Algonquin College

CST8283
Business Programming

Course Outline

2022-2023

Pre-requisite(s)	CST8116
Co-requisite(s)	N/A
Prepared by	Hesham Saadawi
Approved by	Sandra Brancatelli, M.Eng., P.Eng., Academic Chair, ICT-Applications & Programming
Normative hours	56.00
Grading system	A+ Through F
Experiential Learning	No

Applicable Program(s)	Level	Core/Elective
Multiple Programs	Multiple Levels	Multiple Core/Elective

Course Description

Information systems built using the COBOL programming language support important institutions such as government services and the banking sectors. Students create COBOL programs in a business environment using structured methodology in the latest visual programming environment. Topics include output design, logic design tools, structured, top-down and modular coding, testing and debugging, and documentation. Students examine interactive, file-based, and database processing of data related to business problems. Arrays, indexed files, database access and sub-programs are explored.

Vocational Learning Outcomes

This course provides the opportunity for you to achieve the following outcomes:

0006X01FWO - Computer Eng. Technology - Comp. Science

VLO 4 Analyze, develop and maintain robust computing system solutions through validation testing and industry best practices. (A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationship. (A)

VLO 6 Select and apply strategies for personal and professional development to enhance work performance. (A)

VLO 8 Adhere to ethical, social media, legal, regulatory and economic requirements and/or principles in the development and management of the computing solutions and systems. (T, A)

VLO 14 Develop, test and maintain software applications for systems integration. (T, A)

0006X03FWO - Computer Eng. Technology - Comp. Science

VLO 4 Analyze, develop and maintain robust computing system solutions through validation testing and industry best practices. (A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationship. (A)

VLO 6 Select and apply strategies for personal and professional development to enhance work performance. (A)

VLO 8 Adhere to ethical, social media, legal, regulatory and economic requirements and/or principles in the development and management of the computing solutions and systems. (A)

VLO 14 Develop, test and maintain software applications for systems integration. (T, A)

0336X01FWO - Computer Programming

VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)

VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)

VLO 3 Implement and maintain secure computing environments. (T, A)

VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. (T, A)

0336X03FWO - Computer Programming

VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)

VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)

VLO 3 Implement and maintain secure computing environments. (T, A)

VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. (T, A)

0336X07PAO - Computer Programming

VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)

VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)

VLO 3 Implement and maintain secure computing environments. (T, A)

VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. (T, A)

0336X09FAO - Computer Programming

VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)

VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)

VLO 3 Implement and maintain secure computing environments. (T, A)

VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)

VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. (T, A)

1561X01FWO - Computer Programming and Analysis

1561X03FWO - Computer Programming and Analysis

Assessment Levels —T: Taught **A**: Assessed **CP**: Culminating Performance

Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

EES 1 Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. (T, A)

EES 2 Respond to written, spoken or visual messages in a manner that ensures effective communication. (T, A)

EES 3 Execute mathematical operations accurately. (T, A)

EES 4 Apply a systematic approach to solve problems. (T, A)

EES 5 Use a variety of thinking skills to anticipate and solve problems. (T, A)

EES 9 Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals. (T, A)

EES 10 Manage the use of time and other resources to complete projects. (T, A)

EES 11 Take responsibility for one's own actions, decisions and consequences. (T, A)

Assessment Levels —T: Taught **A**: Assessed **CP**: Culminating Performance

Course Learning Requirements / Embedded Knowledge and Skills

When you have earned credit for this course, you will have demonstrated the ability to:

1. Write COBOL program code and simple JCL , using prescribed design documents and top-down structured programming techniques.

- Draft simple JCL code typically 4 to 5 step job streams with straight forward file and program references, and simple decision constructs.
- identify data records/structuresto be manipulated in a COBOL program.
- define and code data structures in COBOL for sequential files.
- write commands in COBOLto access and manipulate data.
- design and describe/draft output formats to be coded in a COBOL program.
- Using COBOL commands/program to access and update data records in sequential files and indexed sequential files for random access.
- write COBOL program code which adheres to a published standard.

2. Construct algorithms and organize programs into cohesive modules.

- use a phased development approach.
- create hierarchy charts and other narratives or diagrams to represent program organization.

3. Produce document(s) that represent the logic applied to data, given program specifications.

- create hierarchy charts, structured flowcharts and/or pseudocode (PDL) to document logic.
- use appropriate logic control structures.

4. Produce tested COBOL code that executes correctly and consistently.

- develop comprehensive test data that includes valid and invalid data with appropriate results.
- ensure that all output is correct, including appropriate user messages.
- perform iterative testing to locate and eliminate logic problems.

5. Prepare program documentation using prescribed program specifications.

- write program narrative to describe the function of a program.
- insert useful comments into a COBOL program source code at appropriate locations.
- ensure that documentation meets specified standards.

6. Debug COBOL program problems using manual methods and computerized tools.

- Identify and correct errors in provided JCL code.
- check for integrity of data.
- use interactive debugging aids as provided in the COBOL integrated development environment (IDE)
- seek help in a timely fashion.

7. Demonstrate facility with the prescribed operation system.

- execute individual system commands for file management, system utilities.
- develop and implement data back-up and restore strategies.

