

INDUSTRIAL ELECTRONICS TECHNOLOGY AAS

The Industrial Electronics Technology Program prepares students for work in installation, testing, and maintenance of electrical and electronic systems in industrial, scientific, and commercial facilities. The program also provides specific training in basic computer hardware and software, Programmable Logic Controllers (PLCs), motors and motor control systems, three-phase power distribution, and Human-Machine Interface (HMI) programming. Graduates are prepared to pursue jobs in areas such as manufacturing automation, electrical power distribution, protection systems, and other electrically-related fields.

The program offers both degrees and certificates. The Electronics Engineering Technology (EET) track emphasizes design, testing, and product development in electrical/electronic systems, while the Instrument Mechanic (IM) track emphasizes instrumentation and control systems found in continuous processing industries such as paper production, oil refining, and water treatment.

Potential positions include industrial electrician, instrument technician, power systems maintenance technician, electronic maintenance technician, process control technician, and electrical apprentice. Typical employers are engineering and manufacturing firms and utility companies.

Entrance requirements for students seeking enrollment in the Industrial Electronics program include:

- Students must score a 30 or higher in math on ALEKS and have a 2 or higher score on the Writing Placement Exam, or qualify for MTHPT-137 (<http://catalog.lcsc.edu/search/?P=MTHPT-137>) and either ENGL-101 (<http://catalog.lcsc.edu/search/?P=ENGL-101>) or ENGL-103 (<http://catalog.lcsc.edu/search/?P=ENGL-103>).
- Enrollment priority for students seeking entrance into the program is on a first-come first-serve basis as determined by the student's faculty advising date.

Successful completers will demonstrate the following:

- (1) COMMUNICATION and TEAMWORK – Accurately communicate ideas across a variety of media (oral, written, graphical) to both technical and non-technical audiences; Function effectively as a member of a technical team.
- (2) SELF-MANAGEMENT – Arrive on time and prepared; Work diligently until the job is done; Budget resources appropriately to achieve objectives.
- (3) SAFE WORK HABITS – Comply with relevant national, state, local, and college safety regulations when designing, prototyping, building, and testing systems.
- (4) ANALYSIS and DIAGNOSIS – Select and apply appropriate principles and techniques for both qualitative and quantitative circuit analysis; Devise and execute appropriate tests to evaluate electronic system performance; Identify root causes of electronic system malfunctions.
- (5) PROBLEM-SOLVING – Devise and implement solutions for technical problems appropriate to the discipline.
- (6) DOCUMENTATION – Interpret and create technical documents (e.g. electronic schematic diagrams, block diagrams, graphs, reports) relevant to the discipline.
- (7) INDEPENDENT LEARNING – Select and research information sources to learn new principles, technologies, and/or techniques.

Students may choose either the Instrument Mechanics (IM) track or the Electronic Engineering Technology (EET) track. The first two semesters' worth of technical courses are common to both tracks; part-time enrollment options also exist to give students more options and flexibility in their education.

The EET track emphasizes skills required to be an Electronics Technician in engineering, manufacturing, and telecommunications industries. After the common first-year courses in DC, AC, and Digital circuits (including basic PLC programming), the EET student goes on to study computer programming, advanced analog circuitry, radio-frequency circuits, electric power system control and protection, digital communications, and data acquisition systems. Successful completion of the EET track can open doors into industries like Electronics Manufacturing, Semiconductor Manufacturing, Energy & Utilities, Research and Development, Broadcasting, and Telecommunications. All technical coursework for this track is open-source and available online at: <https://www.ibiblio.org/kuphaldt/socratic/model/>

The IM track provides the solid technical foundation required to pursue a career as an Instrumentation Mechanic/Technician, or Instrumentation Controls Technician. After the common first-year courses in DC, AC, and Digital circuits (including basic PLC programming), the IM student goes on to study process indication measurements like pressure, level, temperature, flow, and chemical measurement. IM students also study control valves, motor control systems, PLC- and HMI-based control systems, and closed-loop controls. Successful completion of the IM track can open doors into industries like Energy & Utilities, Pulp & Paper, Biotech & Pharmaceutical, Chemical, Food & Beverage, Mining & Minerals, and Electronic Manufacturing.

