

ELECTRICAL CONSTRUCTION & MAINTENANCE

Pathway: Construction, Maintenance & Utilities
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PROGRAM LEARNING OUTCOMES (PLOs)

Upon completion of the **Degree/Certificate** programs, students are able to:

- Use electrical trade hand and power tools in accordance with industry and safety standards.
- Analyze and solve mathematical problems related to the electrical trade.
- Locate and interpret technical information from the National Electrical Code.

ELECTRICAL CONSTRUCTION AND MAINTENANCE: ELECTRICIAN

Associate in Science Degree
 Major Units: 48

Requirements for the Associate in Science degree in Electrical Construction and Maintenance: Electrician may be met by completing 42 units of Required Courses and 6 unit of Major Electives with a "C" or better along with General Education units. Information on the General Education unit requirements may be found in the catalog under Graduation Requirements.

REQUIRED COURSES

| SEMESTER I | | UNITS |
|--------------|---|-------|
| ECONMT 115 | Fundamentals of D.C. Electricity | 3 |
| ECONMT 116 | Hand Tools and Wiring Practices | 2 |
| ECONMT 117 | Elementary Circuit Practices | 4 |
| ELECTIVE | | 3 |
| SEMESTER II | | UNITS |
| ECONMT 120 | Industrial Control Systems | 3 |
| ECONMT 128 | Industrial Control Systems Practices | 3 |
| ECONMT 129 | Fundamentals of Alternating Current | 3 |
| ECONMT 169 | Alternating Current Practices | 2 |
| ELECTIVE | | 1 |
| SEMESTER III | | UNITS |
| ECONMT 130 | Principles of Industrial Electric Power | 3 |
| ECONMT 136 | Industrial Power Applications | 3 |
| ECONMT 137 | Industrial Electronic Control Systems | 3 |
| ECONMT 138 | Applications of Electrical and Electronic Devices | 2 |
| ELECTIVE | | 1 |
| SEMESTER IV | | UNITS |
| ECONMT 140 | Construction Wiring Principles and Practices | 3 |
| ECONMT 150 | Introduction to the Electrical Codes | 3 |
| ECONMT 167 | Electrical Construction Wiring Techniques | 3 |
| ECONMT 168 | Installation of Electrical Wiring | 2 |
| ELECTIVE | | 1 |

MAJOR ELECTIVES

| Select at least 6 unit from the courses below | | UNITS |
|---|--|-------|
| ECONMT 001 | Resistive Circuit Electrical Fundamentals | 3 |
| ECONMT 006 | Security & Fire Alarm Technician Certification | 3 |

| Award Title | Academic Plan | Award Type | GE Units | Required Course Units | Major Elective Units | Major Units |
|---|---------------|------------|----------|-----------------------|----------------------|-------------|
| Electrical Construction and Maintenance: Electrician* —(day only) | T002910C | A.S. | 21* | 42 | 6 | 48 |
| Electrical Construction and Maintenance: Electrician —(day only) | T021853D | C | | 42 | 6 | 48 |
| Electrical Construction and Maintenance: Construction Technician* —(evening only) | T008481C | A.A. | 21* | 40 | 8 | 48 |
| Electrical Construction and Maintenance: Construction Technician* —(evening only) | T021852D | C | | 40 | 8 | 48 |

At least 60 degree applicable units are required to earn an Associate degree.
 *This Associate Degree is eligible for a reduction of General Education requirements from 21 to 18 units; please consult with a counselor for more details.
 These programs are Financial Aid Eligible.

PROGRAM OVERVIEW

To meet the training needs of persons interested in becoming an Electrician LATTC offers an Electrical Construction and Maintenance Associate of Science degree, and Electrical Construction and Maintenance Construction Technologies Associate of Arts degree, as well as Certificates of Achievement.

The Associate in Science degree is designed for individuals seeking entry level positions in the field. Students enrolling in this program should be able to commit to full time student status, which is approximately 24 hours per week in the classrooms and laboratories, plus at least 12 hours of homework every week. This time commitment is necessary to allow for hands on training in the laboratory applications used during the course of instruction.

The Associate in Arts degree is an evenings only course of study designed for individuals, currently working in the electrical field, who want to improve or expand their skills. Due to the limitations of the student's available evening hours, much of the hands on laboratory component is assumed to be provided at the student's place of employment. Depending on availability, the Associate in Arts degree may require more time to complete. See the Department Chair for details prior to enrolling.

