



Course Outline

Course Name: Electrical CADD (TECH 155)

Academic Period: 2022 - 2023

Faculty:

Faculty Availability:

Associate Dean:

Shaun Ghafari

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Schedule Type Code:

Land Acknowledgement

Humber College is located within the traditional and treaty lands of the Mississaugas of the Credit. Known as Adoobiigok [A-doe-bee-goke], the "Place of the Alders" in Michi Saagiig [Mi-Chee Saw-Geeg] language, the region is uniquely situated along Humber River Watershed, which historically provided an integral connection for Anishinaabe [Ah-nish-nah-bay], Haudenosaunee [Hoeden-no-shownee], and Wendat [Wine-Dot] peoples between the Ontario Lakeshore and the Lake Simcoe/Georgian Bay regions. Now home to people of numerous nations, Adoobiigok continues to provide a vital source of interconnection for all.

Equity, Diversity and Inclusion Statement

Humber College and the University of Guelph-Humber (Humber) are leaders in providing a learning, working and living environment that recognizes and values equity, diversity and inclusion in all its programs and services. Humber commits to reflect the diversity of the communities the College serves. Students, faculty, support and administrative staff feel a sense of belonging and have opportunities to be their authentic selves.

Faculty or Department	Faculty of Applied Sciences & Technology
Course Name:	Electrical CADD (TECH 155)
Pre-Requisites	none
Co-Requisites	none
Equates	none
Restrictions	none
Credit Value	3
Total Course Hours	42

Developed By:

Prepared By:

Approved by:

Shaun Ghafari

A handwritten signature in black ink, appearing to read 'S. Ghafari'.

Humber Learning Outcomes (HLOs) in this course.

The HLOs are a cross-institutional learning outcomes strategy aimed at equipping Humber graduates with the employability skills, mindsets, and values they need to succeed in the future of work. To explore all the HLOs, please consult the [Humber Learning Outcomes framework](#).

Course Description

N/A

Course Rationale

AutoCAD is leading computer-aided-design software used in electrical design and many other applications. This course prepare students with knowledge for drawing wire schematic and panel layout drawings.

Course Learning Method(s)

- Action Learning
- Group or Team Work
- Lecture

Learning Outcomes

- Explore the AutoCAD program by describing the role of the CAD software in the industrial environment and performing all outcomes according to industrial standards.
- Identify basics of geometric construction tools by utilizing simple drawing operations, different coordinate systems and position geometry.
- Identify standard types of lines, paper sizes, the geometric objects by using the corresponding commands.
- Describe the geometric construction and editing tools to create and modify geometric objects using the dynamic Input interface and corresponding commands.
- Apply the object properties tools to control the appearance of objects and to organize the drawing.
- Draw the 3D orthographic views from a 3D object to complete a complex drawing.
- Set up different types of dimensions on the objects by creating and modifying the dimension styles to control the appearance of dimensions.
- Create viewports and blocks from different objects.
- Identify electrical components and their corresponding symbols in AutoCAD Electrical program to create electrical layouts for residential, commercial and industrial applications.
- Create single-phase and three-phase motor control diagrams and their associated wiring schematics using Build Circuit feature.
- Create relay logic diagrams, schematics and PLC panel layout using the Schematic Tab and PLC Layout Tab.

Assessment Weighting

Assessment	Weight
Final Exam	
Test 2	25%
In-class Activity	
Tutorial Assignments	20%
Design/Model	
Lab Assignments- In process evaluation	30%
Midterm Exam	

Assessment	Weight
Test 1	25%
Total	100%

Modules of Study

Module	Course Learning Outcomes	Resources	Assessments
Introduction: Getting Started	<ul style="list-style-type: none"> Explore the AutoCAD program by describing the role of the CAD software in the industrial environment and performing all outcomes according to industrial standards. 	<ul style="list-style-type: none"> Textbook (Introduction Part) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Geometric Construction Basics	<ul style="list-style-type: none"> Identify basics of geometric construction tools by utilizing simple drawing operations, different coordinate systems and position geometry. 	<ul style="list-style-type: none"> Textbook (Chapter 1) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Basic Object Construction Tools	<ul style="list-style-type: none"> Identify standard types of lines, paper sizes, the geometric objects by using the corresponding commands. 	<ul style="list-style-type: none"> Textbook (Chapter 2) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Geometric Construction and Editing Tools	<ul style="list-style-type: none"> Describe the geometric construction and editing tools to create and modify geometric objects using the dynamic Input interface and corresponding commands. 	<ul style="list-style-type: none"> Textbook (Chapter 3) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Object Properties and Organization	<ul style="list-style-type: none"> Apply the object properties tools to control the appearance of objects and to organize the drawing. 	<ul style="list-style-type: none"> Textbook (Chapter 4) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation

