

EECS 1021 -- Object-Oriented Programming & Telemetry as Engineering Cornerstones

Winter 2026 – Sections X & Z @ the Lassonde School of Engineering, York University

The objective of EECS 1021 is to expand students' understanding of computational thinking and the interfacing of engineering-relevant hardware and software by removing scaffolding that was originally in place in EECS 1011. Students are exposed and interact with the underlying concepts of modern programming using a combination of activities, including experiential laboratories, projects and interactive programming assessments. The programming language is chosen so that it is widely used in a variety of applications, is object-oriented, and is of industrial strength (Java is an example of such a language). The problems are chosen in order to expose abstract programming concepts by immersing them in relevant and engaging applications. The experiential laboratory activities incorporate discrete sensors and actuators, focused on dynamic telemetry applications that are common to all branches of engineering. Furthermore, by identifying sensors as concrete inputs and actuators as output objects, students can build event-driven software that connects events to actions. The problems are chosen with consultation with the various engineering disciplines in the School with a view of exposing how computing is used in these disciplines. Prerequisites: LE/EECS1011 3.00. Course credit exclusions: LE/EECS 1020 3.00 .LE/EECS 1022 3.00, LE/ENG 1117 3.00. Previously offered as: LE/EECS1020 3.00, LE/CSE 1020 3.00.

Course page: <https://www.eecs.yorku.ca/~drsmith/eecs1021/index.html>

Instructor: Dr. James Andrew Smith, P.Eng.

Course Learning Outcomes

By the end of the semester, students are expected to be able to:

1. Demonstrate an ability to write and unit test a class that is capable of solving a simple algorithmic problem (GAI 2b)
2. Program a simple application relevant to an engineering discipline using an object oriented language and solve them on the computer.(GAI 4c)
3. Given a problem specification and a suitable API, build an application that meets the given requirement. (GAI 4b)
4. Use a language's pre-existing data structure to solve problems involving aggregations of typed data. (e.g. Hashmap or Arraylist within the Collections Framework) (GAI 5b)
5. Build an event-driven application that controls sensors and actuators in order to connect events to physical actions. (GAI 4b)
6. Demonstrate an ability to identify and solve an error in a physical telemetry system controlled by an object-oriented program (GAI 3d)
7. Recognize methods to engage as an Active Bystander (12e)
8. Identify a legal fact or detail of a standard in context when provided with a relevant reference (GAI 9b)

Teaching Team Information (Instructor and TAs)

TAs will be assigned to each lab section. Feel free to communicate with them during the lab sessions. They are not available for general email conversations.

Email response is slow. Very slow. Too many emails and not enough time. It's more effective to use the office hours and class time to communicate concerns and to raise questions.

Course Materials

- Required: The 2025/26 Lab Kit from the York University Bookstore, complete with sensors, actuators, Grove board and crib sheets. A Multimeter is also required and is available from the Bookstore or elsewhere
- *Students are required to use their own personal computers during the lab activities. These computers must be capable of running Java (JDK 17/21) and connecting to Arduino hardware. Students are required to use their own devices to access to the course webpage for assessments and learning activities, both during scheduled course time and outside of it.*
- Optional: reference textbooks, as listed on the course page, including, but not limited to:
 - "[Head First Java \(2nd ed\)](#)" by Bert Bates and Kathy Sierra (2nd ed.; 2005), with end-of-chapter questions.
 - "[Java: A Beginner's Guide](#)" by Herbert Schildt (10th ed; 2024) with end-of-chapter exercises. (<https://tinyurl.com/44h3udxf>)
 - "[Java Programming Exercises: Volume One: Fundamentals](#)" by Christian Ullenboom (2025)
 - "[Java Programming Exercises: Volume Two: Java Standard Library](#)" by Christian Ullenboom (2023)

Course Structure

Approach	Description
Lectures	In-person classroom lectures.

Labs	Once per week, typically with pre-lab components due prior to the lab, a demonstration for the TAs and, occasionally, lab reports due at the end of the week.
Tutorial	None.
Projects (group/individual)	Required
Assessments	1. Multiple flipped classes throughout the semester. 2. Weekly labs 3. Final hands-on project 4. Formal tests: two midterms and one final exam.

