Coding: Scope & Sequence

Year 1, Semester 1
C101 - Coding I
Object Based Programming
(94 days)

District Pre-Assessment &

Unit Name: (1) Introduction to West-MEC coding (8 Days)
- Expectations, rule, culture
- W3C Style and Guidelines
- IDEs , Terminal, Chrome Dev Tools
- Hardware and Software

Technical Standards: 10.1, 10.3, 12.1, 16.1, 16.2
ELA Standards: RI.2, RI.3

Unit Name: (2) Web Design Fundamentals (20 Days)
- HTML Basics
- CSS Basics
- Principles of good web design
- System software
- Application software
- Networks and security
- History of the Internet
- Communication through the web

Technical Standards: 3.1, 16.0
Professional Standards: 7.0
DE Standards: CIS 105 - II.0, III.0, IV.0, IX.0
CIS 133 - I.0, II.0, III.0, IV.0, V.0, VI.0, VII.0, VIII.0, IX.0, X

Unit Name: (3) JavaScript Fundamentals (20 days)
- Using numbers, variables, and operators
- String manipulation
- bit vs byte math conversions
- Version control
- Decimal to hexadecimal to binary

Technical Standards: 1.0, 4.0, 8.1, 8.5, 5.0, 10.2, 11.4, 15.0
Math Standards: NF.B.3, .6, RP.A.3
DE Standards:
CIS 166 - I.C

CTSO FLEX Conference

Unit Name: **(4) Flow Control**   (10 Days)
- Comparisons
- Conditionals
- Loops
- Functions

Technical Standards: 6.0, 7.0, 12.10, 12.11
Math Standards: A-CED
DE Standards:
  CIS 166 - IV.0

Unit Name: (5) Coder Etiquette and Best Practices (15 Days)
- Debugging
- SDLC + Agile (Figma)/Scrum
- Color Theory
- JS Docs
- DRY code
- Design Principles
- Information Systems Role in Business
- Purchasing and upgrading microcomputers

Technical Standards: 1.3, 1.4, 2.0, 11.0, 12.7, 12.913.0, 19.0
Professional Standards: 4.0
Academic Standards (ELA): SL.3, RI.2, L.4, SL.4, W.2
DE Standards: CIS 105 - VI.A, VI.B, VII.A-VII.G, CIS 133 -
XI.0,CIS 166 - I.D

CTSO (11 Days throughout semester)
- General meetings
- Leadership Academy
- Online Testing

Professional Standards: 1.0, 2.0, 3.0 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
Academic Standards:ELA.11-12.SL.1-6, W.7-W.9, L.6

Capstone / Midterm (10 Days)
Professional Standards: 1.0, 2.0
Academic Standards: ELA.11.12.W.7 - W.9, SL.1 - SL.3

Year 1, Semester 2
C102 Coding II
Object Oriented Programming
(86 days)

CTSO Regionals & Online Testing

Unit Name: (6) Object Based Programming (15 Days)
- Objects and object methods
- OBP vs. OOP languages
- Events
- Classes
- DOM

Technical Standards: 4.6, 8.3, 12.0, 18.0
Math Standards: A-CED, S-CP

Unit Name: (7) Advanced Web Design (18 Days)
- JQuery
- SASS
- Bootstrap
- Dictionaries
- Portfolio/Resume

Technical Standards: 11.1-11.4, 16.0
Academic Standards: ELA.11-12.RI.10, W.4-5
DE Standards: CIS 166 - II.0, III.0

Unit Name: (8) Advanced Data Types/Functional JS (25 Days)
- Primitive Variable Methods
- Array Methods
- Dictionaries
- JSON
- Scheduling timed events
- Sorting Algorithms
- Big O Notation

Technical Standards: 8.2, 8.4, 8.6, 8.7, 12.2
Professional Standards: 3.0, 5.0
ELA Standards: RI.10
Math Standards: RP.A.3, EE.A.2, B.3
DE Standards:
   CIS 105 - II.a-f, II.a-e.

