Lecture/Lab: 2:00pm – 2:50pm (Stevens 118)
Instructor: Robert Marmorstein (marmorsteinrm@longwood.edu)   **Phone:** (434)395-2185
Office Hours: 1:00pm – 1:50pm MTWRF or by appointment   **Office:** Stevens 109

My schedule is posted near my office door. To make an appointment, please check the schedule to see which times I am free, then contact me by e-mail and list some possible times we could meet. In general, I need at least 24 hours of notice to schedule an appointment.

Communications Policy:

The best way to reach me is to use **Slack**. Slack is a chat utility with clients for mobile devices and desktop computers. It will allow you to easily send me code snippets. Also, since I get notifications when a Slack message comes in, I am more likely to reply to your message quickly than if you send me an e-mail. Slack also allows me to easily set up a Zoom meeting (or Google Hangout) if we need to video chat.

When you send me a Slack message, I instantly get a notification on my computer, tablet, and phone. Typically, I reply to Slack messages within 24 hours (often sooner) on weekdays and sometimes even on weekends. I am much slower at replying to e-mail (since I do not get a notification and have to explicitly check it). Typically, you can expect a reply to an e-mail within 48 hours (longer on weekends).

Slack is also a good way to communicate with other members of the class. You will be invited to a public #cmsc-210 channel in which you can discuss the projects and other course topics with other students in the class. Feel free to ask for and give help on this channel, but please stick to general answers rather than posting code.

You can also reach out to me by e-mail to marmorsteinrm@longwood.edu. However, please do not send me large files by e-mail. They take up space toward my limited quota on the mail server and cause me all sorts of headaches. **E-mail messages containing large files will be deleted unread**.

Asking for help

If you are asking for help with a project or homework problem, you can send me a direct message through Slack. You should attach your code or your work to a Slack message so that I can see where you are at. You should do this by using the "paperclip" icon to attach the file directly to your message or by copy/pasting the particular snippet of code you are working on to the body of the message.

Please do NOT attach screenshots or pictures taken on your phone. They are hard to read and do not allow me to compile your code without retyping it. Instead, send the text of the code directly.

One last suggestion: don't "ask to ask". I am delighted to answer questions about the projects and homework assignments and you should feel free to ask questions at any time. Asking permission to ask a question wastes my time and yours.

Course description: The class will study interactive web pages that provide customized data in response to visitor requests and/or collect data from site visitors. This interaction will be done via program scripts written in an appropriate language.

Prerequisite: CMSC 140 or CMSC 160.

Required Textbook: No textbook is required for this course. However, I will be assigning reading from various web resources and tutorials. It is important that you read these articles for comprehension
(Note: I strongly recommend taking notes as you read them!)

Course student learning outcomes: By the end of the course, the successful student will be able to:
  – Write a program that runs (in Python)
  – Make calls to built-in libraries
  – Create functions, classes, or other appropriate kind of software modules
  – Access and process stored data (from a file or and/or from a database)
  – Use a library, technology, or other program code not directly taught in this course

Section student learning outcomes: By the end of the semester, the successful student will be able to:
  – Create web pages using HTML markup and CSS styling
  – Use Javascript to manipulate a web page and perform AJAX requests
  – Access REST services using API calls at the command line and using scripts
  – Store information in a database or file using Python

Course Structure and Student Expectations: This course is heavily project-driven. In general, I will use the first day or two of each week to lecture on a new topic. You will then have the rest of the week to work on laboratory projects. Laboratory and lecture sessions will take about three hours each week. However, you should expect to spend at least nine to twelve additional hours each week reading the materials, working on homework and the laboratory projects, and preparing for exams.

Course Work: Your grade will be determined by your performance on the final exam (10%), participation (5%), homework and quizzes(10%) and programming projects (75%).

Grading Policy: Late work will not be accepted unless you have a serious medical or family emergency which prevents you from completing the assignment on time. In such cases, you do not need a doctor's note, but you must send me e-mail within twelve hours of the assignment due date to explain your circumstances and to make arrangements for the work to be completed.

Grading Scale:		100-91:	A		90:	A-
89:	B+	88-81:	B		80:	B-
79:	C+	78-71:	C		70:	C-
69:	D+	68-64:	D			
63 or lower: F						

(There is no grade of D- in this course. Anything below a 64% is failing.)

Attendance: I expect you to attend class unless you are sick or engaged in an approved extracurricular activity. Please do NOT come to class if you are sick. Instead, contact me within 12 hours of the absence to check whether you've missed any work and then make arrangements to get notes from another student in the class. You should also check the course web site for announcements, new assignments, and other important updates.

I will rely primarily on your honor for enforcement of the attendance policy. However, I will keep a record of your attendance as required by Longwood policy. In accordance with that policy, I may (at my discretion) penalize you for missing more than 10% of scheduled class time (about 5 class sessions) to unexcused absences. If you miss 25% or more of scheduled class meetings (about 14 sessions), you will automatically fail this course.

