Western Engineering

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

SE 2202A – Scripting Language Fundamentals

Course Outline Fall 2024

COURSE DESCRIPTION:

This course is intended to explore the concepts of scripting programming using JavaScript including variable, flow control, expressions, arrays, and objects, to allow students writing functions using objects, properties and methods needed to deliver simple interactive web-based programs. The course also includes coverage of basic HTML and CSS and discusses topics such as; The best-practice JavaScript programming patterns.

Upon completion of the course, students will be able to:

- Know variable naming rules, JavaScript data types, and flow control.
- Identify expressions and operators and define functions and methods.
- Demonstrate objects and arrays usage and define constructors and inheritance.
- Describe the Document Object Model (DOM).
- Know managing web page styles using JavaScript and CSS.
- Demonstrate handling web page events.

ACADEMIC CALENDAR:

https://www.westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_028631_1&SelectedCalendar=Live&ArchiveID=

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PRE OR COREQUISITES:

Engineering Science 1036A/B.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record.

ANTIREQUISITES:

Computer Science 1046A/B.

CEAB ACADEMIC UNITS:

Engineering Science 75%, Engineering Design 25%.

INSTRUCTOR INFORMATION:

Name: Dr. Fadi AlMahamid **Office:** TEB 241 **Office Hours:** TBA **Email:** fadi.almahamid@uwo.ca	**Name:** Dr. Yimin Yang **Office:** TEB 245 **Office Hours:** TBA **Email:** yimin.yang@uwo.ca

CONTACT HOURS:

Timetable information is available at https://draftmyschedule.uwo.ca/.

LECTURE:	3hrs per week during the term
TUTORIAL:	2hrs per week during the term

REQUIRED TEXT:

Course notes and supplementary material will be available on the Course Web site (OWL).

RECOMMENDED SOFTWARE:

- Visual Studio Code
- Node.js

GENERAL LEARNING OBJECTIVES (CEAB GRADUATE ATTRIBUTES):

Knowledge Base	I	**Engineering Tools**	I	**Impact on Society**	
Problem Analysis		**Individual & Team Work**		**Ethics and Equity**	
Investigation		**Communication**		**Economics and Project Management**	
Design		**Professionalism**		**Life-Long Learning**	

Notation: x represents the content level code as defined by the CEAB. blank = not applicable; I = introduced (introductory); D = developed (intermediate) and A = applied (advanced).

Rating: I – The instructor will introduce the topic at the level required. It is not necessary for the student to have seen the material before. D – There may be a reminder or review, but the student is expected to have seen and been tested on the material before taking the course. A – It is expected that the student can apply the knowledge without prompting (e. g. no review).

COURSE MATERIALS:

Weekly content and guides for the laboratories will be available on the course OWL site. The material for this course will be taught in both lectures and labs; therefore, it is imperative that you attend each lecture and lab.

COURSE TOPICS AND SPECIFIC LEARNING OUTCOMES:

The following table summarizes the course learning outcomes along with CEAB GAIs where the GAIs in bold indicate ones to be measured and reported annually.

Course Objectives and Specific Learning Outcomes	CEAB GA Indicators	Tentative Timeline
Unit 1: Introduction & Context for JavaScript **At the end of this unit, the students will be able to:**		
a. Recognize how web applications work.	**KB4**	Week 1
b. Recognize how HTML and JavaScript are used to create web applications.		
c. Outline the major milestones in JavaScript's history.		
d. Recognize the differences between scripting languages and other types of languages.		
e. Recognize the ECMAScript standard and its relation to JavaScript.		
f. Identify different frameworks that use JavaScript to create desktop apps and mobile apps in addition to web apps.		
Unit 2: HTML & CSS **At the end of this unit, the students will be able to:**		
a. Identify the main elements of HTML & CSS.	**KB4** **ET2**	
b. Construct static websites using HTML & CSS.		
c. Investigate problems and static website and fix them.		
d. Identify and use new elements that were not covered in the material by looking at the documentations.		
Unit 3: JavaScript in the browser **At the end of this unit, the students will be able to:**		
a. Recognize and use the <script> tag.	**KB4** **ET2**	Week 4
b. Recognize and use basic programming constructs of JavaScript including basic variable declarations, expressions, lexical structure and control flow structures.		
c. Recognize and use developer tools available in the browser.		
Unit 4: Introduction to Node.js **At the end of this unit, the students will be able to:**		
a. Recognize and use the <script> tag.	**KB4** **ET2**	Week 5
b. Use Node.js with IDE (e.g. VS Code or WebStorm … etc.).		
c. Compare Node.js and the browser as different environments to run JavaScript code.		
Unit 5: JavaScript Functions **At the end of this unit, the students will be able to:**		
a. Identify and create function declarations.	**KB4** **ET2**	Week 6
b. Recognize and use functions as values.		
c. Recognize and use closures.		
d. Recognize and use nested functions.		

