

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
Section Attendance and Asynchronous Exercises	150
TOTAL	950

Assignments	Assigned	Due	Points
Assignment 1: Interests and Hobbies Website	Week 2	W4	100
Assignment 2.1: Interactive Website (GROUP), <i>Proposal and Wireframes</i>	Week 4	W5	50
Assignment 2.2: Interactive Website (GROUP), <i>FrontPage and Style Sheet</i>	Week 4	W7	100
Assignment 2.3: Interactive Website (GROUP), <i>Final Build With Video and jQuery</i>	Week 4	W9	150
Assignment 3: Database Commission	Week 8	W9	50
Assignment 4.1: Mobile Project, App Idea (Individual)	Week 9	W10	25
Assignment 4.2: Mobile Project, Pitch Deck (GROUP)	Week 10	W12	150
Assignment 5: Analytics Paper	Week 14	W15*	50
Total			675
Labs	Assigned	Due	Points
Lab 1: Edit Student Information File, Post to Web	Week 1	W2	5
Lab 2: Web Page on Past Projects	Week 2	W3	25
Lab 3: Web Page That Is Mobile Responsive	Week 4	W5	15
Lab 4: jQuery Exercise	Week 5	W6	10
Lab 5: Research on Implementing an API, Plug-in or Library	Week 7	W8	15
Lab 6: Web Page Build in Bootstrap	Week 7	W8	10
Lab 7: Research Into Server Scoping	Week 9	W10	15
Lab 8: AR/VR Proposal	Week 12	W13	15
Lab 9: ML exercise	Week 13	W14	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: 10% deduction
- Submission between 24 and 48 hours after the deadline: 20% deduction
- Submission between 48 hours and 3 days after the deadline: 50% deduction
- Submission more than 3 days 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	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> Student Information File, Post to Web 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: Interest and Hobbies Website due
Week 5	Scripting and Interactivity	Assignment: Group Website, Proposal, and Wireframes due <i>Lab:</i> Mobile Web Page due
Week 6	Server-Side Scripting, Templates, APIs	<i>Lab:</i> jQuery exercise due
Week 7	Libraries, Frameworks, Content Management Systems (CMS)	Assignment: Group Website, FrontPage, 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 <i>Lab:</i> Web page Build in Bootstrap due
Week 9	Servers, Domains, Cloud	Assignment: Interactive Website (GROUP), Final Build With Video and jQuery due Assignment: Database Commission due
Week 10	Introduction to Mobile Apps, UI, Monetization	Assignment: Mobile App Idea due, <i>Lab:</i> Research into Server Scoping
Week 11	Mobile Development, Internet of Things, IoT Dev	<i>None</i>
Week 12	Software Development, Video Games, AR, VR and Next Generation New Media	Assignment: Mobile Pitch Deck (Group) due
Week 13	Artificial Intelligence, Machine Learning (ML)	<i>Lab:</i> VR/AR Proposal due
Week 14	Analytics, Data Science, ML	<i>Lab:</i> Machine Learning exercise due
Week 15	Security, Performance, Legal Issues. Upcoming Technologies	Assignment: Analytics Paper due

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.