By fulfilling the program requirements, students will have the necessary knowledge and skills for a career in Residential, Commercial, and Industrial Construction and Maintenance of Electrical Systems. Electrical theory, electrical controls, conduit installation, blueprints, low voltage systems, maintenance practices, equipment installation, etc. are just some of the skills that will be mastered during this program.

| | | |
|-------------|--|---|
| ECONMT 007 | Home Theater & Comm Audio Video Installation Theory | 3 |
| ECONMT 100 | (O.S.H.A.) Safety Standards: Construction and Industry | 2 |
| ECONMT 101 | Electrical Craft Helper | 4 |
| ECONMT 105 | Fundamentals of Solar Electricity | 3 |
| ECONMT 110 | Renewable Energy Systems | 3 |
| ECONMT 119 | Applied Calculations and Measurements | 3 |
| ECONMT 142 | Basic Programmable Logic Controls (PLC) | 1 |
| ECONMT 159 | Programmable Logic Controls (PLC) | 4 |
| ECONMT 164 | Sustainable Lighting Principles & Practices | 3 |
| ECONMT 171 | Electrical Codes and Ordinances I | 3 |
| ECONMT 172 | Electrical Codes and Ordinances II | 3 |
| ECONMT 173 | Electrical Mathematics I | 3 |
| ECONMT 174 | Electrical Mathematics II | 3 |
| ECONMT 177 | Electric Motor Control I | 3 |
| ECONMT 178 | Electric Motor Control II | 3 |
| ECONMT 181 | Basic Wiring Practices | 3 |
| ECONMT 182 | Basic Diagram and Circuit Practices | 1 |
| ECONMT 183 | Residential Electric Wiring | 3 |
| ECONMT 184 | Motor Control Principles and Practices | 3 |
| ECONMT 185 | Directed Study - Electrical Construction and Maintenance | 1 |
| ECONMT 185L | Directed Study, Electrical Construction And Maintenance (Lab) | 1 |
| ECONMT 186 | Industrial Electrical Principles and Practices | 3 |
| ECONMT 187 | Advanced Programmable Controllers | 4 |
| ECONMT 190 | Electrical Code Calculations | 3 |
| ECONMT 191 | Commercial Wiring and Practices | 2 |
| ECONMT 192 | Residential Wiring and Practices | 2 |
| ECONMT 193 | Conduit Bending and Calculations | 3 |
| ECONMT 193A | Conduit Bending Laboratory | 1 |
| ECONMT 195 | Grounding: Fundamentals, Applications and Practices | 3 |
| ECONMT 196 | Infrastructure Wiring Practices | 4 |
| ECONMT 197 | Low Voltage Electrical Practices | 3 |
| ECONMT 199 | Journeyman Electrician Exam Preparation | 3 |
| ECONMT 205 | Solar Energy Installation & Maintenance Principles & Practices | 2 |
| ECONMT 212 | Significant Changes NEC - National Electrical Code | 3 |
| ECONMT 215 | Small Wind Energy Systems Principles and Practices | 3 |
| ECONMT 285 | Directed Study - Electrical Construction and Maintenance | 2 |
| ECONMT 285L | Directed Study, Electrical Construction and Maintenance (Lab) | 2 |
| ECONMT 385 | Directed Study - Electrical Construction and Maintenance | 3 |
| ECONMT 385L | Directed Study, Electrical Construction and Maintenance (Lab) | 3 |
| ECONMT 941 | Cooperative Education -Electrical Construction & Maintenance | 4 |

ELECTRICAL CONSTRUCTION AND MAINTENANCE: ELECTRICIAN

Certificate of Achievement
Major Units: 48

A Certificate of Achievement in Electrical Construction and Maintenance: Electrician may be earned by completing 42 units of Required Courses and 6 units of Major Electives listed under the Associates degree in Electrical Construction and Maintenance: Electrician with a "C" or better in each course.

ELECTRICAL CONSTRUCTION & MAINTENANCE: CONSTRUCTION TECHNICIAN

Associate in Arts Degree
Major Units: 48

Requirements for the Associate in Arts degree in Electrical Construction and Maintenance: Construction Technician may be met by completing 40 units of Required Courses and 8 units of Major Electives with a "C" or better along with General Education units. Information on the General Education unit requirements may be found in the catalog under Graduation Requirements.

REQUIRED COURSES

| SEMESTER I | | UNITS |
|------------|--|-------|
| ECONMT 115 | Fundamentals of D.C. Electricity | 3 |
| ECONMT 116 | Hand Tools and Wiring Practices | 2 |
| ECONMT 119 | Applied Calculations and Measurements <i>or - ECONMT 173 Electrical Mathematics I (3)</i> | 3 |
| ECONMT 100 | (O.S.H.A.) Safety Standards: Construction and Industry <i>or - BLDGCTQ 102 OSHA Based Safety Standards: Construction & Industry (2)</i> | 2 |

| SEMESTER II | | UNITS |
|-------------|--------------------------------------|-------|
| ECONMT 177 | Electric Motor Control I | 3 |
| ECONMT 181 | Basic Wiring Practices | 3 |
| ECONMT 182 | Basic Diagrams and Circuit Practices | 1 |
| ECONMT 129 | Fundamentals of Alternating Current | 3 |

| SEMESTER III | | UNITS |
|--------------|--------------------------------------|-------|
| ECONMT 120 | Industrial Control Systems | 3 |
| ECONMT 178 | Electric Motor Control II | 3 |
| ECONMT 128A | Industrial Control Systems Practices | 1 |
| ECONMT 128B | Industrial Control Systems Practices | 1 |
| ELECTIVE | | 2 |

| SEMESTER IV | | UNITS |
|-------------|--|-------|
| ECONMT 171 | Electrical Codes and Ordinances I | 3 |
| ECONMT 184 | Motor Control Principles and Practices | 3 |
| ELECTIVE | | 3 |

| SEMESTER V | | UNITS |
|------------|--|-------|
| ECONMT 172 | Electrical Code and Ordinances II | 3 |
| ECONMT 186 | Industrial Electrical Principles & Practices | 3 |
| ELECTIVE | | 3 |

