
Mobile API Development

Ict-Applications & Programming

Course Number: MAD9124	Co-Requisites: N/A	Pre-Requisites: MAD9013 and MAD9014
Applicable Program(s): 1515X01FWO - Mobile App. Des. & Dev	AAL: 2	Core/Elective: Core
Prepared by:	Steve Griffith, Professor Griffith	
Approved by:	Sandra Brancatelli, Chair, ICT - Applications & Programming	
Approval Date:	Monday, November 25, 2019	
Approved for Academic Year:	2019-2020	
Normative Hours:	70.00	

Course Description

Students enhance their JavaScript skills to become productive with Full-stack development. They use a hands-on approach to build APIs using Node.JS and a variety of tools, frameworks, libraries and packages. The creation of these modern APIs also requires the students to develop skills with persistent scalable database storage systems. Project work culminates with students creating APIs to be used with websites and mobile applications. Students work individually as well as with other students to complete tasks.

Relationship to Vocational Learning Outcomes

This course contributes to your program by helping you achieve the following Vocational Learning Outcomes:

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- VLO 7 Research and apply various software development kits (SDKs), frameworks and toolkits. (T, A,)
- VLO 8 Integrate database and server-side technologies to provide complete mobile development solutions. (T, A, CP,)
- VLO 10 Collaborate in a team-based, mobile development project. (T, A,)

Relationship to Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

- EES 3 Execute mathematical operations accurately. (T, A)
- EES 9 Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals. (T, A)

Course Learning Requirements/Embedded Knowledge and Skills

When you have earned credit for this course, you will have demonstrated the ability to:

1.) Design and develop REST-compliant APIs

- Identify the core characteristics of REST
- Map API resources to application models
- Map HTTP verbs to CRUD operations
- Create RESTful API services using a backend scripting language

2.) Compose the critical components of application security

- Investigate options for client-application and user authentication
- Create scripts that safely encrypt and store sensitive data
- Create scripts that protect the transmission of sensitive data
- Create scripts that sanitize incoming data before being stored

3.) Compare and contrast scalable persistent data storage technologies

- Summarize the strengths and weaknesses of relational databases
- Summarize the strengths and weaknesses of document databases
- Learn about different document database management systems
- Design and develop a simple document or relational database to store information.

4.) Write server-side scripts to manage and manipulate data

- Install a document database system
- Create scripts to store new data objects into the database
- Create scripts to retrieve data objects from the database
- Create scripts to modify existing data objects in the database
- Create scripts to remove data objects from the database

5.) Integrate backend API service applications with document databases

Create a resource model schema for document databases

Receive data objects from client applications and store them in the corresponding document collections

Respond to client application requests for data objects by returning correctly formatted JSON documents

Respond to client application requests for paginated datasets

6.) Compare and contrast various techniques for testing API services

Demonstrate manual API resources testing

Investigate various automated testing libraries

Create automated test scripts

Describe the goals and benefits of TDD (test driven development)

Demonstrate how to integrate frameworks/packages/libraries into a backend application

7.) Illustrate current best practices for full-stack development

Investigate various common design patterns

Learn to refactor code using modern language features

Learning Resources

Online technical documentation and user guides

Online written tutorials

Online video tutorials

Online Learning Management System

Classroom lectures

Classroom practical labs

Online wikis and articles

Learning Activities

In-class exercises, assignments and discussions

Group projects

Online quizzes

Online conferences and discussion groups

Classroom lectures

Video tutorials

Evaluation/Earning Credit

The following list provides evidence of this course's learning achievements and the outcomes they validate:

Quiz(zes)/Test(s) (20%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, CLR 6, EES 3

In-class Work (20%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, CLR 6, CLR 7, EES 3, EES 9

Assignment(s) (30%)

Validates Outcomes: CLR 1, CLR 2, CLR 4, CLR 5, EES 3, EES 9

Project(s) (30%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, CLR 6, EES 3, EES 9

Students are expected to meet evaluation and completion deadlines as stated in course outline and course section information documents. In circumstances where evaluation and/or completion deadlines are missed or student performance has been affected by a temporary or permanent disability (including mental health), interim or retroactive accommodations may be considered. In such instances, please consult your course faculty member. For other situations where deferral of evaluations may be warranted, please refer to college policy AA21.

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Challenge Exam
- Project/Assignment

Grade Scheme

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90% - 100%	4.0	A	85% - 89%	3.8
A-	80% - 84%	3.6	B+	77% - 79%	3.3
B	73% - 76%	3.0	B-	70% - 72%	2.7
C+	67% - 69%	2.3	C	63% - 66%	2.0
C-	60% - 62%	1.7	D+	57% - 59%	1.4
D	53% - 56%	1.2	D-	50% - 52%	1.0
F	0% - 49%	0	FSP	0	0

Course Related Information

Please refer to the Course website for specific course-related information as provided by your professor.

Program Related Information

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The late policy for assignments is a 10% per day deduction to a maximum of 30%.