Course Assessment & Evaluation

Item	Due	Weight	Requirement
Flipped classes (throughout the semester)	In class	5%	required
Lab demonstrations and reports	Demos during lab session, reports by following Sunday at 11:55pm. Pre-lab activities may be necessary, as required.	15%	required
Midterms	Date to be determined	10% and 10%	required
Final Exam	Date to be determined	45%	required
Project	due on last day of class before exams	15%	required

"Two for free" policy: the two worst flipped class and two worst labs will be dropped. This permits a degree of accommodation to all students. If a student is not present for a lab or flipped class they will be assigned a grade of zero. No permission, excuse notes or communication with the instructor is required to take advantage of this policy – it is automatically applied to all students at the end of the semester.

If a student misses a midterm then the weight for the missed midterm is transferred to the following midterm or final exam. No note or permission is required for this policy to apply. A missed final exam requires an application to be filed with the EECS Department office to participate in a deferred exam.

Grading Scheme

The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York

GRADE	GRADE POINT	PER CENT RANGE	DESCRIPTION
A+	9	90-100	Exceptional
A	8	80.00-89.99999	Excellent
B+	7	75-79.99999	Very Good
B	6	70-74.99999	Good
C+	5	65-69.99999	Competent
C	4	60-64.99999	Fairly Competent
D+	3	55-59.99999	Passing
D	2	50-54.99999	Marginally Passing
E	1	(marginally below 50%)	Marginally Failing
F	0	(below 50%)	Failing

Assignments and tests will bear either a letter grade designation or a corresponding number grade.

Student Expectations & Course Specific Policies

Course work Submission

Proper academic performance depends on students doing their work not only well, but on time. Accordingly, assignments for this course must be received on the due date specified for the assignment. Assignments are to be handed in during lectures, tutorials, or through the course site as specified by the respective instructions.

- Lateness Penalty

Course work received later than the stipulated due date will be penalized. Exceptions to the lateness penalty for valid reasons such as illness, compassionate grounds, etc., may be entertained by the Course Instructor but will require supporting documentation (e.g., a doctor's letter).

- Missed Tests
Students with a documented reason for missing a course test, such as illness, compassionate grounds, etc., which is confirmed by supporting documentation (e.g., doctor's letter) may request accommodation from the Course Instructor on a case-by-case arrangement. Further extensions or accommodation will require students to submit a formal petition to the Faculty.
For missed exams or final assignments, students are expected to fill out the deferred exam form (
<https://secure.students.yorku.ca/pdf/final-exam-assignmentdeferred-standing-agreement.pdf>*).*
Note: The Senate policy states that "normally, requests for deferred standing must be communicated within one week following a missed examination or the last day to submit course work". The period during which the University is officially closed for December holidays and statutory holidays is not counted in the determination of deadline days.

Campus Policies

- Academic Integrity (<http://www.yorku.ca/academicintegrity>)
- Student Code of Rights and Responsibilities
(<https://calendars.students.yorku.ca/2023-2024/code-of-student-rights-and-responsibilities>)
- Accommodations for Students with Disabilities
(<https://calendars.students.yorku.ca/2023-2024/academicaccommodation-for-students-with-disabilities>)
- Academic Policies and Regulations
(<https://calendars.students.yorku.ca/policies-and-regulations>)
- Ethics review process for research involving human participants (<https://www.yorku.ca/research/research-ethics/>)
- Student conduct standards
(<https://calendars.students.yorku.ca/2023-2024/studentconduct-and-responsibilities>)
- Religious Accommodation
(<https://calendars.students.yorku.ca/2023-2024/religiousaccommodation>)
- Copyright - Course materials are designed for use only in the course. Copying this material for distribution (e.g. uploading material to a commercial third-party website) may lead to a charge

of misconduct under York's Code of Student Rights and Responsibilities and the Senate Policy on Academic Honesty and/or legal consequences if copyright law has been violated
<http://www.copyright.info.yorku.ca>

York's course accessibility statement

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University. Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs. (

<https://www.yorku.ca/secretariat/policies/policies/academicaccommodation-for-students-with-disabilities-policy/>)

Other relevant links:

- Counselling and Disability Services - <https://accessibility.students.yorku.ca/>
- York University's Policies on Sexual Violence <http://secretariat-policies.info.yorku.ca/policies/sexualviolence-policy-on/>
- York University's Policies on Gender/LGBTQ*/Positive Space - <http://rights.info.yorku.ca/lgbtq/>