C-101 Semester 1 Front End Design

District Pre-Assessment

Unit 1 (3 Days)
Coding Program Overview
- Basic operating system and computing fundamentals
- Expectations, rules and procedures/ culture building
- Program specific software/accounts/ basic implementation

Technical Standards: 1.0, 2.1, 2.3, 2.6, 3.0

Unit 2 (3 Days)
Version Control
- Fundamentals of Command line Git (i.e. creating repositories/forking/branching/ committing/pushing & pulling)
- Utilize GitHub as an online repository & collaboration platform
- Navigate code from local machine to GitHub using GitKraken

Technical Standards: 3.0, 15.0, 10.2, 12.7

Professional Standards: 3.C, 3.E, 8.E

Industry Speaker Presentation

Unit 3 (8 Days)
HTML5 Foundations & Basic Syntax
- Utilize a code editor/install packages to customize editor
- Write and edit HTML5 code and get your HTML files ready for display on the World Wide Web

Technical Standards: 3.0, 12.1, 12.4-.5, 12.7, 16.1-2

FBLA Online Testing Tournament

Unit 4 (2 Days)
Software Development Life Cycle
- Understanding the scrum approach to project success & solve project problems with scrum
- Establishing your scrum teams & set a vision for a project
- Write user stories/set boundaries for success/get stories done in scrum
- Assess your team

Technical Standards: 1.0, 11.1, 11.2

Professional Standards: 2.C, 3.C

FBLA State Officer Visit

Unit 5 (10 Days)
Getting Started with CSS3
- Apply basic principles of design to a webpage using CSS3
- Use color, typography and layout to enhance the look of a website
- Define & apply techniques of inheritance
- Use css functions and custom properties ("variables")

Technical Standards: 3. 0, 12.4, 12.7

FLBA FLEX Conference

Mid Term Exam

Unit 6 (11 Days)
Designing a Page Layout
- Explore fundamentals of page layout
- Apply various positioning techniques
- Explore and create a grid-based layout
- Use css functions

Technical Standards: 3.0, 12.4, 12.7

Unit 7 (8 Days)
Graphic Design with CSS3
- Create CSS styles that can be used to add interesting visual effects to a website in order to create impact & visual interest

Technical Standards: 3.0, 12.4, 12.7, 16.3, 16.4

Unit 8 (12 Days)
Designing for the Mobile Web
- Apply responsive design techniques using media queries
- Make a website compatible for mobile devices
- Explore & work with flexbox layouts

Technical Standards: 3.0, 9.6, 12.4, 12.7, 16.3

Industry Speaker Presentation

Unit 9 (12 Days)
Working with Tables & Columns
- Create web tables and apply CSS style rules to enhance layout and readability
- Create a multi-column layout

Technical Standards: 3.0, 12.4, 12.7

Unit 10 (10 Days)
Designing a Web Form
- Explore the fundamentals of how web forms function
- Create web form elements
- Stylize web form elements using CSS3
- Create custom form entry controls

Technical Standards: 3.0, 9.1, 9.5, 12.4, 12.7, 16.5

Unit 11 (5 Days)
Enhancing a Website with Multimedia
- Integrate audio and video into a website
- Customize transitions and playback options

Technical Standards: 3.0, 12.4, 12.7

Certification Review (1 Day)

Microsoft Exam 98-383: Introduction to Programming Using HTML and CSS

Learning experiences provided over the course of the year
- **Professional Skills**
- **Leadership Development – FBLA**

Software & App Design, 15.1200.40

C-102 Semester 2 Front-end Programming

Unit 1 (10 Days)

Getting Started with JavaScript

- Examine the features and syntax of the JavaScript language, as well as explore how to create and apply JavaScript programs to websites
- JavaScript ES6 standards integrated

Technical Standards: 3.0, 4.1 - 4.4, 5.1 - 5.4, 11.4, 12.4, 12.7, 12.8, 12.10, 12.11, 14.1, 14.3

FBLA Regional Conference & Online Testing

Unit 2 (4 Days)

Debugging

- Recognize error types
- Trace errors with dialog boxes and the console
- Use comments to locate bugs
- Trace errors with debugging tools
- Write code to respond to exceptions and errors

Technical Standards: 3.0, 10.1, 10.2, 12.7, 13.0, 19.1 - 3
Professional Standards: 3.A, 3.C

Industry Speaker Presentation(s)

Unit 3 (12 Days)

Exploring Arrays, Loops, and Conditional Statements

- Create an array and utilize properties and methods to create more efficient code
- Develop a program using a for loop, while loop, do while loop, & conditional operators
- Write conditional statements using if, if else, if else if

Technical Standards: 3.0, 4.5, 6.0, 7.0, 8.1, 8.4 - 8.6, 12.7

Unit 4 (8 Days)

