

TEC-56 – Full Stack Web Developer with MEAN Certificate Program with Externship

Professional Education Course Syllabus

Program includes National Certification & an Externship Opportunity

Course Contact Hours: 36

The Full Stack MEAN Web Developer Profession

Full stack developers are software or website programmers who combine the roles of front-end and back-end developers. Stack developer job is relatively new (just four years old). This role blends both front-end and back-end development since there is no clear borderline between the two: front-end developers often lack extra back-end skills, and the other way around. Full stack duties, in their turn, unite the both. These specialists work professionally both on the user side and server side of the web development cycle. To this end, the role requires in-depth knowledge of every level of web creation process, which includes Linux server's set-up and configuration, creating server-side APIs, making JavaScript-codes that power apps, and so on.

MEAN Stack Developer is a software engineer who is specialized in developing web applications with so called MEAN, a collection of JavaScript-based technologies. Responsibilities include building interactive consumer data from multiple systems and RESTfully abstract to the UI through a Node.js backend; define code architecture decisions to support a high-performance and scalable product with a minimal footprint.

Full Stack MEAN Web Developer Program

The Front-End Web Developer content introduces students to front-end, or client-side, web development technologies, including JavaScript, HTML, CSS, and jQuery. Participants learn how to make interactive applications that run inside a web browser and can communicate with a web server running remotely. Participants also learn how to use the version control program Git and collaboration website GitHub. Once complete, participants will have the basic skills necessary to work as a front-end web developer.

The MEAN Stack Web Developer Complete Video Course portion introduces students to building dynamic web applications with MongoDB, Express, AngularJS, and Node.js. Students learn about essential JavaScript-based technologies, async programming, and MVC design techniques. Students also walk through establishing database connectivity and secure user authentication. Once complete, students will have the basic skills they need to create full-fledged JavaScript-based web solutions from server to browser, and integrate all MEAN stack technologies into full working systems.

Education and National Certifications

- Students should have or be pursuing a high school diploma or GED.
- There are no state approval and/or state requirements associated with this program.

- Since the languages and profession is constantly evolving there are no established national certification for coding and web development. Your program includes Microsoft Office Suite (MOS) which prepares you for a widely adopted employer recognized certification.
 - **Microsoft Office Specialist (MOS) Certification Exam.**

Program Objectives

At the conclusion of this program, students will be able to:

- Create simple web pages using HTML and CSS and get those pages up on a website
- Explain how JavaScript is used, format and execute code, define arrays, assign functions, and more
- Use JQuery to manipulate DOM and perform Ajax requests
- Verify that the individual functions that make up the application perform as expected using JsUnit
- Make rich user interface elements using jQuery UI
- Build an interactive application and add it to a GitHub repository to show prospective employers
- Install and configure all components of the MEAN stack
- Work with the JavaScript features all MEAN stack developers need to know
- Write and extend JSON web servers and Node modules
- Simplify web development with Express web servers
- Build AngularJS apps with directives, filters, MVC, and modules
- Create databases, collections, and documents with MongoDB
- Authenticate your users

National Certification

Upon successful completion of this program, students would be eligible to sit for the Microsoft Office Specialist (MOS) exam. Although there are no state approval, state registration or other state requirements for this program, students who complete this program will be prepared and are eligible to sit for the national certification exams. Students who complete this program are encouraged to complete the externship option with their program. Students who complete this program can and do sit for the MOS national certification exams and are qualified, eligible and prepared to do so.

Externship / Hands on Training / Practicum

Although not a requirement, once students complete the program, they have the ability to participate in an externship and/or hands on practicum so as to practice the skills necessary to perform the job requirements of a professional in this field. Students will be assisted with completing a resume and/or other requirements necessary to work in this field. All students who complete this program are eligible to participate in an externship and will be placed with a participating organization near their location.

Full Stack MEAN Web Developer Program Detailed Student Objectives:

Front End

Module 0: Pre-Requisite - HTML and CSS

- Introduction HTML
- Building a basic HTML document
- Introducing CSS
- Building and Styling HTML TEXT
- Understanding HTML5 semantic elements

- Adding Images and multimedia
- Building and using HTML forms

Module 1: JavaScript

- JavaScript – Getting Started
- JavaScript Basic Syntax —Part 1
- JavaScript Basic Syntax – Part 2
- JavaScript – Functions
- JavaScript – Objects

Module 2: HTML and CSS for JavaScript

- HTML—a crash course, Part 1
- HTML— a crash course, Part 2
- CSS for JavaScript Developers – a crash course

Module 3: jQuery

- JQUERY—Installation, Overview, and Getting Started
- Deploying Web Application with Eclipse and Tomcat
- JQUERY AJAX SUPPORT: Basics
- JQUERY AJAX SUPPORT: Sending Data to the Server
- JQUERY AJAX SUPPORT: Advanced Capabilities
- JQUERY AJAX SUPPORT: Promises and Deferred Objects
- JQUERY: Selectors and Dom Manipulation
- Unit Testing with JSUNIT

