WEB AND MOBILE SYSTEMS

OAKLAND UNIVERSITY, SCHOOL OF ENGINEERING AND COMPUTER SCIENCE,

COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION

COURSE NUMBER: CSI 3150, CRN: 44741

FALL 2023, HYFLEX, 4 CREDITS, SEP 06 – DEC 16, 2023

LOCATION: HUMAN HEALTH BUILDING ROOM 4043
CLASS MEETING HOURS: TUE & THU, 1300 TO 1447 HOURS

Course description: An introduction to web and mobile systems. Development of interactive web systems using front-end technologies such as HTML, CSS and JavaScript during the first half of the semester. A cross platform JavaScript framework, such as React Native along with React Library, for mobile apps development during the second half. Formerly CSI 2520. With laboratory. Additional Requirement(s): Major Standing. Students can receive credit for CSI 3150. **Prerequisite**(s): CSI 2300.

PROFESSOR INFORMATION

Name: Dr. Amartya Sen

Office Location: Engineering Center 322

Office hours: Mondays, 1 PM to 3 PM or email to schedule an appointment.

Email: sen@oakland.edu

Responding to online communication: The instructor will respond to e-mails no later than 16 work hours (work hours are M-F from 9.00 A.M to 5.00 P.M Eastern Time).

Learning Outcomes

Upon completion of the course, successful students will be able to:

- Describe and differentiate between the setup, design, styling, and navigation of web and mobile systems.
- Implement web systems using front-end technologies such as HTML, CSS, and JavaScript.
- Create and customize interactive and dynamic user interfaces for web systems using front-end frameworks such as React.
- Create cross-platform iOS and Android apps for mobile systems using technologies such as React Native.
- Create and customize dynamic views and implement navigation techniques across platforms for mobile systems.

Textbooks and Materials

Suggested Readings/Supplementary Support:
Use any of the vast array of open-source materials available on the World Wide Web relevant to the course topics.
Required Software: A code editor like Microsoft Visual Studio . Install Node.js (https://nodejs.org/en/). Rest of required libraries and tools will be installed as the course progresses.

Student Evaluations

Programming Assignments (Take Home Series):

There will be **at most** Ten (10) individual take-home programming assignments. One (1) lowest exam score will be dropped. Assignments will be posted on Moodle and need to be submitted via Moodle. Further instructions specific to each assignment will be available on Moodle once the assignment is posted.

Programming Assignments (In Class Series):

There will be **at least** Five (5) individual programming assignments, which will be assigned via Moodle at the beginning of a class session and must be completed and submitted by the end of the class session to be considered for full credits. One (1) lowest exam score will be dropped. Time allocated to complete an assignment will vary between 30 minutes to 90 minutes depending on the nature of the assignment. Days on which in-class programming assignments will be assigned is at the sole discretion of the

instructor. Read carefully the late penalty instructions for this assignment category in the *Late Submission Policy* section of this syllabus.

QUIZZES:

Five (5) individual quizzes will be assigned. These quizzes will be assigned after the completion of each of the five (5) learning modules that will be covered during the coursework. The pattern of the quizzes will be either very-short answer type questions and/or multiple choice questions. The quizzes will consist of at most five (5) questions and will not take more than 15 minutes to complete. Quizzes will be assigned on Moodle. Quizzes will not be timed and the deadline to submit all quizzes is the last day classes for the semester. The purpose of the quizzes is to highlight and help students revise the key concepts of each learning module and prepare more effectively for the programming assignments.

LATE SUBMISSION POLICY:

All submission must be made via Moodle and must be in .PDF format (unless instructed otherwise). Do not submit any hand drawn illustrations/ hand written code work / cellphone pictures or scans of handwritten code or illustrations. Late submissions to all deliverables will be penalized according to the following schedule:

- [Take-home programming assignments] First Time Late: 10% penalty for the first 24 hours (1st day). 20% penalty for the second 24 hours (2nd day). No credit thereafter. For repeated late submissions: 20% penalty if late by 24 hours and no credit thereafter. There is no accommodation for make-up assignments in this category. For criteria on exemption to late penalty, read the last bullet in this list.
- [In class programming assignments]: Assignment will be considered for full credit (A grade or 100%) if submitted by end of the class session (i.e. 3 pm). Assignment will be considered for A-grade (90%-93.99%) if submitted after the class session but by 11.59 PM of the same day. Assignment will be considered for B+ grade if submitted within the next day. No credit thereafter. Every student will receive only one (1) no questions asked make-up assignment opportunity in this category in the entire semester. Make up assignments will still be timed and will follow aforementioned late submission policy. However, the time and date of the make-up assignment will be decided by the instructor after discussing with the student about their availability. For criteria on exemption to penalty, read the last bullet in this list.
- [Quizzes]: There are no late penalty for the quizzes. All quizzes must be submitted by the last day of classes for the semester. After the submission deadline, any unattempted quiz will not receive any credits.
- Late penalty will be exempted if students present reasonable and **verifiable** excuses like medical conditions and/or family events or emergencies. Technical Issues (especially if a student chooses to attend the class online via Zoom) like but not limited to, device failures or loss of network connection will not be considered for exemption of late penalties. Nonetheless, life is unpredictable and unforeseen events may occur at times, which one cannot control. In such

situations, the instructor will try to accommodate the late submissions. However, such accommodations will be assessed on a case-by-case basis and **should not be taken for granted**. If a student is facing challenges, personal or otherwise, which might affect their performance in class, they are very much welcome to come and discuss the matter with the instructor. The earlier a student reaches out to the instructor, the better they can help and guide you.

GRADING

	Total Points
10 Take Home Prog. Assign. with lowest score drop	900 points (9*100)
5+ In class Prog. Assign. With lowest score drop	400 points+ (4*100)
5 Quizzes	50 points (5 * 10)
Net Total of Points	**1350+ points**

- ***A range*** – Comprehensive, thorough coverage of all objectives, required content, critical and higher level thinking, original and creative, sound use of English skills, both written and oral
- ***B range*** – Competent, mastery of basic content and concept, adequate use of English
- ***C range*** – Slightly below average work, has met minimum requirements but with difficulty
- ***D range*** – Has not met requirements of assignment/course, has significant difficulties in many areas
- ***F*** – Has not completed requirements; has not officially withdrawn from course before drop date

OAKLAND UNIVERSITY GRADING SCALE

SCALE AS OF FALL 2018	OLD SCALE	PERCENTAGE
A	4.0	>= 94% and <=100%
A-	3.7	>= 90% and < 94%
B+	3.3	>= 86% and < 90%
B	3.0	>= 80% and < 86%
B-	2.7	>= 77% and < 80%
C+	2.3	>= 73% and < 77%
C	2.0	>= 70% and < 73%
C-	1.7	>= 67% and < 70%
D+	1.3	>= 63% and < 67%

D	1.0	>= 60% and < 63%
F	0.0	<60%

This grading scale will be followed very strictly. No grade boosts will be given regardless how short one might be from the next letter grade.

Using Moodle and Other Technologies

Technology Back-up Plan

- In the event that your computer crashes or the internet goes down, it is essential to have a "backup plan" in place where you are able to log in using a different computer or travel to another location that has a working internet.
- Any files you intend to use for your course should be saved to a cloud solution (Google Drive, Dropbox, etc.) and not to a local hard drive, USB stick or external disk. Saving files this way guarantees your files are not dependent on computer hardware that could fail.

Technology Help

- For help using Moodle, use the Get Help link at the top of the Moodle page (moodle.oakland.edu).
- For access to technology and in-person assistance, call or visit the Student Technology Center (Link to Student Technology Center: https://www.oakland.edu/stc/).
- For general technology assistance, consult the OU Help Desk (Link to Help Desk: https://www.oakland.edu/helpdesk/).

Respect Rules of Netiquette

a. Respect your peers and their privacy.
b. Use constructive criticism.
c. Refrain from engaging in inflammatory comments.

Classroom and University Policies

Classroom Behavior

1. ***Academic conduct policy.*** All members of the academic community at Oakland University are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and one's work honestly. Misrepresentation is

cheating since it means students are claiming credit for ideas or work not actually theirs and are thereby seeking a grade that is not actually earned. Following are some examples of academic dishonesty:

d. **Cheating.** This includes using materials such as books, notes, **and/or generative AI tools** when not authorized by the instructor. Copying from someone else's work, helping someone else copy your work, substituting another's work as one's own, theft of exam copies, falsifying data or submitting data not based on the student's own work on assignments or lab reports, or other forms of misconduct on exams and assignments.
e. **Plagiarizing the work of others.** Plagiarism is using someone else's work or ideas without giving that person credit; by doing this, students are, in effect, claiming credit for someone else's thinking. Both direct quotations and paraphrases must be documented. Even if students rephrase, condense or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or using information from the World Wide Web or Internet without attribution and handing it in as one's own work is plagiarism. **This policy will also apply to the broad range of generative AI tools.**
f. **Falsifying records** or providing misinformation regarding one's credentials.
g. **Unauthorized collaboration** on computer assignments and unauthorized access to and use of computer programs, including modifying computer files created by others and representing that work as one's own.
h. In all of the above cases, the Assignment/Exam/Project work will receive zero points and the student's academic advisor will be notified.

