THE UNIVERSITY OF BRITISH COLUMBIA

COSC 360 – 001 (3 Credits)
Web Programming
2019 Summer Term 2
14:30-17:00 Tue, Wed, Fri
17:30-19:30 Tue, Thu
FIP 121

Academic Calendar Entry
Design and implementation of web-based information systems and app development. Rich user interfaces, asynchronous updates, client-side and server-side scripting using standard technologies such as HTML, CSS, SVG, JavaScript, PHP. Data manipulation with SQL, JSON, XML. Modern scripting frameworks and libraries.

Prerequisite: A score of 60% or higher in COSC 121 and COSC 304, with third-year standing

Course Format
An instructional lecture component with interactive exercises and participation via clickers to develop an understanding of the web development environment, with practical implementation of this knowledge reinforced through regular lab activities. Course materials will be available on Canvas and GitHub.

Course Overview
This course will provide learners with the opportunity to develop a technical understanding of the Internet environment and the structure of the World Wide Web. Core concepts will be covered through pre-readings and exercises. In class, learners will build upon these concepts through discussions, exercises, and coding examples. Learners will gain a solid foundation of modern front end and backend development and integration strategies. Technical skill will focus on the design and implementation of effective web sites. Fundamental knowledge and skills will be acquired that can be applied to web development projects in a multitude of industries and of varying complexity. In addition to practical skill and theory, learners will explore asynchronous JavaScript, web services, frameworks and libraries to efficiently build advanced websites. Learners will advance their skills through both theory and practical concepts involving MVC, and AJAX, enabling them to build an easy to maintain high performing web sites. Throughout the course, work will be conducted on an ongoing project, providing the opportunity for knowledge and skill synthesis resulting in a practical and functional showcase of acquired skills.

Learning Outcomes
With completion of this course, students should expect to be able to:
- Design and build a simple web site that organizes information effectively
- Understand and utilize the DOM
- Use cascading style sheets to create style standards for a web site
- Create a navigational framework that matches the content and genre of the site
- Compare and contrast different CSS layout techniques
- Utilize CSS frameworks to simplify complex CSS layout tasks
- Explain separation of concerns as it applies to the design and implementation of a web site
- Describe the issues involved in developing a web interface
- Utilize client-side scripting to perform tasks such as element transitions and data validation
- Describe how JavaScript interacts with client environments
- Summarize the need and issues involved in web site implementation and integration

- Explain why accessibility issues are an important consideration in web page development
- Design and implement a web interface
- Explain and compare media file formats including lossy vs. lossless compression
- State how server-side technology works
- Utilize server-side scripting to programmatically generate HTML in response to client responses
- Compare and contrast server-side scripting technologies
- Build a web application utilizing PHP
- Utilize databases to create dynamic web applications
- Investigate and describe mechanisms for maintaining state in web applications
- Utilize cookies and web storage to maintain web application state
- Describe RESTful web services
- State potential shortcoming in web security
- Design and implement secure web services
- Write an asynchronous web application using programming best practices
- Integrate third party web services into an application
- Understand and utilise sessions across multiple site visits
- Compare and contrast common data interchange formats used in web applications
- Identify how content can be created/refreshed automatically
- Understand how to construct a web application that can handle exceptions gracefully

Evaluation Criteria and Grading

Grade Item	% Total Weight
Labs	35
iClickers (in-class)	5
Midterm	20
Final Exam (Date TBA)	40
Total	**100%**

Labs are due on the posted dates; lab submissions are to be done via Canvas. Late assignments will not be accepted, unless a valid excuse is given (e.g. doctor's note, bereavement, etc). Students are expected to attend and participate in lectures and class activities, as well as attend labs. iClickers will be used throughout the lecture to evaluate student understanding and participation.

Students are **required** to achieve passing grades on both the final exam and lab components of the course in order to pass. Failure to do so will result in a grade of 45% or the resulting grade, whichever is lowest.

Required Materials

- Lecture notes (available electronically via Canvas or GitHub)
- Required Textbook: Fundamentals of Web Development 2nd edition, Randy Connolly & Ricardo Hoar, 2018. Pearson Education Inc. ISBN 13: 978-0-13-448126-5.
    - https://www.vitalsource.com/en-ca/products/fundamentals-of-web-development-pod-file-randy-connolly-ricardo-hoar-v9780134481807
    - https://www.amazon.com/Fundamentals-Web-Development-Randy-Connolly/dp/0134481267
- iClicker (Available at UBC Bookstore, register in Canvas)

Course Schedule

Week	Topics	Required Readings
July 2 – July 5	**Topic 1:** Course overview, network basics **Topic 2:** Basic HTML elements and structure **Topic 3:** CSS basics: styling	Chapters 1-4
July 8 – July 12	**Topic 4:** HTML tables and forms, form control elements **Topic 5:** Advanced CSS – floats, positioning, and CSS frameworks **Topic 6:** Media, images, file formats	Chapters 4-7
July 15 – July 19	**Topic 7:** Client-Side scripting, Javascript, DOM, Form Handling	Chapters 8-10
July 22 – July 26	**Midterm Exam – Tuesday July 23rd, 2019** **Topic 8:** Server-side development using PHP, Database connections with PHP	Chapters 11, 12, 14
July 29 – Aug 2	**Topic 9:** Error handling and user input validation **Topic 10:** Managing website state; query strings, cookies, sessions, and passing data **Topic 11:** Web application design	Chapters 15, 16, 17
Aug 5 – Aug 9	**Topic 12:** RESTful services, JSON, and data interchange **Topic 13:** Security **Topic 14**: Final exam review	Chapters 18, 19

Final Examination

The examination period for Term 2 of Summer 2019 is Monday, August 12th, 2019 to Friday, August 16th, 2019. Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 24-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job. Further information on Academic Concessions can be found under Policies and Regulations in the Okanagan Academic Calendar http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0. Out-of-time examination forms can be found at (http://ikbsas.ok.ubc.ca/students/undergrad/forms.html) and must be sent to the Dean's office.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0.

Grading Practices

Final grades will be based on the evaluations listed above and the final grade will be assigned according to the standardized grading system outlined in the UBC Okanagan Calendar. The Barber School reserves the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or the school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014).

UBC Okanagan Disability Resource Centre

The Disability Resource Centre ensures educational equity for students with disabilities and chronic medical conditions. If you are disabled, have an injury or illness and require academic accommodations to meet the course objectives, please contact Earllene Roberts, the Diversity Advisor for the Disability Resource Centre located in the University Centre building (UNC 214).

UNC 214 250.807.9263
Email: earllene.roberts@ubc.ca
Web: www.students.ok.ubc.ca/drc

UBC Okanagan Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

UNC 216 250.807.9291
Email: equity.ubco@ubc.ca
Web: www.equity.ok.ubc.ca

Health & Wellness

At UBC Okanagan health services to students are provided by Health and Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Health and Wellness for more information or to book an appointment.

UNC 337 250.807.9270
Email: healthwellness.okanagan@ubc.ca
Web: www.students.ok.ubc.ca/health-wellness

SAFEWALK

Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at ***250-807-8076***

For more information, see: www.security.ok.ubc.ca