HUMBER

Course Outline

Course Name: Operator Interface, Design and Control (ELEC 325)

Academic Period: 2023 - 2024

Faculty:

Faculty Availability:

Associate Dean:
Shaun Ghafari
shaun.ghafari@humber.ca

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:	Operator Interface, Design and Control (ELEC 325)
Pre-Requisites	ELEC 253
Co-Requisites	none
Equates	none
Restrictions	none
Credit Value	3
Total Course Hours	42

Developed By:	Prepared By:	Approved by:
		Shaun 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.

- Systems Thinking
- Critical Thinking
- Communication
- Digital Fluency
- Professionalism
- Strategic Problem-Solving

Course Description

Course Rationale

The human machine interface is equipment where communication between humans and machines occurs. The objective of this interaction is effective operation and control of the machine on the user's end, and feedback from the machine, which helps the operator in making operational decisions.

Course Learning Method(s)

- Lecture

Learning Outcomes

- Demonstrate the programming standards, software requirements, configuration of screen, initial configuration .
- Analyze application settings, terminal set-up, communication set-up, status tags and control tags
- Interpret system applications, description, text editor, tag editor; along with uploading and downloading of the tags
- Compare and contrast screens and objects, start-up, screen addition, insertion of objects and switching between screens by analyzing properties, states, and other options
- Evaluate alarms, alarm set-up, trigger and message, computer real time interactive graphical displays in addition with configuration of digital alarms and display alarm information
- Interpret how to create, edit, customize the project by defining events and evaluating added security
- Evaluate a tag database, the use of the tag editor, tag types and data source precisely
- Analyze graphic displays which includes creating, editing, setting up display behavior and properties
- Synthesize the animation of graphic displays with the attachemnt animation to graphic object, animation to OLE objects, button configure
- Evaluate testing and running of the project, project paths while monitoring tag values, viewing alarms and activity log
- Synthesize the use, creation of expressions using expression editor, tags, constants, operations with their formatting
- Evaluate the OPC Server Application with the creation of a file and setting up communication settings.

Assessment Weighting

Assessment	Weight
Final Exam	
Final Exam	35%
In-class Activity	
Lab - In process Evaluation	30%
Midterm Exam	
Mid-term Exam	35%
Total	**100%**

Modules of Study

Module	Course Learning Outcomes	Resources	Assessments
Introduction	• Demonstrate the programming standards, software requirements, configuration of screen, initial configuration .	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation
Communications: Communication of HMI (Panel Views) in a Network and their Configuration	• Analyze application settings, terminal set-up, communication set-up, status tags and control tags	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation
Tag Database	• Interpret system applications, description, text editor, tag editor; along with uploading and downloading of the tags • Evaluate a tag database, the use of the tag editor, tag types and data source precisely	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation
Screen Configuration	• Compare and contrast screens and objects, start-up, screen addition, insertion of objects and switching between screens by analyzing properties, states, and other options	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam

Module	Course Learning Outcomes	Resources	Assessments
Alarms and Trends	• Evaluate alarms, alarm set-up, trigger and message, computer real time interactive graphical displays in addition with configuration of digital alarms and display alarm information	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam
Troubleshooting	• Interpret system applications, description, text editor, tag editor; along with uploading and downloading of the tags	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam
Introduction to RSView32	• Demonstrate the programming standards, software requirements, configuration of screen, initial configuration .	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation
Editing	• Interpret how to create, edit, customize the project by defining events and evaluating added security • Analyze graphic displays which includes creating, editing, setting up display behavior and properties • Synthesize the animation of graphic displays with the attachemnt animation to graphic object, animation to OLE objects, button configure • Evaluate testing and running of the project, project paths while monitoring tag values, viewing alarms and activity log	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam
Use of Expressions	• Synthesize the use, creation of expressions using expression editor, tags, constants, operations with their formatting	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam
OPC Server Application	• Evaluate the OPC Server Application with the creation of a file and setting up communication settings.	Blackboard and class Notes	• Mid-term Exam • Lab - In process Evaluation • Final Exam

Required Resources

Rosenberg, M. (2015). Electrical: Based on the Ontario Electrical Safety Code 26th Edition. Canada: Orderline.

Essential Skills

Section	Skills	Measurement	Details
Communication	• Writing • Speaking • Visual Literacy	Reinforce and measure	• Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. • Tests, assignments, reports, presentations.
Critical Thinking and Problem-Solving	• Analysing • Evaluating	Reinforce and measure	• Apply a systematic approach to solve problems. • Tests, assignments, reports, presentations.
Information Management	• Gathering and managing information • Selecting and using appropriate tools and technology for a task or project	Reinforce and measure	• Locate, select, organize, and document information using appropriate technology and information systems. • Tests, assignments, reports, presentations.
Interpersonal Skills	• Relationship management	Reinforce and measure	• Show respect for diverse opinions, values belief systems, and contributions of others. • Tests, assignments, reports, presentations.
Personal Skills	• Managing self • Managing change and being flexible and adaptable	Reinforce and measure	• Manage the use of time and other resources to complete projects. • Tests, assignments, reports, presentations.
Communication	• Reading • Listening • Presenting	Reinforce and measure	• Respond to written, spoken, or visual messages in a manner that ensures effective communication. • Tests, assignments, reports, presentations.
Critical Thinking and Problem-Solving	• Synthesizing • Decision-Making • Creative and Innovative Thinking	Reinforce and measure	• Use a variety of thinking skills to anticipate and solve problems. • Tests, assignments, reports, presentations.

Section	Skills	Measurement	Details
Information Management	• Gathering and managing information • Computer literacy • Internet skills	Reinforce and measure	• Analyze, evaluate, and apply relevant information from a variety of sources. • Tests, assignments, reports, presentations.
Personal Skills	• Engaging in reflective practice • Demonstrating personal responsibility	Reinforce and measure	• Take responsibility for one's own actions, decisions, and consequences. • Tests, assignments, reports, presentations.

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:

- Learning Portfolio (results reflected as SAT and not added to student's CGPA)
- Skills Test
- Interview
- Oral exam

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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See the **Humber Libraries website** for additional information regarding copyright and for details on allowable limits.
