WEB ACCESSIBILITY AND DESIGN

GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
INFORMATIONAL TECHNOLOGY AND SPECIAL EDUCATION

EDIT 426, EDIT 526 and EDSE 526
Web Accessibility and Design
Spring Semester 2013 (3 credits)
Online

PROFESSOR:

Name: Paul Bohman, PhD
Mobile Phone: 703-930-8500
Office location: No office on campus
Office hours: By appointment only; contact me by email or phone first
Email address: pbohman@gmu.edu

Technical Questions and Support

Name: Samit Vartak
Office Phone: 703-993-3940
Email: SVartak@gmu.edu

COURSE DESCRIPTION:

Official Course Catalog Description: Develops understanding of principles of universal web design. Students apply this understanding by designing and developing accessible web site using web authoring tools. **Prerequisites:** None.

LEARNER OUTCOMES:

This course is designed to enable students to:
1. Understand the concept of universal design
2. Understand disability types and the accessibility challenges presented by digital technologies
3. Create basic web content using HTML and CSS
4. Evaluate the accessibility of existing web content
5. Know the basics of creating accessible Word and PDF documents
6. Know the basics of creating video captioning and audio description for video
7. Understand how to create an organization-wide accessibility policy for the procurement, creation, and delivery of technology products and services.

PROFESSIONAL/TECHNICAL STANDARDS TAUGHT:

- Web Design
  - HTML (including basic HTML 5)
  - CSS
  - Basic WAI-ARIA
- Media and document accessibility
  - Video captioning and audio descriptions
  - Adobe PDF accessibility
  - MS Word accessibility
- Accessibility laws and guidelines
  - Section 508 (U.S.)
  - Americans with Disabilities Act (ADA)
  - Mandate 376 (European Commission)
  - Web Content Accessibility Guidelines (WCAG) 2.0
- IBSTPI Instructional Design Competencies:
  - Professional Foundations:
    - Identify and resolve ethical and legal implications of design in the work place.
  - Planning and Analysis:
    - Identify and describe target population characteristics.
    - Analyze the characteristics of existing and emerging technologies and their use in an instructional environment.
    - Reflect upon the elements of a situation before finalizing design solutions and strategies.
  - Design and Development:
    - Design instruction that reflects an understanding of the diversity of learners and groups of learners.

REQUIRED TEXTS:

None. All reading materials are available on the web.

OPTIONAL LEARNING MATERIALS AND WORKSHOPS:

- Online training by Lynda.com http://www.lynda.com (subscription-based)
  - **HTML Essential Training** http://www.lynda.com/HTML-tutorials/HTML-Essential-Training-2012/99326-2.html
  - **Dreamweaver CS6 Essential Training** http://www.lynda.com/Dreamweaver-tutorials/Dreamweaver-CS6-Essential-Training/97613-2.html
  - **CSS Page Layouts** http://www.lynda.com/Web-Interactive-CSS-training/CSS-Page-Layouts/86003-2.html

REQUIRED HARDWARE:

You will need access to:
- A **Windows or Macintosh computer** with:
  - a fast and reliable **broadband internet connection** (e.g., cable, DSL)
  - **speakers or headphones**
  - a **microphone**
- A **video recording device** (can be a phone, computer, webcam, video camera, or anything that can record videos)

REQUIRED SOFTWARE:

NOTE: You do not necessarily need to buy any of the software listed below, but you will need access to it. All of the required software will be available in the classroom computer labs. Please plan accordingly if you are going to use the 30-day demo.
- **Readers and media players:**
  - **Adobe Reader** (free) (or other PDF reader, such as Preview on a Mac) http://get.adobe.com/reader/
  - **Quicktime** (free) http://www.apple.com/quicktime/download/
  - **Adobe Flash player** (free) http://get.adobe.com/flashplayer/
- **Word processing:**
  - **Microsoft Office** http://office.microsoft.com
    NOTE: If you don't have a license, Office is available in nearly all computer labs on all campuses. You can also access it from home using the Virtual Computing Lab (VCL) https://www.vcl.gmu.edu.
- **HTML/text editor** (one of the following, or other similar program. *DO NOT* use Notepad on Windows or TextEdit on a Mac*):
  - Mac:
    - **TextWrangler** (free) http://www.barebones.com/products/textwrangler/download.html
    - **BBedit** (commercial) http://www.barebones.com/products/bbedit/
    - **Textmate** (commercial) http://macromates.com/
  - Windows:
    - **PSPad** (free) http://www.pspad.com/
    - **Notepad++** (free) http://notepad-plus-plus.org/
- **Screen reader** (choose at least one):
  - **Windows**
    - **JAWS** (commercial product; most popular screen reader; trial version available for 40 minutes at a time before you have to reboot the computer to keep using it, with essentially no expiration date) http://www.freedomscientific.com/products/fs/jaws-product-page.asp
    - **NVDA** (free) http://www.nvda-project.org/
  - **Mac**
    - **VoiceOver** (free, already installed on Macs)

