

# Analysis Phase

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## *Detailed Project Profile*

### Instructional Goals

#### *Overview*

The goal of this instructional lesson is to be a complementary online lesson for students taking Web Accessibility and Design (EDIT 526) course. It is meant to help students in two areas. The first area is to show students, who already have some basic HTML and CSS knowledge, how to make a 3-page website. The second area is to show students how to test their sites for accessibility issues using some basic free tools.

### Instructional Analysis

Here is the outline and flowchart for creating this lesson:

- Review basic HTML and CSS syntax
- Creating the needed HTML and CSS files:
  - Why and how to create a separate CSS file
  - Use the same CSS file in all pages
- Link HTML files together using a common code for menu
  - Copy the code for the menu on all pages
  - Make “current page” menu item stand out so the user knows which page they are on
- Add sample content to pages
  - Add a few images
  - Add a table
  - Add multiple headings
  - Add a page background
  - Add a few hyperlinks
- Check HTML pages for accessibility issues
  - Using a screen reader to make sure reading order is correct and understandable
  - Check Hyperlinks for descriptive language

- Ensure important information is not only part of images
- Check images for Alt tags
- Check tables for proper headings on rows and columns
- Check headings are properly ordered
- Check for color contrast
- Check for various color blindness

## Learner Analysis

**Background Knowledge:** Learners need to have some basic knowledge of HTML and CSS before starting this course. Even though there is a review of HTML and CSS basics, it will not be enough for most students. They also need to be able to use a computer and work with a text editor. Students will decide on the subject and the content of their website. Students should be familiar with Web Content Accessibility Guidelines (WCAG) standards already. They will learn to use some of the freely available tools to check for accessibility issues.

**Access Requirements:** Learners need to have access to a computer with Internet connection. They also need to have access to a web hosting account. This is where they will upload their HTML and CSS file. The university will provide this space, but learners need to do some setup before they can use it.

A comprehensive survey will be given at the time of the lesson to gather feedback regarding the learner's experience. This survey will be used to modify and improve future offerings of this lesson.

## Learning Objectives

There are two learner objectives in this instructional lesson. Learners will learn the concept of how to properly set up a website with multiple pages with a common menu structure and share the same CSS file. They will also learn to use some free tools to check the site for some accessibility issues. These tools include a screen reader like Voice Over and a few Chrome extensions like Chrome Contrast Analyzer.

## Implications for UDL in Analysis Phase of ID Process

To make this instructional lesson more accessible and follow some of the UDL guidelines, the content will be presented in multiple formats. There will be

reading materials for those who learn best by reading. There will be instructional videos for those who don't like to read, but like to see and hear the instructions. Finally there will be links to websites, where many examples are provided. This will help those students who learn best by following examples.

## Design Phase

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### Assessments

The main assessment at the end of the course will evaluate the student's knowledge in two areas. Each area corresponds to a learning objective.

The first learning objective is to make sure students know how to create a multi-page website and use a common CSS file and menu. Since they have to create such a site, the course instructor will visit each site to ensure their site is functioning properly and includes all the needed features. After students have completed this assignment, they will complete an assessment, which would include a set of multiple-choice questions. The questions are designed to evaluate student's knowledge, yet at the same time be educational and informative.

The second learning objective ensures students know how to test a web page for accessibility issues. To that end, a test site will be setup, which contains multiple accessibility issues. Students will be asked to evaluate the site and produce a comprehensive report on all the accessibility issues they are able to find. The course instructor also evaluates this report and proper feedback is given to each student.

### Instructional Format

The most suitable instructional format for this course is online delivery. Links will be provided to all of the reading materials, instructional videos, and example sites. This lesson will be delivered on Blackboard along with the rest of EDIT 526 content.

## Instructional Strategy

### Pre-Instructional Activities:

In order to increase student motivation for this course, students are asked to review a few videos, which demonstrate the difficulties people with accessibility issues face when visiting an inaccessible website. Some of these videos will show students who have accomplished unimaginable tasks, despite their handicap. A simple search for “blind programmers” brings back unbelievable success stories. After students get some motivating exposure, the goals of this course are presented to them, both in the form of text and a video of what previous students have done in this course with the knowledge they gained.

### Content Presentation:

Lesson content will be presented to students in three formats. There will be instructional text, to inform students of the content, an instructional video, by the course instructor clarifying the content. Finally, there will be links to some example sites demonstrating the usability of the course content.

### Learner Participation:

This lesson is setup to be hands-on. Students will be setting up their own multi-page website and use tools to check other sites for accessibility issues. They will also receive proper feedback from the course instructor on their progress and accomplishments. To create web pages, students are encouraged to use simple text editing tools, like Notepad, Wordpad, or any other simple text/HTML editor. These tools are more compatible with screen readers.

When it comes to evaluating a site for accessibility issues, students will be using at least one screen reader (i.e. Voice Over) to evaluate content on a webpage. A screen reader is the main tool to evaluate things like making sure all images have alt text, tables are setup properly with header row, headings inside the content are properly nested, and making sure all links have meaningful description.

There are many Chrome extensions, which help in evaluating accessibility issues of a website. One of them is called Color Contrast Analyzer, which can detect contrast issues on a page. Another one is Spectrum, which will change screen colors according to various color blindness. Extensions like these will be used by most students, but it is unfortunate Chrome extensions are not accessible by

screen reader tools, which means students with vision impairment will not be able to use these extensions.

