

Course Description

Technology Essentials establishes a fundamental understanding of engineering and technology across a wide range of areas. Students build theoretical fluency in core concepts, methods, and technologies, and in some cases develop limited technical competencies. The purpose of this foundation is to create technological fluencies that will enable students to:

- 1) Understand the technological aspects of projects, from their essence and goals to scopes and budgets
- 2) Improve interactions and teamwork with engineers on projects and teams
- 3) Better recognize technology opportunities for disruption and innovation in projects and start-ups

Learning Objectives

Students will acquire a degree of theoretical fluency in technology and engineering that enables them to understand:

- How computing technologies have disrupted and transformed businesses and industries
- The process of designing and developing a web-based application, from consumer user experience (UX) to back end, through hands-on experiences
- Capabilities of the cloud and its impact on (and opportunities for) technological development, capabilities, and businesses
- The purpose of storing and structuring data, such as in a database
- Core business, design, and development considerations for creating mobile applications and Internet enabled devices
- The basics and uses of data analytics
- Security and performance considerations that impact all of the above

Recommended Preparation: IDSN-510 Integrative Practices Residential

No prior technology knowledge is required or expected for this class. Those with extensive prior technology education or experience are encouraged to complete IDSN-525 Business Essentials or IDSN-520 Design Essentials in lieu of this course. More in-depth technology instruction is available through the ACAD-590 Directed Research course requirement.

Course Notes

This course will be conducted online, using a combination of synchronous and asynchronous methods.

Technological Proficiency and Hardware/Software Required

Students must provide their own laptop. The laptop specifications take into consideration that students will be creating, streaming, and downloading audio and video, communicating using video-conferencing applications, and creating and storing large multimedia files.

	Apple	Windows PC
Laptop (Minimum Standards)	<ul style="list-style-type: none"> • 2.6 GHz dual-core Intel Core i5 or 2.0 GHz quad-core Intel Core i7 • Minimum 13" display • 250 GB hard drive or larger 8 GB memory/16 GB memory recommended 	<ul style="list-style-type: none"> • Intel Core i5 or Intel Core i7 • Minimum 14" display • 250 GB hard drive or larger • 8 GB memory/16 GB memory recommended
Warranty	<ul style="list-style-type: none"> • Manufacturer warranty or extended warranty coverage (AppleCare) 	<ul style="list-style-type: none"> • Manufacturer warranty or extended warranty coverage
Operating System	<ul style="list-style-type: none"> • Max OSX or higher 	<ul style="list-style-type: none"> • Windows 7, 8, 10 or higher
Peripherals	<ul style="list-style-type: none"> • HD webcam, speakers, and microphone (Most newer laptops have built-in webcam, speakers, and microphone) • Headset • Digital camera (Cameras on newer smartphones are acceptable) • External drive for cloud account for backup and storage 	
Software	<ul style="list-style-type: none"> • Adobe Creative Cloud (Photoshop, Dreamweaver, Illustrator, and Acrobat) • Microsoft Office Suite • Sophos Endpoint Security (antivirus) • Browser: Most recent version of Internet Explorer, Firefox, Chrome, or Safari 	
Network	<ul style="list-style-type: none"> • Cable modem, DSL, T1/T3 or higher 	

Required Readings and Supplementary Materials

Required reading will be drawn from textbooks, articles, papers, cases, and online publications (e.g., articles, op-ed essays) available through a host of available outlets; in all instances, the material will be delivered via computer. Students will also be required to view online videos; complete web-based, interactive exercises; and respond to peer and faculty comments (within an online discussion forum or group discussion). Lectures, readings, and viewings will be supplemented with current articles and audio/video content.

