COURSE OUTLINE: CSD230 - ADV. WEB APPS

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Course Code: Title	CSD230: ADVANCED WEB APPLICATIONS
Program Number: Name	2095: COMPUTER PROGRAMMING
Department:	COMPUTER STUDIES
Academic Year:	2024-2025
Course Description:	The tools and design patterns used to build modern web applications are constantly evolving. Depending on instructor expertise, learners in this course explore and employ a variety of widely used libraries, frameworks, and technologies to prepare them for modern web application development. Topics include full-stack application development, testing, deployment, front-end frameworks, and web security. JavaScript, TypeScript, Node.js, Java, and PHP may all be used at times throughout the course. Depending on instructor experience, learners will work with popular technologies such as React, Next, Spring, or similar.
Total Credits:	5
Hours/Week:	5
Total Hours:	70
Prerequisites:	CSD213, CSD214
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**2095 - COMPUTER PROGRAMMING** VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. VLO 3 Implement and maintain secure computing environments. VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. VLO 8 Adhere to ethical, legal, and regulatory requirements and/or principles in the development and management of computing solutions and systems. VLO 9 Support the analysis and definition of software system specifications based on functional and non-functional requirements. VLO 11 Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. VLO 12 Model, design, implement, and maintain basic data storage solutions. VLO 13 Contribute to the integration of network communications into software solutions by adhering to protocol standards.
Essential Employability Skills (EES) addressed in	EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems.

this course:	EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Students are expected to be present to write all tests in class, unless otherwise specified. If a student is unable to write a test due to illness or a legitimate emergency, that student must contact the professor prior to class and provide reasoning. Should the student fail to contact the professor, the student shall receive a grade of zero on the test. If a student is not present 10 minutes after the test begins, the student will be considered absent and will not be given the privilege of writing the test. Students exhibiting academic dishonesty during a test will receive an automatic zero. Please refer to the College Academic Dishonesty Policy for further information. In order to qualify to write a missed test, the student shall have: a.) attended at least 75% of the classes to-date. b.) provide the professor an acceptable explanation for his/her absence. c.) be granted permission by the professor. NOTE: The missed test that has met the above criteria will be an end-of-semester test. Labs / assignments are due on the due date indicated by the professor. Notice by the professor will be written on the labs / assignments and verbally announced in advance, during class. Labs and assignments that are deemed late will have a 10% reduction per academic day to a maximum of 5 academic days at 50% (excluding weekends and holidays). Example: 1 day late - 10% reduction, 2 days late, 20%, up to 50%. After 5 academic days, no late assignments and labs will be accepted. If you are going to miss a lab / assignment deadline due to circumstances beyond your control and seek an extension of time beyond the due date, you must contact your professor in advance of the deadline with a legitimate reason that is acceptable. It is the responsibility of the student who has missed a class to contact the professor immediately to obtain the lab / assignment. Students are responsible for doing their own work. Labs / assignments that are handed in and are deemed identical or near identical in content may constitute academic dishonesty and result in a zero grade. Students are expected to be present to write in-classroom quizzes. There are no make-up options for missed in-class quizzes. Students have the right to learn in an environment that is distraction-free, therefore, everyone is expected to arrive on-time in class. Should lectures become distracted due to students walking in late, the professor may deny entry until the 1st break period, which can be up to 50 minutes after class starts or until that component of the lecture is complete. Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89%

B 70 - 79% 3.00
C 60 - 69% 2.00
D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Discuss approaches to web application design	1.1 Discuss the advantages and disadvantages of monolith vs microservices, multi- vs single-page, and server- vs client-side rendered apps 1.2 Explain the components of a typical JAM stack application 1.3 Describe the nature of progressive web apps 1.4 Explain what serverless applications are and when they are advantageous
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Build and deploy a web API	2. Discuss the nature and relative merits of REST and GraphQL APIs2 2.1 Design a web API using a specification format such as OpenAPI 2.2 Build a web API using a framework like Spring (or similar) 2.3 Employ token-based API authentication and access control 2.4 Discuss common security vulnerabilities and mitigation measures in web APIs 2.5 Discuss approaches to API versioning 2.6 Deploy a web API to a web-accessible server
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Build a client-side web application front end	3.1 Describe the nature of front end frameworks and their common components 3.2 Build reusable web components in a front end framework 3.3 Compose components into a complete user interface using a front end framework 3.4 Use the routing tools of a front end framework to manage browser history 3.5 Use the state management tools of a front end framework to manage application and component state 3.6 Integrate an application front end with one or more web API back ends 3.7 Discuss common security vulnerabilities and mitigation measures in front end code
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Manage the building and deployment of web	4.1 Install and configure IDE tools and plugins to support development

	applications in a team of developers	4.2 Install and configure application dependencies 4.3 Configure and run build processes 4.4 Configure and run development and test servers 4.5 Configure, write, and run tests to validate web application functionality 4.6 Employ a DevOps pipeline to manage building, testing, and deploying a web application

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Activities and Formative Assessments	10%
Labs and Projects	40%
Tests	50%

Date: July 5, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.