I. INTRODUCTION

A. This course builds upon previously learned programming skills and teaches techniques for Web and mobile applications development to include server-side and client-side scripting.

B. This course serves as a required or elective course on various degree plans. Curriculum plans for degrees and certificates are listed in the current Central Texas College catalog.

C. The delivery method of this course may be traditional lecture/lab, blended lecture/lab, or online.

D. Prerequisites: COSC1315 (or ITSE 1329) and ITNW 1337.

II. LEARNING OUTCOMES

Upon successful completion of this course, Intermediate Web Programming, the student will be able to:

A. Create and use client-side and server-side scripts to design and implement dynamic websites. (C1, C7, C8, C16, C18, F1, F3, F8)

B. Create mobile device applications. (C1, C7, C8, C16, C18, F1, F3, F8)

III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books.

B. Lecture Classes may also require a minimum of one storage device. (16 GB or smaller preferred). Online students may use cloud-based storage.
IV. COURSE REQUIREMENTS

A. Attend both lecture and lab or in the case of online delivery, be actively engaged in Blackboard and maintain constant progress.

B. Be prepared to participate in discussion, team projects/assignments and take unannounced assessments relating to the lecture materials.

C. Complete all exams/assessments.

D. Submit all assignments on time.

V. ASSESSMENTS

A. Student content mastery will be evaluated in the following areas:
   • Assessments (midterm exam, quizzes, projects, etc.)
   • Final Assessment (final exam and/or semester project, participation)

B. Scheduled and unscheduled quizzes will be given at the discretion of the instructor.

C. Exams/assessments may be composed of both subjective and objective questions plus computer output.

D. A student must take all exams/assessments. Both online and on campus students who know in advance that they will be absent due to school sponsored trips, military duty or orders, or any other valid reason, must arrange to take an early exam/assessment. Unexpected absences due to illness or other extenuating circumstances will require the student to contact the instructor about make-up work in lieu of the missed exam/assessment.

E. Students with unexcused absences will be given a zero for any missed work.

VI. SEMESTER GRADE COMPUTATIONS

<table>
<thead>
<tr>
<th>Course Requirements</th>
<th>Points</th>
<th>Points</th>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>300</td>
<td>900</td>
<td>A - Superior</td>
<td>4</td>
</tr>
<tr>
<td>Assessments</td>
<td>300</td>
<td>800 - 899</td>
<td>B - Above Average</td>
<td>3</td>
</tr>
<tr>
<td>Final Assessment</td>
<td>400</td>
<td>700 - 799</td>
<td>C - Average</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
<td>600 - 699</td>
<td>D – Passing but Unsatisfactory</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 - 599</td>
<td>F - Failure</td>
<td>0</td>
</tr>
</tbody>
</table>
VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

A. Information on the following Academic Policies, as described in the CTC Course Catalog will be followed:
   1. Withdrawals
   2. Grading
   3. Class Attendance and Course Progress
   4. Scholastic Honesty

B. Cell Phones and Pagers: Students will silence cell phones and mobile devices while in the classroom or lab.

C. Americans with Disabilities Act (ADA): Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Review the website at www.ctcd.edu/disability-support for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

D. Instructor Discretion: The instructor reserves the right of final decision in course requirements and may make changes to the course outline and/or assignments as needed.

E. Civility: Individuals are expected to be aware of what a constructive educational experience is and be respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion.

VIII. COURSE OUTLINE

A. Unit Zero: Introduce course requirements and objectives. Introduce students to the laboratory and use of the microcomputer.

1. Learning Outcomes: Upon successful completion of this unit the student will be able to:
   a. Discuss course requirements as defined in the syllabus and reviewed by the instructor.
   b. Enter, save, and execute a simple Web program using Visual Studio.
   c. Discuss intermediate Web programming techniques
   d. Be prepared to begin the course for successful completion.
   e. Use Google App Inventor to create Android apps.
   f. Use the App Inventor app designer.
   g. Use the App Inventor Blocks Editor.
   h. Use non-visible components in creating Android apps.
i. Incorporate messaging, locations, and media into an app.
j. Deploy an app created with App Inventor.