OPTIONAL SOFTWARE

- **Dreamweaver**, version CS5 or higher. Dreamweaver is available on the Fairfax campus in the computer labs in Robinson A350, STAR Lab, and CLUB. On the Arlington Campus, contact Chris Tilley: 703-993-7553 to loan out a laptop in Founders Hall, Rm B115. On Prince William Campus, Bull Run Hall computer labs have Dreamweaver. You can also contact Rick Reo: 703-993-8536 for more information for Prince William. Students may also purchase their own copy at the discounted educational rate through the campus bookstore or any other retailer such as: AcademicSuperstore (http://www.academicsuperstore.com/) or JourneyEd (http://www.journeyed.com/). A free 30-day trial version is available for download from the Adobe website. ***NOTE* You may need the software for more than 30 days. It is your responsibility to have access longer if needed by visiting a computer lab or purchasing the software.**
- **Antivirus software**, free for students at http://antivirus.gmu.edu

ACCESSING THE COURSE:

Blackboard: This course uses Blackboard as the learning management system. Log in to the myMasonPortal web site (https://mymasonportal.gmu.edu/) and click on the "Courses" tab to access the class. Be sure to use a combination of browser and operating system that is compatible with the Mason web site, as explained at https://coursesandorgs.pbworks.com/w/page/30543474/Browser-Support

COURSE ASSIGNMENTS:

Note: All of the assignments are explained in greater detail in the Assignments section of the course in Blackboard.

1. Ongoing assignment: Participate in weekly online discussions (15 points, 1 point per week)
2. Fix the accessibility issues in a Word document given by the instructor (10 points)
3. Create captions for a YouTube video (10 points)
4. Create a practice web page (10 points)
5. Create a simple 5-page web site with CSS styling (20 points)
6. Write a comprehensive set of organization-wide accessibility policies for a mid-size company (10 points)
7. Final project: Evaluate the accessibility of an existing web site (25 points)

Total points possible: 100

ASSIGNMENT DETAILS AND GRADING RUBRICS

1. Ongoing assignment: Participate in weekly online discussions

The instructor will post weekly discussion topics. Students will respond to the topic in general, and to the posts of other students.

Online commenting protocols:
- Postings should be evenly distributed during the discussion period (not concentrated all on one day or at the beginning and/or end of the period).
- Postings should be a minimum of 50 words.
- Avoid postings that are limited to 'I agree' or 'great idea', etc. If you agree (or disagree) with a posting then say why you agree by supporting your statement with concepts from the readings or by bringing in a related example or experience.
- Address the questions as much as possible (don't let the discussion stray).
- Try to use quotes from the articles that support your postings. Include page numbers when you do that.
- Build on others responses to create threads.
- Bring in related prior knowledge (work experience, prior coursework, readings, etc.)
- Use proper etiquette (proper language, typing, etc.).

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Timely discussion contributions	2 postings well distributed throughout the discussion period	2 postings distributed throughout the discussion period	1 posting somewhat distributed throughotut he discussion period	0-2 postings not distributed throughout the discussion period
Responsiveness to discussion and demonstration of knowledge and understanding gained from assigned reading	Very clear that readings were understood and incorporated well into responses	Readings were understood and incorporated into responses	Postings have questionable relationships to reading materials	Not evident that readings were understood and/or not incorporated into the discussion
Adherence to online commenting protocols (see above)	All online protocols adhered to	1 online protocol not adhered to	2-3 online protocols not adhered to	4 or more online protocols not adhered to
Points	15	12-14	8-11	7 or less

2. Fix the accessibility issues in a Word document given by the instructor

The instructor will provide students with a Word document that has several accessibility errors. Students will identify and remediate (fix) the errors.

