Calendar Course Description Design and implementation of web-based information systems and app development. Rich user interfaces, asynchronous updates, client-side and server-side scripting using standard technologies such as HTML, CSS, SVG, JavaScript, PHP. Data manipulation with SQL, JSON, XML. Modern scripting frameworks and libraries. *Prerequisite*: All of COSC 121, COSC 304 and third-year standing. Course Overview, Content and Objectives This course will provide learners with the opportunity to develop a technical understanding of the Internet environment and the structure of the World Wide Web. Core concepts will be covered through pre-readings and exercises. In class, learners will build upon these concepts through discussions, exercises, and coding examples. Learners will gain a solid foundation of modern front end and backend development and integration strategies. Technical skill will focus on the design and implementation of effective web sites. Fundamental knowledge and skills will be acquired that can be applied to web development projects in a multitude of industries and of varying complexity. In addition to practical skill and theory, learners will explore asynchronous JavaScript, web services, frameworks and libraries to efficiently build advanced websites. Learners will advance their skills through both theory and practical concepts involving MVC, and AJAX, enabling them to build an easy to maintain high performing web sites. Learning Outcomes Upon completion of this course, students will be able to: Design and build a simple web site that organizes information effectively; Understand and utilize the DOM; Use cascading style sheets to create style standards for a web site; Create a navigational framework that matches the content and genre of the site; Compare and contrast different CSS layout techniques; Utilize CSS frameworks to simplify complex CSS layout tasks; Explain separation of concerns as it applies to the design and implementation of a web site; Describe the issues involved in developing a web interface; Utilize client-side scripting to perform tasks such as element transitions and data validation; Describe how JavaScript interacts with client environments; Summarize the need and issues involved in web site implementation and integration; Explain why accessibility issues are an important consideration in web page development; Design and implement a web interface; Explain and compare media file-formats including lossy lossless compression; State how server-side technology works; Utilize server-side scripting to programmatically generate HTML in response to client responses; Compare and contrast server-side scripting technologies; Build a web application utilizing PHP; Utilize databases to create dynamic web applications; Investigate and describe mechanisms for maintaining state in web applications; Utilize cookies and web storage to maintain web application state; Describe RESTful web services; State potential shortcoming in web security; Design and implement secure web services; Write an asynchronous web application using programming best practices; Integrate third-party web services into an application; Compare and contrast common data interchange formats used in web applications; Identify how content can be created/refreshed automatically; Understand how to construct a web application that can handle exceptions gracefully. Topics include Topic 1: Course overview, network basics Topic 2: Basic HTML elements and structure Topic 3: CSS basics: styling Topic 4: HTML tables and forms, form control elements Topic 5: Advanced CSS – floats, positioning, and CSS frameworks Topic 6: Media, images, file formats Topic 7: Client-Side scripting, Javascript, DOM, Form Handling Topic 8: Client-Side Scripting with JavaScript, Syntax, DOM, Events and Forms Topic 9: Java Script with JQuery Topic 10: Server Side Development with PHP Topic 11: PHP with Arrays and Superglobals Topic 12: Database Connections with PHP Topic 13: Managing State, Query Strings, Information Passing, Cookies, and Session State Topic 14: Error Handling and Validating User Input