Module 4: jQuery UI Basics

- Rich Interfaces with JQUERY UI – Setup and Basic Widgets
- JQUERY UI— Dialog Boxes
- JQUERY UI—Tabbed Panels and Accordion Panels
- LESSON 20: JQUERY UI— Autocompleters
- LESSON 21: JQUERY UI— Animation effects and themes

Module 5: Using Git and GitHub in Web Development

- How to Install Git
- How to Create a GitHub Account
- Configuring GIT
- Getting Started with GIT
- Getting Started with GITHUB
- Files in GIT— Renaming, Deleting and Ignoring
- Branching, Merging and Rebasing
- Reviewing a project on GITHUB

Front End Web Developer Final Exam

MEAN Stack Program Portion Detailed Student Objectives:

Module 1: Learning Node.js

- GETTING STARTED

- A CLOSER LOOK AT JAVASCRIPT
- ASYNCHRONOUS PROGRAMMING
- WRITING APPLICATIONS
- MODULES
- EXPANDING OUR WEB SERVER
- BUILDING WEB APPLICATIONS EASIER WITH EXPRESS

Module 2: Learning AngularJS

- GETTING STARTED
- WORKING WITH ANGULARJS BUILDING BLOCKS: BINDING-DIRECTIVES AND FILTERS
- PUTTING IT ALL TOGETHER WITH MODULES
- LOADING AND SAVING DATA
- FILLING IN THE BLANKS-FILTERS, DIRECTIVES, COOKIES, AND MORE

Module 3: Using MongoDB with NodeJS and AngularJS

- MONGODB FUNDAMENTALS
- USING MONGODB WITH NODEJS
- IMPLEMENTING FULL NODESJS, MONGODB & ANGULARJS STACK TO ADD USER AUTHENTICATION TO WEBSITE

Capstone Project

- Create a Bookstore
- Capstone Solution

Final Exam

Fresno Pacific University Student Learning Outcomes (FPU-SLO)

FPU-SLO 1	Student Learning Outcomes Oral Communication: Students will <i>exhibit</i> clear, engaging, and confident oral communication – in both individual and group settings – and will critically <i>evaluate</i> content and delivery components.
FPU-SLO 2	Written Communication: Students will <i>demonstrate</i> proficient written communication by <i>articulating</i> a clear focus, <i>synthesizing</i> arguments, and utilizing standard formats in order to <i>inform</i> and <i>persuade</i> others.
FPU-SLO 3	Content Knowledge: Students will <i>demonstrate</i> comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
FPU-SLO 4	Reflection: Students will <i>reflect</i> on their personal and professional growth and <i>provide evidence</i> of how such reflection is utilized to manage personal and vocational improvement.
FPU-SLO 5	Critical Thinking: Students will <i>apply</i> critical thinking competencies by <i>generating</i> probing questions, <i>recognizing</i> underlying assumptions, <i>interpreting</i> and <i>evaluating</i> relevant information, and <i>applying</i> their understandings to new situations.
FPU-SLO 6	Moral Reasoning: Students will <i>identify</i> and <i>apply</i> moral reasoning and ethical decision-making skills, and <i>articulate</i> the norms and principles underlying a Christian world-view.

FPU-SLO 7	Service: Students will <i>demonstrate</i> service and reconciliation as a way of leadership.
FPU-SLO 8	Cultural and Global Perspective: Students will <i>identify</i> personal, cultural, and global perspectives and will employ these perspectives to <i>evaluate</i> complex systems.
FPU-SLO 9	Quantitative Reasoning: Students will accurately <i>compute</i> calculations and symbolic operations and <i>explain</i> their use in a field of study.
FPU-SLO 10	Information Literacy: Students will <i>identify</i> information needed in order to fully understand a topic or task, <i>explain</i> how that information is organized, <i>identify</i> the best sources of information for a given enquiry, <i>locate</i> and critically <i>evaluate</i> sources, and accurately and effectively <i>share</i> that information.

Continuing Education Student Learning Outcomes (CE-SLO)

CE-SLO 1	Demonstrate proficient written communication by articulating a clear focus, synthesizing arguments, and utilizing standard formats in order to inform and persuade others, and present information applicable to targeted use.
CE-SLO 2	Demonstrate comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
CE-SLO 3	Reflect on their personal and professional growth and provide evidence of how such reflection is utilized to manage personal and professional improvement.
CE-SLO 4	Apply critical thinking competencies by generating probing questions, recognizing underlying assumptions, interpreting and evaluating relevant information, and applying their understandings to the professional setting.
CE-SLO 5	Reflect on values that inspire high standards of professional and ethical behavior as they pursue excellence in applying new learning to their chosen field.
CE-SLO 6	Identify information needed in order to fully understand a topic or task, organize that information, identify the best sources of information for a given enquiry, locate and critically evaluate sources, and accurately and effectively share that information.