Unit 6: JavaScript Objects and Object Prototypes **At the end of this unit, the students will be able to:**		
a. Recognize the core operations of the Document Object Model (DOM).	**KB4** **ET2**	Week 7
b. Work with JavaScript native objects, (e.g. Array, String, Date …).		
c. Create objects and object prototypes.		
d. Work with JSON objects.		
Unit 7: Object-Oriented Principles in JavaScript **At the end of this unit, the students will be able to:**		
a. Create and instantiate JavaScript classes.	**KB4** **ET2**	Week 8
b. Distinguish between Prototypal inheritance vs. Class based inheritance.		
c. Implement encapsulation and information hiding in JS.		
d. Recognize and use the "this" keyword in JS.		
Reading Week		
Unit 8: JavaScript Events **At the end of this unit, the students will be able to:**		
a. Recognize and work with events and event handling.	**KB4** **ET2**	Week 10
b. Define Custom events.		
Unit 9: Asynchronous programming **At the end of this unit, the students will be able to:**		
a. Recognize the difference between Synchronous Vs. Asynchronous programming.	**KB4** **ET2**	Week 10
b. Recognize and work with Callbacks and Promises.		
Unit 10: ES Modules and CommonJS **At the end of this unit, the students will be able to:**		
a. Recognize and work with CommonJS.	**KB4** **ET2**	Week 11
b. Recognize and work with ES modules.		
c. Recognize and work with Modules and Node.js.		
d. Recognize and work with NPM.		

EVALUATION:

Name	% Worth	Assigned	Due Date	CEAB GAs ASSESSED
Individual Project Assignments (3)	20%	No	Posted on OWL	**KB4, ET2**
Tutorials (6)	20%	No	Posted on OWL	**KB4, ET2**
Midterm Exam	20%	No	Before reading week	**KB4, ET2**
Final Exam	40%	Yes	Final Exam Period	**KB4, ET2**

Note that the dates listed above are tentative and may be adjusted if needed. Marks will be assigned on the basis of method of analysis and presentation, correctness of solution, clarity and neatness.

For this course, the following assessment has been designated as requiring supporting documentation:

- Final Exam, due during the final examination period

Tutorials and Assignments:

This course includes three assignments in a mini-project and six tutorials completed individually. Information about the assignments and tutorials will be posted on the course website.

COURSE POLICIES:

Late Submission Policy:
Please note that the assignment submission deadline includes flexibility in the form of a 48-hour submission window (grace period). As a result, the instructor reserves the right to deny any requests for academic consideration for assignments submitted after this grace period.
If students submit their assignments beyond the 48-hour grace period, a penalty of 10% per day will be applied for late submissions, up to a maximum of 3 days. After three days, late submissions will no longer be accepted.

Self-Reported Absence:
No weight-shifting is allowed for self-reported absence; missed work will be due after a covered period.

Laboratory:
Throughout the semester, we will conduct a series of tutorials and support sessions designed to reinforce key concepts and assist with project assignments. These sessions are integral to the course, providing hands-on experience with essential project management tools, particularly MS Project. Early in the semester, during Weeks 2 and 3, we will hold two tutorials focused on introducing MS Project. These sessions will cover the basics of project scheduling, resource management, and task tracking, ensuring you are well-prepared for the assignments ahead.
Before each major assignment, a dedicated tutorial session will be held to explain the assignment requirements, demonstrate relevant tools and techniques, and offer guidance on how to approach the tasks. These sessions are crucial for helping you apply course concepts directly to your project work.
Attendance at the tutorials is highly recommended, as they are critical to your success in the course. While attendance at these sessions is optional, they are extremely valuable for ensuring you stay on track with your assignments. If you miss a tutorial, it is your responsibility to catch up on the material, as tutorials will not be repeated.

