Course Outline

Full-Stack Developer – LEA.BN

A. General Information

Course title	Web Services
Course number	420-WD4-AB
Hours	60
Ponderation *Ratio of lecture, practical and homework hours*	2-2-3
Credits	2.33
Competency statement(s) and code(s)	00SV Develop data exchange services.
Prerequisite (s)	420-WC4-AB User Interfaces
Cohort	FSD-05
Start date	Aug 17, 2022
End date	Sept 1, 2022
Day(s) and times	Mon-Fri 9:00 a.m. - 2:30 p.m. with 1/2-hour break
Classroom/lab number	Online
Semester	Summer 2022
Teacher	Reza Mirsalari
Teachers' contact info	
Course format (F2F, online, hybrid)	Online

B. Introduction

This course is part of the Full-Stack Developer program leading to an Attestation of Collegial Studies (A.E.C.). It should be taken in the Second semester of the program.

In this course the student will learn how to create and consume a variety of platform-independent web services, such as SOAP, and REST. The student will also learn to consume existing web services with public APIs (Application Programming Interface), such as Facebook, Twitter, GoogleAPI, and Yahoo Finances. Clients and servers for such services may be written using C#, Java, JavaScript, NodeJS as well as mobile platforms.

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C. Course Objectives

By the end of this course, students should be able to perform the following:

00SV	
Statement of the Competency	**Achievement Context**
Develop data exchange services.	• For data exchange services used by native or Web applications or connected objects • For new applications and applications to be modified • Based on design documents • Using issue tracking and version control procedures
Elements of the Competency	**Performance Criteria**
1. Analyze the application development project.	• Accurate analysis of design documents • Proper identification of the tasks to be carried out
2. Prepare the computer development environment.	• Proper installation of the development platform and development database management system • Proper installation of software and libraries • Appropriate configuration of the version control system • Proper importing of source code
3. Prepare the database.	• Suitable creation or adaptation of the database • Proper insertion of initial or test data • Compliance with the data model
4. Program the application logic for the service.	• Proper programming or integration of authentication, authorization or secure connection establishment mechanisms • Proper programming of the reception of input data • Appropriate choice of clauses, operators, commands or parameters in database queries • Correct handling of database data • Proper programming of the response of output data • Precise application of secure programming techniques • Compliance with communication protocols and data exchange formats

5. Program a test application using the service.	• Precise retrieval of the service interface
	• Appropriate use of the service
	• Proper conversion of the data provided by the service into run data using a test application
6. Control the quality of the service.	• Precise application of test plans
	• Thorough reviews of code and security
	• Relevance of the corrective actions
	• Compliance with issue tracking and version control procedures
	• Compliance with design documents
7. Participate in the deployment of the service.	• Proper application of the procedure for migrating the service onto the server
	• Precise application of security measures
8. Produce the documentation.	• Proper identification of the information to be written up
	• Clear record of the work carried out

D. Evaluation Plan

Evaluation task	%	Approximate date	Link to competency(ies) and element(s)	Select if part of the final evaluation!
Daily Assignment	10	All classes	1, 2, 3, 4, 5	☐
Test 1	30	Class 6	1, 2, 3, 4, 5, 6	☐
Project – presentation Required	20	Class 11	1, 3, 4	☒
Test 2	40	Class 12	1, 2, 3, 4, 5, 6	☒

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E. Course Content and Schedule

Course Content

Web Services Overview Introduction to SOAP, UDDI, WSDL XML vs JSON Integrating Third-party APIs Composing RESTful Web Services CRUD-oriented services How to publish a web service Platforms for Web Services

