9712/)	Degree	ECTA
	Electrical Construction Certificate (4222) (https://catalog.lakelandcc.edu/degree-certificate-programs/ecta/4222/)	Certificate	ECTA

ECTA 1000 Electrical Construction Technology IA **3 Credits**

Prerequisite: formal admission to the Electrical Construction Technology program.

This course presents basic scientific information about the nature of matter as it relates to understanding electrical theory and provides an understanding of the theories and principles by which all electrical devices operate. Students will learn about the structures, elements, functions, and characteristics of Direct Current (DC) circuits. The course also develops an understanding of the International Brotherhood of Electrical Workers (IBEW), National Electrical Contractors Association (NECA), and the National Joint Apprenticeship and Training Committee (NJATC) as they exist on a national and local level. A separate laboratory experience will provide students with opportunities to apply and work with concepts learned in the classroom setting.
(5 contact hours: 2 lecture, 3 lab)

ECTA 1010 Electrical Construction Technology 1B **3 Credits**

Prerequisite: ECTA 1000.

This course provides a continuation of the topics presented in ECTA 1000 Electrical Construction Technology IA. Students will continue to develop an understanding of electrical theory and apply concepts in a separate laboratory experience. In addition, this course will explore the fundamentals of workplace safety and basic residential blueprint reading.
(5 contact hours: 2 lecture, 3 lab)

ECTA 1200 Electrical Construction Technology IIA **3 Credits**

Prerequisite: ECTA 1010.

Building on the history of the International Brotherhood of Electrical Workers (IBEW), National Electrical Contractors Association (NECA), and the National Joint Apprenticeship and Training Committee (NJATC), this course discusses parliamentary procedures and the Construction Organizing Membership Education Training program (COMET). Students will learn about the rules, regulations, and provisions that govern a "Safe Installation" for the electrical industry. This course also introduces the National Electrical Code (NEC), and presents scientific information about the nature of electrical theory and characteristics of Alternating Circuit (AC) circuits. A separate laboratory experience will provide students with opportunities to apply and work with concepts learned in the classroom setting.
(5 contact hours: 2 lecture, 3 lab)

ECTA 1210 Electrical Construction Technology IIB **3 Credits**

Prerequisite: ECTA 1200.

This course provides a continuation of the topics presented in ECTA 1200 Electrical Construction Technology IIA. Students will continue to develop an understanding of electrical theory and apply concepts in a separate laboratory experience. Building on the principles of residential blueprint reading, this course teaches the necessary concepts to properly design and lay out circuits for a residential and commercial project. Students will also learn about transformers, DC and AC generators, and conduit bending and installation.
(5 contact hours: 2 lecture, 3 lab)

ECTA 2300 Advanced Electrical Construction Technology IA **3 Credits**

Prerequisite: ECTA 1210.

This course introduces semiconductor devices, including information on operating characteristics and applications. It identifies semiconductor devices by their current voltage (I/V) characteristics and discusses basic semiconductor and Integrated Circuit (IC) amplifier configurations. A separate laboratory experience will provide students with opportunities to apply and work with concepts learned in the classroom setting.
(5 contact hours: 2 lecture, 3 lab)

ECTA 2310 Advanced Electrical Construction Technology IB **3 Credits**

Prerequisite: ECTA 2300.

This course provides a continuation of the topics presented in ECTA 2300 Advanced Electrical Construction Technology IA. Students will continue to develop an understanding of electrical theory and apply concepts in a separate laboratory experience. The course provides information necessary to the understanding of digital electronics and explores the use of Boolean algebra. It reviews characteristics of various logic families including power requirements, speed of operation, and noise immunity. In addition, the course explores the operational characteristics of NAND, NOR, XOR, and XNOR logic gates and presents the development of logic circuits and controls, and switching circuits.
(5 contact hours: 2 lecture, 3 lab)

ECTA 2400 Advanced Electrical Construction Technology IIA**3 Credits***Prerequisite: ECTA 2310.*

This course introduces the importance of proper grounding techniques and methods and explores the electrical conductivity of the earth and its relationship to grounding systems. The course also presents an introduction to DC and AC motors. A separate laboratory experience will provide students with opportunities to apply and work with concepts learned in the classroom setting.

(5 contact hours: 3 lecture, 2 lab)

ECTA 2410 Advanced Electrical Construction Technology IIB**3 Credits***Prerequisite: ECTA 2400.*

This course provides a continuation of the topics presented in ECTA 2400 Advanced Electrical Construction Technology IIA. Students will continue to develop an understanding of electrical theory and apply concepts in a separate laboratory experience. The course examines both DC and AC motors in detail and explores methods of motor control.

(5 contact hours: 2 lecture, 3 lab)

ECTA 2500 Instrumentation and Testing A**3 Credits***Prerequisite: ECTA 2410.*

This course introduces the various modes of control used in the process control industry. It also provides information on various types of sensors, safety factors, installation, testing instruments, and tests for measuring dielectric quality, and locating and testing faults. A separate laboratory experience will provide the students with opportunities to apply and work with concepts learned in the classroom setting.

(5 contact hours: 2 lecture, 3 lab)

ECTA 2510 Instrumentation and Testing B**3 Credits***Prerequisite: ECTA 2500.*

This course provides a continuation of the topics presented in ECTA 2500 Instrumentation and Testing A. Students will continue to develop an understanding of electrical theory and apply concepts in a separate laboratory experience. In addition, the course presents information on telephone and alarm systems, system installations and start-up, and fiber optic cabling.

(5 contact hours: 2 lecture, 3 lab)