Midterm Test:
There will be one midterm test, which will be a closed-book exam (no reference materials allowed) and will last for two hours. Calculators are not permitted. If a student misses the midterm, the exam will not be rescheduled. Instead, the weight of the midterm will be added to the final exam, making the final exam worth 70% of the overall grade. If no valid justification is provided for missing the midterm, the student will receive a mark of zero for the test.

Final Examination:
Please note that the final exam is considered to be central to the learning objectives for this course. Accordingly, students seeking academic consideration for this assessment must provide formal supporting documentation. Students who are granted academic consideration for this assessment will be provided with the following opportunity to make up this work: The final examination will take place during the regular examination period. It will be three hours long, closed book, and no calculators are allowed.
A mark of 60% or more must be achieved on the final examination to obtain a passing grade in the course. A final examination mark < 60% will result in a final course grade of 48% or less.

If the above conditions are not met, your final grade cannot exceed 48%. Students who have failed this course (i.e., final average < 50%) must repeat all course components.

Use of English:
In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Attendance:
Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the department, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

ABSENCE FROM MANDATORY COURSE COMMITMENTS:

Students must familiarize themselves with the Policy on **Academic Consideration for Absences:** https://www.eng.uwo.ca/undergraduate/academic-consideration-for-absences.html

I. Missed/Late Accommodation Policy

1. Students missing a test/assignment/lab or examination you will report the absence by submitting Academic Consideration Request form through STUDENT ABSENCE PORTAL.
2. Documentation must be provided as soon as possible.
3. Forged notes and certificates will be dealt with severely. To submit a forged document is a scholastic offence.

II. Exam Accommodation

1. If you are unable to write a final examination, report your absence using the Academic Consideration Request Form through STUDENT ABSENCE PORTAL.
2. Be prepared to provide the Undergraduate Services Office with supporting documentation (see next page for information on documentation) the next day, or as soon as possible (in cases where students are hospitalized). **The following circumstances are not considered grounds for missing a final examination or requesting special examinations: common cold, headache, sleeping in, misreading timetable and travel arrangements.**
3. In order to receive permission to write a Special Examination, you must obtain the approval of the Chair of the Department and the Associate Dean and in order to apply you must submit an the Academic Consideration Request Form through STUDENT ABSENCE PORTAL.
   PLEASE NOTE: It is the student's responsibility to check the date, time and location of the Special Examination.

III. LATE ASSIGNMENTS

IV. Medical Accommodation

1. Requests for Academic Consideration Request Form through STUDENT ABSENCE PORTAL.
2. Requests for academic consideration must include the following components:
   a. Self-attestation signed by the student (*This is only accepted for the first/one absence*)
   b. Medical note. Forged notes and certificates will be dealt with severely. To submit a forged document is a scholastic offence.
   c. Indication of the course(s) and assessment(s) affected by the request
   d. Supporting documentation as relevant
3. Requests without supporting documentation are limited to one per term per course.

4. **Students must request academic consideration as soon as possible and no later than 48 hours after the missed assessment.**
5. Once the request and supporting documents have been received and reviewed, appropriate academic consideration, if granted, shall be determined by the instructor in consultation with the academic advisor, in a manner consistent with the course outline.

   Academic consideration may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, or re-weighting of course requirements. Some forms of academic consideration, such as arranging Special Examinations, assigning a grade of Incomplete, or granting late withdrawals without academic penalty, may only be granted by the Academic Advising office of the Faculty of Registration.
6. **An instructor may deny academic consideration for any assessment that is not required in the calculation of the final grade** (e.g., "8 of 10 quizzes"). Assessment flexibility must be indicated on the course outline.
7. **An instructor may deny academic consideration relating to the timeframe submission of work where there is already flexibility in the submission timeframe** (e.g., 72-hour submission window). This assessment flexibility must be indicated on the course outline.

V. Religious Accommodation

When scheduling unavoidably conflicts with religious holidays, which (a) require an absence from the University or (b) prohibit or require certain activities (i.e., activities that would make it impossible for the student to satisfy the academic requirements scheduled on the day(s) involved), no student will be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and instructor involved, they should consult the appropriate Department Chair and, if necessary, the student's Dean.

It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

VI. Academic Integrity

In the Faculty of Engineering, we encourage students to create a culture of honesty, trust, fairness, respect, responsibility, and courage, befitting the professional degree you are pursuing.

