SYST35300
Hybrid Mobile Application Development

Sheridan

I: Administrative Information **II: Course Details** **III: Topical Outline(s)** **Open in Word**

Retain during the course and for future use when applying for credit at other educational institutions

Land Acknowledgement

Sheridan College resides on land that has been, and still is, the traditional territory of several Indigenous nations, including the Anishinaabe, the Haudenosaunee Confederacy, the Wendat, and the Mississaugas of the Credit First Nation. We recognize this territory is covered by the Dish with One Spoon treaty and the Two Row Wampum treaty, which emphasize the importance of joint stewardship, peace, and respectful relationships.

As an institution of higher learning Sheridan embraces the critical role that education must play in facilitating real transformational change. We continue our collective efforts to recognize Canada's colonial history and to take steps to meaningful Truth and Reconciliation.

Section I: Administrative Information

Program(s): CST-Information Systems Eng, CST-Software Dev & Network Eng, Computer Programming
Program Coordinator(s): Simon Hood, Ann Cadger, Walid Belal, Satyendra Narayan
Course Leader or Contact: Andy Pak
Version: 20240903_00
Status: Approved (APPR)

Section I Notes: N/A

Total hours: 42.0
Credit Value: 3.0
Credit Value Notes: N/A
Effective: Fall 2024
Prerequisites: SYST24444
Corequisites: N/A
Equivalents: N/A
Pre/Co/Equiv Notes: N/A

Section II: Course Details

Detailed Description

Building mobile applications with web technologies (HTML, CSS, and JavaScript) and HTML5 mobile app development framework (Ionic/Angular). Working with a native wrapper, these applications have access to the mobile device's native functions (e.g. Contacts and Calendar). Practicing the concepts of a cross-platform run-time environment. Installing the environment and building server-side JavaScript applications using Node.js. Installing a NoSQL database; defining databases collections and documents; working with data; and building queries.

Program Context

CST-Information Systems Eng **Program Coordinator(s):** Walid Belal
In a previous course in the program, students learned how to develop mobile web-based applications using web technologies and angular framework. In this required course that knowledge is extended and students learn how to build native or device resident applications using web technologies and Ionic framework. These native applications permit access to "built-in" applications on mobile devices such as the contact book, calendar etc.

CST-Software Dev & Network Eng **Program Coordinator(s):** Simon Hood
In a previous course in the program, students learned how to develop mobile web-based applications using web technologies and angular framework. In this

required course that knowledge is extended and students learn how to build native or device resident applications using web technologies and Ionic framework. These native applications permit access to "built-in" applications on mobile devices such as the contact book, calendar etc.

Computer Programming **Program Coordinator(s):** Ann Cadger, Satyendra Narayan

In a previous course in the program, students learned how to develop mobile web-based applications using web technologies and angular framework. In this required course that knowledge is extended and students learn how to build native or device resident applications using web technologies and Ionic framework. These native applications permit access to "built-in" applications on mobile devices such as the contact book, calendar etc.

Course Critical Performance and Learning Outcomes

Critical Performance:

By the end of this course, students will have demonstrated the ability to develop full stack hybrid mobile applications that cover both the front and back ends of a website or application.

Learning Outcomes:

To achieve the critical performance, students will have demonstrated the ability to:

1. Develop a mobile application using web technologies (e.g. HTML, CSS, and JavaScript) with an HTML5 mobile app development framework (Ionic/Angular).
2. Incorporate the use of an HTML5 mobile app development framework for use in building mobile applications that access a mobile device's native functions/features to complete the development process.
3. Deploy an application to a mobile device.
4. Manage a NoSQL database by defining collections, queries and documents to store and manage persistent data.
5. Maintain cross platform run-time environment.
6. Build server-side JavaScript applications to create scalable applications.
7. Build a mobile application to interface with a server JavaScript application to access backend NoSQL database to perform CRUD operations and queries.
8. Design the component architecture of a mobile application including server and database elements using a UML component diagram.

