

University of Kentucky
School of Information Science (SIS)
ICT 390, Section 001
Semantic Web Development

Instructor:	Dr. Sean Burns
Office Address:	327 Little Library Building
Email:	sean.burns@uky.edu
Office Phone:	859-218-2296
Office Hours:	Mon, Wed: 2 – 4pm
Virtual Office Hours:	Same as above.
Preferred Method of contact:	Email I usually respond to emails within 24 hours, or the first business day after the weekend or holiday.

Course Description

This course introduces students to web development with the goal of designing a website containing structured and semantic data and that adheres to principles of usability, accessibility, and inclusion. By the end of this course, students will acquire skills at planning, developing, organizing, and managing websites in HTML5 and CSS3 and will develop an understanding of basic design principles and project management.

Student Learning Outcomes

After completing this course, students will be able to:

1. explain and implement standard design principles that account for accessibility, usability, and inclusion for audiences of different types;
2. understand basic project management and organize work flows;
3. read and write HTML5 and CSS3 code;
4. connect to a web server and upload, organize, and manage project files;
5. understand and implement structured and semantic data in web sites.

Course Format

This course is taught as a face to face course and managed via Canvas. Course content will be delivered through face to face lectures based on slides and demonstration videos. It is expected that students will devote at least four hours per week to reading and studying the materials, six hours per week of coding, and three hours per week to participation. All reading assignments must be completed prior to the start of the week.

Required Texts and Software

West, Matt. (2013). *HTML5 foundations*. West Sussex, United Kingdom: John Wiley & Sons, Inc.
ISBN 978-1-118-35655-5

Additional required readings are listed below.

Software

- Atom: <https://atom.io/>. Text editor.
- Inkscape: <https://inkscape.org/en/>. Vector graphics editor.
- FileZilla: <https://filezilla-project.org/>. FTP Client.
- Git: <https://git-scm.com/downloads/>. Revision control system.

Course Activities and Assignments

Demonstrations: Class participation constitute 10% of the student's grade. Participation includes demonstrations of material based on course topics and skills.

Assignments: Class assignments constitute 50% of the student's grade. There are five assignments in this course. Each assignment focuses on a key aspect of site design and development. A full description of each assignment will be posted on Canvas at least three weeks before the due date.

Quizzes: Quizzes constitute 25% of the student's grade. Quizzes encourage students to study the basic concepts related to site design, HTML, CSS, semantic technologies, and usability.

Final Project: The final project constitutes 15% of the grade. For the final project, students will collaboratively develop a website that is different from the test sites they developed during the semester. The final project will include a site mock-up, the published site, a usability report, and a final presentation.

Summary Description of Course Assignments

This is a short summary of the course assignments. More complete assignment descriptions will be posted on Canvas on the Assignments page at least three weeks before the due date.

Assignment 1: Site Mock-up. Students will design a mock-up of a single web page using the vector graphics editor, Inkscape, and the design processes discussed in class. The purpose of this assignment is to encourage students to engage in web development planning and apply industry usability principles. The assignment will be evaluated on visual usability principles and layout design.

Assignment 2: HTML. Students will hand-code a one page website based on their mock-up with emphasis only on the structural components (architecture) of the mock-up using HTML5. The purpose of this assignment is to engage students in the process of implementing their design mock-up and acquire the skills necessary to write valid HTML5. The assignment will be evaluated based on how well formed and error-free their code is.

Assignment 3: CSS. Students use CSS3 to style their one page website based on their mock-up and the structural elements used in the previous assignment. The purpose of this assignment is to engage students in the process of implementing layout and to acquire the skills necessary to write CSS3. The assignment will be evaluated based on how well formed and error-free their code is and how well their site matches their mock-up.

Assignment 4: Semantic Markup. Students will encode elements of their site using the schema.org ontology and HTML5 microdata elements or JSON-LD format. The purpose of this assignment is to

engage students in the process of creating semantic web pages. The assignment will be evaluated on how well formed and error-free their code is and how complete their semantic markup is.

Assignment 5: Usability. Students will conduct a usability review of a peer's website. The purpose of this assignment is to engage students in the evaluation of the user experience. The assignment will be evaluated on principles related to usability, accessibility, and inclusion.

Final Project: Students will work in small groups to create a mock-up of a two page website, to create and style that website using HTML5 and CSS3, and add encoded data using the schema.org ontology with the HTML5 microdata elements, RDFa, or JSON-LD. The purpose of this project is to engage students in the entire process of website development. The final project will be evaluated using a holistic rubric based on usability, HTML5 and CSS code, and semantic markup. Work will be conducted collaboratively using Git. The final project will be presented during the last week of class.

Course Grading

Grading Scale (No rounding)

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = E

Mid-term Grade: Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar: <http://www.uky.edu/registrar/content/academic-calendar>

Final Exam Information: There is no final exam in this course.

Dead Week: Senate Rules 5.2.4.6 define the last week of class during a regular semester as dead week. Class participation and attendance policies apply during dead week and regularly assigned homework that was announced in the syllabus applies, but no written examinations or quizzes will be assigned during dead week. See Senate Rules 5.2.4.6 for complete policy information.

