Final Deliverable: Meteo 003 Website

User Guide

Group 4: Shannon Gearhart, Julia Maloney, Mihir Marathe,

Arianna Scheidell, and Charlie Steininger

12/2/18

Table of Contents

1. Overview	2
2. Technologies Used	2
2.1 HTML	2
2.2 CSS	3
2.3 JavaScript	4
2.4 Python	6
3. Changes	7
3.1 Home	8
3.2 Syllabus	8
3.3 Resources	9
3.4 Contest	9
4. Maintenance	11
4.1 Home	11
4.1.1 Announcements	11
4.1.2 Course Information	14
4.1.2 Weather API	16
4.2 Syllabus	17
4.2.1 Sections	17
4.2.2 Navigation	18
4.3 Resources	18
4.3.1 Modules	18
4.3.2 Helpful Links	19
4.3.3 Web Lecture Outlines	19
4.4 Contest	20

1. Overview

The following information is an instructional guide for Professor Syrett on the remodeled website. This guide discusses the technologies used, changes from the old to new website, and an overview of how course information can be updated via the HTML files. Because the code will be updated and the website is completely refreshed, our group is providing this information guide to help anyone with minimal technical experience understand and be able to update the information on the website.

2. Technologies Used

This section of the document will cover which technologies were used to redevelop the Meteo 003 website. While section 4, Maintenance, will go more in-depth as to how the website can be updated and modified technically using the various technologies described, this section will go over the technologies used to develop the website. The four main languages used to develop the updated website were HTML, CSS, JavaScript, and Python. All of the code for the website is located at https://github.com/steiningeriv/meteo. There is also an images folder on the repository containing images in used on the website.

2.1 HTML

HTML (Hypertext Markup Language) is a markup language that was used on this website to develop the front end displayed on the website. The files using this kind of format are denoted using the .html ending. The following image is an example of HTML code used on the homepage (index.html) of the website.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <meta name="WeatherSTEM-api-key" content="ed1wra9a"> <!-- WeatherSTEM API Key: can be customized with personal account -->
   <meta name="WeatherSTEM-station" content="centre/arboretum"> <!-- Target WeatherSTEM station -->
   <title>Meteorology 3</title>
    <link rel="stylesheet" href="styles.css">
   k href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i,800,800i" rel="stylesheet">
   <script src="scripts.js"></script>
   <script src="index.js"></script>
   <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
   <script src="//code.jquery.com/jquery-latest.min.js"></script>
    <script src="api.min.js"></script>
</head>
```

HTML was mainly used to add the various text elements needed on the website. HTML provides a base (a sort of "skeleton") to a website that can be formatted and referenced with CSS and JavaScript. As discussed in section 4, Maintenance, this HTML can be edited in the future if need be.

The specific pages that were developed using html were: index.html, announcement.html, resources.html, syllabus.html, and contest.html.

2.2 CSS

CSS (Cascading Style Sheets) is a styling language that was used to develop the design for the website. CSS files contain formatting information for certain page elements that is used when the website is displayed. The files using this language are denoted using the .css ending. CSS deals with aligning elements to their proper locations, setting their properties (display properties, colors, width, height, etc.), and performing other stylistic manipulations. Below is a sample taken from the pages.css file aligning the syllabus section of the website.

```
.container-2 {
    display: grid;
    min-height: 100%;
    grid-template-columns: 130px 60% 20% 11
    grid-template-rows: 165px 1fr 400px 100
}

.syllabus {
    grid-column: 2 / 2;
    grid-row: 2;
    height: auto;
    margin: 0px 20px 20px 30px;
}
```

The specific pages that were developed using CSS were pages.css and styles.css.

While HTML and CSS can seem very similar, as they are both used to edit the front end of the website, a major difference is what each technology is used for. HTML is used to essentially create the textual "skeleton" of the website, while CSS is used to create the "skin" of the website. That is, CSS arranges how all the elements look and where they are located on the webpage.

2.3 JavaScript

JavaScript is a high-level interpreted programming language used to specify the dynamic functions behind the website (for example, getting information from the WeatherStem API for the daily weather feature). The files using this kind of technology are denoted using the .js ending. Below is an image of the JavaScript code used to develop the weather widget feature.

