

# COURSE OUTLINE

**SCHOOL OF CONTINUING EDUCATION – TECHNOLOGY**

**COURSE NAME:** Allen-Bradley PLC 2

**COURSE CODE:** ELCL 9070

**COURSE HOURS:** 48

**PREREQUISITES:** ELCL 9061 (Allen-Bradley PLC I)

**PLAR ELIGIBLE:** YES ( X ) NO ( )

**EFFECTIVE DATE:** February 2021

**TEACHER:** Eduard Loiczli, Kang Lin

**OFFICE #:** C426

**PHONE:** 416-415-5000 x4861

**EMAIL:** [cetechnology@georgebrown.ca](mailto:cetechnology@georgebrown.ca)

**NOTE:** Academic departments at George Brown College do **not** store historical copies of course outlines. Retain this course outline for your future reference.

FOR OFFICE USE ONLY

ORIGINATOR: \_\_\_\_\_\_\_\_William Juranic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2014\_\_\_\_\_\_\_\_\_\_

**SIGNATURE DATE**

**CHAIR: 2020 SIGNATURE DATE**



## EQUITY STATEMENT

George Brown College values the talents and contributions of its students, staff and community partners and seeks to create a welcoming environment where equity, diversity and safety of all groups are fundamental. Language or activities which are inconsistent with this philosophy violate the college’s Human Rights Discrimination and Harassment policy and will not be tolerated. The commitment and co-operation of all students and staff are required to maintain this environment. George Brown College is dedicated to reducing barriers and providing equal access to education for students with disabilities. If you require academic accommodations, contact the Accessible Learning Services office on your campus.

## STUDENT RESPONSIBILITIES

Students should be familiar with information regarding the grading system, withdrawals, exemptions, class assignments, missed tests and exams, supplemental privileges, and academic dishonesty. For a full outline of college policies, visit [coned.georgebrown.ca/policies/](https://www.georgebrown.ca/policies/). Students are required to apply themselves diligently to the course of study, and to prepare class and homework assignments as given. Past student performance shows a strong relationship between regular attendance and success.

**COURSE DESCRIPTION:**

This Course covers advanced features of the Allen Bradley Controllogix PLC and SoftLogix 5800. The student will learn to use RSLogix 5000 to set up a controller and create a basic program, set up IO and know how to create controller tasks and routines. RSView Studio is used as HMI to interact with the SoftLogix controller and provide operator control.

**COURSE OUTCOMES:**

Upon successful completion of this course, the students will have reliably demonstrated the ability to:

1. Discuss RPI settings for processor communication;
2. Illustrate controller connections;
3. Discuss the producer/consumer model from Allen Bradley;
4. Use RSView Studio to create RSView ME applications;
5. Create ladder programs with RSLogix 5000 software;
6. Use Bit Shift Left, Bit Shift Right Instructions;
7. Use FIFO and LIFO instructions;
8. Use FAL instruction;
9. Discuss Subroutine commands, JSR and RET; and
10. Discuss EtherNet, ControlNet and DeviceNet networks used by Allen Bradley.

**DELIVERY METHODS / LEARNING ACTIVITIES:**

This is normally an in-class course but will be offered **temporarily online** via [Blackboard Learn/Collaborate](https://coned.georgebrown.ca/student-resources/blackboard-requirements) while college buildings are closed. The materials for self-directed learning will be distributed through Blackboard Learn on the section start date. Weekly online sessions on Blackboard Collaborate will start two weeks after the start date.

**LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:**

***Required:*** Allen-Bradley PLC 2 Manual (supplied on first class)

**TESTING POLICY**

As per GBC policy, (see Student Code of Conduct & Discipline Section 3.2 & 4.1)

Tests and Examinations are to be written on the dates indicated. It is the student’s responsibility to contact the instructor to arrange an extension within one week of the original test/exam date. Valid reasons for an extension are at the instructors’ discretion.

**TESTS:** There will be one test on the last class in the course.

**ASSIGNMENT POLICY**

As per GBC policy, (see Student Code of Conduct & Discipline Section 3.2 & 4.1)

Assignments are due on the dates indicated. It is the student’s responsibility to contact the instructor to arrange an extension within one week of the original due date. Valid reasons for an extension are at the instructors’ discretion.