Grading Breakdown of Assignments and Labs

Assignments	675
Labs	125
Asynchronous Exercises/Reflections	150
TOTAL	950

Assignments	Points
Assignment 1: Interests and Hobbies Website	100
Assignment 2.1: Interactive Website (GROUP), <i>Proposal and Wireframes</i>	50
Assignment 2.2: Interactive Website (GROUP), <i>FrontPage and Style Sheet</i>	100
Assignment 2.3: Interactive Website (GROUP), <i>Final Build with Video and jQuery</i>	150
Assignment 3: Database Commission	50
Assignment 4.1: Mobile Project, App Idea (Individual)	25
Assignment 4.2: Mobile Project, Pitch Deck (GROUP)	150
Assignment 5: Analytics Paper	50
Total	675
Labs	Points
Lab 1: Edit Student Information File, Post to Web	10
Lab 2: Web Page on Past Projects	25
Lab 3: Web Page That Is Mobile Responsive	15
Lab 4: jQuery Exercise	15
Lab 5: Research on Implementing an API, Plug-in or Library	15
Lab 6: Web Page Build in Bootstrap	15
Lab 7: Research into Server Scoping	15
Lab 8: AR/VR Proposal	15
Total	125

Assignment Submission Policy

All assignments and labs must be delivered, per instructor guidelines to be distributed, by **noon Pacific Time** on the date (of that section's live session) that deliverable is listed as due. No exceptions. (Early submissions are, of course, encouraged!)

All assignments, no matter how late, must be completed in order to pass this class.

Correcting a Grading Error or Disputing a Grade

If you don't inform the instructor of missing or incorrect grades within two weeks of those grades being posted, the grades will be assumed correct. Do not wait until the semester's end to check or appeal any grades. If you feel a grade merits reevaluation, you are encouraged, within one week of the instructor providing a grade and initial feedback, to send the instructor a memo in which you request reconsideration. The memo should include a

thoughtful and professional explanation of your concerns. Be aware that the reevaluation process can result in three types of grade adjustments: positive, none, or negative. (Note: Complaints on the date of a graded assignment's return to you will not be addressed; it is essential to wait one full day prior to raising a concern.)

Late Submissions

Assignments will be accepted after the deadline with the following grade penalties. Do not ask for extensions; the below *are* the extensions.

- Submission in the 24 hours after the deadline: 20% deduction
- Submission between 24 and 48 hours after the deadline: 50% deduction
- Submission more than 2 days late will receive NO credit

Keep copies of all your files and e-mails until the end of the semester.

Additional Policies

Class notes policy: Notes or recordings made by students based on a university class or lecture may only be made for purposes of individual or group study, or for other noncommercial purposes that reasonably arise from the student's membership in the class or attendance at the university. This restriction also applies to any information distributed, disseminated, or in any way displayed for use in relationship to the class, whether obtained in class, via e-mail or otherwise on the Internet, or via any other medium. Actions in violation of this policy constitute a violation of the Student Conduct Code and may subject an individual or entity to university discipline and/or legal proceedings. Again, it is a violation of USC's Academic Integrity Policies to share course materials with others without permission from the instructor.

No recording and copyright notice: No student may record any lecture, class discussion, or meeting with the instructor without his/her prior express written permission. The word *record* or the act of recording includes, but is not limited to, any and all means by which sound or visual images can be stored, duplicated, or retransmitted whether by an electro-mechanical, analog, digital, wire, electronic, or other device, or any other means of signal encoding. The instructor reserves all rights, including copyright, to his/her lectures, course syllabi, and related materials, including summaries, slides (e.g., Keynote, PowerPoint), prior exams, answer keys, and all supplementary course materials available to the students enrolled in the class whether posted to the LMS or otherwise. They may not be reproduced, distributed, copied, or disseminated in any media or in any form, including but not limited to all course note-sharing websites. Exceptions are made for students who have made prior arrangements with The USC Office of Disability Services and Programs and the instructor.

Participation: Students are expected to actively participate in this course. In an online forum, participation includes:

- Careful reading and viewing of assigned materials by the date due
- Regular, substantive contributions to discussions
- Active engagement with online content
- On-time attendance and full attention in synchronous sessions
- Significant collaboration with classmates and teammates

Course grades for students who do not contribute to the course through active participation may be affected. Students should notify the instructor in advance if they are unable to attend class.