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Accurate identification and remediation of accessibility issues	All accessibility issues identified and remediated	All but one or two accessibility issues identified and remediated	At least half of the accessibility issues identified and remediated, but missing three or more	Less than half of the accessibility issues identified and remediated.
Points	10	7-9	5-8	4 or less

3. Create captions for a YouTube video

Video requirements: Students will create a brief video with at least two minutes of narration, monologue, or dialog. The topic can be anything the student chooses, as long as the student creates the video, and there are no third-party copyright restrictions on the content.

Captioning requirements: Students will upload the video to YouTube, create a transcript for the video, upload the transcript to create a captioning file, and synchronize the transcript with the video on YouTube. See http://support.google.com/youtube/bin/static.py?hl=en&guide=2734661&page=guide.cs for general YouTube captioning instructions.

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Video requirements	All of the video requirements are met	All of the video requirements are met	The video meets half or more of the requirements	The video meets less than half of the requirements
Captioning requirements	The transcript is accurate, and the captions are synchronized accurately with the video on YouTube	The transcript is accurate and synchronization of the captions is reasonably accurate	The transcript has a few errors, or the synchronization has a few errors	The transcript has many errors (or is not done), and there are many synchronization errors (or the captions were not

				synchronized)
Points	10	7-9	5-8	4 or less

4. Create a practice web page

Minimum required elements:
- a doctype
- an opening `<html>` and closing `</html>`
- a `<head>`, with a `<title>`, character encoding, and `lang` attribute
- a `<body>`, with the following elements inside it:
  - at least three paragraphs (can be placeholder text, such as "lorem ipsum" text generated at http://www.lipsum.com/)
  - a level 1 heading
  - at least two level 2 headings (and any other headings you want to add, up to level 6)
  - a blockquote
  - a line break
  - a horizontal line (horizontal "rule")
  - bold and italic text using `<strong>` and `<em>`
  - a superscript
  - a subscript
  - an invisible comment
  - a bulleted (unordered) list
  - a numbered (ordered) list
  - a definition list
  - a link to another web site
  - a link to another place in the same page
  - an image
  - a simple data table

Uploading to the Mason web server: Students will upload their files to their own directory on the http://mason.gmu.edu server. The web address, once everything is set up properly and the file is uploaded, will be http://mason.gmu.edu/~yourname, where "yourname" is your Mason user name. Refer to http://webdev.gmu.edu/Setting_Up_a_Personal_Site for an overview of the account setup and upload process. Samit Vartak can help guide you through the process: SVartak@gmu.edu 703-993-3940.

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Inclusion of all required elements	All elements included	1 to 2 elements left out	3 to 5 elements left out	6 or more elements left out

Pass HTML validator at http://validator.w3.org/	No errors	1 to 2 errors	3 to 5 errors	6 or more errors
Uploading to server	The web page is uploaded to the web, on the student's mason.gmu.edu account, and is viewable by anyone with a web connection and a browser	The web page is uploaded, but there are problems viewing the file	The web page is not uploaded	The web page is not uploaded
Points	10	7-9	5-8	4 or less

5. Create a simple 5-page web site with CSS styling

- **Template:**
  - o The template section must be exactly the same on each page (that's why they call it a template!)
  - o A header section, marked by `<div class="header">`
  - o A navigation section, marked by `<div class="nav">`
    The navigation must be constructed using a bulleted list, and must consist of 5 links. The first link must be "Home." One of the links must be "Contact," and another link must be "About" (or "About Me"). Students can choose the name of the other links. Each list item must have a unique `id`, for example: `<li id="nav_home">`, `<li id="nav_about">`, etc.
  - o A content section, marked by `<div class="content">`
  - o A footer section, marked by `<div class="footer">`
- **Cascading Style Sheet (CSS):**
  - o The styles must visually turn the main navigation into a tab-like interface (either horizontal or vertical)
  - o The styles must specify a font family for the body of the document
  - o The styles must include at least one background image. The background image must not visually conflict with the foreground text, and must not contain any important content (such as text).
  - o The styles must specify at least one background color
  - o The styles must specify a hover and focus effect for links using the `a:hover` and `a:focus` pseudo classes. There should be one set of effects for the navigation and a different set of effects for all other links
- **Page-specific styles:**
  - o Each page must have page-specific styles in the head of the document to make the active tab in the navigation look selected or active. This helps users know where they are within a site by simply looking at the navigation bar. The styles

must be consistent, so that no matter which page the user is on, it is obvious by looking at the navigation tabs which link is currently active/selected.