Unit Name: (9) Software (5 Days)
- Visual basic and Excel
- Word,Access, and PowerPoint

Technical Standards: 1.1-1.4, 3.1, 5.3-5.5, 11.4, 12.1-12.10, 18.1 - 18.10, 14.0, 16.0
Professional Standards: 7.0
DE Standards:
   CIS 105 - I.A-I.E, VIII.A, VIII.B

Unit Name: (10) Capstone Assignments (8 Days)
Technical Standards: 1.0, 9.1, 9.3,18.0
Professional Standards: 1.0, 2.0, 5.0
ELA Standards: SL.1 - SL.6

CTSO (10 Days)
Regional Competition
State Competition
Fundraisers
Signature Event (i.e. Trunk or Treat)
Professional Standards: 1.0, 2.0, 3.0 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
ELA Standards:SL.1-SL.6, W.7-W.9, L.6

District Post-Assessment

Certification Review (3 Days)
Industry Certification Exam ITS HTML5 (1 day)
Application Development Fundamentals Exam 98-375
(1 Day)

Year 2, Semester 1
C201 Coding III
Back-end Programming
85 Days

JavaScript Pre-Assessment
Unit 0: **Review JavaScript ES6 (2 Days)**
- Arrow Function
- Asynchronous Functionality
- Promises
- Fetch

Unit 1: ExpressJS, NodeJS, MongoDB (18 Days)
- HTTP & Routing
- Application design with M.V.C Layout
- File system and security
- Node.js Testing with example mocha or other latest
- OWASP-Security threats
- Creating and using a MongoDB

Technical Standards: 2.0, 14.0, 16.1-16.3, 9.0, 12.3 - 12.5
Professional Standards: 1.0, 9.0
ELA Standards: 11-12, SL4, SL5

Unit 2: **React & Fetch** (20 Days)
- React Overview
- Async/await
- Pulling Data from an API
- axios calls to a back end server
- using response data from MongoDB

Technical Standards: 11.3-11.4, 12.0, 14.0, 16.0
Professional Standards:2.0
Math Standards: S-CP
DE Standards:CIS 150 AB - I, II, III, IV

Unit 3: **Next.JS + TypeScript** (20 Days)
- Converting react to Next
- Pages/ for routing
- Type Casting
- Static/Dynamic objects+variables
- getStaticProps
- CTX for state context
- api/ built in reducer

Technical Standards: 4.0, 5.0, 6.0, 7.0, 8.0, 12.6, 12.7, 13.0, 19.0
Professional Standards: 1.0
Math Standards: A-REI
ELA Standards: SL.2, SL.3
DE Standards: CIS 166AE - I, V, VII, IX

CTSO (9 Days)
- General meetings
- Leadership Academy
- Online Testing

Professional Standards: 1.0, 2.0, 3.0 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
ELA Standards:SL.1-SL.6, W.7-W.9, L.6

Unit Name: (4) React Native , NextJS : Projects and Portfolio Completion for Semester 1 (16 Days)
- Libraries
- NextJS vs. React
- Working with Data Structures Open Source

Technical Standards: 5.3-5.5, 9.3-9.5
Professional Standards: 7.0, 8.0, 3.0
Math Standards:A-CED
DE Standards: CIS 166AE - II, III, VI, VIII

CTSO Fall Conference

Semester Exam

Year 2, Semester 2
C202 Coding IV
Emerging Technologies
95 Days

CTSO Regional Conference & Online Testing

Unit Name: (1) PHP (20 Days)
● Syntax & Overview of Language
● Setup of Dev Environment
● Working with Server Side Environment
Technical Standards: 4.2, 5.3-5.5, 9.0, 10.0, 17.0
Professional Standards: 4.0, 5.0, 6.0
ELA Standards: W.7-W.9

Unit Name: (2) Databases (25 Days)
● Relational vs Non-Relational
● SQL / MySQL / MongoDB/ Postgres
● IOT devices & other DB uses
● C.R.U.D Functionality
Technical Standards: 5.3-5.5, 9.3-9.5, 17.0
Professional Standards: 2.0, 7.0, 8.0
Math Standards: A-CED
ELA Standards: SL.4, L.6, RI.7
Dual Enrolment: CIS 166AE : 2,3,6,8

Unit Name: (3) Restful API (15 Days)
● Rest vs. SOAP
● Design an API
● Real World Problem Solving w/ API's

Technical Standards: 5.0, 9.2, 10.2, 10.3, 11.0, 12.8
Professional Standards: 2.0, 5.0
ELA Standards: 11.0-12.0, W 7-9

Unit Name: (4) SASS/Mobile/Desktop App Development (15 Days)
● Latest Technologies: Firebase/ Flutter/ Cordova / Electron
● Mobile vs. Desktop
Technical Standards: 1.0, 3.1, 5.3-5.5, 11.4, 12.0, 18.0
Professional Standards: 3.0, 5.0
Math Standards: A-CED
DE Standards: CIS 150AB 5.A, 5.B

Unit Name: (5) Capstone Assignments (13 Days)

ADE Skill Standards Assessment

Certification Review

Industry Certification Exam
ITS 302 - JavaScript Specialist (Day)

CTSO State and National Conference