UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Web Programming and Development
FY2027 / 22 Credits (660 Clock-Hours)

Foundational Courses

TEWP 1000 Introduction to Web Development — 2 Credits / 60 Clock-Hours

This course gives students an in-depth understanding of how to build web pages and a solid foundation for your future development or website-building career. Students will learn the basic concepts of the internet, web pages, markup coding and best practices that are applicable in the real-world environment using Git, GitHub, HTML, CSS, Bootstrap, Sass and JavaScript.

Objectives:
• Implement common HTML tags in a functional coding format to create a Web site using current standards and technologies.
• Demonstrate the ability to upload and publish a Web page on a Web server.
• Explore best practices in modern responsive website design.
• Receive common computational problem-solving techniques and training useful to entry-level web developers and programmers.

TEWP 1010 JavaScript Programming — 4 Credits / 120 Clock-Hours

This course introduces students to a great foundation in computer programming using JavaScript. Students will learn to use JavaScript to cover basic programming including arrays, functions, objects, events and the DOM, web API's. JavaScript is a widely used industry programming language that can integrate with other languages and frameworks, providing learners a context in which to learn foundational programming concepts that can easily transfer to other programming languages.

Objectives:
• Learn a high-level overview of JavaScript as a programming language and some of the features that make it different from other programming languages.
• Implement and know how to effectively work with objects and inheritance in JavaScript and know how all this works behind the scenes.
• Create, build and start a basic server using JavaScript and Node.js.
• Know the importance of built-in Object and Array functions which will speed up development time and make code much more readable and concise.

TEWP 1020 React.js — 3 Credits / 90 Clock-Hours

React is one of the web's most popular libraries that is used in production by huge companies like Twitter, Netflix, and Microsoft. React is fun to use and its component architecture makes it faster and easier to build scalable, maintainable and amazing products for the web including native platforms. This course will introduce the fundamentals of React using modern syntax and best practices for creating React components. Students will have hands-on experience with React's core concepts, and explore other concepts like testing, data fetching, routing and much more.

Objectives:
● Demonstrate how to use the fundamental building blocks of creating React components to build small and scalable web applications.
● Build simple and flexible React Components and Hooks using modern react patterns.
● Execute the essential tools and techniques to write, test, and deploy React components and applications with confidence.

TEWP 1030 Backend Programming **2 Credits / 60 Clock-Hours**

This course will help students understand the concept that every great web application begins with the components of user experience and the business impact of delivery, deployment and support that is quick, cost effective, and requires great functionality. Students will learn that the combination of JavaScript, Node, and Express is an ideal choice for web teams that want a powerful, quick-to-deploy technology stack that is widely respected in the development community and large enterprises alike.

Objectives:
• Identify Node.js, core modules, and NPM (Node Package Manager) and how it works behind the scenes with event loop, blocking vs non-blocking code, event-driven architecture, streams, modules, etc.
• Explain the features and functions of Express (Node.js framework) from routing, middleware, to sending responses.
• Create a real-world web application to demonstrate how MVC (Model-View-Controller) architecture is applied.

TEWP 1040 Deployment and Security **1 Credit / 30 Clock-Hours**

This course will provide foundational knowledge and hands-on projects that will teach students theory and practical skill required to install Docker and be aware of critical security risks to web applications. Students will learn to build, run, and deploy applications anywhere using the World's leading software container platform.

Objectives:
• Create, build and manage Docker images and containers effectively.
• Deploy course web application projects using Docker containers.
• Practice how to securely configure your browser to block malicious scripts, cookies, trackers, and so on, as well as maintain good privacy/anonymity on the Internet to safeguard your development environment.
• Learn best practices and fundamentals of confidently managing emails, business files, computers, mobile devices, and internet browsing.
• Understand human emotions, patterns and work on real life cases about how hackers trigger or trick people into providing access to money, personal accounts, systems, and company network.

TEWP 1060 Angular Framework **4 Credits / 120 Clock-Hours**

Angular is one of the fastest, most popular open-source web app frameworks today, and knowing how to deploy and use it is essential for developers. Angular is a TypeScript-based open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations. Angular allows developers to create beautiful, performant, easily maintainable websites incredibly quickly. Student will learn to be proficient in the use of the Angular framework and produce full scale Angular applications.

Objectives:
• Demonstrate code for a full-scale Angular application.
• Create components and user interfaces, databinding, retrieving data using HTTP, and more.
• Build and deploy this application so that it can be accessed from anywhere.
• Communicate effectively with other Angular developers by knowing the fundamental concepts of Angular.
• Recognize good and bad patterns in Angular code.