### **Assessments:**

Students will be assessed during the activities and practices of this course. At the end of the course, students will have a final assessment for each of the learning objectives. The assessment for the first objective will be in the form of multiple-choice questions, which will serve as an assessment and as a review tool. The second objective of this course is assessed by having the student evaluate a test website and do a write-up on all accessibility issues found on that site.

After the course is completed, students are asked to complete a survey about the course. This survey will identify any issues encountered by students during the course and any suggestions they may have about improving this course in the future.

### **Follow-up Activities:**

There will be a newsletter for this course. Students are encouraged to sign up for this newsletter, which will send them periodic emails to keep them up-to-date on the latest accessibility related news. Using these emails, the instructor can help students remember and apply their skills learned in this course.

### **Implications for UDL in Design Phase**

In order to take UDL principles into consideration, the following guidelines will be used when developing course content:

- **Multiple Means of Representation of the Course Content:** The course content will be presented in multiple ways (text, video, and demos) to help students with various learning orientations learn the content.
- **Students with Visual Impairments:** Course content will be provided in a text format for the benefit of students with visual impairments. All WCAG will be followed in creating the text of the course content for this class.
- **Students with Hearing Impairments:** All videos will have subtitles associated with them. In some cases, it might be necessary to have the full text of the video available in text format.

# Development

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## Create a Sample:

There are many tutorial websites and YouTube videos already available, which can be used in this instructional lesson. New instructional text and videos will only be created if a similar one is not found on Internet. Here are a few sample text-based tutorial sites and videos on how to build a multi-page site using HTML and CSS, which is our first learning objective. The following videos have been selected because the narrative is very accurate and they all contain closed captions.

- Build Your First Website (text-based): <http://learn.shayhowe.com/html-css/building-your-first-web-page/>
- Basic HTML and CSS Website for Beginner: <https://www.youtube.com/watch?v=tGWdjWhyWPM>
- Learn HTML and CSS in 12 Minutes: <https://www.youtube.com/watch?v=0afZj1G0BIE>
- How to use DIV Tags and CSS to Create Advanced Website Layouts and CSS Menus: <https://www.youtube.com/watch?v=cyjQUzlwerY>

## Develop the Course Material:

Tutorial websites and videos will be collected to cover both learning objectives. These will be evaluated and the best websites and videos will be used for this lesson. This complementary lesson will be between 45 and 60 minutes long.

## Conduct a Run-through:

Selected websites and videos will be organized and presented in proper order. The final selection and order will be presented to the EDIT 526 course instructor for his / her professional review. The instructor's feedback and comments will be used to make final adjustments to this complementary lesson.

## Implications for UDL in Development Phase:

In order to comply with UDL principles, all tutorial websites and videos will be evaluated for accessibility issues. Tutorial websites and videos need to be WCAG compliant to ensure the greatest number of users can benefit from them. Any web page or video created for this lesson will also be WCAG compliant.

## Implementation

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### Train the Instructor:

In this section of the implementation, the focus is on the course instructor. Since this is a complementary instructional lesson, it is necessary to inform the course instructor and make sure the instructor understands the purpose of this lesson and how it should be used. All the UDL aspects of this lesson should be pointed out to the instructor as well.

### Prepare the Learner:

The course instructor will inform registered students that such a complementary lesson exists for their class. On the week when students are going to create a multipage website, their instructor will inform them by an announcement that such a complementary lesson exists and can benefit students who are having trouble completing their multipage website assignment. A similar announcement will be sent out by the instructor when students are suppose to evaluate a website for accessibility issues.

There are no prerequisites for this lesson because this course is providing basic background on HTML & CSS and instruction on how to use simple tools to evaluate accessibility issues. Needed hardware and access to the Internet and the LMS system is the same as the course itself.

### Arrange the Learning Space:

This complementary lesson will also be presented in the same LMS system as the course itself. There are two parts to this lesson and the instructor will make each part available when students need it to complete their relevant assignment.

## UDL in the Implementation Phase:

There is no special UDL consideration in for the Implementation phase in the case of this instructional lesson. The course instructor will learn about this lesson in a one on one session. He or she will then inform the students using the LMS Announcement system, which should already be UDL compliant.

## Evaluation

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### Formative Evaluation:

It is best to have three groups do the formative evaluation for this lesson. The first group will be current and past instructors of this course, who are the most suitable people to provide feedback regarding how this lesson will complement EDIT 526. The second group should be the actual students who have used this lesson to complete their assignment. A quick evaluation survey in the form of simple grading scale questions should be used to gather student feedback. The third group to provide formative feedback will be a couple of coworkers, who have no prior knowledge of this course. Their feedback is used to make sure the instructions are easy to understand and make sense to a new learner.

### Summative Evaluation:

Since the course already has a summative evaluation, a few extra questions can be added to the existing evaluation for those students who used this complementary lesson. A couple of open format questions will also allow students to make suggestions and recommendations for future upgrades.

### UDL in the Evaluation Phase:

Since evaluation questions are in the form of simple multiple choice questions and comment boxes added to the existing course evaluation, there will not be any UDL related concerns in the evaluation phase.