Contact Hours

This 3-unit course requires 2,250 minutes of instructional time per semester, which equals 150 minutes (2.5 hours) of instructional time each week. Instructional time may be further broken down into 75 minutes (1.25 hours) of

asynchronous time and 75 minutes (1.25 hours) of synchronous time. In addition, it is expected that students will work, on average, an additional 300 minutes (5 hours) per week outside of class—on readings/viewings, homework assignments, field experiences, and individual or team projects. Synchronous class sessions will be offered as regularly scheduled evening or weekend classes, once each week.

Course Schedule: Week by Week

DATE	TOPICS
Week 0	Importance of Technology: Role of Engineering and Technology Over Time
Week 1	Course Introduction. Introduction to Technologies, IS
Week 2	Web Objects, Hypertext Markup Language (HTML)
Week 3	Web Design, Cascading Stylesheets (CSS)
Week 4	Responsive Web Design, Media Queries, Marketing and SEO
Week 5	Scripting and Interactivity
Week 6	Server-Side Scripting, Templates, APIs
Week 7	Libraries, Frameworks, Content Management Systems (CMS)
Week 8	Data Structures, Database Fundamentals, Structured Query Language (SQL)
Week 9	Servers, Domains, Cloud
Week 10	Introduction to Mobile Apps, UI, Monetization
Week 11	Mobile Development, Internet of Things, IoT Dev
Week 12	Software Development, Video Games, AR, VR and Next Generation New Media
Week 13	Artificial Intelligence, Machine Learning (ML)

Week 14	Analytics, Data Science
Week 15	Security, Performance, Legal Issues. Upcoming Technologies

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism—presenting someone else’s ideas as your own, either verbatim or recast in your own words—is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services - (RSVP) 213-740-9355 (WELL)
<https://studenthealth.usc.edu/sexual-assault/>

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. “Relationship and Sexual Violence Prevention and Services provides immediate therapy services for situations related to gender- and power-based harm (e.g., sexual assault, domestic violence, stalking)” (from website).

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic that may be specified in applicable laws and governmental regulations.

USC Policy Reporting to Title IX - (213) 740-5086
<https://policy.usc.edu/reporting-to-title-ix-student-misconduct/>

The university encourages individuals to report prohibited conduct to the *Title IX Office*. Individuals can report to the university *Title IX Coordinator* in the *Office of Equity and Diversity*.

Bias Assessment Response and Support - (213) 740-2421 studentaffairs.usc.edu/bias-assessment-response-support
Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776 dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test-taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call dps.usc.edu
Nonemergency assistance or information.

Course Schedule: Week by Week

DATE	TOPICS	DELIVERABLES
Week 0	Importance of Technology Role of Engineering and Technology Over Time	<i>None</i>
Week 1	Course Introduction. Introduction to Technologies, IS	
Week 2	Web Objects, Hypertext Markup Language (HTML)	<i>Lab:</i> Edit Student Information File due
Week 3	Web Design, Cascading Stylesheets (CSS)	<i>Lab:</i> Web Page on Past Projects due
Week 4	Responsive Web Design, Media Queries, Marketing and SEO	Assignment: Interests and Hobbies Website due
Week 5	Scripting and Interactivity	Assignment: Interactive Website (GROUP), Proposal and Wireframes due <i>Lab:</i> Web Page That Is Mobile Responsive due
Week 6	Server-Side Scripting, Templates, APIs	<i>Lab:</i> jQuery Exercise due
Week 7	Libraries, Frameworks, Content Management Systems (CMS)	Assignment: Interactive Website (GROUP), Front Page and Style Sheet due
Week 8	Data Structures, Database Fundamentals, Structured Query Language (SQL)	<i>Lab:</i> Research on Implementing API, Plug-in, or Library due
Week 9	Servers, Domains, Cloud	Assignment: Interactive Website (GROUP), Final Build with Video and jQuery due Assignment: Database Commission Due <i>Lab:</i> Web Page Build in Bootstrap due