## 

## GRADING SYSTEM

The passing grade for this course is **D (50%)**.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A+** | **90-100** | **4.0** | **B+** | **77-79** | **3.3** | **C+** | **67-69** | **2.3** | **D+** | **57-59** | **1.3** | **Below 50** | **F** | **0.0** |
| **A** | **86-89** | **4.0** | **B** | **73-76** | **3.0** | **C** | **63-66** | **2.0** | **D** | **50-56** | **1.0** |  |  |  |
| **A-** | **80-85** | **3.7** | **B-** | **70-72** | **2.7** | **C-** | **60-62** | **1.7** |  |  |  |  |  |  |

**Excerpt from the College Policy on Academic Dishonesty:**

**The *minimal* consequence for submitting a plagiarized, purchased, contracted, or in any manner inappropriately negotiated or falsified assignment, test, essay, project, or any evaluated material will be a grade of zero on that material.**

**To view George Brown College policies please go to** [**www.georgebrown.ca/policies**](http://www.georgebrown.ca/policies)

**TOPICAL OUTLINE:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Topic / Task** | **Outcome(s)** | **Content / Activities** | **Hours** |
| 1 | **Introduction to RSLogix 5000** | 1 | 1.1 R.P.I (Priority)  1.2 Time Slice  1.3 Multitasking  1.4 Tags (Base, Alias, Produced, Consumed)  1.5 UDT / A.O.I | 3.5 |
| 2 | **Continue Introduction to RSLogix 5000** | 5 | 2.1 Program Structure  2.2 Shit Left / Right lab | 3.5 |
| 3 | **FIFO / LIFO** | 7 | 3.1 FIFO / LIFO (with RsView, 1734 Point IO) | 3.5 |
| 4 | **FAL** | 8 | 4.1 FAL lab with RsView | 3.5 |
| 5 | **GSV / SSV** |  | 5.1 Time / Calendar  5.2 Run / Pro / Test  5.3 UDT | 3.5 |
| 6 | **Function Block Diagram** |  | 6.1 Faceplate Lab | 3.5 |
| 7 | **Tank lab** |  | 7.1 Tank Lab with FTAP View Studio | 3.5 |
| 8 | **FTAP View Studio** |  | 8.1 Multiple Page  8.2 Run Time  8.3 Application Manager (Backup, Restore) | 3.5 |
| 9 | **Tank lab (Continuation)** |  | 9.1 Alarming  9.2 Alarm Server  9.3 Data Logger  9.4 Recipe  9.5 Message  9.6 Calculation | 3.5 |
| 10 | **Add-On Instruction** |  | 10.1 Start / Stop Lab ( Use 1734 analog input /output) | 3.5 |
| 11 | **Introduction to ASCII & S.F.C** |  | 11.1 Batch Lab | 3.5 |
| 12 | **Introduction to ASCII & S.F.C (Continuation)** |  | 12.1 Batch Lab | 3.5 |
| 13 | **PIDE** |  | 13.1 Faceplate | 3.5 |
| 14 | **Equipment Phase** |  | 14.1 Create a equipment phase | 3.5 |
| 15 | **Review** | 1-10 | 15.1 Question & Answer  15.2 CLX KoolWater Training | 3.5 |
| 16 | **Final Exam** | 1-10 | 16.1 Exam  16.2 Stu-View | 3.5 |

**Note:** This schedule may change as resources and circumstances require.For information on withdrawing from this course without academic penalty, visit [coned.georgebrown.ca/policies/withdrawals/](https://coned.georgebrown.ca/policies/withdrawals/).

# Information for Students

We hope you find your course at George Brown College to be a challenging and rewarding learning experience. Below you will find some important information to assist you while at the College.

**WITHDRAWAL**

To withdraw from a course without academic penalty (a failing grade), you must withdraw officially before 60% of the scheduled classes/meetings are held. If you stop attending your course without officially withdrawing, you will receive a failing grade that will be recorded on your grade report, and you will **not** receive a refund of fees.

To officially withdraw, you must e-mail your request to withdraw to [cereg@georgebrown.ca](mailto:cereg@georgebrown.ca). Include your name, your student ID number, the class section course registration number (CRN) and the reason for withdrawal. Alternately, you can withdraw in person at any Student Service Centre.

**REFUND POLICY**

If you withdraw from a course prior to the day of the first scheduled class, you will receive a full refund less a $20 administrative fee. If you withdraw up to ten business days (including the first scheduled day of class) after the course start date, you will receive the full refund **less 100% of the materials fee** and a $20 administrative fee. If you withdraw later than ten business days (including the first scheduled day of class) from the course start date, you will **not** receive a refund.

At this time, refunds can only be made by cheque, regardless of your method of payment. Ensure that your online student account contains your current address and allow four weeks for processing and mail delivery of refund cheques. If you ask to have a duplicate cheque printed, you will be charged a $20 administrative fee.

**COURSE GRADES** can be printed from your student account located on the continuing education website: <https://coned.georgebrown.ca/student-resources/student-account/> For assistance, please call: 416-415-2000.