General Education Requirements

Code	Title	Credits
Written Communication		
ENGL-101	WRITING AND RHETORIC I	3.00
Oral Communication		
Select one of the following:		3.00
COMM-101	FUNDAMENTALS OF ORAL COMMUNICATION	
COMM-203	SMALL GROUP COMMUNICATION	
COMM-204	PUBLIC SPEAKING	
Mathematical Ways of Knowing		
MTHPT-137	MATH FOR TECHNOLOGY	4.00
Social & Behavioral Ways of Knowing		
Select one of the following:		3.00
ANTH-102	CULTURAL ANTHROPOLOGY	
ANTH-120	WORLD PREHISTORY	
ANTH-170	INTRODUCTION TO NATIVE AMERICAN STUDIES	
ECON-201	PRINCIPLES OF MACROECONOMICS	
ECON-202	PRINCIPLES OF MICROECONOMICS	
GEOG-102	INTRODUCTION TO GEOGRAPHY	
HIST-101	WORLD HISTORY I	
HIST-102	WORLD HISTORY II	
HIST-111	UNITED STATES HISTORY I	
HIST-112	UNITED STATES HISTORY II	
HRPT-184	DIVERSITY IN ORGANIZATIONS	
HRPT-185	HUMAN RELATIONS IN ORGANIZATIONS	
POLS-101	AMERICAN NATIONAL GOVERNMENT	
POLS-237	INTERNATIONAL POLITICS	
POLS-285	COMPARATIVE GOVERNMENT	
PSYC-101	INTRODUCTION TO GENERAL PSYCHOLOGY	
PSYC-205	LIFESPAN DEVELOPMENTAL PSYCHOLOGY	
SOC-101	INTRODUCTION TO SOCIOLOGY	
SOC-102	SOCIAL PROBLEMS	
SS-184	DIVERSITY IN ORGANIZATIONS	
SS-185	HUMAN RELATIONS IN ORGANIZATIONS	
Additional General Education Core		
Select one of the following:		3.00-5.00
ANTH-360	RACE AND ETHNICITY	
ART-100	INTRODUCTION TO ART	
BIOF-100	INTRODUCTION TO BIOINFORMATICS	
BIOL-100	CONCEPTS OF BIOLOGY	
BIOL-120	PLANTS AND PEOPLE	
BIOL-123	BIOLOGY IN FILM	
BIOL-175	HUMAN BIOLOGY	
BIOL-227	HUMAN ANATOMY AND PHYSIOLOGY I	
CHEM-100	CONCEPTS OF CHEMISTRY	
CHEM-105	GENERAL, ORGANIC AND BIOCHEMISTRY	
CHEM-111	PRINCIPLES OF CHEMISTRY I	
CITPT-108	INTRODUCTION TO COMPUTER SCIENCE	
COMM-345	INTERCULTURAL COMMUNICATION	
CS-108	INTRODUCTION TO COMPUTER SCIENCE	
ENGL-175	LITERATURE AND IDEAS	
ENGL-257	WORLD CLASSICS	

ENGL-258	INTERNATIONAL LITERATURE
ENGL-260	NATIVE AMERICAN LITERATURE
ENGL-261	MYTHOLOGIES
ENGL-474	NATIVE AMERICAN WRITTEN LITERATURE
FSCI-101	INTRODUCTION TO FORENSIC SCIENCE
GEOL-101	PHYSICAL GEOLOGY
GEOL-120	INTRODUCTION TO EARTH SYSTEMS
GIS-271	GEOGRAPHIC INFORMATION SYSTEMS
HUM-101	THE ART AND HISTORY OF THE MOTION PICTURE
HUM-150	INTRODUCTION TO THE ARTS
ID-240	INTEGRATED SCIENCE II
ID-300C	ETHICS AND IDENTITY
ID-301A	HELLS CANYON INSTITUTE
KIN-220	SOCIAL-CULTURAL ASPECTS OF SPORTS
MUS-101	SURVEY OF MUSIC
MUS-102	MUSIC IN AMERICA
MUS-150	WORLD MUSIC
MUS-151	HISTORY OF MUSICAL THEATER
MUS-152	HISTORY OF JAZZ AND POPULAR MUSIC STYLES
NP-101	NEZ PERCE LANGUAGE AND CULTURE
NP-102	NEZ PERCE LANGUAGE AND HISTORY
NS-140	INTEGRATED SCIENCE I
NS-150	INTRODUCTION TO NATURAL SCIENCES
NS-174	NATURAL SCIENCE FOR ELEMENTARY EDUCATOR
PHYS-111 or PHYS-112	GENERAL PHYSICS I GENERAL PHYSICS II
PHYS-171	PHYS SCIENCES FOR ELEMENTARY EDUCATORS
PHYS-205	DESCRIPTIVE ASTRONOMY
PHYS-211	PHYSICS FOR SCIENTISTS AND ENGINEERS I
SPAN-101	ELEMENTARY SPANISH I
SPAN-102	ELEMENTARY SPANISH II
SPAN-201	INTERMEDIATE SPANISH I
SPAN-202	INTERMEDIATE SPANISH II
SS-184	DIVERSITY IN ORGANIZATIONS
SS-185	HUMAN RELATIONS IN ORGANIZATIONS
THEA-101	SURVEY OF THE THEATER

