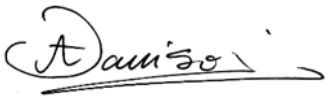
Approved by Chair:



Sep 1, 2023

Signature

COMP3123 – Full Stack Development I

Course Description

This course builds on the fundamental knowledge and skills required for full stack development (MERN Stack). Students learn React as a front-end framework, implement NoSQL databases (MongoDB) and work with Express framework and Node.js environment. Students enrolled in this course are expected to have prior working knowledge of HTML & CSS and JavaScript ES6. Knowledge of other JavaScript frameworks is an asset.

Course Outcomes

At the end of this course, the student will reliably demonstrate the ability to:

1. Describe and implement the major new features in ES6.
2. Design and implement a simple front-end web solution using React.
3. Utilize native features of Node.js using built-in modules.
4. Implement a data storage solution using MongoDB.
5. Store and retrieve data to a MongoDB using Mongoose ODM.
6. Create a basic Express web server.
7. Implement and consume REST APIs with Node.js and Express.

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

Required

- Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node 2nd Edition ISBN 978-1-4842-4391-6

Recommended Resources:

1. https://reactjs.org/
2. https://nodejs.org/api/

Course Delivery Mode

The course uses various instructional methods, such as lectures, demonstrations, hands-on exercises, and take-home assignments. The delivery mode depends on whether the course is online or in person. Online lectures will be the primary mode, but there may be in-person lectures for in-person participants. Labs will be conducted virtually for the online program, while in-person program students must attend on-campus labs. For more information about the delivery mode, please refer to D2L. Any updates will be communicated through D2L in advance.

Assignment Policy

- All assignments must be submitted on the due date based on an instruction given by the professor. Late assignment, will be penalized 20% per day to a maximum of five days, the weekend included unless the student has notified the professor (via email, phone or in person) ahead of the due date that he/she has a valid reason for a late submission.

Test Policy

- Students must complete tests and the final exam on the assigned day. If unable to complete the test/exam as scheduled, students are required to notify the professor at least three days before the date so that alternative arrangements can be made. Failure to comply with this policy may result in a zero grade.
- There will be no makeup quiz and lab exercises for medical or other reasons. If you anticipate missing more than two quizzes or lab exercises for serious, major reasons, see your professor beforehand.

EVALUATION SYSTEM:

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

Assessment	Description	Outcome(s) assessed:	EES assessed:	Week	Weight
Lecture Quiz 8	The best 8 out of 10 quizzes will count.	1-6	1,2,3,4,5	TBA	8%
Lab Test x 2	Hands on test, covers previous weeks topics	2-4	1,2,3,4,5, 6,7,10	5, 13	12%
Lab exercises 8	Weekly 8 out of 10 lab exercises and AtKlass participation	1-6	1,2,3,4,5	TBA	8%
Assignment 1	Individual assignment	1,3,4,5	1,2,3,4,5,6, 7,10,11	6	10%
Assignment 2	Individual assignment	1-7	1,2,3,4,5,6, 7,10,11	13	12
Mid Term Exam	Mixed format and multiple-choice test.	1,3,4,5	1,2,4	7	20%
Final Exam	Mixed format and multiple-choice test on week 1 to week 14	1-7	2,4,5	15	30%
				TOTAL	**100%**

Topical Outline

Learning Schedule / Topical Outline (subject to change with notification)

Week	Topic	Outcome(s)	Content / Activities	Chapter / Reference
1	1		- Administrative & Course Outline - Introduction to Full Stack and MERN Stack - Review of JavaScript & ES6 features - Enhanced Object Literals	Ch 1
2	2	1	- Arrow Functions - Classes/Subclasses - Callbacks - Promises - Async/await	Class notes
3	3	3	- Node.js - Introduction & installation - Node package manager (NPM) - Versioning and package.json - Core Node API - Global Object - Modules, Export, Require - Intro to Events and Event Emitter	Ch 1 https://nodejs.org/api/

4	4	3	- Node as a web server
			  - Serving static files using http and file system module
			- ExpressJS framework
			  - Introduction to RESTful API
			  - Using Routes (GET)
			  - Working with route params & query string
				https://nodejs.org/api/

5	5	6, 7	- ExpressJS framework
			  - Using Routes (POST/PUT/DELETE)
			  - Serving static files with express
			  - Express Router
				Ch 3, 5,
				https://nodejs.org/api/
				https://expressjs.com/

6	6	4-5	- MongoDB
			  - SQL vs No SQL
			  - Local Installation & cloud (MongoDB Atlas)
			  - Mongoose
			  - Intro to Mongoose schemas and datatypes
			  - CRUD Operations with Mongoose
				Ch 6

7	***MID-TERM EXAM*** Mixed format test week 1-6			
8	***Intersession Week***			

9	7	2	- React:
			  - Introduction to frontend tools
			  - The architecture of React Application
			  - Setting up React environment
			  - JSX & HTML view
			  - Single Page Application scope and objectives
			  - State
			  - Props
				Ch 1,3
				https://reactjs.org

10	8	2	- React continued
			  - Dev Tools and environment
			  - DOM & Component events
			  - Life Cycle of React Components
			  - Functional vs Class Components
				Ch 4
				https://reactjs.org

11	9	2-7	- React Router and route parameters - React Forms - Form Element & Validation - Submitting data to the backend using Axios	Ch 9, 10 https://reactjs.org
12	10	2	- Context API	https://reactjs.org

13	11	2	- Introduction to hooks
			  - useState,
			  - useEffect
			  - useRef
				https://reactjs.org

14	12	2	- Authentication	Ch 14
15	***FINAL EXAM*** Mixed format test week 1-14			

For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: http://www.georgebrown.ca/Admin/Registr/PSCal.aspx

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