Learning Resources

RECOMMENDED TEXT
COBOL from Micro to Mainframe; Grauer, Villar, Buss; Published by Prentice-Hall. (ISBN: 0-13-790817-2).

OTHER REFERENCE TEXTS
COBOL for the 21st Century; Stern, Stern and Ley; Published by Wiley. (ISBN 0-471-07321-0)

A list of other text references will be provided at the begining of the course. There will be presentation material and online sessions through Blackboard throughout the course.There is also a variety of reference material available on the internet covering the material in this course.

OTHER LEARNING MATERIAL
Online learning sessions filed in Brightspace which constitute approximately 25% of the course deliverables
Presentation slide material in Powerpoint will be available in Brightspace.
OpenCobol IDE, Microfocus COBOL IDE and Eclipse IDE are available from download.

Learning Activities

Samples of learning activities include:

- attendance at lecture sessions;
- reading and study outside of classroom hours;
- completion of homework and lab assignments involving the use of COBOL programs;
- development of correctly functioning and properly documented programs;
- in-class exercises;
- completion of on-line lectures (hybrid activity) covering COBOL structures and language components, JCL and Testing concepts.

Pre-defined Evaluation / Earning Credit

The following list provides evidence of this course's learning achievements and the outcomes they validate:

Assignment(s) (25%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, CLR 6, EES 1, EES 2, EES 3, EES 4, EES 5, EES 9, EES 10, EES 11

Final Exam (35%)

Validates Outcomes: CLR 1, CLR 2, CLR 4, CLR 6, EES 2, EES 3, EES 4, EES 5, EES 10, EES 11

Midterm Exam(s) (25%)

Validates Outcomes: CLR 1, CLR 2, CLR 4, CLR 6, EES 1, EES 2, EES 3, EES 4, EES 11

Lab Activity(ies) (15%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 6, CLR 7, EES 1, EES 2, EES 3, EES 4, EES 5, EES 9, EES 10, EES 11

Prior Learning Assessment and Recognition

Students who wish to apply for Prior Learning Assessment and Recognition (PLAR) need to demonstrate competency at a post-secondary level in all outlined course learning requirements. Evidence of learning achievement for PLAR candidates includes:

- Portfolio
- Challenge Exam
- Project/Assignment
- Other: Other prior learning assessment may be required including the development of specific program logic diagrams and/or narratives and test documentation. This will be considered depending on the specifics of the request for the PLAR.

Other Information

Grade Scheme

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90% - 100%	4.0	A	85% - 89%	3.8
A-	80% - 84%	3.6	B+	77% - 79%	3.3

B	73% - 76%	3.0	B-	70% - 72%	2.7
C+	67% - 69%	2.3	C	63% - 66%	2.0
C-	60% - 62%	1.7	D+	57% - 59%	1.4
D	53% - 56%	1.2	D-	50% - 52%	1.0
F	0% - 49%	0	FSP	0	0

Course Related Information

Please refer to the Course Section Information (CSI) / weekly schedule for specific course-related information as provided by your professor.

The theoretical assessment consists of a Midterm and Final Exam combined and is worth 60 course marks. To pass the course a student must get at least 30 marks on the theoretical assessment.

The laboratory excercises combined are worth 15 course marks. To pass the course a student must get at least 7.5 marks on the laboratory excercises combined.

The course assignments combined are worth 25 course marks. To pass the course a student must get at least 12.5 marks on the assignments combined.

Department Information

STUDENT ACADEMIC RESPONSIBILITIES

Each student is responsible for:
• Knowing the due dates for marked out-of-class assignments.
• Attending all classes and knowing the dates of in-class marked assignments and exercises.
• Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.
• Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing.
• Regularly checking both Brightspace announcements as well as one's Algonquin e-mail account for important messages from both professors and college administration.
• Participating in on-line and classroom exercises and activities as required.
• Retaining course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Department Grading Policy - For all courses that have both a theory and practical (lab) component, students must have a grade of at least 50% (or "D-") on both the theory component as well as in the practical (i.e. lab) component in order to achieve a passing grade in the course. i.e. Even if your combined grade exceeds 50% for the entire course, if you fail either the theory component or the practical component, you will not achieve a passing grade in the course.

Lab/Practical Assessment Demonstration "Demo" Requirements - Certain courses require students to demo their work after it has been submitted. These will be scheduled by the professor and involve 1-2 rudimentary questions to assure the professor that the work submitted by the student is their own. Demos are not graded items - the work submitted is graded. However, where demos are required, if a student does not demo their work, the work will not be graded (i.e. grade of 0 on the lab or practical assessment).

Department Academic Dishonesty Policy - Academic Integrity is very important to all of our faculty and administrative staff and as such, measures have been put into place to detect all forms of academic dishonesty, including plagiarism of code. If plagiarism is detected by a professor, the incident will be reported and investigated. If the findings of the investigation are that a student has submitted plagiarized work as their own, they will be subject to the following policy:

1. The first offence will result in the plagiarized assessment being assigned a grade of 0.
2. The second offence will result in the assignment of a grade of F for the course.
3. The third offence will result in removal of a student from the program of study.