Total Credits**16.00-18.00**

Program Requirements

Code	Title	Credits
AAS Degree		
Select one of the following:		48.00
Electronic Engineering Technician		
Take all of the following:		
IETTI-101	DC CIRCUIT THEORY	
IETTI-102	DC CIRCUIT PROJECTS	
IETTI-103	DC CIRCUIT EXPERIMENTS	
IETTI-104	AC CIRCUIT THEORY	
IETTI-105	AC CIRCUIT PROJECTS	
IETTI-112	AC CIRCUIT EXPERIMENTS	
IETTI-220	Intermediate Electronics Projects	
IETTI-221	Intermediate Electronics Experiments	

IETTI-222	Intermediate Electronics Theory
IETTI-223	ADVANCED ELECTRONICS THEORY
IETTI-225	ADVANCED ELECTRONICS EXPERIMENTS
IETTI-236	ADVANCED ELECTRONICS PROJECTS
Industrial Electronics Technology	
Take all of the following:	
IETTI-101	DC CIRCUIT THEORY
IETTI-102	DC CIRCUIT PROJECTS
IETTI-103	DC CIRCUIT EXPERIMENTS
IETTI-104	AC CIRCUIT THEORY
IETTI-105	AC CIRCUIT PROJECTS
IETTI-112	AC CIRCUIT EXPERIMENTS
IETTI-220	Intermediate Electronics Projects
IETTI-221	Intermediate Electronics Experiments
IETTI-222	Intermediate Electronics Theory
IETTI-223	ADVANCED ELECTRONICS THEORY
IETTI-225	ADVANCED ELECTRONICS EXPERIMENTS
IETTI-236	ADVANCED ELECTRONICS PROJECTS
IETTI-270	INDUSTRIAL MEASUREMENT THEORY
IETTI-271	INDUSTRIAL MEASUREMENT EXPERIMENTS
IETTI-272	INDUSTRIAL MEASUREMENT PROJECTS
IETTI-280	INDUSTRIAL CONTROL THEORY
IETTI-281	INDUSTRIAL CONTROL EXPERIMENTS
IETTI-282	INDUSTRIAL CONTROL PROJECTS
Instrument Mechanic	
Take all of the following:	
IETTI-101	DC CIRCUIT THEORY
IETTI-102	DC CIRCUIT PROJECTS
IETTI-103	DC CIRCUIT EXPERIMENTS
IETTI-104	AC CIRCUIT THEORY
IETTI-105	AC CIRCUIT PROJECTS
IETTI-112	AC CIRCUIT EXPERIMENTS
IETTI-270	INDUSTRIAL MEASUREMENT THEORY
IETTI-271	INDUSTRIAL MEASUREMENT EXPERIMENTS
IETTI-272	INDUSTRIAL MEASUREMENT PROJECTS
IETTI-280	INDUSTRIAL CONTROL THEORY
IETTI-281	INDUSTRIAL CONTROL EXPERIMENTS
IETTI-282	INDUSTRIAL CONTROL PROJECTS
Total Credits	48.00

Sequential Plan of Study

Industrial Electronics Technology

Course	Title	Credits
First Year		
Fall		
IETTI-101	DC CIRCUIT THEORY	4.00
IETTI-102	DC CIRCUIT PROJECTS	4.00
IETTI-103	DC CIRCUIT EXPERIMENTS	4.00
IETTI-110	BASIC DC CIRCUIT LAB	2.00
Credits		14.00