MAJOR ELECTIVES

| Select at least 8 units from the courses below | | UNITS |
|--|--|-------|
| ECONMT 1 | Resistive Circuit Electrical Fundamentals | 3 |
| ECONMT 6 | Security And Fire Alarm Technician Certification | 3 |
| ECONMT 7 | Home Theater & Commercial Audio, Video Installation Theory and Practices | 3 |
| ECONMT 101 | Electrical Craft Helper | 4 |
| ECONMT 105 | Fundamentals of Solar Electricity | 3 |
| ECONMT 110 | Renewable Energy Systems | 3 |

| | | |
|-------------|--|---|
| ECONMT 117 | Elementary Circuit Practices | 4 |
| ECONMT 128 | Industrial Control Systems Practices | 3 |
| ECONMT 128C | Industrial Control Systems Practices C | 1 |
| ECONMT 129 | Fundamentals of Alternating Current | 3 |
| ECONMT 130 | Principles of Industrial Electric Power | 3 |
| ECONMT 136 | Industrial Power Applications | 3 |
| ECONMT 137 | Industrial Electronic Control Systems | 3 |
| ECONMT 138 | Applications of Electrical and Electronics Devices | 2 |
| ECONMT 140 | Construction Wiring Principles and Practices | 3 |
| ECONMT 142 | Basic Programmable Logic Controls (PLC) | 1 |
| ECONMT 150 | Introduction to the Electrical Codes | 3 |
| ECONMT 159 | Programmable Logic Controls (PLC) | 4 |
| ECONMT 164 | Sustainable Lighting Principles & Practices | 3 |
| ECONMT 167 | Electrical Construction Wiring Techniques | 3 |
| ECONMT 168 | Installation of Electrical Wiring | 2 |
| ECONMT 169 | Alternating Current Practices | 2 |
| ECONMT 174 | Electrical Mathematics II | 3 |
| ECONMT 183 | Residential Electric Wiring | 3 |
| ECONMT 185 | Directed Study - Electrical Construction and Maintenance | 1 |
| ECONMT 185L | Directed Study, Electrical Construction and Maintenance (Lab) | 1 |
| ECONMT 187 | Advanced Programmable Controllers | 4 |
| ECONMT 190 | Electrical Code Calculations | 3 |
| ECONMT 191 | Commercial Wiring and Practices | 2 |
| ECONMT 192 | Residential Wiring and Practices | 2 |
| ECONMT 193 | Conduit Bending and Calculations | 3 |
| ECONMT 193A | Conduit Bending Laboratory | 1 |
| ECONMT 195 | Grounding: Fundamentals, Applications and Practices | 3 |
| ECONMT 196 | Infrastructure Wiring Practices | 4 |
| ECONMT 197 | Low Voltage Electrical Practices | 3 |
| ECONMT 199 | Journeyman Electrician Exam Preparation | 3 |
| ECONMT 205 | Solar Energy Installation & Maintenance Principles and Practices | 2 |
| ECONMT 212 | Significant Changes NEC - National Electrical Code | 3 |
| ECONMT 215 | Small Wind Energy Systems Principles and Practices | 3 |
| ECONMT 285 | Directed Study - Electrical Construction and Maintenance | 2 |
| ECONMT 285L | Directed Study, Electrical Construction and Maintenance (Lab) | 2 |
| ECONMT 385 | Directed Study - Electrical Construction and Maintenance | 3 |
| ECONMT 385L | Directed Study, Electrical Construction and Maintenance (Lab) | 3 |
| ECONMT 941 | Cooperative Education -Electrical Construction & Maintenance | 4 |

ELECTRICAL CONSTRUCTION & MAINTENANCE: CONSTRUCTION TECHNICIAN

Certificate of Achievement Major Units: 48

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USEFUL LATTC LINKS:

College Catalog: <http://college.lattc.edu/catalog/>
 Financial Aid Office: <http://college.lattc.edu/financialaid/>
 Counseling Department: <http://college.lattc.edu/counseling/>
 General Education Information: <http://college.lattc.edu/catalog/Construction, Maintenance & Utilities Pathway:>
<http://pathways.lattc.edu/catalog-programs/cmu/>

To register: <http://college.lattc.edu/student/new-students/register-now/>

For additional information consult a LATTC college counselor.