Harassment/Discrimination/Violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability-related), discrimination (direct or indirect), or violence, whether involving a professor and a student or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College Policies - HR22 and SA07.
Harassment means one or a series of vexatious comment(s) (whether done verbally or through electronic means), or conduct related to one or more of the prohibited grounds that is known or ought reasonably to be known to be unwelcome/unwanted, offensive, intimidating, derogatory or hostile. This may include, but is not limited to: gestures, remarks, jokes, taunting, innuendo, display of offensive materials, offensive graffiti, threats, verbal or physical assault, stalking, slurs, shunning or exclusion related to the prohibited grounds.

For further information, a copy of the official policy statement can be obtained from the Student Association.

Violation of the Copyright Act
General – The Copyright Act makes it an offence to reproduce or distribute, in whatever format, any part of a publication without the prior written permission of the publisher. For complete details, see the Government of Canada website at http://laws.justice.gc.ca/en/C-42 . Make sure you give it due consideration, before deciding not to purchase a textbook or material required for your course.

Software Piracy - The Copyright Act has been updated to include software products. Be sure to carefully read the licensing agreement of any product you purchase or download, and understand the terms and conditions covering its use, installation and distribution (where applicable). Any infringement of licensing agreement makes you liable under the law.

Disruptive Behaviour is any conduct, or threatened conduct, that is disruptive to the learning process or that interferes with the well being of other members of the College community. It will not be tolerated. Members of the College community, both students and staff, have the right to learn and work in a secure and productive environment. The College will make every effort to protect that right. Incidents of disruptive behaviour must be reported in writing to the departmental Chair as quickly as possible. The Chair will hold a hearing to review available information and determine any sanctions that will be imposed. Disciplinary hearings can result in penalties ranging from a written warning to expulsion.

For further details, consult the Algonquin College Policies AA32, SA07 and IT01 in your Instaguide.

College Related Information

Algonquin College's policies have been developed to ensure the health, safety and security of all students, faculty and staff, and the proper and fair operation of the College as an academic institution and employer. Please refer to the Algonquin College Policies website for the most current policy information available at http://www.algonquincollege.com/policies/.

Students are especially encouraged to be aware of the following College expectations

Academic Integrity

Algonquin College is committed to the highest standards of academic integrity, and students are expected to uphold these standards as part of the learning process. Any academic work submitted by a student is expected to be their own work, unless designated otherwise and all sources must be attributed. All students should be familiar with the Algonquin College policy AA48: Academic Integrity which outlines student's roles and responsibilities and what represents academic dishonesty. In some courses, online proctoring may be used to prevent academic dishonesty. Additional information can be found at Academic Integrity - Student Survival Guide - Subject Guides at Algonquin College (libguides.com) and via Academic Integrity Student Resources. Students with any questions about the course expectations regarding academic integrity

are encouraged to speak to their professor and the College's academic integrity team at acaio@algonquincollege.com

Centre for Accessible Learning

Students with visible and/or non-visible disabilities are encouraged to register with the Centre for Accessible Learning (CAL) in order to be eligible for appropriate learning supports and/or accommodations. Students are strongly encouraged to make an appointment with the Centre for Accessible Learning as early as possible when starting a program. Once your needs are identified, a Letter of Accommodation (LOA) will be issued which you can share with your professors. If you are a returning student, please ensure that professors are given a copy of your LOA each semester.

College Email

Students at Algonquin College are provided with a college email account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course activities. Your network credentials can be found in the?ACSIS portal and you are expected to check your Algonquin email regularly and to use it to send and receive college-related email. Support is available through the college Information Technology Service (ITS) at: https://www.algonquincollege.com/its/

Retroactive Accommodations

Students are expected to meet evaluation and completion deadlines as stated in course outline and course section information documents. In circumstances where evaluation and/or completion deadlines are missed or student performance has been affected by a temporary or permanent disability (including mental health), interim or retroactive accommodations may be considered. In such instances, please consult your course faculty member. For other situations where deferral of evaluations may be warranted, please?consult Algonquin College?Policy?AA21: Deferred Evaluation.

Student Course Feedback

Algonquin College's invites students to share their course experience by completing a student course feedback survey for each course they take. For further details consult Algonquin College Policy AA25: Student Course Feedback.

Use of Mobile Devices in Class

With the proliferation of small, personal mobile devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of such devices unless authorized by your professor can be disruptive and disrespectful to others. During examinations, the use of such devices is generally prohibited unless authorized by your professor. Otherwise use is considered academic dishonesty in the form of cheating. For further details consult Algonquin CollegePolicy AA32: Use of Mobile Devices in Class

Technology Requirements

Students are required to have access to a computer and to the internet. There may also be additional technology-related resources required to participate in a course that are not included in the course materials fee, such as headphones, webcams, specialized software, etc. Details on these requirements can be found in the Course Section Information of the course outline for each course available on Brightspace.

Transfer of Credit

It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Safe Harbour

In the event of an unexpected major event (pandemic, etc.), your course may have changes that are not reflected in the Course Outline. Should this happen, the Course Section Information document will have updated information about your course.