2. For more information, review OU's Academic Conduct Regulations. (Link to Academic Conduct Regulations: https://www.oakland.edu/deanofstudents/policies/)
3. ***Behavioral Code of Conduct.*** Appropriate behavior is required in class and on campus. Disrespectful, disruptive and dangerous behavior are not conducive to a positive learning environment and may result in consequences. Core Standards for Student Conduct at OU includes
   a. **Integrity.** See academic conduct policy points above.
   b. **Community.** Policies regarding disruptive behavior, damage and destruction, weapons, and animals.
   c. **Respect.** Policies regarding harassment, hazing, and sexual misconduct (Link to Sexual Misconduct policy: https://www.oakland.edu/policies/health-and-safety/625/)
   d. **Responsibility**. Policies regarding alcohol, drugs, and other substances

   See the **Student Code of Conduct** for details. (Link to Student Code of Conduct: https://www.oakland.edu/deanofstudents/student-code-of-conduct/)
   e. **Electronic Devices** should be put in vibrate/silent mode.

Accommodation and Special Considerations

Oakland University is committed to providing everyone the support and services needed to participate in their courses. Students with disabilities who may require special accommodations

should make an appointment with campus Disability Support Services (DSS). If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Support Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. DSS determines accommodations based on documented disabilities. Contact DSS at 248-370-3266 or by e-mail at dss@oakland.edu.

For information on additional academic support services and equipment, visit the Study Aids webpage of Disability Support Services website. (Link to Disability Support Services website: https://www.oakland.edu/dss/)

ATTENDANCE POLICY

Attendance is mandatory. In the event that you miss a class, discuss with your peers or team/group members. Review the lecture slides/relevant course content, and contact your instructor/TA during student hours (or schedule an appointment) if you have any doubts. For COVID related absence, see excused absence policy below.

EXCUSED ABSENCE POLICY

This policy for university-excused absences applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee. The instructor will also accommodate excused absence resulting due to the ongoing COVID pandemic if the student is immunocompromised or is a caregiver to an individual who is immunocompromised. A student must notify and arrange with the professor in advance. For responsibilities and procedures, see Academic Policies and Procedures. (Link to Academic Policies and Procedures: https://www.oakland.edu/provost/policies-and-procedures/)

RELIGIOUS OBSERVANCES

Students should discuss with the professor at the beginning of the semester to make appropriate arrangements. Although Oakland University, as a public institution, does not observe religious holidays, it will continue to make every reasonable effort to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. See The OU Diversity Calendar for more information. (Link to calendar: https://www.oakland.edu/diversity/calendar/)

PREFERRED NAME POLICY

OU's Preferred Name Policy ensures a student's university records can use a name that reflects the student's identity (abbreviated name, name change etc.).

Sexual Misconduct

Faculty and staff are responsible for creating a safe learning environment for our students, and that includes a mandatory reporting responsibility if students share information regarding sexual misconduct/harassment, relationship violence, or information about a crime that may have occurred on campus with the University. In such cases, the professor will report information to the campus' Title IX Coordinator (Chad Martinez, chadmartinez@oakland.edu or 248-370-3496). Students who wish to speak to someone confidentially can contact the OU Counseling Center at 248-370-3465. Additionally, students can speak to a confidential source off-campus 24 hours a day by contacting Haven at 248-334-1274.

Add/Drops

The university policy will be explicitly followed. It is the student's responsibility to be aware of deadline dates for dropping courses and officially drop the course. (Link to deadlines for dropping courses: https://www.oakland.edu/registrar/registration/dropornot/)

Faculty Feedback: OU Early Alert System

As a student in this class, you may receive "Faculty Feedback" in your OU e-mail if your professor identifies areas of concern that may impede your success in the class. Faculty Feedback typically occurs during weeks 2-5 of the Fall and Winter terms, but may also be given later in the semester and more than once a semester. A "Faculty Feedback" e-mail will specify the area(s) of concern and recommend action(s) you should take. Please remember to check your OU email account regularly as that is where it will appear. This system is to provide early feedback and intervention to support your success. (Link to Faculty Feedback for students: https://www.oakland.edu/advising/faculty-feedback/)

Student Mental Health Well-Being

Oakland University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact the OU Counseling Center in the Human Health Building at (248) 370-3465 or the SEHS Counseling Center at 250A Pawley Hall, (248) 370-2633, https://oakland.edu/counseling/sehs-cc/. Student resources can also be found at https://www.oakland.edu/deanofstudents/student-health-safety-resources/. For immediate 24/7 services contact Common Ground at https://commongroundhelps.org/#/ via chat or call or text the word "hello" to 1-800-231-1127.