```
(function() {
    var j, c, f, b, h, a, g = "1.001";
var k = function() {
         j = $("meta[name=WeatherSTEM-api-key]").attr("content");
         if (!j) {
              return alert("No WeatherSTEM API key found")
         station = $("meta[name=WeatherSTEM-station]").attr("content");
if (station == "closest") {
              f = station;
              get_geolocation(function(o) {
                  h = o.lat;
                  a = o.lon;
c = "api";
                  update()
              });
              return
         } else {
              if (station == "random") {
                  f = station;
c = "api"
              } else {
                  if (station == "assigned") {
                       var m = i("station");
                       if (!m) {
    f = "random"
                       } else {
                            f = m
                       }
                       c = "api"
                  } else {
                       if (station.match("@")) {
                            var 1 = station.split("@");
                            var n = 1[1];
l = n.split(".");
                            c = 1[0];
                            f = station
                       } else {
    if (station) {
                                 var 1 = station.split("/");
                                 c = l[0];
if (c == "leonschools") {
    c = "leon"
                                 }
f = 1[1]
                            } else {
                                return alert("No WeatherSTEM station found")
                       }
                  }
              }
         update();
         setInterval(update, 60000)
    };
```

This provides information to the website as shown below.



JavaScript was also used to help make this website more mobile-friendly so students could easily view important information regarding the course on their smartphones and tablets of all sizes. The specific pages that were developed using JavaScript were: index.js, api.min.js, scripts.js, and weather.js.

2.4 Python

Python is a high-level programming language that was used to develop a backend HTML announcement generation tool for the website. The files using this language are denoted using the .py ending. Below is image containing an example of the Python code used in this application for generating announcement HTML which can be copied to the index.html file.