Tentative Assignment Due Dates

Activities	Weight	Due Dates
Demonstrations/Participation	10%	Periodic
Assignment 1: Site Mock-up	10%	10/15
Assignment 2: HTML	10%	10/29
Assignment 3: CSS	10%	11/5
Assignment 4: Semantic Markup	10%	11/12
Assignment 5: Usability	10%	11/19
Quiz 1: Site Design	5%	TBA
Quiz 2: HTML	5%	TBA
Quiz 3: CSS	5%	TBA
Quiz 4: Semantic Markup	5%	TBA
Quiz 5: Usability	5%	TBA
Final Project	15%	12/4 – 12/8

Tentative Course Schedule: 8/23 – 12/8

Dates	Topic
Module 1: Introduction	
8/23	Introduction to Course
8/25	History of the Internet and the Web
8/28 – 8/30	Accessibility, Usability, and Inclusion
Module 2: Creating Web Pages with HTML5	
9/1 – 9/8	Getting Started with HTML5 and CSS
9/11 – 9/15	Structuring a Web Page
9/18 – 9/20	Creating the Page Template
9/22 – 9/29	Creating the Web Pages
10/2 – 10/6	Semantic HTML
10/9 – 10/16	CSS
Module 3: Dealing with Data	
10/18 – 10/20	Working with Forms
10/23	Enhancing and Validating Web Forms with HTML5
Module 4: Semantic Web	
10/25 – 10/27	Microdata
10/30 – 11/1	Microdata & JSON-LD
11/3 – 11/6	RDFa
Module 5: Projects	
11/8	Project Management Cycle
11/10 – 11/17	Collaborative Development: Git
Module 6: Conclusion	
11/20	Revisiting Accessibility
11/27 – 12/1	Review
12/4 – 12/8	Final Project Presentations

Reading List & Schedule

Module 1: Introduction

Introduction to Course; History of the Internet and the Web, 8/23, 8/25

- Leiner, B. M., ... Wolff, S. (n.d.). Brief history of the Internet. *Internet Society*. Retrieved from <http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet>
- History of the world wide web. (n.d.). In *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/History_of_the_World_Wide_Web

Accessibility, Usability, and Inclusion, 8/28 – 8/30

- Accessibility, usability, and inclusion: Related aspects of a web for all. (2016, May 06). Retrieved from <https://www.w3.org/WAI/intro/usable>
- Accessibility basics. (n.d.). Retrieved from <https://www.usability.gov/what-and-why/accessibility.html>

Module 2: Creating Web Pages with HTML5

Getting Started with HTML5 and CSS, 9/6 – 9/8

- West, Chapter 1
- Wireframing. (n.d.). Retrieved from <https://www.usability.gov/how-to-and-tools/methods/wireframing.html>
- Lynch, P. J., & Horton, S. (n.d.). Information architecture. In *Web Style Guide* (3rd ed.). Retrieved from <http://webstyleguide.com/wsg3/3-information-architecture/index.html>
- CSS Tutorial, Retrieve from <http://www.w3schools.com/css/default.asp>

Structuring a Web Page, 9/11 – 9/15

- West, Chapter 2
- HTML element reference. (2016, June 12). <https://developer.mozilla.org/en-US/docs/Web/HTML/Element>

Creating the Page Template, 9/18 – 9/20

- West, Chapter 3

Creating the Web Pages, 9/22 – 9/29

- West, Chapter 4

Semantic HTML, 10/2 – 10/6

- HTML5 semantic elements. (2016). Retrieved from http://www.w3schools.com/html/html5_semantic_elements.asp
- HTML5. (2016, June 1). Retrieved from <https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/HTML5>
- Using HTML sections and outlines. (2016, June 10). Retrieved from https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/Using_HTML_sections_and_outlines

CSS, 10/9 – 10/16

- CSS Tutorial, <https://www.w3schools.com/css/>

Module 3: Dealing with Data

Working with Forms, 10/18 – 10/20

- West, Chapter 5
- West, Chapter 6

Enhancing and Validating Web Forms with HTML5, 10/23

- West, Chapter 7

Module 4: Semantic Web

Microdata, 1, 10/25 – 10/27

- West, Chapter 8
- Ronallo, J. (2012). HTML5 microdata and schema.org. *Code4lib*, 16. Retrieved from <http://journal.code4lib.org/articles/6400>
- HTML Microdata. In W3C. Retrieved from <https://www.w3.org/TR/microdata/>.
- Microdata. (2016, August 22). Retrieved from <https://html.spec.whatwg.org/multipage/microdata.html#microdata>

- Getting started with schema.org using microdata. (n.d.). Retrieved from <https://schema.org/docs/gs.html>
- Organization of schemas. (n.d.). Retrieved from <https://schema.org/docs/schemas.html>