Emergency Preparedness

In the event of an emergency arising on campus, the Oakland University Police Department (OUPD) will notify the campus community via the emergency notification system. The professor of your class is not responsible for your personal safety, so therefore it is the responsibility of

each student to understand the evacuation and “lockdown” guidelines to follow when an emergency is declared. These simple steps are a good place to start:

- OU uses an emergency notification system through text, email, and landline. These notifications include campus closures, evacuations, lockdowns and other emergencies. Register for these notifications at oupolice.com.
- Based on the class cellphone policy, ensure that one cellphone is on in order to receive and share emergency notifications with the instructor in class.
- If an emergency arises on campus, call the OUPD at (248) 370-3331. Save this number in your phone, and put it in an easy-to-find spot in your contacts.
- Review protocol for evacuation, lockdown, and other emergencies via the classroom’s red books (hanging on the wall) and oupolice.com/emergencies.
- Review with the professor and class what to do in an emergency (evacuation, lockdown, snow emergency).

Violence/Active Shooter: If an active shooter is in the vicinity, call the OUPD at (248) 370-3331 or 911 when it is safe to do so and provide information, including the location and number of shooter(s), description of shooter(s), weapons used and number of potential victims. Consider your options: Run, Hide, or Fight.

The instructor reserves the right to make changes in the syllabus. In case of any changes, students will be notified appropriately.

TENTATIVE COURSE SCHEDULE

Note: This is a tentative course schedule and may change during the semester based on the progress of the class.

WEEK 01: THURSDAY, SEP 06, 2023 && WEEK 02: SEP. 12 -- SEP. 14 [HTML]

- Discussion on Syllabus and course structure
- Basics of web and mobile app development – the big picture
- Introduction to HTML5 and basics of Document Object Model
- Create a basic HTML Page
- HTML semantic elements, lists and images, tables, media elements, forms and input

WEEK 03: SEP. 19 -- SEP. 21 && WEEK 04: SEP. 26 -- SEP. 28 [CSS]

- Intro to CSS3, various CSS selectors, properties and their values. How to apply CSS – inline, internal, and external CSS
- CSS box model and layout techniques (Flexbox and Grid) & Styling text, font, color, background
- CSS pseudo classes and elements & Intro to CSS transition and transformations

WEEK 05: OCT. 03 -- OCT. 05 && WEEK 06: OCT. 10 -- OCT. 12 [JAVASCRIPT]

- Intro to JS – variables, data types, operators, conditional statements, loops, and functions
- Revisiting Document Object Model (DOM), DOM manipulation using JS and event handlers for interactive web pages.
- Demo: Simple Calculator App and Timer based Quiz App (Kahoot Clone)

WEEK 07: OCT. 17 -- OCT. 19 && WEEK 08: OCT. 24 -- OCT. 26 [REACT JS INTRO]

- Intro to React JS framework, setting up React JS environment, and intro to functional components and JSX
- Intro to Props and state management in React JS (useState React Hook)
- Demo: AirBnB Experiences clone app using React

WEEK 09: OCT. 31 -- NOV. 02 && WEEK 10: NOV. 7 -- NOV. 9 [REACT JS ADVANCED]

- User input forms in React JS, React Router for single-page view type navigation
- External API calls with React JS (useEffect hook) and hosting a react app.
- Demo: Meme Generator App using React

WEEK 11: NOV. 14 -- NOV. 16 && WEEK 12: NOV. 21 -- NOV. 23 [REACT NATIVE]

- Intro to mobile app development using React Native, setting up development environment using Expo, creating and styling basic react native components
- Mobile app screen navigation
- Thanksgiving day on Nov 23.

WEEK 13: NOV. 28 – NOV. 30 && WEEK 14: DEC. 5 -- DEC. 7

- Managing state in React native + intro to global state management using Redux
- Classes end Dec. 9th.

WEEK 15 & 16: EXAMS WEEK

- Final thoughts and looking ahead.