Week 10	Introduction to Mobile Apps, UI, Monetization	Assignment: Mobile Project, App Idea (Individual) due. <i>Lab: Research into Server Scoping</i>
Week 11	Mobile Development, Internet of Things, IoT Dev	
Week 12	Software Development, Video Games, AR, VR and Next Generation New Media	Assignment: Mobile Project, Pitch Deck (GROUP) due
Week 13	Artificial Intelligence, Machine Learning (ML)	<i>Lab: VR/AR Proposal due</i>
Week 14	Analytics, Data Science	
Week 15	Security, Performance, Legal Issues. Upcoming Technologies	Assignment: Analytics Paper due

Assignment and Lab Descriptions

Assignments and Labs Descriptions and Timelines	Assigned	Due
Lab 1: Edit Student Information File, Post to Web	Week 1	W2
Assignment 1: Interests and Hobbies Website	Week 2	W4
Lab 2: Web Page on Past Projects	Week 2	W3
Lab 3: Web Page That Is Mobile Responsive	Week 4	W5
Assignment 2.1: Interactive Website (GROUP), <i>Proposal and Wireframes</i>	Week 4	W5
Assignment 2.2: Interactive Website (GROUP), <i>Front Page and Style Sheet</i>	Week 5	W7
Assignment 2.3: Interactive Website (GROUP), <i>Final Build With Video and jQuery</i>	Week 7	W9
Lab 4: jQuery Exercise	Week 5	W6
Lab 5: Research on Implementing an API, Plug-in, or Library	Week 7	W8
Lab 6: Web Page Build in Bootstrap	Week 8	W9
Assignment 3: Database Commission	Week 8	W9
Lab 7: Research Into Server Scoping	Week 9	W10
Assignment 4.1: Mobile Project, App Idea (Individual)	Week 9	W10
Assignment 4.2 Mobile Project, Pitch Deck (GROUP)	Week 10	W12
Lab 8: AR/VR Proposal	Week 12	W13
Assignment 5: Analytics Paper	Week 14	W15

Assignment 1: Interests and Hobbies Website

Deliverable: Link to completed website

Details: Website with a minimum of three pages (homepage plus 2+ inner pages). *2 weeks to complete.*

You will create an "interests and hobbies" website containing content (text, images, layouts, design) focusing on your personal interests and hobbies. Your final site should contain:

- At least one external css stylesheet. Can choose to also use internal stylesheet.
- Homepage that includes header title, introduction, summary information about subpages, and navigation.
- A minimum of two subpages. Each inner page should contain header, navigation, and focus on one topic/area in depth.
 - All pages should have a uniform design, color scheme, and look and feel.
 - Overall site shall contain ***at least*** seven images (among all of the pages).

Assignment 2.1: Interactive Website (GROUP), Proposal and Wireframes

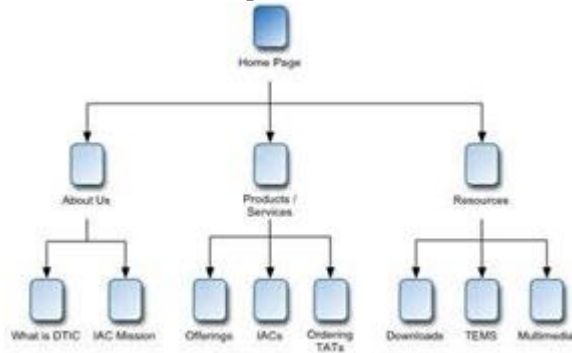
Deliverable: Document (proposal), including screenshots/wireframes

Details: Written (text, narrative) proposal of the website, as well as mock-ups, wireframes, and/or screenshots of a version of one page (front page or inner page). *1 week to complete.*

Your group is building a website over a 5-week period. There are three milestones/sprints in the project. This first deliverable is a formal, written proposal for the website the group will build, as well as an initial mock-up, wireframe, or screenshot of what one page of the site will look like (front page or inner page).

The proposal will contain:

- A graphically rendered or hand-drawn **Site/Flow Chart** for your project (see sample). • Text/narrative description or declaration of the **Focus/Mission** of the site.