Working with Events & Styles

- Create event handlers & reference attributes from a page element
- Change inline styles
- Create code for different input type events
- Create and apply anonymous functions

Technical Standards: 3.0, 12.2, 12.4, 12.7

Unit 5 (9 Days)

Working with Document Nodes & Style Sheets

- Create a dynamic document online using the document object model
- Develop external and internal style sheets using JS
- Enable and disable style sheets

Technical Standards: 3.0, 12.4, 12.7

Mid Term Exam

Unit 6 (10 Days)

Programming for Web Forms

- Enhance form usability with JavaScript
- Customize browser-based HTML validation
- Implement custom validation to check for errors and display error messages

Technical Standards: 2.5, 2.7, 3.0, 12.3, 12.4, 12.7

Unit 7 (10 Days)

Exploring Object-Based Programming

- Explain basic concepts related to object-oriented programming
- Define prototypes/object classes/constructor functions/object literals/object properties & methods
- Define your own custom JavaScript objects

Technical Standards: 3.0, 12.4, 12.7, 18.1, 18.3, 18.6, 18.7, 19.3 - 19.6

Unit 8 (4 Days)

Security Issues Related to Computing & Web Development

- Identify common computer threats (e.g. Viruses, phishing, suspicious email, social engineering, spoofing, identity theft)
- Identify procedures to maintain data integrity and security (e.g. lock the screen, delete unrecognized emails, etc.)
- Describe methods for sanitizing user input to prevent issues (e.g. buffer overflow)

Technical Standards: 2.1 - 2.7

Mock Interviews
Industry Speaker Presentation
Guest Speaker – FBLA Competition Prep
FBLA Regional Conference

Unit 9 (15 Days)

Capstone Assignments

- Form teams to create a unique website based on a prompt driven by the FBLA National Office
- Utilize distributed version control to manage branches of repositories, allowing each group member to operate autonomously
- Use SDLC SCRUM techniques to manage Trello boards and individual group member tasks
- Build a dynamic presentation to demonstrate final product
- Deliver product demo to multiple stakeholders
- Submit group & peer reviews

Technical Standards: 1.0, 3. 0, 12.7
Professional Standards: 4.A, 4.B, 4.E, 4.F

FBLA State Conference

District Post-Assessment Review (1 Day)

District Post-Assessment

Certification Review (1 Day)

Microsoft Exam 98-382: Introduction to Programming Using JavaScript

FBLA National Conference (Summer)

Learning experiences provided over the course of the year
- **Professional Skills**
- **Leadership Development – FBLA**

Software & App Design, 15.1200.40

C-201 Semester 1 Back-End Programming

JavaScript Pre-Assessment

Unit 1 (10 Days)

JavaScript Language/Debugging Review

- Review the fundamentals of JavaScript – syntax/data types/strings/conditionals/loops
- Review the Document Object Model
- Review debugging/error handling techniques

Technical Standards: 4.1 - 4.5, 5.3, 6.0, 7.0, 8.0, 11.3, 12.1, 12.5, 12.7, 12.8, 12.10, 12.11, 14.1

Unit 2 (15 Days)

Object-Oriented Programming w/ JavaScript ES6

- Support for constants
- Block Scope & Arrow Functions
- Extended Parameter Handling
- Template/Extended Literals
- Enhanced Object Properties
- Destructuring Assignment
- Modules/Classes/Iterators/Generators/Collections
- New built in methods for various classes
- Promises/Callback/Async
- Heroku Deployment

Technical Standards: 4.1- 4.4, 4.6, 5.3-5.5, 6.0, 7.0, 8.0, 11.3, 11.4, 12.1-.8, 12.10, 12.11, 13.0, 14.1, 18.0, 19.0

FBLA Online Testing Tournament

Unit 3 (15 Days)

AJAX & RESTful API

- Describe the steps involved in using AJAX to update data
- Create an HTTP request and interpret an HTTP response
- Request and receive server data using the XMLHttpRequest object
- Process data received from a web service and add it to the DOM
- Update app data using JSON-P
- Use .fetch

Technical Standards: 4.1- 4.4, 5.3-5.5, 6.0, 7.0, 8.0, 9.1-9.4, 10.3, 11.3, 11.4, 12.1-12.5, 12.7, 12.8, 12.10, 12.11, 13.0, 14.1

Unit 4 (10 Days)

Introduction to Node.js & ExpressJS

- Introducing & installing Node.js
- Synchronous vs. Asynchronous Tasks
- Node.js and JavaScript
- Node.js Modules- CommonJS V ESM
- The package.json file
- File and Directory I/O
- Frameworks and Web APIs
- ExpressJS
- Promises
- Build a Server for the Application with ExpressJS
- Setting Up the Views in Express