Microdata & JSON-LD, 2, 10/30 – 11/1

- Google, *Introduction to Structured Data*, Retrieved from <https://developers.google.com/search/docs/guides/intro-structured-data>
- Google, *Introduction to Structured Data Type*, Retrieved from <https://developers.google.com/search/docs/data-types/data-type-selector>
- Google, *Providing Structured Data*, Retrieved from https://developers.google.com/custom-search/docs/structured_data
- Google, *Structured Data Testing Tool*, Retrieved from <https://search.google.com/structured-data/testing-tool?hl=EN>

RDFa, 11/3 – 11/6

- RDFa. (2017, August 8). In Wikipedia, The Free Encyclopedia. Retrieved from <https://en.wikipedia.org/wiki/RDFa>
- RDFa Lite 1.1 (2nd ed.). In W3C. Retrieved from <https://www.w3.org/TR/rdfa-lite/>.
- RDFa Lite 1.1 Primer (3rd ed.). In W3C. Retrieved from <https://www.w3.org/TR/rdfa-primer/>
- RDFa Play. <https://rdfa.info/play/>

Module 5: Projects

Project Management Cycle, 11/8

- Project Management Methods. usability.gov, How to & tools. Retrieved from <https://www.usability.gov/how-to-and-tools/index.html>

Collaborative Development: Git, 11/10 – 1/17

- Git – Documentation: <https://git-scm.com/doc>
- Git – The Simple Guide: <https://rogerdudler.github.io/git-guide/>
- How to contribute to an open source project on GitHub: <http://blog.davidecoppola.com/2016/11/howto-contribute-to-open-source-project-on-github/>
- How to undo (almost) anything with Git: <https://github.com/blog/2019-how-to-undo-almost-anything-with-git>
- Collaborating with Git: <https://www.atlassian.com/git/tutorials/syncing>
- GitLab: <https://gitlab.com/>
- GitHub: <https://github.com/>

Module 4: Conclusion

Revisiting Accessibility, 11/20

- West, Chapter 9

Course Review, 11/27 – 12/1

Final Project Presentations, 12/4 – 12/8

Course Policies

Submission of Assignments

All assignments should be submitted via Canvas. Prepare and submit all assignments on time. Unless the student has an excused absence, a 10% penalty will be exacted every day an assignment is late and will not be accepted after three days past the due date. See the Attendance Policy and the Course Policies for details on excused absences.

Attendance Policy

This class is a community whose success depends on everyone's participation, and it is vital for you to attend class in order to be successful. Attendance will be taken at the beginning of class. If you miss this, it is your responsibility to let me know you arrived late.

If you are absent on a day when an assignment is due, you will be allowed to hand in or make up that work only if the absence is officially excused. You will be asked to provide official written documentation for excused absences the next time you are in class in order for your absence to be excused. If you know ahead of time that you will be absent from class with an excused absence, please discuss this with your instructor and turn in any assignments ahead of time. Excuses for university-sponsored activities must be made prior to such absences. For any emergency situation that arises, email your instructor as soon as you know about the situation when possible. No make-up work is available for in-class exercises or quizzes unless approved in advance by your instructor. Students have one week to complete a missed assignment or quiz due to an excused absence upon their return without penalty.

If you know ahead of time that you will be absent from class with an excused absence, please discuss this with your instructor and turn in any assignments ahead of time. Excuses for university-sponsored activities must be made prior to such absences. For any emergency situation that arises, email your instructor as soon as you know about the situation when possible. Students have one week to complete a missed assignment or quiz due to an excused absence upon their return without penalty.

Excused Absences

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Per *Senate Rule 5.2.4.2*, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Course Withdrawal

Students are strongly encouraged to withdraw from the class if more than 20% of the scheduled work for the semester are missed (excused or unexcused), per university policy. Please refer to the Academic Calendar for important withdrawal dates: <http://www.uky.edu/registrar/content/academic-calendar>

Academic Integrity

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website:

<http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see <http://www.uky.edu/Faculty/Senate/> for the current set of *Senate Rules*) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and

phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations Due to Disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>.

Technology Information & Resources

As your instructor, I am your first go-to person for technology problems. If you need more immediate assistance, please contact UK ITS: <https://www.uky.edu/its/> or 859-218-4357.

The School of Information Science has a page with a comprehensive list of technology resources here: <http://ci.uky.edu/sis/students/techtips>

Military Members and Veterans

We recognize the complexities of being a member of the military community and also a student. If you are a member of the military or a military veteran or dependent, please inform your instructor if you are in need of special accommodations. Drill schedules, calls to active duty, mandatory training exercises, complications with GI Bill disbursement, and other unforeseen military and veteran related developments can complicate your academic life. If you are aware of a complication, we will work with you and put you in contact with university staff members who are trained to assist you. Please contact the Coordinator of the University of Kentucky Veterans Resource Center at (859) 257-1148 for additional assistance. Visit <http://www.uky.edu/veterans> for more available resources.

Civility and Professionalism

Students must learn to meet the standards of professional behavior and treat each other with respect. Critical inquiry is important, but attacking other persons, verbally or otherwise, is not accepted.

Students must learn to receive and act on constructive criticism, be reliable and responsible, polite and respectable of others, and focus on producing above quality work.