2. **Learning Activities:**
   a. Instructor will cover the syllabus. (C5, F1)
   b. The instructor will review the lab procedures for the microcomputer lab. (C5, C6, C8, C9, C19, F1, F5, F11)
   c. The student will write a program using the materials presented (C1, C5, C6, C16, C17, C18, C19, F1, F2, F3, F5, F9, F11, F13, F17)

3. **Unit Outline:** Follow the learning activities and objectives

B. **Unit One:** Introduction to mobile applications programming and First App

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
   a. Create a simple HTML5-based app
   b. Put the app on the web for general access through the web
   c. Enhance the presentation with CSS3
   d. Add multimedia to the web page including images and videos.

2. **Learning Activities:**
   a. The instructor will discuss key programming terms used for Web and Mobile Apps development. (C5, C6, C8, F1, F5, F11, F13)
   b. The instructor will describe the three major programming platforms. (C5, C6, C8, F1, F5, F11, F13)
   c. The instructor will demonstrate available development tools used in targeting a platform. (C5, C6, C8, F1, F5, F11, F13)
   d. The instructor will define and discuss the history of smartphones and their current capabilities. (C5, C6, C8, F1, F5, F11, F13)
   e. The students will produce a simple program using the materials presented. (C1, C3, C8, C17, F2, F3, F9)
   f. Debugging of a computer program (C8, C16, C17, F9)

3. **Unit Outline:** Follow the learning objectives

C. **Unit Two:** Making Apps more Interactive and Significant

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
   a. Understand the basics of JavaScript
   b. Understand the usage of jQuery for mobile devices
   c. Embed JavaScript in a web page
   d. Use an external JavaScript file on a web page
e. Use CSS elements designed for mobile devices  
f. Accept input through a web page  
g. Use different types of input widgets  
h. Link multiple mobile pages in an app  
i. Validate input  
j. Do computations based on input  
k. Do conditional computing  
l. Do iterative computing  
m. Use arrays in JavaScript

2. **Learning Activities:**  
a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)  
b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. **Unit Outline:** Follow the learning objectives.

D. **Unit Three:** Creating Menu-Driven Apps and Storing Data Locally

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:  
a. Secure an app with a password  
b. Create a numeric pad for input  
c. Navigate using menus  
d. Store and retrieve data locally on the device  
e. Validate a password  
f. Make sure that the user has accepted the disclaimer  
g. Accept and manage user profiles  
h. Store and manage an array of records

2. **Learning Activities:**  
a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)  
b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. **Unit Outline:** Follow the learning objectives.

E. **Unit Four:** Creating Graphics on HTML5 canvas

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:  
a. Work with canvas
b. Draw various shapes

c. Display some of the graphical gadgets

d. Draw graphs

e. Create an icon for the app on the home screen

f. Run an app locally with no Internet connection

2. **Learning Activities:**

   a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)

   b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. **Unit Outline:**

   a. Follow the learning objectives.

   b. Review for and administer Midterm Assessment

F. **Unit Five: Using servers for sharing and storing information**

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:

   a. Provide facilities for server storage

   b. Use Node.js

   c. Sync the device storage with server-side storage

   d. Use non-relational or NoSQL databases in JSON format

   e. Create collections in a NoSQL database

   f. Insert/delete/update records in a NoSQL collection

   g. Connect to a NoSQL database server using node.js

   h. Manipulate NoSQL database using node.js

2. **Learning Activities:**

   a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)

   b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. **Unit Outline:**

   a. Follow the learning objectives.

   b. Review for and administer Midterm Assessment

G. **Unit Six: Using a relational database server with Web Apps**

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:

   a. Describe relational databases
b. Create tables in a relational database
c. Insert/delete/update records in a relational table
d. Connect to a relational database server using node.js
e. Manipulate relational database using node.js

2. Learning Activities:
   a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
   b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. Unit Outline: Follow the learning objectives.

H. Unit Seven: Templating, Maps and Multimedia Databased

1. Learning Outcomes: Upon successful completion of this unit the student will be able to:
   a. Describe JavaScript templating
   b. Describe Handlebars
   c. Create apps using Handlebars
   d. Manage Handlebars documents through JavaScript programs
   e. Use maps in our app
   f. Use location information from our app
   g. Use Snap.js, Leaflet, and ESRI modules in our server-side code

2. Learning Activities:
   a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
   b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. Unit Outline: Follow the learning objectives.

I. Unit Eight: Cross-Platform Development

1. Learning Outcomes: Upon successful completion of this unit the student will be able to:
   a. Describe native app development
   b. Describe Cordova
   c. Create and test a native Windows Phone app
   d. Create and test a native Android app

2. Learning Activities:
a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)

3. **Unit Outline:**
   a. Follow the learning activities.
   b. Review for and administer Final Assessment