TEWP 1080 Capstone **2 Credits / 60 Clock-Hours**

The Capstone course enhances students' employability in the industry as they demonstrate their ability to plan, design and execute a responsive web project using the technology that they have acquired so far. The project must adhere to validation and accessibility standards. Students showcase a complete client project from concept to the final presentation.

Objectives:
• Research and develop a design system (color, typography, and layout) based on research and client information for the project.
• Develop and publish a web project using standards-compliant HTML, CSS, and any other technology stack.
• Conduct and present basic usability testing on the site and correct any issues.
• Design professional-level web page layouts with attention to usability: consistent navigation, clear visual hierarchy, and intuitive interface design.
• Present your project utilizing critical thinking ability, professional presentation skills, and the ability to explain your creative process.
• Create a professional resume, cover letter and reference sheet.
• Expand and develop networking skills.
• Demonstrate the ability to fill out job applications in a professional manner.

TEWP 1700 Server-side Web Development **4 Credits / 120 Clock-Hours**

Server-side programming explores delivering a customized user experience. This course combines the skills of programming, client-side development, and relational database management to create and manage dynamic web-based content. Students will be exposed to using, creating, and testing web APIs.

Objectives:
• Implement server-side programming to serve the client-side development.
• Demonstrate proper syntax, patterns, data structures, and functional usage of server-side language.
• Connect and utilize databases.
• Develop controls and event-handling procedures.
• Apply server-side concepts and techniques to create, manage, and use dynamic web pages.
• Employ API testing and development.

Supplemental Courses Varies by Institution

Mountainland

TEWP 1900 Web Programming and Development Externship I **4 Credits / 180 Clock-Hours**

Upon completion of the classroom portion of program, students will find an externship opportunity to complete 180 hours within a real-world software development environment.

Objectives:
• Use source control principles and technologies to track and manage code.
• Write, review, and edit HTML, CSS, JavaScript libraries or frameworks like React and/or Angular code while completing assigned tasks.
• Collaborate with other team members while working to complete defined project goals.
• Students are embedded into existing development teams or organized into small project groups with other students.
• Students engage in tasks and assignments to support product development and/or other special development projects.

TEWP 1910 Web Programming and Development Externship II **1 Credit / 60 Clock-Hours**

Upon completion of the classroom portion of program, students will find an externship opportunity to complete 60 hours within a real-world software development environment.

Objectives:
• Use operating system commands and utilities to execute, test, troubleshoot and configure code and web applications.
• Utilize knowledge of back-end (server side) technologies while completing assigned tasks.
• Utilize knowledge of database technologies while completing assigned tasks.
• Students engage in tasks and assignments to support product development and/or other special development projects.

Salt Lake

TEDG 1020 Digital Literacy **1 Credit / 30 Clock-Hours**

In this course, students will learn to effectively use digital technologies, such as computers and the internet, to find, evaluate, create, and communicate information. Students will demonstrate their ability to complete basic computing tasks such as working with an operating system, creating and managing files and folders, and effectively utilizing internet searches and resources. Students will also be introduced to common terminology and file types that they will encounter in various digital media industries.

Objectives:
• Demonstrate proper file management including the use of cloud storage.
• Demonstrate basic knowledge of the operating system.
• Describe important facts about the internet and how it works.
• Demonstrate the ability to use various browsers and their development tools.
• Explain the various languages used for building websites and how they interact.
• Describe the tools used for web design/development.
• Explain the various tools commonly used by web and graphic designers.

TEWG 1070 Responsive Web Design with CMS **3 Credits / 90 Clock-Hours**

Responsive Web Design with CMS introduces the process for transforming a static site into a dynamic CMS theme. Students will install the CMS locally, modify content, style the site using CSS/JS, and migrate the CMS to a live internet server.

Objectives:
• Setup a development environment.
• Identify the primary components that make up a CMS theme.
• Utilize CSS Preprocessing and JavaScript to add styling and functionality.
• Create a custom child theme.
• Identify and install essential plugins.
• Migrate the site to a live internet server.

TEWP 1800 Portfolio Website Project **1 Credit / 30 Clock-Hours**

In this course, students will design and develop a personal portfolio website using HTML and CSS. This project will allow them to apply the concepts and techniques they have learned in the HTML and CSS courses. The portfolio website will showcase their work, skills, and personal information.

Objectives:
• Plan a website.
• Structure a website with HTML.
• Style a website with CSS.
• Populate a website with relevant content.
• Add interactive features.
• Test and debug a website on various browsers and devices.
• Optimize Images and code for faster loading times.
• Upload a website to a web hosting platform.