

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; Distance Learning

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/>) | Business Management Leadership (AMGT), Bachelor of Science (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/construction-management-cmgt-bachelor-science/>)

Program Outcomes

- An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline.
- An ability to design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline.
- An ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
- An ability to conduct standard tests, measurements, and experiments, and to analyze and interpret the results.
- An ability to function effectively as a member of a technical team.

Degree Requirements

Code	Title	Credits
General Requirements		
MATH1000	Algebra & Trigonometry	3
MATH1250	Boolean Algebra	3
	Communications Elective	3
	Humanities Elective	3
	Physical/Natural Science w/Lab Elective	3
	Social Sciences Elective	3
	General Elective	3
Technical Requirements		
ECDM2001	Electrical Lab	3
ECDM2002	Electrical Principles	4
ECDM2003	Introduction to 3D Drafting & Design	2
ELEC1114	Introduction to the NEC	1
CMGT2111	Building Codes	3
ECDM2102	Design Lab - Delta	3
ECDM2104	Illumination Technology & Design	2
ECDM2105	Residential & Commercial Principles	3
ECDM2202	Design Lab - Omega	3
ECDM2205	Electrical Estimating	3
ECDM2206	Commercial & Industrial Principles	3
ECDM2208	Project Management	2
ECDM2304	Design Capstone	3
ECDM2305	Electrical Planning & Scheduling	3
ECDM2306	Risk Management	1
ECDM2307	Advanced Estimating	2
Total Credits		62

Courses

Descriptions

ECDM2001 | Electrical Lab | Laboratory (3 Credits)

Investigate and apply electrical principles and theories utilizing electrical math, basic schematics, test equipment, circuit connections, and analysis techniques to identify and predict electrical circuit behaviors for a greater understanding of electricity.

Corequisite(s): ECDM2002

ECDM2002 | Electrical Principles | Lecture (4 Credits)

Examine electrical principles and theories utilizing electrical math, basic schematics, and circuit analysis techniques to identify and predict electrical circuit behaviors and a greater understanding of how electricity works.

Corequisite(s): ECDM2001

ECDM2003 | Introduction to 3D Drafting & Design | Laboratory (2 Credits)

Examine and implement construction graphics and conventions into electrical designs using industry specific 3D drawing software.

ELEC1114 | Introduction to the NEC | Seminar (1 Credit)

Introduction to the National Electrical Code through investigation of the history to formulate a necessary base knowledge in which to develop basic skills and understanding of the NEC and how it applies to the electrical applications in the field.

CMGT2111 | 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.

ECDM2102 | Design Lab - Delta | Laboratory (3 Credits)

Electrical design of a simulated residential and commercial building project. This project covers utility to outlets, with a focus on branch circuits and low voltage systems utilizing owner specifications and building and electrical codes. 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.

ECDM2104 | Illumination Technology & Design | Lecture/Laboratory (2 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 and use 3D modeling to design layouts, taking into account luminaire selection and basic aesthetic considerations.

ECDM2105 | Residential & Commercial Principles | Lecture (3 Credits)

Principles and practices of electrical system design. Design and calculations involved in electrical construction for residential and commercial occupancies. Apply occupant perspectives, construction techniques, and relevant codes. Examine the entire electrical system, with a focus on branch circuits, power distribution and low voltage systems.

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 for a commercial and industrial project. 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.

ECDM2205 | Electrical Estimating | Lecture/Laboratory (3 Credits)

Detailed estimation and project management of electrical construction projects using industry software. Scheduling and bidding of construction projects and project documentations.

ECDM2206 | Commercial & Industrial Principles | Lecture (3 Credits)

Principles and practices of electrical system design for commercial and industrial applications. Design and calculations involved in electrical construction will be used. 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 and PLC controls.

ECDM2208 | Project Management | Seminar (2 Credits)

Investigate the roles and responsibilities for construction project managers. Examine the ethics within the decision-making process from the request for proposal through close-out.

ECDM2304 | Design Capstone | Capstone (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.

ECDM2305 | Electrical Planning & Scheduling | Lecture/Laboratory (3 Credits)

Create a sequence of construction tasks using industry methods to generate construction schedules with preplanned and design build work-flow analysis. Examine potential conditions that impact planning of projects including supply chains, logistics of materials and equipment, and the workforce.

ECDM2306 | Risk Management | Seminar (1 Credit)

Investigate the process of identifying, assessing, and managing risks associated with a construction project from the design phase through close-out through analysis of electrical projects.

ECDM2307 | Advanced Estimating | Lecture/Laboratory (2 Credits)

Advanced analysis of cost estimating and bidding methods using industry practices and methods to oversee and manage the successful procurement of electrical construction projects.

MATH1000 | Algebra & Trigonometry | Lecture (3 Credits)

Real numbers and polynomials, exponents and radicals, fractional equations; proportions and linear equations; trigonometric functions, solutions of triangles, radians, trig functions graphs, vectors, and basic identities.

General Education: Mathematics

MATH1250 | Boolean Algebra | Lecture (3 Credits)

Binary, octal and hexadecimal number systems. Boolean algebra and mapping.

General Education: Mathematics