Honor Code/Collaboration: Exams and quizzes are to be completed entirely on your own. You may discuss the homework and lab projects with other students subject to these restrictions:

1. Only turn in work which YOU have typed or written.

The work you submit should, in general, be either your own original work or modifications of material which I have provided.

2. You may NOT copy large blocks of code from the Internet or other students.

This doesn't mean you can't look online for help with a project. Researching ways to do things is an important part of being a good web developer. However, you need to transform what you find and not just copy/paste it into your project. To this end, you MAY NOT copy/paste large blocks of code from the Internet or from other students.

A good guideline of what "large" means is that changes that involve one or two lines of code are usually okay, but copying more than three complete statements is usually too much.

*You MAY assist other students or get assistance with simple problems like syntax errors. You MAY NOT share code with other students over e-mail, Slack, discord, git, the file system, or **any other** electronic storage or communication device. You MAY print out copies of your code for personal use, but MAY NOT share printouts of your code with other students.*

3. You must give proper attribution.

Whenever you receive help or use an online resource, you should comment your code to give proper credit. A simple comment like "/* based on http://codewarrior.com **/" is fine. This comment should go directly above or directly after the place that you used the resource or received help to make it clear which parts of your program are not entirely original.*

You do NOT need to cite material I share with the class (either in lecture, over Slack, or as part of the project handout).

4. You are responsible for securing your code.

Helping other students to cheat is also cheating. Furthermore, it is your responsibility to make sure that other students do not use your work to cheat. Be careful with who you allow to access your computer or account. Report any missing files, flash drives, or other devices that contain your work to me promptly.

Infractions of these policies will be dealt with harshly under the Longwood Honor Code. Any student convicted of an honor offense involving this class will automatically receive a final course grade of **F** in addition to any penalties imposed by the Honor Board. You should consider all work in this class to be pledged work, whether or not the pledge appears on the assignment.

Food and Drink: You may bring non-alcoholic beverages, including soft drinks, to class. However, please do not eat in class (it distracts me and the other students). Violations of this policy will be considered an unexcused absence. I occasionally grant exceptions to this rule for students who must otherwise forgo lunch or have medical needs that require them to eat in class. If you feel that you need such an exception, you must make arrangements with me in advance (that is, before bringing food to class).

Cell Phones and Laptops: Cell phones, music players, and laptops are to be turned off and put away during class, except as needed for the lab sessions. Violations of this policy will be considered an unexcused absence.

Campus Policies: This class complies with campus policies on wearing of face masks, intellectual property, disability accommodations, mental health, and reporting of crimes and sexual misconduct. For more information, see http://www.longwood.edu/academicaffairs/syllabus-statements/.

Tentative Course Schedule:

Week 1: Jan. 11 – 13 **Introduction to Web Programming**
Principles of Web Programming: Responsive Design, Accessibility, and Security
The Model-View-Controller Paradigm

Networking Basics
Clients and Servers, HTTP Methods and Status Codes

Introduction to the Linux Command Line
Creating and manipulating files using the command line

Read Syllabus

Read RFC 1945 (https://tools.ietf.org/html/rfc1945 **)**

Lab 0: Introduction to Unix and Network Tools

MLK Holiday (No Class): Jan. 16th

Week 2: Jan. 18 – 20 **Introduction to HTML and CSS**
HTML Documents, Head and Body Sections
Text and Hyperlinks
Paragraphs, Lists, and Tables
HTML5 Structure Elements
Linking in Fonts, Icons, and Style Sheets

Parts of a Web Site
Hero Images, Navigation Bars, Headers and Footers, Cards

Read "Parts of a Website: A cheat sheet for non-techies"
(https://www.markbrinker.com/parts-of-a-website **)**

Read "Introduction to CSS"
(https://www.mygreatlearning.com/blog/css-tutorial/ **)**

Read "The Ultimate CSS Selectors Cheat Sheet You Must Know"
(https://www.lambdatest.com/blog/css-selectors-cheat-sheet/ **)**

Read "Create a responsive mobile menu with CSS"
(https://blog.logrocket.com/create-responsive-mobile-menu-with-css-no-javascript/ **)**

Last Day to Add/Drop classes: Jan. 20th

Week 3: Jan. 23 – 27   **Mobile-First Design and Accessibility**
Media queries
WAI Guidelines

Advanced CSS
CSS Layout: Box Model, Position, and Floats
CSS Variables, Colors, and Units

Graphics, Animation, and Transitions
Raster and SVG Images
CSS Transitions and Animation

Read "Introduction to the CSS Box Model" (https://tinyurl.com/259ryxzz)

Read "A Complete Guide to CSS Variables [With Examples]"
(https://www.lambdatest.com/blog/guide-to-css-variables-with-examples/)

Read "In Depth SVG Tutorial" (https://flaviocopes.com/svg/)

Lab 1: Introduction to HTML and CSS

Week 4: Jan. 30 – Feb. 3 **Introduction to Python**
Variables: Numbers, Strings, and Lists
Basic I/O statements
Loops and "If" statements
Functions and Documentation Strings
Data Structures: Lists, Dictionaries, Tuples, and Sets