- Text/narrative description about the **Audience/s** for the site.
- Notes about the origin of the **Text and Graphic Content** for the site. Will you scrape news sites, reviews, blogs, image archives? Will your team be writing and shooting the content itself? Etc.
- **Team Roles:** For each group member notes on what roles they are expecting to serve, such as project management, html or css production, design or graphic production, javascript or jquery dev, etc.
- **Wireframes/Mock-Ups** or screenshots of one page of the site. This is meant to provide an example of the general look and feel (or design) and layout approach that your team intends for the site.

Assignment 2.2: Interactive Website (GROUP), Front Page and Style Sheet

Deliverables: Link to the homepage/front page of the site, document with a site style guide

Details: This build is your initial front page (no inner pages required), including a navigation with content (labels) indicating the inner pages, as well as a general site style guide (see samples). *Two weeks to complete.*

Your group will build the front page of your site, with text, graphic content, html and css, and a Style Guide (document) that lays out general design elements of the site such as common font, color, and dimensions of elements. See sample style guides for reference/suggestions.

This build represents a fairly mature version of your homepage (but without any video or scripting).

Assignment 2.3: Interactive Website (GROUP), Final Build With Video and JQuery

Deliverables: Link to completed website

Details: Final website with homepage, a minimum of three inner pages, and all content including scripting (jQuery recommended), user interactivity, and at least one embedded video. *Two weeks to complete.*

Having previously completed a build of your homepage/front page for the site, the final build includes the front and all inner pages.

Final site requirements:

- Consistent design / look and feel across all pages
- Clear navigation and narrative paths through the site
- Real, substantive text and graphic content
- User interactivity implemented through client-side scripting such as jQuery. These should be more sophisticated than plain rollover image behaviors. Better interactions would be hidden regions that animate upon scripted user interactions, interactive menus, etc.
- At least one embedded video. Embedded audio is good too, especially if triggered by user interactions through scripting.

Assignment 3: Database Commission

Deliverables: Submitted document

Details: Create a scope document to be submitted to a DBA to commission a database for a web project. Include sketch of data structures and all relevant information for DBA to design database for commissioned project.

Requirements:

- General description of data set and how it will be used (on WHICH specific website)
- Rough data sketch that includes at least five tables. Each table should have partial list of fields. Note: You could list the tables and fields as an Excel doc, Word doc, hand sketch, etc.
- Notes and ideas about how the data might need to be analyzed, totaled, converted into statistics, etc.
- Is there *existing* data that might need to be imported (starting posts, stats, game scores, course listings, photo galleries, etc.)? Where might it be coming from? Any particular format?

Pick one domain from the list below that you are "commissioning" a database for (note that you need to provide a specific site example). You can also ask the instructor for approval for a different domain:

- Product e-commerce site such as *Amazon.com*, *Target.com*, etc.
- Online sports statistic and articles site such as *ESPN Sports*
- Online learning platform such as *2U/Design@USC*
- Photo sites such as *Flickr*
- Online forum (pick a genre and site)

Assignment 4.1: Mobile Project, App Idea (Individual)

Deliverables: Submitted document

Details: Pitch a mobile application project. Write up thoughts about what, why, etc.

Be prepared to "pitch" your idea to the class (although really your audience will be your group). Although your in-class pitch will be brief (30–60 seconds), your document should include at least initial thoughts toward:

- Market
- Audience

- Business plan and monetization strategy
- Challenges

Assignment 4.2: Mobile Project, Pitch Deck (Group)

Deliverables: Submitted document

Details: Presentation "pitch" deck for a mobile app to be developed, which would theoretically be pitched to a VC.

The pitch "deck" should weave together all of the following elements (some of which you may choose to summarize in the deck and offload the details to an appendix or attached doc). It might be most beneficial to have your group start by collaboratively working up the Lean Canvas on the idea:

- Overall pitch for app:
 - Core idea (problem and solution)
 - Originality, uniqueness
 - Core audience/s (including analysis/arguments about demographics, income levels, other relevant factors)
 - Monetization
 - Competition
- Mock-ups and/or screenshots of the app
- Development cost estimates for:
 - App creation (iOS, Android, hybrid, mobile?)
 - Back-end requirements (server, database, etc.)
 - Other—transactions, special APIs, etc.
- Lean Canvas plan

Your group should be prepared to “present” the pitch deck.