Module	Course Learning Outcomes	Resources	Assessments
Orthographic Views in Drawing	<ul style="list-style-type: none"> Draw the 3D orthographic views from a 3D object to complete a complex drawing. 	<ul style="list-style-type: none"> Textbook (Chapter 5) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Basic Dimensioning and Notes Speed Control	<ul style="list-style-type: none"> Set up different types of dimensions on the objects by creating and modifying the dimension styles to control the appearance of dimensions. 	<ul style="list-style-type: none"> Textbook (Chapter 6) 	<ul style="list-style-type: none"> Test 1 Tutorial Assignments Lab Assignments- In process evaluation
Plotting and Creating Viewports and Blocks	<ul style="list-style-type: none"> Create viewports and blocks from different objects. 	<ul style="list-style-type: none"> Textbook (Chapter 7) 	<ul style="list-style-type: none"> Test 2 Tutorial Assignments Lab Assignments- In process evaluation
Getting Started with AutoCAD Electrical	<ul style="list-style-type: none"> Identify electrical components and their corresponding symbols in AutoCAD Electrical program to create electrical layouts for residential, commercial and industrial applications. 	<ul style="list-style-type: none"> Lecture Notes Supplemental Resources 	<ul style="list-style-type: none"> Test 2 Tutorial Assignments Lab Assignments- In process evaluation
Create Wire Schematic, Single-phase, and Three-phase Schematic Diagrams	<ul style="list-style-type: none"> Create single-phase and three-phase motor control diagrams and their associated wiring schematics using Build Circuit feature. 	<ul style="list-style-type: none"> Lecture Notes Supplemental Resources 	<ul style="list-style-type: none"> Test 2 Tutorial Assignments Lab Assignments- In process evaluation
Create Panel Layout and PLC Layout Drawings	<ul style="list-style-type: none"> Create relay logic diagrams, schematics and PLC panel layout using the Schematic Tab and PLC Layout Tab. 	<ul style="list-style-type: none"> Lecture Notes Supplemental Resources 	<ul style="list-style-type: none"> Test 2 Tutorial Assignments Lab Assignments- In process evaluation

Required Resources

Shih, R. H. (2018). *AutoCAD 2018 Tutorial First Level: 2D Fundamentals*. Schroff Development Corporation (SDC) Publications.

Supplemental Resources

Tickoo S. (2021) *AutoCAD Electrical 2021 for Electrical Control Designers*, (12th Ed.) CADCIM Technologies

Essential Skills

Section	Skills	Measurement	Details
Communication	<ul style="list-style-type: none"> • Reading • Writing • Speaking • Listening • Presenting • Visual Literacy 	Reinforce and measure	<ul style="list-style-type: none"> • Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. Respond to written, spoken, or visual messages in a manner that ensures effective communication. • A combination of summative and formative assessments, such as tests, quizzes, lab reports, and assignments has been applied to evaluate the learners.
Numeracy	<ul style="list-style-type: none"> • Conceptualizing 	Teach and measure	<ul style="list-style-type: none"> • Execute mathematical operations accurately. • A combination of summative and formative assessments, such as tests, quizzes, lab reports, and assignments has been applied to evaluate the learners.
Critical Thinking and Problem-Solving	<ul style="list-style-type: none"> • Analysing • Decision-Making • Creative and Innovative Thinking 	Reinforce and measure	<ul style="list-style-type: none"> • Apply a systematic approach to solve problems. Use a variety of thinking skills to anticipate and solve problems. • A combination of summative and formative assessments, such as tests, quizzes, lab reports, and assignments has been applied to evaluate the learners.
Information Management	<ul style="list-style-type: none"> • Selecting and using appropriate tools and technology for a task or project • Computer literacy 	Reinforce and measure	<ul style="list-style-type: none"> • Locate, select, organize, and document information using appropriate technology and information systems. Analyze, evaluate, and apply relevant information from a variety of sources. • A combination of summative and formative assessments, such as tests, quizzes, lab reports, and assignments has been applied to evaluate the learners.

Section	Skills	Measurement	Details
Personal Skills	<ul style="list-style-type: none"> Managing self Engaging in reflective practice Demonstrating personal responsibility 	Reinforce and measure	<ul style="list-style-type: none"> Manage the use of time and other resources to complete projects. Take responsibility for one's own actions, decisions, and consequences. A combination of summative and formative assessments, such as tests, quizzes, lab reports, and assignments has been applied to evaluate the learners.

Prior Learning Assessment & Recognition (PLAR)

Prior Learning Assessment and Recognition (PLAR) is the formal evaluation and credit-granting process whereby candidates may obtain credits for prior learning. Prior learning includes the knowledge competencies and skills acquired, in both formal and informal ways, outside of post-secondary education. Candidates may have their knowledge, skills and competencies evaluated against the learning outcomes as defined in the course outline. Please review the [Assessment Methods Glossary](#) for more information on the Learning Portfolio assessment methods identified below.

The method(s) that are used to assess prior learning for this course may include:

- Challenge Exam (results recorded as a % grade and added to student's CGPA)
- Skills Test

Please contact the Program Coordinator for more details.

Academic Regulations

It is the student's responsibility to be aware of the College Academic Regulations. The Academic Regulations apply to all applicants to Humber and all current students enrolled in any program or course offered by Humber, in any location. Information about academic appeals is found in the [Academic Regulations](#).

Anti-Discrimination Statement

At Humber College, all forms of discrimination and harassment are prohibited. Students and employees have the right to study, live and work in an environment that is free from discrimination and harassment. If you need assistance on concerns related to discrimination and harassment, please contact the [Centre for Human Rights, Equity and Inclusion](#) or the [Office of Student Conduct](#).

Accessible Learning Services

Humber strives to create a welcoming environment for all students where equity, diversity and inclusion are paramount. Accessible Learning Services facilitates equal access for students with disabilities by coordinating academic accommodations and services. Staff in Accessible Learning Services are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. If you require academic accommodations, contact:

[Accessible Learning Services](#)

North Campus: (416) 675-6622 X5090

Lakeshore Campus: (416) 675-6622 X3331

Academic Integrity

Academic integrity is essentially honesty in all academic endeavors. Academic integrity requires that students avoid all forms of academic misconduct or dishonesty, including plagiarism, cheating on tests or exams or any misrepresentation of academic accomplishment.

Disclaimer

While every effort is made by the professor/faculty to cover all material listed in the outline, the order, content, and/or evaluation may change in the event of special circumstances (e.g. time constraints due to inclement weather, sickness, college closure, technology/equipment problems or changes, etc.). In any such case, students will be given appropriate notification in

writing, with approval from the Dean (or designate) of the School.

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