```
This python file is a helper to generate an html file for announcements.
The announcements will be written to a file called announcements.html, included
in the main directory, which will then be included in index.html upon page load.
This file must be run manually when new announcements are posted.
def generate_announcement(title, announcement, link):
    html = '<div class="spacer">\n'
    html += ' <a href="" + link + '">\n'
    html += '
               <div class="announcement">\n'
                 <h3 class="announcement-title">' + title + '</h3>\n'
    html += '
                 <h4 class="announcement-details">' + announcement + '</h4>\n'
    html += '
               </div>\n'
    html += ' </a>\n'
   html += '</div>\n\n'
   return html
print("Welcome to the Announcement Generator Helper Tool.")
print("This tool will generate an announcement.html page that will be loaded by index.html")
print('For more information, run python help("announcement.py")')
title = input("Enter the title of the announcement: ")
announcement = input("Enter the text of the announcement: ")
print("If you would like the annoucement to link to a file, enter the file name with full path information.")
print("If not, press enter.")
link = input("")
announcement_html = generate_announcement(title, announcement, link)
print("The following html announcement was generated: ")
print(announcement html)
f = open("announcement.html", "a")
f.write(announcement_html)
```

The specific page that was developed using python was announcement.py.

3. Changes

The original Meteo 003 website was created a number of years ago for Professor Syrett. While it is a fully functioning website, its design, usability, and overall aesthetic is scattered and can be confusing to students. After conducting several surveys and interviewing students who have taken the class, our group updated the website to better suit the needs of the class. Our goal was to provide relevant information quickly, using a clean and modern interface. While the old website suffered from being too cluttered, it is our hope that the redesigned website presents information in a more approachable and uncluttered manner. While both websites include the same information, the new website is based on the design and aesthetics of more modern course management websites such as Canvas. This allows students to quickly understand the format of the class website, making it much easier to navigate. Tabs on the new website were reduced to just four along the sidebar. Information was categorized into these sections to avoid the website looking cluttered or unorganized, while still containing all of the information and links of the original website. Additionally, the group added a Contest tab for the extra credit forecasting contest held during the class, which was originally just a separate linked website. The splash page (information page) for the contest is now integrated into the updated website, allowing for a more seamless flow.

The Original Website:

http://www.meteo.psu.edu/~wjs1/Meteo3/index.html

The New Website (temporary testing link before deployment in the week of December 3):

http://personal.psu.edu/cws5743/METEO/index.html

The website has been updated to promote usability for both the professor and the students. While on the original website there are many tabs, the new website only includes four tabs: the home page, syllabus page, resources page, and the contest page. Below, this report will discuss each of these pages.

3.1 Home

The home page contains information about the course, including the name and section of the course, instructor and TA contact information, class meeting times, and a link to download the course syllabus.

The original homepage was scattered and includes 3 sets of columns, each containing two sections. Along with that there was a bar of tabs across the top. This was difficult for the professor to change and for students to find necessary links toc complete their coursework. The home page is the first page that will be visible to visitors of the page. On this page can be found course announcements, information, and detailed information about the weather. The home page of the website was updated to place the course announcements in a more front-and-center position, making them easily and immediately visible to any visitors to the page. Some information was moved off of the home page, including links to other websites, which were gathered and placed in a scrollable "Helpful Links" section in the Resources tab. The syllabus was also given its own tab, though it is still downloadable on the home page in the Course Information card.

3.2 Syllabus

The syllabus word document was converted into its own html page. On the updated website, this is accessible by clicking the syllabus link on the sidebar. The original word document is downloadable via a download button on both the home page and the syllabus page.

To make the syllabus more understandable, it was split into sections based on those found in the original word document. The sections are Overview, Assignments, Final Examination, Lecture Format, Examinations and Grading, Nondiscrimination Statement, Diversity Statement, Mandated Reporting Statement, Safe Zone Statement, Penn State Principles, and Penn State Values. These sections are listed in a scrollable link section, where clicking a link will scroll the page to the appropriate section.

3.3 Resources

The resources page is new. It includes a modules section including lessons and labs which can be easily downloaded, and includes helpful links on the right-hand side.

Before many of these links were listed in the course announcements and under the Notes tab, which was more disorganized and difficult to follow. Further complicating the old website, there was a separate tab for Web Lecture Outlines. These have also been moved to a section below the lessons and labs. This information was aggregated and placed onto a separate Resources tab in an effort to reduce clutter and increase understandability on the new website.

3.4 Contest

The landing page for the weather forecasting contest was given its own link on the sidebar of the website, and has its own redesigned and reformatted HTML file. The information

