University of Kentucky
School of Information Science (SIS)
ICT 420, Section 201
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:	Wed, Thur: 1–3 PM
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. Prereq: ICT 320 Information Architecture or instructor approval.

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; and
5. understand and implement structured and semantic data in web sites.

Course Format

This is an online course that requires asynchronous class participation. Course will be delivered via the Canvas learning management system.

Required Materials

No required textbook. Required readings and resources listed below.

Required Software

- Text editor (not a word processor). Suggested: Atom, https://atom.io/.
- Vector graphics editor. Required: Inkscape, https://inkscape.org/en/.
- FTP client. Suggested: FileZilla: https://filezilla-project.org/.
- Git. Required: https://git-scm.com/downloads/. Revision control system.

Course Assignments

Assignment/Activity	Grade
Class Participation/Discussions	25%
Final Exam	25%
Assignment 1: Site Mock-up with Inkscape	12.5%
Assignment 2: HTML5	12.5%
Assignment 3: Semantic Markup with JSON-LD	12.5%
Assignment 4: CSS3	12.5%

Summary Description of Course Assignments

Class Participation/Discussions: Participation in class discussions constitutes 25% of grade. Participation will include discussing lectures and topics, performing tasks, and helping each other solve technical issues.

Final Exam: Final comprehensive exam constitutes 25% of the grade. The exam will cover project management, planning and design, HTML5, CSS3, Semantic Markup (JSON-LD), and Accessibility. The exam will be online, *open book* but timed, and delivered through Canvas. Students may start the exam at any time during Finals Week but then must finish it within a set amount of time. Students who require accommodations due to to disabilities must contact the instructor. See the Accommodations due to Disability section in the Course Policy for more information.

Assignments: Class assignments constitute 50% (12.5% each) of the student's grade. There are four assignments in this course, described below. 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. By the last assignment, students will have a fully developed web site.

Assignment 1: Site Mock-up with Inkscape. Students will design a mock-up of a three web page website 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.

Assignment 2: HTML5. Students will hand-code a three page website based on their mock-up with emphasis only on the structural components (architecture) of the mock-up using HTML5 but with added content addressing the purpose of the website. The goal 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 error free code, code readability, and website accessibility and usability.

Assignment 3: Semantic Markup with JSON-LD. Students will add semantic data on each of their web pages using the schema.org ontology and JSON-LD. The purpose of this assignment is to engage students in the process of adding semantic data. The assignment will be evaluated based on error free code, code readability, and data completeness.

Assignment 4: CSS3. Students will use CSS3 to style their website. The purpose of this assignment is to engage students in the process of implementing layouts and presentation and to further develop the skills necessary to write CSS3. The assignment will be evaluated based on error free code, code readability, and website accessibility and usability.

Course Grading

Grading Scale (No rounding)

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

Tentative Course Schedule & Reading List

Module 1: Set up and Planning

WEEK 1: 01/09 – 01/15

Introduction and Installing Basic Software (Text Editor, Inkscape, FTP, Git)

- ➔ Berners-Lee, T., Hendler, J., & Lassila, O. (2001, May). The semantic web. *Scientific American*, *284*(5), 34-43. Retrieved from Retrieved from http://www.jstor.org.ezproxy.uky.edu/stable/26059207
- ➔ Getting started with the Web, https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web

WEEK 2: 01/16 – 01/22

Semantics and Accessibility

- ➔ 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

WEEK 3: 01/23 – 01/29

Designing Web Sites (Inkscape)

- ➔ Inkscape tutorial, Basic: https://inkscape.org/doc/tutorials/basic/tutorial-basic.html

ASSIGNMENT 1: SITE MOCK-UP WITH INKSCAPE, DUE 02/12/2019

WEEK 4: 01/30 – 02/05

Project Management with Git

- ➔ Project Management Methods. usability.gov, How to & tools. Retrieved from https://www.usability.gov/how-to-and-tools/index.html
- ➔ 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
- ➔ Collaborting with Git: https://www.atlassian.com/git/tutorials/syncing
- ➔ GitLab: https://gitlab.com/
- ➔ GitHub: https://github.com/

