**CAMOSUN COLLEGE**
*Trades & Technology*
*Computer Science*

*ICS 221*
*Web Services*
*Winter 2018*

# COURSE OUTLINE

**The calendar description is available on the web @**
**http://camosun.ca/learn/calendar/current/web/ics.html#ICS221**

Ω  *Please note:  This outline will not be kept indefinitely.  It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

## 1.  Instructor Information

| | | |
|---|---|---|
| **(a)** | **Instructor** | Saryta Schaerer |
| **(b)** | **Office hours** | As needed |
| **(c)** | **Location** | T 239 |
| **(d)** | **Phone** | **Alternative:** |
| **(e)** | **E-mail** | schaerer@camosun.bc.ca |
| **(f)** | **Website** | D2L |

## 2.  Intended Learning Outcomes
*(If any changes are made to this part, then the Approved Course Description must also be changed and sent through the approval process.)*

Learn how to create and deploy a web application. You will design and implement dynamic web-based applications utilizing the tools and technologies that enable interoperability between software systems. This interoperability is the foundation for modern service oriented architecture.

By the end of this course, students will understand:

- what a web service is
- the Representational State Transfer (REST) architectural style
- best practices in RESTful web service design
- HTTP and how it is leveraged in building web services
- how to secure a web service
- how to test a web service
- how JSON and XML are used to transfer resource representations
- the dependency inversion principle and its implementation with dependency injection
- the motivation for Object/Relational Mapping frameworks
- database programming in C# utilizing Entity Framework and LINQ
- ASP.NET Core and its MVC approach to building web applications and services
- How to program a RESTful web service in C# using ASP.NET Core

Lecture topics include:

- web services in context
- HTTP
- JSON
- the RESTful architecture style
- REST design principles
- dependency injection
- securing web services
- description and discovery of web services
- API design guidelines

Lab Topics will include:

- Visual Studio 2017
- Testing web APIs with cURL and PostMan
- Classes, Interfaces, and Inheritance in C#
- Database Programming in C#
- Serializing with JSON
- ASP.NET MVC
- Entity Framework Core
- LINQ
- Building Web Services Using ASP.NET MVC
- Managing Dependencies with NuGet

## 3. Required Materials

(a) Texts:
C# 7 and .NET Core: Modern Cross-Platform Development (Second Edition), Mark J. Price.

(b) Other
What Every Web Developer Should Know About HTTP, K. Scott Allen.

## 4. Course Content and Schedule

| Date | Lecture Topic | Lab Topic | Textbook |
|---|---|---|---|
| January 8 | | Visual Studio | |
| January 15 | Introduction to Web Services HTTP | cURL, Chrome developer tools | 1-3 HTTP eBook |
| January 22 | JSON | OOP in C# | 6-7 |
| January 29 | RESTful Architecture | .NET Standard Types | 4 |
| February 5 | RESTful Architecture | JSON | 10 |
| February 12 | Reading Break | Reading Break | Reading Break |
| February 19 | Database Programming in C# | Entity Framework | 8 |
| February 26 | Midterm / Midterm Review | LINQ | 9 |
| March 5 | Securing Web Services | MVC Web Apps | 14 |
| March 12 | MVC / Dependency Injection | MVC Web Apps | 14 |
| March 19 | | MVC Web Services | 15 |
| March 26 | REST API Advanced Topics | MVC Web Services | 15 |
| April 2 | Description and Discovery | NuGet, Azure | 16 |
| April 9 | Review | | |

## 5. Basis of Student Assessment (Weighting)

(a) Assignments: 40% Lab Assignments
(b) Quizzes:
(c) Exams: 25% Midterm. 35% Final Exam.
(d) Other (e.g. Project, Attendance, Group Work)

## 6. Grading System

*(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)*
*(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)*

| X | Standard Grading System (GPA) |

| | Competency Based Grading System |

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

## 8. College Supports, Services and Policies

**Immediate, Urgent, or Emergency Support**
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

**College Services**
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

**College Policies**
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

### A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

**The following two grading systems are used at Camosun College:**

**1. Standard Grading System (GPA)**

| Percentage | Grade | Description | Grade Point Equivalency |
|---|---|---|---|
| 90-100 | A+ | | 9 |
| 85-89 | A | | 8 |
| 80-84 | A- | | 7 |
| 77-79 | B+ | | 6 |
| 73-76 | B | | 5 |
| 70-72 | B- | | 4 |
| 65-69 | C+ | | 3 |
| 60-64 | C | | 2 |
| 50-59 | D | | 1 |
| 0-49 | F | Minimum level has not been achieved. | 0 |

**2. Competency Based Grading System (Non GPA)**

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

| Grade | Description |
|---|---|
| COM | The student has met the goals, criteria, or competencies established for this course, practicum or field placement. |
| DST | The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement. |
| NC | The student has not met the goals, criteria or competencies established for this course, practicum or field placement. |

# B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

| Temporary Grade | Description |
|---|---|
| I | *Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family. |
| IP | *In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course. |
| CW | *Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement. |