from the original page at http://www.meteo.psu.edu/~syrett/Meteo3/Html/FContest.htm was copied over. We decided to integrate the contest landing page into the main website to make navigation more seamless. Before, the contest page was somewhat isolated from the main website; it was viewable only from a single link in the announcements section of the home page, and it departed from the style and navigational elements on the home page. No navigation bar was present on the top of the page, such that a link had to be included to go back to the home page. This gave the contest page a feeling of being separate. To remedy this, we placed the information originally found on the contest landing page into a new tab, which allows the information about the contest to be viewed without the feeling of going to a "new website" and allows for easier navigation between needed information.

3.5 Overall Changes

The information present on the original website was all clustered onto a single page, which made it feel cluttered and could lead to navigational issues. Some of the tabs along the top of the old website were also not really tabs - they just allowed for certain information to be downloaded, which is counterintuitive. The naming conventions for these tabs could also lead to some confusion - how does "Notes" differ from "Web Lecture Outlines" for example, and why does "Tools" only have a single link? To alleviate some of the clutter and naming issues present on the original website, we came up with four separate tabs, each of which linked to a separate page with categorized and related information. Home holds the most pertinent information: the course announcements, standard course information, and detailed weather information.

Resources holds the labs and lessons, aggregated helpful links scattered on the original website,

and linked to the web lecture outlines. Syllabus got its own tab to make it more easily accessible, and the Contest information page was integrated into the website to improve flow.

4. Maintenance

This section will cover how the website can be maintained and updated. Note that to make any changes or view the files, it is advisable to use a program such as Notepad++ (which you can find information about here: https://notepad-plus-plus.org/) or Atom (information here: https://atom.io/). These programs have text highlighting that makes the file easier to understand, though plain text editors such as Notepad would also work. The screenshots shown in this guide were taken in the text editor Atom. To make it more organized and easier to understand, this section has been divided into four parts, one for each page of the website: the home page, the syllabus page, the resources (labs, lessons, and helpful links) page, and the contest page.

4.1 Home

The home page is the first page that will be visible to visitors of the page. On this page can be found course announcements, information, and detailed information about the weather retrieved partly from the WeatherStem API used in the previous version of the website, and partly from a different API called OpenWeatherMap. The latter is used to retrieve a worded description of current weather (e.g. "cloudy" or "partly sunny") and a weather icon. This section will be split into three parts: Announcements, Course Information, and Weather API.

4.1.1 Announcements

The home page of the website was updated to place the course announcements in a more front-and-center position, making them easily and immediately visible to any visitors to the page. This was implemented using HTML, which is editable via the index.html file.

To update the announcements, first open the index.html file in the text editor of your choice. Each "card", or section of the page, is set off by a comment and is wrapped in a <div> element with the class of the same name. Find the Announcements Card (beginning at line 44 at the time of writing this guide). See below an example of the structure of an announcement.

All announcements are contained by the <div> element with the class "announcements card". An <h2> (header 2) element marks the section as "Announcements". Each individual announcement is contained in a <div> with the class "spacer". These announcements may or may not have a link to a downloadable document (as seen in this example, there is a link to the course syllabus) or other website. This information is contained in an <a> tag, where the link is set by the href, as seen in line 48:

Note that an announcement does not have to link to anything - to remove the link, simply remove the <a> tag and its corresponding ending tag .

The actual announcement information is contained in a <div> element with the class "announcement". The <h3> (header 3) and <h4> (header 4) elements contain the announcement title ("Test Announcement" in the example above) and details.

This code displays on the website as shown below.

Announcements



This announcement is clickable and will download the course syllabus if clicked.

To remove an old announcement, just select the code contained by the "spacer" <div>, and delete it.

To modify an existing announcement's link, just modify the <a href="

A new announcement can be added in two ways: (1) by copying an existing announcement and modifying it; or (2) by using the announcement.py tool and copying in the generated code.

For the first method, select the code of another announcement (that is, the full "spacer" <div>) copy it, and paste it below the existing announcement(s). This new announcement can then be modified with the correct link, title, and details.

For the second method, make sure that Python is installed on your computer (it can be downloaded here: https://www.python.org/). Open the program IDLE, which comes with Python (see the icon below).



In IDLE, open the announcement.py file, which can be found in the website folder. Click run → run module. Prompts to enter the title, text, and optional link will appear. Enter the appropriate information after each prompt and press enter. See below the use of the announcement.py tool.

The generated code can then be copied into index.html under the other announcements. Note that the python program will also save the generated announcement html into a file called announcement.html which can be referenced if you forget to copy the generated announcement. This file records every announcement it generates (each new announcement is simply appended to the file) so older announcements generated with the program are also in the file. The file itself or its contents can be deleted if it gets too large; the program will simply create a new file of the same name if there is no file existing.

4.1.2 Course Information