Assignment 5: Analytics Paper (Student Pairs)

Deliverables: Submitted document

Details: Minimum of three written pages with sample/existing data visualizations.

Each pair of students is given a domain and data area. Team should research and think about the nature of the data that domain would use. The final paper should:

- Describe some of the types of data (users, products, web traffic, voting patterns, etc.) the domain/organization would have (whether inputted by users, imported, captured, etc.).
- List a series of ways the organization would use analytic data and why (motivation). For decision making? For evaluating ROI? To define metrics of success? Etc.
- Describe and explore how analytics would be used to fulfill the organization’s data goals. Would they be using predictive, diagnostic, prescriptive, or descriptive analytics (or more than one)?
- Theorize some analytic plans, campaigns, etc.
- Cite some real-world (parallel) examples to the above (i.e., excerpt from and point to studies, articles, papers, etc., where an org had similar(ish) goals to yours in which they used data and analytics to fulfill/inform).
- Define some data visualizations that would be useful (based on the data, organization’s goals, analytic output, etc.).
- Finally, give some examples of what you consider effective data visualizations (anything from data dashboards to infographics) from real/past analytic campaigns (do not have to be from the same domain). Obviously these examples should have parallels or work as effective illustrations of what you would want.

Partial list of domain areas (student can suggest others): political voting pattern, retail banking, targeted health issues (such as obesity), e-commerce site, disaster relief efforts, public transport or traffic.

Lab 1: Edit Student Information File, Post to Web

Deliverable: Edit and upload studentinfo.txt file to your web.iyaclasses.com web space in your public_html folder and also post it to the LMS for lab 1.

To complete this lab, you need to follow the instructions on the Wall for how to Download and install the FileZilla FTP program. After downloading and installing, if you cannot connect, then you will also need to download and install the VPN (Virtual Private Network) software, as well. Instructions for this are also posted to the Wall. If you already have an FTP client installed on your computer, then you can use that.

1. Create a studentinfo.txt file. You can put whatever information about yourself that you would like to. You should include things such as your name, perhaps a picture, where you work and your title, hobbies, interests, etc. It is pretty much up to you.
2. Using FileZilla use the following connection information
 - a. Host: web.iyaclasses.com
 - b. Protocol: SFTP (secure FTP)
 - c. Username: Your USC userid that you use to get to USC email
 - d. Password: Idsn530_Lastname_USCID, so mine might be Idsn530_Crowley_1234567890

3. Once you are logged in, click on the public_html folder
4. Upload your studentinfo.txt file into the public_html folder.
5. You can verify that it worked by going to a browser and entering the following URL:

web.iyaclasses.com/~YOURUSCUSERNAME

For me, this would be: web.iyaclasses.com/~crowley

Lastly, don't forget the tilde (~) in the URL. Once connected you should see your studentinfo.txt file displayed in a list. If you click on it, you should see the contents of the file you uploaded.

Lab 2: Web Page on Past Projects

Deliverable: Link to web page you created that lists past projects

To complete this lab, you need to compose a web page that lists some of the past projects you have completed, including hyperlinks to select samples. *Note: The samples can be PDFs (of essays, illustrations, etc.), graphics (TIFF, PNG, etc.), html (web pages/sites), etc.*

You can base this page on sample html pages/templates from previous assignments, demos, and labs, or you can create one from scratch.

Page requirements:

- Header/title section
- General layout region and color scheme
- At least two sections of work (web pages, published research, design layouts, illustrations, code development projects, etc.). Each section should have text title and description. *At least three of the overall samples **must have** hyperlinks to samples/references/actual work.*

Lab 3: Web Page That Is Mobile Responsive

Deliverable: Link to published web page

For this lab, you are going to take the front page of your Interests and Hobbies website (Assignment 1), and create a new version of that page (just the front, not all internal pages) that features an *adaptive layout*, that changes to fit a small mobile device.