Schedule

Date or class	Topic(s)	Additional info	F2F	Online
Class 1	Web Services Overview Introduction to SOAP, UDDI, WSDL XML vs JSON	REST Overview WSDL, SOAP, UDDI JSON Overview	☐	☒
2	Web Services Overview Introduction to SOAP, UDDI, WSDL XML vs JSON Integrating Third-party APIs	JSON Data Binding with Jackson Set Up a Maven Project Processing JSON Nested Objects and Arrays Ignore Properties	☐	☒
3	Integrating Third-party APIs	JSON Data Binding with Jackson Set Up a Maven Project Processing JSON Nested Objects and Arrays Ignore Properties	☐	☒
4	Composing RESTful Web Services	**Quiz** Retrieve POJO as JSON Using @PathVariable for REST Endpoints Spring REST - Exception Handling Exception Handling - Create Custom Error Response and Exception Exception Handling - Update REST Service to throw Exception	☐	☒
5	Composing RESTful Web Services How to publish a web service Platforms for Web Services	Creating a REST Controller REST - HTTP Overview REST - Install a REST Client REST - Creating a Spring RESTful API Set Up All Java Configuration Creating the REST Controller	☐	☒
6	**Summative Assignment 1**		☐	☒
7	**Test 1** CRUD-oriented services	REST - CRUD Database Real-Time Create REST Controller - Testing in Postman	☐	☒

		CRUD Database Real-Time Project - Exception Handling - Responses Add new Entity Save to Database Prepopulating the Form Delete from Database		
8	CRUD-oriented services		☐	☒
9	CRUD-oriented services		☐	☒
10	CRUD-oriented services		☐	☒
11	**Assignment 2**		☐	☒
12	**Test 2**		☐	☒

F. Required Textbooks / Materials / Costs

Title / Item	Cost $
Technical requirements for this course (hardware, software, High speed Internet connection, etc.)	

G. Bibliography (books, articles, videos, websites, podcasts, etc.)

Balachandar, B. M. *RESTful Java Web Services - Third Edition*: Vol. Third edition. Packt Publishing, 2017.
Sriparasa, Sai. JavaScript and JSON Essentials, Packt Publishing, Limited, 2013.

Microservices with Spring Boot and Spring Cloud: Build and deploy Java microservices using Spring Cloud, Istio, and Kubernetes Paperback – 2019 - by Magnus Larsson

H. Teaching Methods

The course is a combination of theory and practical work.
- Listen to lectures and taking notes
- Watch demonstrations
- Accomplish regular work in the laboratory
- Work in groups for a project

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The course requires your individual presence and your active, consistent and sustained participation in your individual work. Your individual responsibilities are to complete the work assigned and be ready to work at the start of each class. Léa, the course management system within Omnivox, will be used in this course.

- Assignments: Hands on experience is mandatory to your success in this course. Lab assignments or project milestones are due on the day specified for handing in the assignment, at 11:55pm if no time is specified.
- Lectures/Demonstrations
- Tests: Theory and Practical
- Team Project: The project focuses on methodologies and tools seen in this course. This project is structured to be small, but somewhat realistic given the time available in the course.
- Classroom Activity: Participation and Discussion

I. Departmental Policies and Classroom Policies

Classroom Policies

Late submission of work
Work submitted late will result in a 10% deduction from the grade, per calendar day
Classroom behaviour
Online etiquette

Departmental Policies

Please refer to the following document concerning policies in place at the Centre for Continuing Education:

[Continuing Education Policies and Guidelines](#)
(version: December 1, 2020)

A. College Policies

Please refer to the following document concerning the provisos related to course outlines as a response to Covid-19.

[Provisos for Course Outlines (Covid-19)](#)
(version: winter 2022)

Topic	Resource
Student rights and responsibilities (see articles 3.2 and 3.3)	[Policy 7:IPESA - Institutional Policy on the Evaluation of Student Achievement (version: June 12, 2019)](#)
Changes to evaluation plan in the course outline (see article 5.3)	
Religious holidays (see article 4.1)	
Cheating and plagiarism (articles 9.1 and 9.2)	
Cheating and plagiarism	[Academic Integrity: Cheating and Plagiarism Procedure (version: October 22, 2021)](#) ***You will need to log into Omnivox to access this document.***
Code of conduct	[Policy 13: Policy on Student Conduct and Discipline Procedures (version: September 21, 2021)](#)

DISCLAIMER: Policies may be updated during the academic year. Should a link in the section above no longer work, please refer to the college website: https://www.johnabbott.qc.ca/the-college/official-documents/