**ELECTRICAL CONSTRUCTION DESIGN & MANAGEMENT (ECDM), AAS**

At Dunwoody College of Technology, the Electrical Construction Design & Management program provides graduates with the knowledge and skills necessary for entry-level employment in the electrical engineering/construction industry.

Graduates of the program start a career as drafters, designers, estimators, or project managers at engineering firms or electrical contractor companies. Students receive training in fundamental electrical theory and application; motors, transformers and generators; electrical control systems; electrical installations and wiring; electrical safety; drafting and designing power, lighting and low voltage systems; lighting calculations; power system analysis; cost estimation; CSI specifications; and project management.

The National Electrical Code (NEC) is studied extensively. Students learn crucial problem-solving skills as they advance through the program. Arts & Sciences curriculum supports the technical skills students learn as well as enhance oral and written communication skills, fundamental math skills, and critical thinking ability.

Students also complete a capstone project that integrates and documents all aspects of drafting, designing, specifying and analyzing, estimating, and managing.

**Credential Earned:** AAS  
**Length of Program:** 2 years (4 semesters)  
**Classes Offered:** Day  
**Available Starts:** Fall Semester; Spring Semester  
**Bachelor's Completion Option(s):** Construction Management (CMGT), Bachelor of Science (https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/construction-management-cmgt-bachelor-science/)  

**Program Outcomes**

- Practice required industry safety standards.
- Demonstrate the wiring of electrical equipment and systems.
- Draft and interpret electrical projects.
- Cite the National Electrical Code for electrical projects.
- Design electrical systems for buildings.
- Estimate electrical construction projects.
- Manage electrical construction and engineering projects.

**Degree Requirements**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH1500</td>
<td>Algebra, Trig &amp; Boolean Algebra</td>
<td>5</td>
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<tr>
<td></td>
<td>Communications</td>
<td>2</td>
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<td></td>
<td>Diversity</td>
<td>2</td>
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<td>Humanities</td>
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**Social Sciences**  
2 credits

**General Electives**  
7 credits

**Technical Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ELEC1111</td>
<td>AC &amp; DC Electrical Lab</td>
<td>5</td>
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<tr>
<td>ELEC1112</td>
<td>AC &amp; DC Electrical Principles</td>
<td>8</td>
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<tr>
<td>ECDM2101</td>
<td>Electrical Theory &amp; Practice - Delta</td>
<td>3</td>
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<tr>
<td>ECDM2102</td>
<td>Design Lab - Delta</td>
<td>3</td>
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<tr>
<td>ECDM2103</td>
<td>Illumination Technology &amp; Design</td>
<td>4</td>
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<tr>
<td>ECDM2201</td>
<td>Electrical Theory &amp; Practice - Omega</td>
<td>3</td>
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<tr>
<td>ECDM2202</td>
<td>Design Lab - Omega</td>
<td>3</td>
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<tr>
<td>ECDM2203</td>
<td>Electrical Estimating</td>
<td>3</td>
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<tr>
<td>CMGT1231</td>
<td>Construction Planning &amp; Scheduling I</td>
<td>3</td>
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<tr>
<td>ECDM2301</td>
<td>Advanced Topics &amp; Technology</td>
<td>3</td>
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<tr>
<td>CSBT2110</td>
<td>Building Codes</td>
<td>3</td>
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<tr>
<td>CMGT1313</td>
<td>Construction Contracts</td>
<td>1</td>
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**Technical Elective (Choose one course):**

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<tr>
<td>ECDM2204</td>
<td>Electrical Field Studies</td>
<td>1</td>
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<tr>
<td>CMGT1901</td>
<td>International AEC Fields &amp; Practices</td>
<td>1</td>
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</tbody>
</table>

**Technical Elective (Choose one course):**

3 credits

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3 credits

**Total Credits:** 66

**Courses**

**Descriptions**

**ELEC1111 | AC & DC Electrical Lab | Laboratory (5 Credits)**  
Investigation and application of electronics and electrical alternating and direct current principles and theories utilizing electrical math, basic schematics, test equipment, circuit connections, and analysis techniques to identify and predict electrical and electronic component and circuit behaviors.  
**Corequisite(s):** ELEC1112

**ELEC1112 | AC & DC Electrical Principles | Lecture (8 Credits)**  
Examination of electronics and electrical alternating and direct current principles and theories utilizing electrical math, basic schematics, and circuit analysis techniques to identify and predict electrical and electronic component and circuit behaviors.  
**Corequisite(s):** ELEC1111

**ECDM2101 | Electrical Theory & Practice - Delta | Lecture (3 Credits)**  
Principles and practices of electrical system design. Design and calculations involved in electrical construction. Apply occupant perspectives, construction techniques, and relevant codes. Examine the entire electrical system, with a focus on branch circuits and low voltage systems.  
**Prerequisite(s):** ELEC1111  
**Corequisite(s):** ECDM2102