If an assignment is still not submitted 10 days after the due date then a grade of zero will be given for the assignment. Students can still submit work for review and feedback after the 10 days but no grade will be given.

Any extensions to due dates must be arranged with the course instructor BEFORE the due date.

Department Related Information

STUDENT ACADEMIC RESPONSIBILITIES

Each student is responsible for:

- Knowing the due dates for marked out-of-class assignments.
- Attending all classes and knowing the dates of in-class marked assignments and exercises.
- Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.

- Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing.
- Regularly checking both Brightspace announcements as well as one's Algonquin e-mail account for important messages from both professors and college administration.
- Participating in on-line and classroom exercises and activities as required.
- Retaining course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Harassment/Discrimination/Violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability-related), discrimination (direct or indirect), or violence, whether involving a professor and a student or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College Policies - HR22 and SA07.

Harassment means one or a series of vexatious comment(s) (whether done verbally or through electronic means), or conduct related to one or more of the prohibited grounds that is known or ought reasonably to be known to be unwelcome/unwanted, offensive, intimidating, derogatory or hostile. This may include, but is not limited to: gestures, remarks, jokes, taunting, innuendo, display of offensive materials, offensive graffiti, threats, verbal or physical assault, stalking, slurs, shunning or exclusion related to the prohibited grounds.

For further information, a copy of the official policy statement can be obtained from the Student Association.

Violation of the Copyright Act

General – The Copyright Act makes it an offence to reproduce or distribute, in whatever format, any part of a publication without the prior written permission of the publisher. For complete details, see the Government of Canada website at <http://laws.justice.gc.ca/en/C-42> . Make sure you give it due consideration, before deciding not to purchase a textbook or material required for your course.

Software Piracy - The Copyright Act has been updated to include software products. Be sure to carefully read the licensing agreement of any product you purchase or download, and understand the terms and conditions covering its use, installation and distribution (where applicable). Any infringement of licensing agreement makes you liable under the law.

Disruptive Behaviour is any conduct, or threatened conduct, that is disruptive to the learning process or that interferes with the well being of other members of the College community. It will not be tolerated. Members of the College community, both students and staff, have the right to learn and work in a secure and productive environment. The College will make every effort to protect that right. Incidents of disruptive behaviour must be reported in writing to the departmental Chair as quickly as possible. The Chair will hold a hearing to review available information and determine any sanctions that will be imposed. Disciplinary hearings can result in penalties ranging from a written warning to expulsion.

For further details, consult the Algonquin College Policies AA32, SA07 and IT01 in your Instaguide.

College Related Information

Email

Algonquin College provides all full-time students with an e-mail account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course events. It is your responsibility to ensure that you know how to send and receive e-mail using your Algonquin account and to check it regularly.

Students with Disabilities

If you are a student with a disability, you are strongly encouraged to make an appointment at the Centre for Accessible Learning to identify your needs. Ideally, this should be done within the first month of your program, so that a Letter of Accommodation (LOA) can be provided to your professors. If you are a returning student, please ensure that professors are given a copy of your LOA each semester.

Retroactive Accommodations

Students are expected to meet evaluation and completion deadlines as stated in course outline and course section information documents. In circumstances where evaluation and/or completion deadlines are missed or student performance has been affected by a temporary or permanent disability (including mental health), interim or retroactive accommodations may be considered. In such instances, please consult your course faculty member. For other situations where deferral of evaluations may be warranted, please refer to college policy AA21.

Academic Integrity & Plagiarism

Adherence to acceptable standards of academic honesty is an important aspect of the learning process at Algonquin College. Academic work submitted by a student is evaluated on the assumption that the work presented by the student is his or her own, unless designated otherwise. For further details consult Algonquin College Policies AA18: Academic Dishonesty and Discipline and AA20: Plagiarism

Student Course Feedback

It is Algonquin College's policy to give students the opportunity to share their course experience by completing a student course feedback survey for each course they take. For further details consult Algonquin College Policy AA25: Student Course Feedback

Use of Mobile Devices in Class

With the proliferation of small, personal mobile devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of such devices is disruptive and disrespectful to others. During examinations, the use of such devices may facilitate cheating. For further details consult Algonquin College Policy AA32: Use of Mobile Devices in Class

Transfer of Credit

It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Note: It is the student's responsibility to refer to the Algonquin College Policies website for the most current information at <http://www.algonquincollege.com/policies/>

Legend

Terms

- ALO: Aboriginal Learning Outcome
- Apprenticeship LO: Apprenticeship Learning Outcome
- CLR: Course Learning Requirement
- DPLO: Degree Program Learning Outcome
- EES: Essential Employability Skill
- EOP: Element of Performance
- GELO: General Education Learning Outcome
- LO: Learning Outcome
- PC: Program Competency
- PLA: Prior Learning Assessment
- PLAR: Prior Learning Assessment and Recognition
- VLO: Vocational Learning Outcome

Assessment Levels

- T: Taught
- A: Assessed
- CP: Culminating Performance