# IS 2560: Web Technologies and Standards

**Instructor**

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**Email**

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**Office Hours:**

By appointments.

**Course Meeting:**

Monday 6:00PM-8:50PM

IS 404

**Term:** Fall 2018

**Introduction**

This course is about the various technologies that we use to build Web applications. It is focused on preparing you for a full stack web development position. The main approach for this class is a hands-on experience that will allow you to build a complete web application from scratch. The course will introduce client and server-side technologies for the web. This will include a set of front-end technologies HTML5, JavaScript, CSS, responsive design etc. and A set of back-end technologies (JSP, Servlets, Node.js, Socket io). In general, we will integrate different technologies including some of the most popular frameworks depending on the project we are working on. Each week will consist of a lecture that will cover new concepts and different topics and will also integrates standards and best practices, you will then be presented with a real-world problem related to the topic discussed in the lecture, you will work in groups to solve it. If a problem is not applicable to the topic being discussed, you will be given a tutorial to build a web component that you will work in developing in class or the rest of the class will be dedicated to open discussions. This problem-based learning approach is more suitable for a real-world environment. It is what you will work in so it is important to work as a team and communicate with your group members regularly. It is also essential to do your reading before the class.

**Objective:**

By the end of this course, you will be able to

- Work in a team to implement high-quality web sites that serve dynamic content to users in in various forms.
- Describe both the major technologies and design approach you used to implement your sites.
- Learn about common web application architecture and the technologies behind them
- Develop major component of web sites forms, scripts, shopping cart, etc.
- Comparing and contrasting your approaches with other options
- Understand and follow trends in the development of web technologies and standards
- Learn about other web technologies and solve problems on your own.

## Course policies

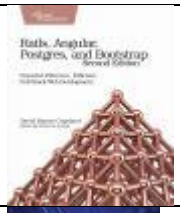
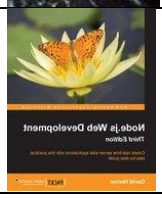
The course will consist of 1 hour and 30 min lecture which represent the topics and explain the concepts. During the lecture, there will be open discussion and reflective questions with the students. **Students are expected to come to class prepared to discuss the topic assigned for the day**. Then, we will work on a hands-on problem related to the topic discussed. **Students are required to bring their laptop to class to work on these problems/tutorials**. You will be divided into groups and work on the problem as a team. Depending on the final enrollment of this class, we will determine appropriate group size. **You will be given a reading list each week, collected from different sources. You are responsible for doing you reading before the class and prepare for the topic. This will also prepare you for the in-class tutorial.**

If for some reason, you missed the class, you need to work on the problem **on your own** and submit it by the deadline (**No exceptions**). In addition, students are expected to be doing their own exploratory reading on related subjects throughout the term. As indicated, the instructor believes that the knowledge and skills you take away from a course come not only from what the instructor espouses in class, but from your external readings and your own work and writing.

The instructor reserves the right to modify the course requirements. In particular**, exams may be added to the requirements or substituted** for selected requirements if in the instructor's opinion students are not staying abreast of course readings.

**Course web page: through CourseWeb**

**Text Books (Available online)**

| | |
|---|---|
| MEAN web development: master real-time web application development using a mean combination of MongoDB, Express, Angular JS, and Node.js<br>by Haviv, Amos Q<br>https://pitt.summon.serialssolutions.com/2.0.0/link?t=1534873310688 | |
| Rails, Angular, Postgres, and Bootstrap: powerful, effective, and efficient full-stack web development<br>by Copeland, David<br>2017<br>https://proquest-safaribooksonline-com.pitt.idm.oclc.org/9781680502657 |  |
| Web programming with HTML5, CSS, and JavaScript<br>by Dean, John<br>2017<br>http://proquest.safaribooksonline.com.pitt.idm.oclc.org/9781284091809 |  |
| Node. Js Web Development<br>by Herron, David<br>2016<br>https://proquest-safaribooksonline-com.pitt.idm.oclc.org/9781785881503 |  |

My personal favorite list of books related to this course can be found here

https://www.netguru.co/blog/10-nodejs-books

**Resources**

- Additional resource and reading material will be posted in CourseWeb for each lecture.

**Course Logistics:**

**Late assignments will be subject to a 10% penalty for each business day.**

**Attendance is mandatory and the grade for attendance will be counted toward your in-class activity. If you missed a class(for a good reason), you are required to work on the problem individually and submit it before the deadline.**

**Grade distribution:**

| | |
|---|---|
| In-Class Activities | 30 |
| Final Project | 30 |
| Assignments | 40 |

All homework will be graded out of 100. In class-activities will be graded as follow

| grade | symbol | criteria | minimum | maximum |
|---|---|---|---|---|
| **Star plus** | *+ | exceeds expectations | **95** | **100** |
| **Star** | * | meets expectations | **80** | **94** |
| **Star minus** | *- | acceptable but does not completely meet all expectations | **70** | **80** |
| **zero** | 0 | | **0** | **0** |

**Grading scale:**

| | |
|---|---|
| A | 100-90 |
| B | 80-89 |
| C | 60-79 |
| F | 0-59 |

**Communication**:

All students are welcome to ask question any time during the lecture. During the class activities, I will be present to guide you through any difficulties you may have. Feel free to send emails or set up an appointment. I will take the time to answer any questions and help with difficult concepts. I usually respond to emails within 24-48 hours, if you haven't received a response during that time, please resend your email. **Please make sure you add the course number to the email subject (INFSCI2560)**.