- **Content:**
    - o The "About" or "About Me" page must include a professional biographical summary and a picture of the student. Optional: Students can also include information about non-professional personal interests.
    - o The content of the other pages can be anything the student wants, and can include placeholder text, such as "lorem ipsum" text (see http://www.lipsum.com/).

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Template	The template includes all of the required elements, and the template section is exactly the same on every page	The template includes all of the required elements, and the template section is mostly the same on every page	The template is missing some of the required elements, or there are some variations in the template sections between pages	The template is missing most or all of the required elements, and there is little consistency between pages
Cascading Style Sheet	The CSS contains all of the required elements and the style sheet is well-organized, well-written, and easy to understand	The CSS contains all of the required elements	Parts of the required elements are missing	Most or all of the required elements are missing
Page-specific styles	The page-specific styles highlight the active/selected tab and are written concisely	The page-specific styles highlight the active/selected tab	The styles achieve most of the goal of highlighting the active/selected tab, but there are deficiencies	The styles fail to achieve the goal of highlighting the active/selected tab
Content	The content meets all of the requirements and is written well	The content meets all of the requirements	Parts of the content requirements are not met	Most of the content requirements are not met
Points	20	16-19	11-15	10 or less

6. Write a comprehensive set of organization-wide accessibility policies for a mid-size company

The scenario: The student is hired as an accessibility consultant by a technology company of 500 employees. The company's main product is a web-based financial platform for business-to-business transactions. The assignment is to create a set of comprehensive accessibility policies for the company.

Policy Requirements: The accessibility policies must ensure that:
- Top level management buys into the idea of accessibility
- The company includes accessibility as an integral part of the technology procurement (purchasing) and contract process with third-party vendors
- The company considers accessibility skills as a part of the hiring process
- Current web developers receive detailed technical accessibility training
- Current project managers receive accessibility training relevant to their job
- Accessibility is built into the product development life cycle of the company's main web-based financial product, from concept to prototype to quality control and deployment.
- Accessibility is built into the development cycle of the company's web site

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Policy Requirements	All requirements are met, and there the policies are thoughtful, feasible without overburdening the company, and comprehensive enough to address real-life accessibility issues	All requirements are met, and there the policies are adequate to address real-life accessibility issues	Some requirements are not met, or the policies are weak in the way they address real-life accessible issues	Several of the requirements are not met or the policies are too weak to address real-life accessibility issues
Points	10	7-9	5-8	4 or less

7. Final project: Evaluate the accessibility of an existing web site

The instructor will provide students with a web site to analyze for accessibility issues.

Report Requirements: Students will find the issues and report them using a Word template supplied by the instructor. The report will include the following sections:

- **Executive summary** of no more than one page (target audience: CEOs, program managers, etc.), which will include:
    1. **A brief overall summary** of the accessibility status of the web site (one paragraph) as well as a
    2. **A brief summary of how the issues affect users of each major disability type** (blindness, low vision, deafness, motor disability, cognitive disability).
- **Detailed list of issues in the template** (target audience: web developers), with a reference to the relevant WCAG 2.0 violation, a brief explanation of the issue, and a recommended method of fixing the issue. This section of the report can be **as long as necessary** to document all of the issues.
- **Detailed list of issues in the content of each page** (target audience: web developers), with a reference to the relevant WCAG 2.0 violation, a brief explanation of the issue, and a recommended method of fixing the issue. This section of the report can be **as long as necessary** to document all of the issues.

Criterion	Expected	Sufficient	Insufficient	Not Evident or Not Completed
Report Requirements	All of the required components of the report are present, and according to the specifications above	All of the required components of the report are present, and mostly according to the specifications	Parts of the requirements are incomplete, or some sections are not in accordance with the specifications	Parts of the requirements are missing, or the majority of the sections are not in accordance with the specifications
Comprehensiveness of Report	All the accessibility issues are identified	Up to three major accessibility issues are not identified	Between six and four major accessibility issues are not identified	Seven or more major accessibility issues are not identified
Quality of Report	The report is well-written, well-organized, and can be used as an effective tool for the company to make their web site more accessible	The report is well-written, well-organized, and is an adequate tool for the company to make their site more accessible	Parts of the report are not well-written or well-organized, or the report is not as effective as it should be as a tool for the company to make their web site more accessible	Serious flaws in the writing or organization of the report, or the report is ineffective as a tool for the company to make their web site more accessible
Points	25	20-24	15-19	14 or less

