Course Code: Title	CSD223: ADVANCED WEB APPLICATIONS
Program Number: Name	2090: COMPUTER PROGRAMMER 2095: COMPUTER PROGRAMMING
Department:	COMPUTER STUDIES
Semesters/Terms:	22W
Course Description:	The tools and design patterns used to build modern web applications are constantly evolving. Students in this course explore and employ a variety of widely used libraries, frameworks, and technologies to prepare them for modern web application development. Topics include popular JS libraries, front-end frameworks (Angular, React, Vue, etc), HTTP and GraphQL APIs, and current web application tooling and development environments. JavaScript, TypeScript, Node.js, and PHP may all be used at times throughout the course.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	CSD212
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**2090 - COMPUTER PROGRAMMER** VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. VLO 3 Implement and maintain secure computing environments. VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. VLO 6 Select and apply strategies for personal and professional development to enhance work performance. VLO 7 Apply project management principles and tools when working on projects within a computing environment. VLO 8 Adhere to ethical, legal, and regulatory requirements and/or principles in the development and management of computing solutions and systems. VLO 10 Cntribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. VLO 11 Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. VLO 13 Contribute to the integration of network communications into software solutions by

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adhering to protocol standards.

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VLO 2	Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools.
VLO 3	Implement and maintain secure computing environments.
VLO 5	Communicate and collaborate with team members and stakeholders to ensure effective working relationships.
VLO 6	Select and apply strategies for personal and professional development to enhance work performance.
VLO 7	Apply project management principles and tools when working on projects within a computing environment.
VLO 8	Adhere to ethical, legal, and regulatory requirements and/or principles in the development and management of computing solutions and systems.
VLO 10	Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks.
VLO 11	Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process.
VLO 13	Contribute to the integration of network communications into software solutions by adhering to protocol standards.

Essential Employability Skills (EES) addressed in this course:	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.
	EES 2	Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 4	Apply a systematic approach to solve problems.
	EES 5	Use a variety of thinking skills to anticipate and solve problems.
	EES 6	Locate, select, organize, and document information using appropriate technology and information systems.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.	
Other Course Evaluation & Assessment Requirements:	The student must pass both the lab and test portions of the course. Attendance: Sault College is committed to student success. There is a direct correlation between academic performance and class attendance, therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. Absences due to medical or other unavoidable circumstances should be discussed with the instructor. Students are required to be in class on time and attendance will be taken within the	

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2021-2022 academic year.

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first five minutes of class. A missed class will result in a penalty in your marks unless you have discussed your absence with the professor as described above. The penalty depends on course hours and will be applied as follows:

Course Hours Deduction
5 hrs/week (75 hrs) 1% / hr
4 hrs/week (60 hrs) 1.5% /hr
3 hrs/week (45 hrs) 2% /hr
2 hrs/week (30 hrs) 3%/hr

Absentee reports will be discussed with each student during regular meetings with Faculty Advisors. Final penalties will be reviewed by the professor and will be at the discretion of the professor.

Grade
Definition Grade Point Equivalent
A+ 90 - 100% 4.00
A 80 - 89%
B 70 - 79% 3.00
C 60 - 69% 2.00
D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Use common Web APIs such as Pointer Events, Web Storage, Geolocation, etc	1.1 Use the History, Location, Navigation, and Screen objects to manipulate the browser window 1.2 Explain what cookies are and how they are used in web applications 1.3 Describe the Web Storage APIs, and explain when they are useful instead of cookies 1.4 Write programs that use cookie, localStorage, and sessionStorage data 1.5 Create web pages that respond to pointer events
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Describe the use of popular JS libraries	2.1 Describe the common idioms of jQuery and use jQuery in a web application 2.2 Summarize the purpose of popular JS libraries such as Axios, Cleave, D3, lodash, Moment, Ramda, Three, etc. 2.3 Install and use existing JS libraries in a web application
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Discuss current trends in	3.1 Explain the components of the JavaScript/APIs/Markup

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web application design	(JAM) stack 3.2 Contrast JAM applications with MVC applications 3.3 Describe the purpose and design of progressive web apps 3.4 Describe static site generators and when their use is appropriate 3.5 Describe low-code/no-code frameworks and explain their dis/advantages
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Build web applications using a front-end framework	4.1 Describe the nature of front-end frameworks and their common components 4.2 Explain the differences between popular front-end frameworks 4.3 Build reusable web components 4.4 Arrange components into a complete user interface using a front-end framework 4.5 Use the routing tools of a front-end framework to manage browser history in a web application 4.6 Explain why state management can be a challenge in front-end frameworks 4.7 Use the state management tools of a front-end framework to manage application and component state
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Use existing tools and development environments to initialize, build, test, and run web applications	5.1 Install and configure IDE plugins to support web application development 5.2 Install and configure application dependencies 5.3 Configure and run build processes 5.4 Configure and run development and test servers 5.5 Describe the purpose of `hot reloading` 5.6 Configure, write, and run tests to ensure the correct functioning of a web application

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Labs	40%
Tests	60%

Date: August 6, 2021

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.

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