Start by saving a copy or new version of your page. In the new version, write css media queries that target devices under **768** pixels, and transform your page layouts to display differently, better, or optimally for small or narrow mobile screens.

For this lab, you are welcome to edit or tweak your original layout if that helps to reorganize your layout objects in such a way that they work better on both normal/large devices and your targeted small device. Your final lab should have a minimum of 10 media queries. Make sure to include a viewport tag in your header such as:

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

Lab 4: jQuery Exercise

Deliverable: URL of completed jQuery in web page

You will add jQuery to your assignment 1 page. You are to add at least 5 jQuery interactions.

Lab 5: Research on Implementing an API, Plug-in, or Library

Deliverable: Fill out your designated wiki/site page

Choose and API, Plug-in, or Library to research.

For this lab, your API, plug-in, or library write-up must include:

- Name, description, primary use
- Stats on how many sites use it
- Cost and any limitations such as X use or transactions per month, no license for nonprofit use, etc.
- Technical requirements—must be able to script in X language, only for use in Y CMS, etc.
- Any requirements to implement—from technical skills (knowledge of JS, etc.) to software requirements (must have X library installed, must have Y language)
- Links to:
 - How-to/implementation docs
 - Three sites that use the plug-in/API
 - Forum or site that has discussions about the software, from troubleshooting problems to pro/cons of using it.
- Quote from someone (can be from the web, from a forum) arguing the advantage of using (arguing for) the software—but NOT the author/developer

Examples of APIs (that you could use):

- Google mapping (and geocoding) API, Slack
- Twitter, Facebook (login and pulling feed/data from site), YouTube, Vimeo

- Trumbler, Instagram, Pinterest, Imgur
- Accuweather, Kayak (travel), Yelp
- FullContact, Stripe, Mailchimp
- ACR Cloud, Apple MusicKit, Spotify
- Amazon S3 (storage), PayPal, FedEx
- Bootstrap
- jQuery
- NextGen Gallery, Jetpack, Yoast SEO, WP Forms, WordFence Security, Askismet Anti Spam
- IMCE, View Bulk Operations (VBO)
- Two-Factor Authentication

Lab 6: Web Page Build in Bootstrap

Deliverable: Link to published web page

For this lab, you will take one starter bootstrap template (from getbootstrap.com or Dreamweaver) and create a web page with "real" content. (You do not have to write/create the content; you can use existing text and images from wikis, existing sites, etc.) *Note: You can choose to "remove" the navigation from the template since you are not creating more than one page.*

The type of content you need will of course depend on the nature of the bootstrap page you create. A bootstrap page with an image carousel, or one with an image gallery grid, will obviously necessitate more graphics, a layout with X will require more narrative text and items, etc.

Lab 7: Research Into Server Scoping

Deliverable: Submit document

Research an existing website to scope out its general traffic levels, technology platform, and some range of what hosting might cost.

Your document should include your research results in the following areas, INCLUDING reference URLs:

- Approximate monthly users and visits
- Technologies/platform site is built/based on List
- "Rough" hosting cost range, and pros and cons, between hosting through at least two of the following:
 - Traditional shared-environment hosting
 - Dedicated server hosting
 - Co-location hosting
 - AWS
- Some general variables that could affect the hosting cost

Note: Instructor will provide some web-based services for evaluating site traffic and technology platforms. Students are welcome to share lists and URLs of hosting sites/resources.

Pick a site from the list below to be "costing out" the server requirements (you can also substitute comparable large-scale enterprise websites):

- Amazon.com
- ESPN Sports
- 2U Online Course Platform
- Reddit
- LinkedIn

Lab 8: AR/VR Proposal

Deliverable: Submit document

Write a proposal to use virtual and/or augmented reality to transform an existing app or mobile game.

Requirements:

- Name of application or mobile game. URLs to docs/description.
- Description of *original* VR/AR component to add to app. What are the primary arguments/advantages/value added?
- Development requirements, challenges: What are some technical requirements (dev platform, o/s restrictions, APIs) to implement? List three major technical challenges/implementations.