Module 2: HTML5 and Semantic Data (JSON-LD)

WEEK 5: 02/06 – 02/12

Website Structure and Document Content Sectioning

- ➔ Main Root, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Main_root
- ➔ Document Metadata, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Document_metadata
- ➔ Sectioning root, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Sectioning_root
- ➔ Content Sectioning, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Content_sectioning

- Additional resources:
  - HTML5 Cheat sheet, https://www.wpkube.com/html5-cheat-sheet/
  - HTML5 Semantic Elements, https://www.w3schools.com/html/html5_semantic_elements.asp
  - Using HTML Sections and Outlines, https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/Using_HTML_sections_and_outlines

WEEK 6: 02/13 – 02/19

Text Content and Inline Text Semantics

- Text Content, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Text_content
- Inline text semantics, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Inline_text_semantics

WEEK 7: 02/20 – 02/26

Image and Multimedia, Embedded Content

- Image and Multimedia, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Image_and_multimedia
- Embedded content, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Embedded_content

WEEK 8: 02/27 – 03/05

Tables and Forms

- Table Content, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Table_content
- Forms, https://developer.mozilla.org/en-US/docs/Web/HTML/Element#Forms

WEEK 9: 03/06 – 03/10

JSON-LD

- 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

ASSIGNMENT 2: HTML5, DUE 03/19/2019

ASSIGNMENT 3: SEMANTIC MARKUP WITH JSON-LD, DUE 03/26/2019

Module 3: CSS3

WEEK 10: 03/17 – 03/23

CSS Syntax, Selectors

- How CSS works, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/How_CSS_works
- CSS Syntax, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Syntax
- CSS Selectors, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Selectors

WEEK 11: 03/24 – 03/30

Styling Content

- ➔ Styling text, https://developer.mozilla.org/en-US/docs/Learn/CSS/Styling_text
- ➔ Styling boxes, https://developer.mozilla.org/en-US/docs/Learn/CSS/Styling_boxes

WEEK 12: 03/31 – 04/06

CSS Attribute Selectors and Pseudo-Classes/Elements

- ➔ Attribute Selectors, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Attribute_selectors
- ➔ Pseudo-classes and pseudo-elements, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Pseudo-classes_and_pseudo-elements

WEEK 13: 04/07 – 04/13

CSS Combinators, Values and Units

- ➔ Combinators and selector lists, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Combinators_and_multiple_selectors
- ➔ CSS values and units, https://developer.mozilla.org/en-US/docs/Learn/CSS/Introduction_to_CSS/Values_and_units

WEEK 14: 04/14 – 04/20

CSS Layout

- ➔ CSS Grids, https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout/Grids

ASSIGNMENT 4: CSS3, DUE 04/26/2019

Module 4: Frameworks

WEEK 15: 04/21 – 04/26

Web Frameworks

- ➔ Bootstrap, https://getbootstrap.com/
- ➔ Bootstrap Beginner Crash Course, https://www.youtube.com/watch?v=5GcQtLDGXy8

FINAL EXAM: DUE 05/03/2019

Course Policies

Submission of Assignments

All assignments must be submitted via Canvas. See assignment descriptions for additional details.

Attendance Policy

Since this is an online, asynchronous course, students are urged to maintain focus on their time management and submit all work by their respective due dates. 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 below for details on excused absences.

Excused Absences

Students need to notify the professor of absences prior to class when possible. *Senate Rules 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, (e) interviews for graduate/ professional school or full-time employment post-graduation, and (f) 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. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php.

In situations where a student's total EXCUSED absences exceed 1/5 (or 20%) of the class periods scheduled for the semester, students are strongly encouraged to withdraw (take a "W") from the class as per university policy. If a student has excused absences in excess of one-fifth of the class contact hours for that course, the student shall have the right to receive a 'W', or the Instructor of Record may award an 'I' for the course if the student declines to receive a 'W.'

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.

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 email me or visit 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/.

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.