Please visit Academic Integrity Western Engineering for more information

VII. Academic Offences

Plagiarism means using another's work without giving credit. The university has rules against plagiarism and other scholastic offences. Western Engineering has a zero-tolerance policy on plagiarism. The minimum penalty is zero on the course work and a repeat offence will earn you zero on the course. A third offence may lead to expulsion from the university.
Scholastic Discipline for Undergraduate Students & Cheating, Plagiarism and Unauthorized Collaboration: What Students Need to Know

Students must write their reports, essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. University policy states that cheating, including plagiarism, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning.

All required papers may be subject to submission for textual similarity review to commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted

will be included as source documents on the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between the University of Western Ontario and Turnitin.com (http://www.turnitin.com). Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the relevant section of the Academic Handbook:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

VIII. Faculty of Engineering AI Policy

The use of generative Artificial intelligence (GenAI) tools won't be discouraged in the Faculty of Engineering. As we pride ourselves on building the future we can't hide from the use of GenAI tools to contribute to the understanding of the course materials. However, the use of GenAI tools in any assignment or contribution during the course will have to be disclosed, as a resource.

GenAI tools use won't be permitted in any type of examination or other assessments where the faculty have prohibited their use. If use of GenAI tools is detected by the instructor in these instances, academic offences penalties might be imposed against the student.

IX. Use of English Policy

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for improper use of English. Additionally, poorly written work except for the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

X. Accessibility

Western is committed to achieving barrier free accessibility for persons with disabilities studying, visiting and working at Western. As part of this commitment, there are a variety of services, groups and committees on campus devoted to promoting accessibility and to ensuring that individuals have equitable access to services and facilities. To help provide the best experience to all members of the campus community, please visit the Accessibility Western University for information on accessibility-related resources available at Western.

Students with disabilities may arrange for academic accommodation at Western. For a more detailed explanation, please visit Academic Support & Engagement -Academic Accommodation.

XI. Inclusivity, Diversity, and Respect

The Faculty of Engineering at Western University is committed to creating equitable and inclusive learning environments that value diverse perspectives and experiences. We recognize that university courses often marginalize students based on social identity characteristics such as, but not limited to, Indigeneity, race, ethnicity, nationality, ability, gender identity, gender expression, sexuality, age, language, religion, and socioeconomic status. Understanding this, we strive to facilitate equitable experiences and inclusion within the classroom by respecting and integrating multiple ways of knowing, being, and doing. Please visit the Office of Equity, Diversity and Inclusion.

XII. Health and Well-Being

- Health & Wellness Services – Students - Offers appointment-based medical clinic for all registered part-time and full-time students.
- Mental Health Support - Provides professional and confidential services, free of charge, to students needing assistance to meet their personal, social and academic goals. Services include consultation, referral, groups and workshops, as well as brief, change-oriented psychotherapy.
- Crisis Support - For immediate assistant, please visit Thames Hall Room 2170 or call 519-661-3030. The crisis clinic operates between 11:00 am - 4:30 pm. For after-hours crisis support, click here.
- Gender-Based Violence and Survivor Support - Western is committed to reducing incidents of gender-

based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced gender-based or sexual violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts, here. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Important Contacts

Engineering Undergraduate Services	SEB 2097	519-661-2130	engugrad@uwo.ca
Electrical and Computer Engineering	TEB 279	519-661-2111 x86264	eceugrad@uwo.ca
Office of the Registrar/Student Central	WSSB 1120	519-661-2100	

Important Links

- WESTERN ACADEMIC CALENDAR
- ACADEMIC RIGHTS AND RESPONSIBILITIES
- ENGINEERING PROGRESSION REQUIREMENTS AND ACADEMIC REGULATIONS
- UNIVERSITY STUDENTS' COUNCIL (USC) - SERVICES
- IMPORTANT DATES AND DEADLINES
- ACADEMIC CONSIDERATION FOR MEDICAL ILLNESS - UNDERGRADUATE STUDENTS
- ACCOMMODATIONS FOR RELIGIOUS HOLIDAYS
- SCHEDULING OF ASSIGNMENTS, TESTS, AND EXAMINATIONS
- STUDENT FORMS
- OFFICE OF THE REGISTRAR
- RETENTION OF ELECTRONIC VERSION OF COURSE OUTLINES (SYLLABI)
- ACADEMIC APPEALS
- STUDENT ABSENCE PORTAL