Introduction to SQL
Simple Queries
Creating Tables
Inserting Data

Read The Python Tutorial, Chapters 1 – 5 (https://docs.python.org/3/tutorial/)

Read SQL Bolt Tutorial, Lessons 1 – 4 and 13 – 16 (https://sqlbolt.com/)

Lab 2: Programming in Python

Week 5: Feb. 6 – 10   **Files and Databases in Python**
Opening, closing, reading, and writing to files
Parsing with "split", "strip", and "join"
Context Managers (the "with" keyword)

SQL Programming
Using SQLite and PsycoPG in Python

Read Python Tutorial, Chapters 6 – 8 (https://docs.python.org/3/tutorial/)

Read "How to work with PostgreSQL in Python"

(https://khashtamov.com/en/postgresql-with-python-and-psycopg2/)

Feb. 17   Pass/Fail Decision Deadline (5pm)

Week 6: Feb. 13 – 17 **Lab Week: Catchup and Review**

       Lab 3: Introduction to SQL

Week 7: Feb. 20 – 24 **Using an API in Python**
The "curl" and "netcat" tools
The Python "requests" library

Understanding URLs and Links
Domains, Paths, and Query Strings

The Domain Name System: Registering and Configuring a Domain

Read RFC 3986 (https://tools.ietf.org/html/rfc3986 **)**

Week 8: Feb. 27 – Mar. 3 **Form Processing**
HTML Forms
CGI: The Common Gateway Interface
Cookies and Sessions

Advanced CSS Layout
Flexbox and Grid Layouts
Fieldsets and Legends

Read Flexbox Tutorial (https://internetingishard.com/html-and-css/flexbox/ **)**

Read the CSS Refresher Notes (https://github.com/vasanthk/css-refresher-notes)

Lab 4: APIs, Forms, and Cookies

Mar. 6 – 10 Spring Break: NO CLASS

Week 9: Mar. 13 – 17 **Flask and Jinja**
Endpoints and Routes
Templates and Template Inheritance

**Read Flask Quickstart Tutorial
(https://flask.palletsprojects.com/en/2.2.x/quickstart/)**

Week 10: Mar. 20 – 24 **Project Work Week: Catchup and Review**

Lab 5: Server Side Programming Using Flask and Jinja

Week 11: Mar. 27 – 31 **Introduction to Javascript**
Variables: Scope, Hoisting, and Type
Loops, Decisions and Comparisons
Functions and Event Handlers, Arrow Functions, the "this" keyword
Code Comments and Programming Style

The Document-Object Model
DOM functions

Read Modern Javascript Tutorial, Chapters 1 – 4 (https://javascript.info/ **)**
Pay particular attention to the "Ninja Code" section – it's tongue in cheek.

Mar. 29   Deadline to withdraw without an F (5pm)

Week 12: Apr. 3 – 7   **Advanced Javascript**
Arrays and Objects
JSON and Serialization

AJAX (Asynchronous Javascript and XML)
XMLHttpRequest
Making get and post requests
JQuery form Serialization
setInterval and setTimeout

Read Modern Javascript Tutorial, Chapters 4 – 6 (https://javascript.info/ **)**

Read "Create a JavaScript AJAX Post Request" (https://tinyurl.com/4cddvp4e **)**

Week 13: Apr. 10 – 14 **Introduction to JQuery and Lodash**
Using JQuery selectors
Lodash functions
Currying functions

Read JQuery Fundamentals Tutorial ("Basics" through "Effects")
(http://jqfundamentals.com/chapter/jquery-basics **)**

Read "5 Must Know Lodash Methods"
(https://dev.to/camskithedev/5-must-know-lodash-methods-4g6p **)**

Read The Modern Javascript Tutorial: Currying
(https://javascript.info/currying-partials **)**

Lab 6: Interactive Web Applications with Javascript and AJAX

Week 14: Apr. 17 – 21 Project Work Week: Catchup and Review

Apr. 19   Research Showcase Day (No Class)

Week 15: Apr. 24 – 28 Final Exam Preparation: Catchup and Review

Final Review Packet (due Monday, Apr. 24!)

Lab 7: Comprehensive Final Project

Final Exam: May 1 (Monday, 8:00am – 10:30am)

Major Assignments:

This class is heavily project driven and most of your grade will come from successful completion of the projects. However, there will also be a final exam and (roughly) weekly homework assignments. See the course schedule (above) for tentative due dates.

Projects: Projects are worth 75% of your grade. There will be six to eight laboratory projects.

Exams: The final exam on May 2nd will be a comprehensive exam covering all course topics and is worth 10% of your grade.

Homework and Quizzes: Homework assignments (largely based on the reading) will comprise 10% of your grade. In general, I will assign these at the beginning of the week and they will be due that Friday, however, due dates may vary depending on the schedule, so check the course web site for updated due dates. I also give unannounced pop quizzes, so make sure you have done, the reading for each week by the beginning of that week!

Probably the largest part of your homework grade will be the final review packet at the end of the year which will be due on April 25th.