



Computer Science (COMP) 466

Advanced Technologies for Web-Based Systems (Revision 7)

Status: Replaced with new revision, see the [course listing](#) for the current revision ❌

Delivery mode: [Individualized study online](#). Delivered via Brightspace.

Credits: 3

Area of study: Science

Prerequisites: [COMP 306](#), or [COMP 308](#) or equivalent**

Precluded: None

Challenge: COMP 466 has a challenge for credit option.

Faculty: [Faculty of Science and Technology](#) 

Notes: Students should be familiar with C or C++ or C# or Visual Basic or Java, and have some good programming skills in one of these languages. In addition, students are also expected to have completed at least three senior CS courses and have some good knowledge of database, SQL, system analysis and design, and computer networks. Students who are concerned about not meeting the prerequisites for this course are encouraged to contact the **course coordinator** before registering

Overview

This new revision of COMP 466 is designed for students to learn some of the advanced Web technologies that are widely used by IT professionals in developing web-based systems and applications. It extends the student's knowledge and skills in computing, network programming, web design, and system analysis, design and development.

Outline

COMP 466 consists of the following eight units:

Unit 1: Introduction 1 – the Web, HTML5, and CSS

In this unit, students will review or learn essential concepts and technologies related to the Web, HTML5, and, cascading style sheets (CSS). Students will also learn about web servers and how to install and run web servers on their computers.

Unit 2: Introduction 2 – Client-side Scripting in JavaScript

In this unit, students will review or study how to program in JavaScript and how to write scripts in JavaScript for web applications. Students are expected to spend minimal time on fundamental programming techniques, and focus on techniques to develop dynamic web pages by manipulating web objects based on JavaScript's document object model.

Unit 3: XML and Ajax

XML is a standard for writing good markup language, while Ajax is a collection of web technologies for making rich Internet applications. In this unit, students will learn how to devise their own markup and to use it to markup data; they will learn how to develop Ajax-enabled Internet applications with XML and JSON.

Unit 4: Databases for the Web

One of the important features of web-based information systems is the use of databases from which relevant data is retrieved automatically and used to dynamically generate web pages. Using databases is essential for building e-commerce websites. In this unit, students will study how to use databases in developing web-based systems.

Unit 5: Web-based System Development with PHP

PHP is a lightweight, yet powerful, server-side scripting language for web-based information systems development. In this unit, students will learn how to write server-side scripts in PHP and how to develop web-based applications using PHP.

Unit 6: Web-based System Development with ASP.NET in C#

Over the last decade, ASP.NET has become an important technology and application framework for the Web community. Combined with the programming power of languages such as VB and C#, ASP.NET is now a preferred development framework for many web professionals. In this unit students will work on using ASP.NET and C# to develop web-based systems, Ajax-enabled web applications, and web services.

Unit 7: Web-based System Development with ASP.NET in Visual Basic

In Unit 6, students are given the opportunity to explore the power of ASP.NET with C#. For various reasons, students may prefer Visual Basic as their programming language. In this unit, students will have the opportunity to learn how to use ASP.NET and Visual Basic to develop web-based systems.

Unit 8: Web-based System Development with JavaServer Faces

Another popular technology for web-based system development is JavaServer Faces (JSF), which has servlets and JSP as predecessors. This web technology not only takes advantage of Java, but also solves the problem of scale found in CGI and ASP. In this unit, students will learn how to build Java server pages that simplify the deployment of Java servlets using the JSF web application framework.

Although the course has eight units, a student will need to study only six units to pass the course: Unit 1–Unit 5 and either Unit 6, Unit 7, or Unit 8. Students will need to make their choice clear when doing the third assignment.



This revision has adopted Deitel's (2012) *Internet and World Wide Web: How to Program* (5th ed.) as its textbook; however, because there are so much well-written materials on the Web covering all the topics and technologies to be learned in this course, students are highly recommended and expected to read beyond the textbook. This 400-level course is loaded with useful web technologies for web-based systems development. Students must be self-motivated and work hard in order to succeed in the course.

Learning outcomes

After successfully completing this course, students will be able to

- Install, set up, and run web servers on a home network.
- Deploy web apps on a web server and web hosting services on the internet.
- Analyze and design web-based systems to meet certain business needs.
- Implement web apps using HTML5, CSS3, and JavaScript.
- Implement Ajax-enabled web-based systems using HTML5, CSS3, JavaScript, JSON and XML.
- Implement web-based systems using HTML5, CSS3, JavaScript, XML, MySQL, and PHP.
- Implement web-based systems using one of the following programming combinations:
 - HTML5, CSS3, JavaScript, XML, SQL, LINQ, and ASP.NET in C#.
 - HTML5, CSS3, JavaScript, XML, SQL, LINQ, and ASP.NET in Visual Basic.
 - HTML5, CSS3, JavaScript, XML, Java DB, and JSF.

Evaluation

To **receive credit**  for COMP 466, you must achieve a course composite grade of at least **D (50 percent)** , including a grade of D (50 percent) on each assignment, and at least 50 percent on the final invigilated examination. The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	20%
Assignment 2	20%
Assignment 3A/3B/3C	30%
Final Exam	30%
Total	100%

The **final examination** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the [Exams and grades](#) section of the Calendar.

Materials

Digital course materials

Links to the following course materials will be made available in the course:

Deitel, P. Dietel, H., & Deitel, A. (2012). *Internet and World Wide Web: How to Program*. (5th ed.). Upper Saddle River, NJ: Pearson Education.

Other Resources

All other learning resources will be available online.

- units of the Computer Science 466 Study Guide
- assignments
- links to other web-based course resources:
 - current Java Development Kit (JDK) and other Java packages (servlets, JSP, etc.),
 - Apache web server, Tomcat suites
 - program examples from the textbook publisher
- course evaluation form

Additional supporting materials of interest to students may occasionally be made available electronically.

Special Instructional Features

COMP 466 is offered online and can be completed at the student's workplace or home. COMP 466 is an elective in all undergraduate programs offered by the **School of Computing and Information Systems** [↗](#).

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about **challenge for credit** [↗](#) can be found in the Undergraduate Calendar.





Evaluation

To **receive credit** [↗](#) for the COMP 466 challenge registration, you must achieve a grade of at least **D (50 percent)** [📄](#) on the examination and D (50 percent) on the project. Each of these has equal weight in the challenge evaluation.

Activity	Weight
Project	50%
Exam	50%
Total	100%

[📄](#) **Challenge for credit course registration form**

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services at AU](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery modes may vary from their individualized study counterparts.

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View **previous revision** 