CLASS SCHEDULE

Dates	Topics	Assignments
Jan. 22-25	Intro to web accessibility and universal design, disability types, and assistive technologies	**Due Sunday (end of week) at midnight:** Online discussion question
Jan 28-Feb 1	Word accessibility	****ASSIGNMENT 1 Due Feb 1 by midnight: Fix the accessibility problems in a Word document given by the instructor (10 points)** **Also due Sunday (end of week) at midnight:** Online discussion question
Feb 4-8	Video accessibility: captions and audio descriptions	****ASSIGNMENT 2 Due Feb 8 by midnight: Add captions to a YouTube video (10 points)** **Also due Sunday (end of week) at midnight:** Online discussion question
Feb 11-15	Basic HTML	**Due Friday at midnight:** Online discussion question
Feb 18-22	Basic HTML (cont'd)	****ASSIGNMENT 3 Due Feb 22 by midnight: Create a practice web page (10 points)** **Also due Sunday (end of week) at midnight:** Online discussion question
Feb 25-Mar 1	Basic CSS	**Due Sunday at (end of week) midnight:** Online discussion question
Mar 4-8	Basic CSS (cont'd)	****ASSIGNMENT 4 Due Mar 8 by midnight: Create a simple 5-page web site with CSS styling (20 points)** **Also due Sunday (end of week) at midnight:** Online discussion question
Mar 11-15	*Spring break*	
Mar 18-22	HTML accessibility techniques	**Due Sunday at (end of week) midnight:** Online discussion question
Mar 25-29	HTML accessibility techniques (continued)	**Due Sunday at (end of week) midnight:** Online discussion question
Apr 1-5	Accessibility evaluation tools and techniques	**Due Sunday at (end of week) midnight:** Online discussion question

Apr 8-12	Accessibility laws, policies, and protocols	****ASSIGNMENT 5 Due Apr 12** Write a comprehensive set of organization-wide accessibility policies for a mid-size company (10 points) **Also Due Sunday (end of week) at midnight:** Online discussion question
Apr 15-19	Introduction to Dreamweaver	**Due Sunday at (end of week) midnight:** Online discussion question
Apr 22-26	PDF accessibility	**Due Sunday (end of week) at midnight:** Online discussion question
Apr 29-May 3	Work on accessibility evaluation	**Due Sunday (end of week) at midnight:** Online discussion question
May 6-10	Work on accessibility evaluation	****ASSIGNMENT 6 Due May 10 by midnight:** Evaluate the accessibility of an existing web site (25 points)

GRADING SCALE

Graduate Students (those taking EDIT/EDSE 526):

95-100% = A
90-94% = A-
87-89% = B+
83-86% = B
80-82% = B-
70-79% = C
< 70% = F

Undergraduate Students (those enrolled in EDIT 426):

95-100% = A
90-94% = A-
87-89% = B+
83-86% = B
80-82% = B-
77-79% = C+
74-76% = C
70-73% = C-
60-69% = D
< 60% = F

GMU POLICIES AND RESOURCES FOR STUDENTS

a) Students must adhere to the guidelines of the George Mason University Honor Code [See http://oai.gmu.edu/honor-code].

b) Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/1301gen.html].

c) Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

d) The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].

e) Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform teir instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].

f) Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

g) The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].

OPTIONAL SOFTWARE TO IMPROVE YOUR LEARNING AND READING COMPREHENSION

- **Read and Write Gold** (free) by TextHelp. For an explanation of the software, see http://www.texthelp.com/videotours/rw10marketing/intro/intro_stream_us.html This software can improve reading comprehension and learning for people with learning disabilities, different learning styles, or those whose native language is not English. Mason is offering this free to all students, please visit Mason's Assistive Technology Initiative http://ati.gmu.edu/ for a copy of the software.

PROFESSIONAL DISPOSITIONS

Students are expected to exhibit professional behaviors and dispositions at all times.

CORE VALUES COMMITMENT

The College of Education & Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles. http://cehd.gmu.edu/values/

For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].