**ECDM2102 | Design Lab - Delta | Laboratory (3 Credits)**  
Electrical design of a simulated building project. This project covers utility to outlets, with a focus on branch circuits and low voltage systems. Practical design implementation is emphasized. Detailed documentation of all aspects of the project. CAD, Revit, and other modeling and analysis software is used to produce a final portfolio.  
**Prerequisite(s):** ELEC1111  
**Corequisite(s):** ECDM2101 ECDM2103
ECDM2103 | Illumination Technology & Design | Lec/Lab (4 Credits)
Interior and exterior applications of lighting. Discussion of energy code, including control system implementation and lighting power density. Analyze photometric data and their application. Use 3D modeling to design layouts, taking into account fixture selection and basic aesthetic considerations.
Prerequisite(s): ELEC1111
Corequisite(s): ECDM2102

ECDM2201 | Electrical Theory & Practice - Omega | Lecture (3 Credits)
Principles and practices of electrical system design. Design and calculations involved in electrical construction. Apply occupant perspectives, construction techniques, and relevant codes. Examine the entire electrical system, with a focus on distribution, such as transformers, generators, panels, and feeders.
Prerequisite(s): ELEC1111
Corequisite(s): ECDM2202

ECDM2202 | Design Lab - Omega | Laboratory (3 Credits)
Electrical design of simulated building project. This project covers utility to outlets, with a focus on distribution, such as transformers, generators, panels and feeders. Practical design implementation is emphasized. Detail documentation of all aspects of the project. Use contemporary 2D, 3D, and other modeling and analysis software to produce a final portfolio.
Prerequisite(s): ELEC1111
Corequisite(s): ECDM2201

ECDM2203 | Electrical Estimating | Lecture (3 Credits)
Detailed estimation and project management of electrical construction projects using industry software. Scheduling and bidding of construction projects and project documentation.

ECDM2204 | Electrical Field Studies | Seminar (1 Credit)
Explore electrical systems in completed construction, and converse with owners and facility managers to discuss implications of design. Tour in-progress projects, and discuss project management obstacles and best practices.

CMGT1901 | International AEC Fields & Practices | Travel Study (1 Credit)
Introduction to the international aspects of architecture, engineering, and construction industries. Emphasis on inter-cultural communication, cultural intelligence, and globalization of technology. Four traditional classroom sessions (held before travel) include lectures, seminar discussions, case studies, participatory activities, and guest speaker presentations. Coursework during travel is primarily experiential based and includes fieldwork, group projects and community based service-learning. Travel expenses are incurred by the student.

CMGT1231 | Construction Planning & Scheduling | Lec/Lab (3 Credits)
Analyze a sequence of construction tasks using network diagrams, Gantt charts, and the critical path method to create a project schedule.
Prerequisite(s): CMGT1131

ECDM2301 | Advanced Topics & Technology | Lecture (3 Credits)
Building on the design theory and labs, in depth analysis of specific electrical design applications, such as residential, medical, data centers, industrial, and other construction. Examine emerging technologies, such as renewable energy and building automation.
Prerequisite(s): ELEC1111

ECDM2302 | Design Capstone | Laboratory (3 Credits)
Integration of all aspects of electrical construction design and management, including drafting, designing, estimating, and managing projects, to create a complete comprehensive capstone project. The capstone project is presented and reviewed by industry experts and leaders, providing valuable feedback from their own experiences.
Prerequisite(s): ECDM2102 And ECDM2202

ECDM2303 | ECDM Co-op/Internship | Directed Study (3 Credits)
The Co-op or Internship course allows students to gain credit for work experience. In either option, students must have faculty approval before registering for this course. The Co-op Track is an educational experience combining academic and career interests with industry experience, offering the opportunity to test career interests, such as design, estimating, or project management. Students are paired with one or two companies over the course of a semester. Through the Co-op Option students are empowered to create a career plan enabling them to make well-informed choices for early career success. The Internship Track is a work experience in a typical company scenario. Students work on real and current projects that allow them to explore the difference in scope and types of work that exist outside the academic classroom.
Prerequisite(s): ECDM2102 And ECDM2203

CSBT2110 | Building Codes | Lecture (3 Credits)
Select and apply appropriate federal, state/provincial and municipal codes, standards and accessibility guidelines using industry standards with an emphasis on Life Safety Codes and the ADA to prepare for licensing exams, meet with codes officials, and to design spaces that enhance the health, safety and welfare of the general public.

CMGT1313 | Construction Contracts | Seminar (1 Credit)
Introduction to construction administration documents, systems, and procedures to understand the construction contracting process including planning and scheduling the job, bidding through closeout to meet project requirements.

MATH1500 | Algebra, Trig & Boolean Algebra | Lecture (5 Credits)
Polynomials, proportions and linear equations. Trig functions, graphs, and vectors. Binary, octal and hexadecimal number systems. Boolean Algebra and mapping.

General Education: Mathematics