The home page contains information about the course, including the name and section of the course, instructor and TA contact information, class meeting times, and a link to download the course syllabus. This information is editable via the index.html file.

The course information is contained in a <div> of class "information card". The information card is just below the announcements card. This starts at line 74 at the time of writing of this guide (this may change based upon the number of announcements, as the announcements card is above the information card).

The first <h2> labels the card as "Course Information". The <h3> below that shows the class name and section. After that are <h4>'s with instructor, TA, and class meeting times. The 's below each <h4> provide additional information. See below for the information card at the time of the writing of this guide.

This information is displayed by the website as shown below.

Course Information

Meteorology 3, Section 2

INSTRUCTOR | Bill Syrett

wjs1@psu.edu 606C Walker Bldg. Office Hours: Wed. 7-10 am & Appt.

TA | Kristina Rolph

wjs1@psu.edu 606C Walker Bldg.

Office Hours: Wed. 7-10 am & Appt.

LECTURE | 109 Walker Building

MWF 12:20 am-1:10 pm

LAB | 109 Walker Building

Wednesdays during regular class meeting time

Download Syllabus

This information can be modified as need be. For instance, if the name of the TA were to change to "Bob Smith", the line with the TA would change as shown below.

4.1.2 Weather API

The weather is displayed in a card below the announcements and course information cards. The code is shown below.

This displays on the website as shown below.



The weather information is loaded mainly from WeatherSTEM. The current weather description (in the example above "cloudy") and icon are loaded from OpenWeatherMap. This is done using JavaScript. The code to load the information from WeatherSTEM is viewable in api.min.js, and the code to load the information from OpenWeatherMap is in index.js.

4.2 Syllabus

The syllabus word document was converted into its own html page. On the website, this is accessible by clicking the syllabus link on the sidebar. The code is in the syllabus.html file.

The original word document is downloadable on the website via a download button.

4.2.1 Sections

To make the syllabus more understandable, it is split into sections based on those found in the original word document. The sections are Overview, Assignments, Final Examination, Lecture Format, Examinations and Grading, Nondiscrimination Statement, Diversity Statement, Mandated Reporting Statement, Safe Zone Statement, Penn State Principles, and Penn State

Values. Each section is denoted in the code by a comment (ex. <!--Overview Section-->).

If any part of the syllabus changes, it can also be changed in the code by looking for the corresponding section of code. The actual syllabus is placed in a <div> of class "syllabus card", while there are buttons for navigation in a <div> of class "secondary-nav".

To remove a section of the syllabus, simply select the <h3> and its corresponding and delete it.

To add a section of the syllabus, create an <h3> of class "spacer" and give it an id that can be linked to in the secondary nav card (this could be anything - the convention followed in the code we wrote is each word lowercase, separated by dashes). Then create a of class "small-spacer". The necessary section information can then be added.

4.2.2 Navigation

To make it easier to get to a specific section, a scrollable selection of buttons corresponding to sections in the syllabus was added. Each <a> in the secondary nav card simply links to another section in the syllabus with the corresponding id. If a section of the syllabus is removed, you can also remove its reference in the secondary nav card by looking for the appropriate named <a> element and removing that line. If a section of the syllabus is added, copy one of the existing lines and modify it with the correct section name. In the href="""> pive it the same id as the new section of the syllabus.

4.3 Resources

The resources page was created to serve three purposes: (1) to provide a space for each lesson and lab to be downloaded; (2) to provide a space to put helpful links; and (3) to provide a

space to reference the web lecture outlines. The lessons and labs are put into a Modules card.

The web lecture outlines are linked at the end of this card. Helpful links are to the side in another card.

4.3.1 Modules

The modules card contains links to download the lesson PowerPoints and labs. Each lab or lesson is a row in a table. Lessons display the icon lesson.png with an alt of "Lesson", while labs display the icon beaker.png with an alt of "Lab". See below an example of a lesson and an example of a lab.

To modify an existing lab or lesson, just find the correct name (e.g. "Radiation II") and modify it however is necessary. The name can be changed or the download link in the <a> tag can be changed.

To create a new lab or lesson, just copy an existing lab or lesson and paste it where you want it to go. Then modify the name and download link.

4.3.2 Helpful Links

Helpful links are contained in the quick links card in resources.html. They are held in an unordered list (, a list without any particular order). Headings for groups of links are denoted with a tag. Each <a> tag is a link.

To add a new link section header, just copy one of the other headers (tags) and paste it where you want to start the new section. Then place <a> tags below it with the appropriate links and names.

4.3.3 Web Lecture Outlines

While we had originally planned to update each of the web lecture outlines, we were unable to do so due to time constraints. Each web lecture outline is linked at the bottom of the modules card on the resources page.

4.4 Contest

The landing page for the weather forecasting contest was given its own link on the sidebar of the website, and has its own redesigned and reformatted HTML file. The information from the original page at http://www.meteo.psu.edu/~syrett/Meteo3/Html/FContest.htm was copied over. This is in a <div> called "syllabus card" (the CSS file uses that as a format style). Any of the information on this page can be modified by finding it in the contest.html page. The links to Conditions at University Park and to the php page to enter the forecast are in a <div> of class "secondary-nav" and appear beside the contest information. These links can be modified if necessary.