**Final project (more detailed later):**

Completer web site that will integrate:

1- Data storage (MYSQL or MONGODB)
2- Multiple users with different interfaces (Admin view vs User view)
3- MVC structure
4- Admin capabilities
5- Location aware
6- Session management capabilities
7- RESTful Web service
8- Ex: review site, social network site, blog, chat app

**Course Schedule (tentative)**

| Week | | Topic | In class Activity | Assignments |
|---|---|---|---|---|
| 1<br>8/27 | FRONT- END DEVELOPMENT | Course Overview/logistics<br>WWW Overview<br>HTTP Protocol<br>HTML & HTML5 | | 1. Begin development of a personal web site (Assignment1)<br>2. Install the following tools<br>3. Get yourself familiar with the tools |
| 2<br>9/3 | | Labor Day (University Closed) | | |
| 3<br>09/10 | | More HTML5<br>CSS (CSS preprocessor)<br>Responsive design | A responsive web sites<br>Git + Heroku | |
| 4<br>09/17 | | Web Scripting<br>Forms<br>AJAX<br>JSON Parsing | HTML Form using JavaScript<br>Fields with automatic suggestions | Assignment 1 due<br>Assignment 2 (transform your personal site using Bootstrap and JQuery) issued |
| 5<br>09/24 | | DOM Model<br>Angular framework<br>Templates Engines (Jade) | Weather App (JQuery + bootstrap) | Assignment 3(JQuery) issued<br>Project Phase 1(proposal) due |
| 6<br>10/1 | BACK-END DEVELOPMENT | Wrap up Front-end Development | Tutorial | Assignment 2 due |
| 8<br>10/8 | | Web Storage<br>HTML5 Web Storage<br>Web databases | MYSQL DB<br>NOSQL(MongoDB) activity | Assignment 3 due |
| 9<br>10/16<br>TUE | | Java Web Technologies<br>MVC<br>Java servlets, JSP | Build a web page with data retrieved from MYSQL database | Assignment 4 (Servlet+MVC) |
| 10<br>10/22 | | Webservices<br>API<br>SOAP<br>REST | Create RESTFUL API using MEAN stack | Project design phase 2 |
| 11<br>10/29 | | Data Access Layer<br>ORM | REST API (continue) | Assignment 5(Java Web Service) |
| 12<br>11/5 | | Socket IO<br>Single page app | Chat App (Socket IO, Node JS) | Assignment 4 due |

| | | | | |
|---|---|---|---|---|
| 13<br>11/12 | | Web Security | Chat App (Continued) | Assignment 5 due |
| 14<br>11/19 | | Session and cookies<br>Socket.io | Shopping cart | |
| 15<br>11/26 | | Wrap-up lecture<br>Final Project Demo | | |
| 16<br>12/3 | | Final project demo | | |
| 17<br>12/10 | | Final Project demo | | |

**Course Policies**

Submission: Each submission should

- The assignment number or name, e.g. Project 2 or chat App
- A link to your code in github
- A live demo of your app uploaded to your pitt server, jsFiddle, cloud9 (the front-end link), plunker, codepen, AWS, your own hosting, as a github page, find a way to have a live demo.
- Team member and their Pitt ID and their role, how did each member contribute to the project/activity (database designer, developer, interface designer etc.)
- Personal Growth Report. What did you learn, where did you struggle, any great a-ha moments? Number of hours logged on this project/assignment
- Any other feedback. How can we improve this assignment for future students.

**Academic Integrity**

You are expected to be fully aware of your responsibility to maintain a high quality of integrity in all of your work. All work must be your own, unless collaboration is specifically and explicitly permitted as in the course group project. Any unauthorized collaboration or copying will at minimum result in no credit for the affected assignment and may be subject to further action under the University Guidelines for Academic Integrity. You are expected to have read and understood these Guidelines. A document discussing these guidelines was included in your orientation materials.

**Special Considerations**

If you have a disability that requires special testing accommodations or other classroom modifications, please, notify both the instructor and Disability Resources and Services by the second week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call 64807890 (voice or TDD) to schedule an appointment. The office is located in the William Pitt Union, Room 216.

**Professionalism and Plagiarism**

There are a couple things that you need to keep in mind as you start this course. Any documents you submit should be carefully proofread and formatted professionally. The paper should provide all the necessary information – your name,

your email address, student ID, the course, the term, the CRN, and the assignment for which the paper is submitted. Any code that is submitted should be thoroughly tested to ensure that I will be able to run it on any machine. The project source code and executable files should both be included. The material, if it is extensive, should be zipped up in a zip or jar file. Care should be taken to make sure that all necessary supporting DBMS and lib or jar files are included. A readme file should be included that explains any particular constraints or steps that need to be taken. ALL CODE THAT COMES FROM ANY SOURCE OTHER THAN YOUR HEAD NEEDS TO BE FULLY AND CAREFULLY MARKED. This includes code which you have adapted from some source but which is essentially someone else's work. Failure to note such use is cause for a grade of 0 on the assignment and an F in the course. All of your code should be carefully and professionally commented and explained. In both the mail note to which the project is attached and in the main file of the project, you should include:

- The names of all participants
- Email addresses and student IDs
- The course, the term, the CRN
- The assignment for which the paper is submitted.