Spring

ENGL-101	WRITING AND RHETORIC I	3.00
IETTI-104	AC CIRCUIT THEORY	4.00
IETTI-105	AC CIRCUIT PROJECTS	4.00
IETTI-112	AC CIRCUIT EXPERIMENTS	4.00
MTHPT-137	MATH FOR TECHNOLOGY	4.00

Credits	19.00
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Second Year**Fall**

CORE	Social & Behavioral Ways of Knowing	3.00
CORE	Oral Communication	3.00
IETTI-108	INTRODUCTION TO PLC'S	4.00
IETTI-201	INTRO TO INSTRUMENTATION	4.00
IETTI-204	PROGRAMMING HUMAN MACHINE INTERFACES (HMI)	4.00

Credits	18.00
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Spring

CORE	Additional General Elective Course	3.00
IETTI-207	PROGRAM AND TROUBLESHOOT PLC'S	4.00
IETTI-208	PLC'S SYSTEMS APPLICATIONS	4.00
IETTI-205	ELECTRIC MOTORS, DRIVES AND CONTROLS	4.00

Credits	15.00
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Total Credits	66.00
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Electronic Engineering Technician

Course	Title	Credits
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First Year**Fall**

ENGL-101	WRITING AND RHETORIC I	3.00
IETTI-101	DC CIRCUIT THEORY	4.00
IETTI-102	DC CIRCUIT PROJECTS	4.00
IETTI-103	DC CIRCUIT EXPERIMENTS	4.00
MTHPT-137	MATH FOR TECHNOLOGY	4.00

Credits	19.00
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Spring

IETTI-104	AC CIRCUIT THEORY	4.00
IETTI-105	AC CIRCUIT PROJECTS	4.00
IETTI-112	AC CIRCUIT EXPERIMENTS	4.00
CORE	Oral Communication	3.00

Credits	15.00
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Second Year**Fall**

CORE	Social & Behavioral Ways of Knowing	3.00
IETTI-220	Intermediate Electronics Projects	4.00
IETTI-221	Intermediate Electronics Experiments	4.00
IETTI-222	Intermediate Electronics Theory	4.00

Credits	15.00
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Spring

CORE	Additional General Elective Course	3.00
IETTI-223	ADVANCED ELECTRONICS THEORY	4.00
IETTI-225	ADVANCED ELECTRONICS EXPERIMENTS	4.00

IETTI-236	ADVANCED ELECTRONICS PROJECTS	4.00
	Credits	15.00
	Total Credits	64.00

Instrument Mechanic

Course	Title	Credits
First Year		
Fall		
IETTI-101	DC CIRCUIT THEORY	4.00
IETTI-102	DC CIRCUIT PROJECTS	4.00
IETTI-103	DC CIRCUIT EXPERIMENTS	4.00
IETTI-110	BASIC DC CIRCUIT LAB	2.00
MTHPT-137	MATH FOR TECHNOLOGY	4.00
	Credits	18.00
Spring		
CORE	Oral Communication	3.00
IETTI-104	AC CIRCUIT THEORY	4.00
IETTI-105	AC CIRCUIT PROJECTS	4.00
ENGL-101	WRITING AND RHETORIC I	3.00
	Credits	14.00
Second Year		
Fall		
CORE	Social & Behavioral Ways of Knowing	3.00
IETTI-108	INTRODUCTION TO PLC'S	4.00
IETTI-201	INTRO TO INSTRUMENTATION	4.00
IETTI-205	ELECTRIC MOTORS, DRIVES AND CONTROLS	4.00
IETTI-211	ADVANCED INSTRUMENTATION	4.00
	Credits	19.00
Spring		
CORE	Additional General Education Course	3.00
IETTI-204	PROGRAMMING HUMAN MACHINE INTERFACES (HMI)	4.00
IETTI-207	PROGRAM AND TROUBLESHOOT PLC'S	4.00
IETTI-208	PLC'S SYSTEMS APPLICATIONS	4.00
	Credits	15.00
	Total Credits	66.00

View on YouTube (<https://www.youtube.com/watch?v=t8l1dDuPgnE>)

Graduates from Industrial Electronics Technology programs go on to obtain careers in a variety of fields:

- Industrial-Electrical Technician
- Instrument Technician
- Power Systems Maintenance Technician
- Electronic Maintenance Technician
- Process Control Technician
- Electrical Apprentice
- Research and Development
- Electronics Equipment Analyst
- Programming Technician
- Manufacturing Technician