**GBC EMAIL** is to be utilized for all Blackboard communication with Teachers. Please visit: <https://www.georgebrown.ca/current-students/websites-apps-technical-support/technical-support-gbc-assist/email/>

**CERTIFICATE REQUEST** form and instructions can be found on our website: <https://coned.georgebrown.ca/policies/certificate-requests/>

**Accessible Learning Services** (416-415-5000, ext. 2622)

# <https://www.georgebrown.ca/accessible-learning-services/>

|  |  |
| --- | --- |
| Administrative Assistant | Program Coordinator |
| [kristine.bucais@georgebrown.ca](mailto:kristine.bucais@georgebrown.ca) | [olimsana@georgebrown.ca](mailto:olimsana@georgebrown.ca) |

For information about more College services available to students,

visit: <http://coned.georgebrown.ca/info/studentservices.html>

***Enjoy the course!***

**George Brown College Continuing Education**

**Programmable Logic Controllers Programs**

PLC Rockwell Program [Certificate of Completion]

Systems driven by Rockwell Automation support the largest sector of the automation industry. Our PLC Rockwell Program provides you with the theory and practical knowledge used in advanced levels of process control. Learn how to use Rockwell programmable logic controllers (PLC) and programmable automation controllers (PAC) as they are applied in the manufacturing automation industry. Study elements of team implementation and the set-up of new automation systems.

Career Opportunities: To read a forecast of automation business and jobs, visit the ARC Advisory Group website.

CORE COURSES (THREE)

Completion order is only limited by course prerequisites. All of these:

[ELCL 9061 - Allen-Bradley PLC 1](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-1)

[ELCL 9070 - Allen-Bradley PLC 2](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-2)

One of these:

[ELCL 9066 - Motor Control Basics](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics)

[ELCL 9092 - Motor Control Basics [ONLINE](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics-distance-learning)]

PLC Motion Control Program [Certificate of Completion]

Our PLC Motion Control Program provides you with advanced knowledge of the automation and manufacturing industry. Learn motion control for manufacturing and acquire the theory and practical knowledge used in advanced levels of motion control. Also study elements of team implementation and set-up of new automation systems.

CORE COURSES (THREE)

This is the recommended completion order. All of these:

[ELCL 9061 - Allen-Bradley PLC 1](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-1)

One of these:

[ELCL 9066 - Motor Control Basics](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics)

[ELCL 9092 - Motor Control Basics [ONLINE]](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics-distance-learning)

One of these:

[ELCL 9067 - Advanced Servo Control](https://coned.georgebrown.ca/courses-and-programs/advanced-servo-control)

[ELCL 9093 - Advanced Servo Control [ONLINE]](https://coned.georgebrown.ca/courses-and-programs/advanced-servo-control-distance-learning)

PLC SCADA Program [Certificate]

Our SCADA Specialist Certificate helps you gain the knowledge in supervisory control and data acquisition (SCADA) and distributed control systems (DCS) design and implementation required in any large-scale manufacturing and oil industry automation processes. Our courses use such cutting-edge software as FactoryTalk VantagePoint and examine the implementation of client-server human-machine interfaces (HMI) using the View Anywhere Display concept.

CORE COURSES (FIVE)

This is the recommended completion order:

[ELCL 9061 - Allen-Bradley PLC 1](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-1)

[ELCL 9070 - Allen-Bradley PLC 2](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-2)

[ELCL 9076 - Human-Machine Interface and View Anywhere Display](https://coned.georgebrown.ca/courses-and-programs/human-machine-interface-and-view-anywhere-display)

[ELCL 9078 - Industrial Process Control](https://coned.georgebrown.ca/courses-and-programs/industrial-process-control)

[ELCL 9074 - Distributed Control System](https://coned.georgebrown.ca/courses-and-programs/distributed-control-system)

Automation Integration Rockwell Program [Certificate]

Systems driven by Rockwell Automation support the largest sector of the automation industry. Our Automation Integration Rockwell Certificate explores Rockwell programmable logic controller (PLC) programming, human-machine interface (HMI) design, motion control systems and integration as applied in the manufacturing industry. Courses examine the theory of process control while also helping you acquire an advanced level of practical knowledge. Cover elements of team implementation, troubleshooting and set-up of new automation systems.

COMPULSORY COURSES (FIVE)

Completion order is only limited by course prerequisites. All of these:

[ELCL 9061 - Allen-Bradley PLC 1](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-1)

[ELCL 9070 - Allen-Bradley PLC 2](https://coned.georgebrown.ca/courses-and-programs/allen-bradley-plc-2)

One of these:

[ELCL 9066 - Motor Control Basics](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics)

[ELCL 9092 - Motor Control Basics [ONLINE]](https://coned.georgebrown.ca/courses-and-programs/motor-control-basics-distance-learning)

One of these:

[ELCL 9067 - Advanced Servo Control](https://coned.georgebrown.ca/courses-and-programs/advanced-servo-control)

[ELCL 9093 - Advanced Servo Control [ONLINE]](https://coned.georgebrown.ca/courses-and-programs/advanced-servo-control-distance-learning)

One of these:

[ELCL 9069 - Automation Integration and Validation](https://coned.georgebrown.ca/courses-and-programs/automation-integration-and-validation)

[ELCL 9094 - Automation Integration and Validation [ONLINE]](https://coned.georgebrown.ca/courses-and-programs/automation-integration-and-validation-distance-learning)

***\*Visit the continuing education website for more course information, start dates and fees.***