Evaluation Plan

Students demonstrate their learning in the following ways:

Evaluation Plan: IN-CLASS

Midterm Exam	25.0%
Final Exam	25.0%
Assignments (3 @ 9%, 1 @ 8%)	35.0%
Term Project	15.0%
Total	100.0%

Evaluation Notes and Academic Missed Work Procedure:
To pass the course, students must achieve a 50% weighted average across the exams and at least 50% overall in the course.

Students must submit/complete all assignments, in-class activities and projects by the scheduled due date and write all tests on the specified date/time. Exceptions will only be made

under extraordinary circumstances.

Refer to the School of Applied Computing's Academic Procedures for Evaluations for more details regarding missed work: Procedures for Evaluations

Provincial Context
The course meets the following Ministry of Colleges and Universities requirements:

Essential Employability Skills
Essential Employability Skills emphasized in the course:

- Critical Thinking & Problem Solving - Apply a systematic approach to solve problems.
- Communication Skills - Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- Critical Thinking & Problem Solving Skills - Use a variety of thinking skills to anticipate and solve problems.
- Information Management - Locate, select, organize and document information using appropriate technology and information systems.
- Interpersonal Skills - Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.

Prior Learning Assessment and Recognition
PLAR Contact (if course is PLAR-eligible) - Office of the Registrar
Students may apply to receive credit by demonstrating achievement of the course learning outcomes through previous relevant work/life experience, service, self-study and training on the job. This course is eligible for challenge through the following method(s):

- Challenge Exam
  Notes: (Challenge Exam) AND (Portfolio and Interview)
- Portfolio
  Notes: (Challenge Exam) AND (Portfolio and Interview)
- Interview
  Notes: (Challenge Exam) AND (Portfolio and Interview)

Section III: Topical Outline

Some details of this outline may change as a result of circumstances such as weather cancellations, College and student activities, and class timetabling.
Instruction Mode: In-Class
Professor: Multiple Professors
Resource(s): N/A
Applicable student group(s): Computer Programming
Course Details:
Module 1: Hybrid Mobile Development
Overview of mobile development options.
Review of Angular framework.

Module 2: Ionic Architecture
Introduction of Ionic framework.
Installation of Ionic/CLI.
Create Ionic applications.
Evaluation Component: Assignment 1 @ 9%.

Module 3: Accessing mobile device native features/functions
Extend Ionic applications to access native features/functions on mobile devices.
Evaluation Component: Assignment 2 @ 9%.

Midterm Exam

Module 4: NoSQL Database
Review of NoSQL databases.
Installation and setup of MongoDB.
Define Databases, collections and documents.
Build queries.
Perform CRUD operations.
Evaluation Component: Assignment 3 @ 8%.

Module 5: Cross-Platform Run-time Environment
Introduction of node.js.
Installation of node.js.
Create server-side JavaScript applications-Build Server side JavaScript applications to access and manage data in NoSQL database.
Evaluation Component: Assignment 4 @ 9%, Term Project

Final Exam

Sheridan Policies

It is recommended that students read the following policies in relation to course outlines:

- **Academic Integrity**
- **Copyright**
- **Intellectual Property**
- **Respectful Behaviour**
- **Accessible Learning**

All Sheridan policies can be viewed on the Sheridan policy website.

Appropriate use of generative Artificial Intelligence tools: In alignment with Sheridan's Academic Integrity Policy, students should consult with their professors and/or refer to evaluation instructions regarding the appropriate use, or prohibition, of generative Artificial Intelligence (AI) tools for coursework. Turnitin AI detection software may be used by faculty members to screen assignment submissions or exams for unauthorized use of artificial intelligence.

Course Outline Changes: The information contained in this Course Outline including but not limited to faculty and program information and course description is subject to change without notice. Nothing in this Course Outline should be viewed as a representation, offer and/or warranty. Students are responsible for reading the Important Notice and Disclaimer which applies to Programs and Courses.