Technical Standards: 5.3-5.5, 9.2, 11.3, 12.1, 12.7, 12.8, 12.10, 12.11, 13.0, 14.1, 18.1-18.8
Professional Standards: 2.A, 2.B, 2.C

Mid Term Exam

FLBA FLEX Conference

Unit 5 (13 Days)

Express, Mongo & API's

- REST Fundamentals
- Consuming RESTful API's
- Building a RESTful API
- API Design with Loopback
- Build a basic API
- Installing Brew and Mongo data base
- Introduction of ORM's & Mongoose

Technical Standards: 2.4, 5.3-5.5, 9.2, 10.3, 11.3, 11.4, 12.1-12.4, 12.7-12.11, 13.0, 14.1, 14.2, 17.1, 17.2, 19.0

Unit 6 (12 Days)

Introduction to REACT.js

- Introduction to REACT.js
- Set Up the Application and Dependencies
- React Elements and JSX
- React Components
- Component Composability
- Components with Modules
- Component State/Life Cycle
- Hooks
- Redux

Technical Standards: 5.3-5.5, 9.2, 11.3, 12.1, 12.7, 12.8, 12.10, 12.11, 13.0, 14.1, 18.1-18.8
Professional Standards: 2.A, 2.B, 2.C

Industry Speaker Presentation

Unit 7 (10 Days)

React, Node.js, and MongoDB

- Getting started with MERN Stack development
- Node as a web server
- REACT basics
- Working with data
- Rendering on the server
- Routing on the client & server
- Working with MongoDB

Technical Standards: 4.1-4.4, 5.3-5.5, 6.0, 7.0, 8.0, 11.3, 11.4, 12.1, 12.7-12.11, 13.0, 14.1, 14.2, 17.1-17.2, 18.0, 19.0

Certification Review (1 Day)

1D0-735 CIW JavaScript Specialist Industry Certification Exam

Learning experiences provided over the course of the year
- **Professional Skills**
- **Leadership Development – FBLA**

C-202 Semester 2 LAMP Stack Programming

FBLA Regional Conference & Online Testing

Unit 1 (20 Days)
Introduction to Linux

- History and context (Windows/OSX)
- Installation and file system basics
- Terminal use and basic commands
- Installing software (PHP, MySQL, NGINX)
- Configuring a web server

Technical Standards:

Professional Standards: 8.A, 8.B

Unit 2 (15 Days)
Introduction to Hypertext Preprocessor (PHP)

- Getting started with PHP
- Functions and control structures
- Manipulating strings
- Handling user input
- Working with files and directories
- Manipulating arrays

Technical Standards: 4.2, 5.3-5.5, 9.2, 9.3, 11.3, 11.4, 12.1, 12.5, 12.7, 12.8, 13.1-13.5, 14.3, 17.1, 17.2

Unit 3 (19 Days)
Relational Databases with MySQL (Structured Query Language) Part I

- Relational Database fundamentals
- Preventing data anomalies
- Gathering requirements
- Develop a conceptual data model
- Normalize your data
- Logical design considerations
- Developing the physical database

Relational Databases with MySQL Part II

- Installing and configuring the test environment
- Basic syntax
- Creating a database
- MySQL data types
- MySQL functions
- Transactions & triggers
- Sub-selects and views
- Stored routines
- PHP's PDO interface with MySQL

Technical Standards: 5.3-5, 9.3, 11.3, 11.4, 12.1, 12.7, 12.8, 12.10, 12.11, 13.1-5, 14.1, 17.1-3, 18.1-8

Mid Term Exam

Unit 4 (15 Days)
Object-Oriented PHP

- Developing Object-Oriented PHP
- Study object-oriented programming concepts
- Use objects in PHP scripts
- Declare data members in classes
- Work with class member functions

Technical Standards: 6.1-6.4, 7.1-7.4, 8.1-8.7

Mock Interviews

Guest Speaker – FBLA Competition Prep

FBLA Regional Conference

Unit 5 (15 Days)
Capstone Projects

- Capstone overview/requirements
- Review of SDLC process & project management software/applications
- Calendar & milestones
- Resume updates
- Building an online resume
- Updating GitHub profiles to be ready for employment
- Creating/updating LinkedIn profiles
- Exit interviews (Advisory Council & West-MEC staff)
- Product demos
- Final Coding Program Package submittal

Technical Standards: 1.0, 3.0, 12.7

Professional Standards: 1.B, 1.C, 5.A, 5.B, 5.C, 5.D, 9.A, 9.B

FBLA State Conference

State Assessment Review (1 Day)

Arizona Department of Education Technical Skills Assessment

FBLA National Conference (Summer)

Learning experiences provided over the course of the year
- **Professional Skills**
- **Leadership Development – FBLA**

Software & App Design, 15.1200.40