Cross-Platform Mobile and Web Apps Development

Course Outline

**Class:** WA130 – Cross-Platform Mobile and Web Apps Development

30 hours

**Instructor:**

**Text:** Building Cross-Platform Mobile and Web Apps for Engineers and Scientists: An Active Learning Approach, 1st Edition, Pawan and Lingras

CENGAGE Learning

**Prerequisite:** WA120 – JavaScript and jQuery

**Equipment:** Each student shall be equipped with a desktop computer with the technical characteristics configured to run the programs used throughout the program:

* 20 desktop computers (including 24” monitors and mice) minimum
* Quad Core processor with Microsoft Windows 7, 8.x, or 10,
* Minimum 16 GB Ram
* Minimum 500 GB HD
* Internet access.

**Grading System:**

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|  | | **Grading Scale** | | |
| Classwork, Homework, Participation, Attendance | 10% | 90–100 | A | I - Incomplete |
| Exams/Quizzes | 50% | 80–89 | B | T - Transfer Credit |
| Presentation/Projects | 10% | 70–79 | C | E - Exempt |
| Final Evaluation | 30 % | 65–69 | D | W - Withdrew |
|  | **100%** | Below 65 | F | I - Incomplete |

**Course Description:**

Cross-platform application design provides an excellent starting point for mastering mobile application development. The students will be given opportunity to use the technologies learned in previous courses, including HTML5, CSS3, JavaScript and jQuery Mobile. An app-centric course curriculum emphasizes subsets of these technologies to guide students in developing sophisticated apps. The apps serve as models for numerous projects from various application domains.

**Overview:** This class meets for a total of 30 hours. Day classes are six hours per day, Monday through Friday.

**Objectives:** Upon successful completion of this course, the student will be able to:

1. Develop mobile apps using the jQuery Mobile framework.
2. Develop mobile apps using the Apache Cordova framework.
3. Develop mobile apps using Android Studio.

**Requirements:** 1. Meet attendance and academic criteria.

2. Completion of all assignments.

3. Completion of the final evaluation.

**Graded Work:** The test average and quiz average each comprise 50% of the final grade point average. Quiz grades are based upon completion of the assignment in the time allotted, ability to follow instructions, observance of safety rules and neatness of work area.

**Attendance:** Daily attendance is required. If you anticipate an absence, consult with your instructor.

Be aware that each absence will require an equal amount of make-up time. Each student is required to maintain a minimum attendance of 85% for each course:

* If you miss more than 15% of the total hours in any one course, you will be required to make-up enough missed hours to meet the minimum course attendance requirement of 85%.
* If at the end of the cycle your attendance is less than 85% you will receive an incomplete (I) for the course, and will have 5 business days immediately following the end of the cycle to make-up the hours missed, otherwise your grade will change from an incomplete to an F, and you will be required to retake the course.
* If you miss more than 30% of the total hours in any one course, you will receive a W (withdrawal) and will be required to retake the course.

**Make-up Work:** All missed work is required to be completed as soon as possible. If you need extra help, it is your responsibility to make an appointment with your instructor at a mutually agreeable time.

**Supplies:** Hunter Business School provides all the necessary supplies.

### **Lesson Plan**

##### Day 1 of 5

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Introduction to jQuery Mobile |
| **Subject Topics:** | Chapter 2: Developing, installing, and testing first app  Chapter 3: Making apps more interactive through data input |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JAVASCRIPT AND JQUERY |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Create mobile apps using jQuery Mobile * Create custom themes using jQuery Mobile ThemeRoller |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Introduction to jQuery Mobile, slides 2-8 * Lab, slide 9   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * Projectile App Requirements and Design, slides 10 - 18   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Lab: Projectile App, slide 19 * Homework, slide 20 |
| **Review / Assessment:** | 2 Lab assignments and Homework are planned to assess students understanding of the material |

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Completion Date of Lesson Teacher Signature

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Date Lesson was reviewed by Dept. Chair Department Chair Signature

### **Lesson Plan**

##### Day 2 of 5

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | jQuery Mobile |
| **Subject Topics:** | Chapter 3: Making apps more interactive through data input  Chapter 4: Making apps do significant computing  Chapter 7: Graphics on HTML5 canvas |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JAVASCRIPT AND JQUERY |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Accept input through a web page * Use different types of input widgets * Link multiple mobile pages in an app * Validate input * Perform computations based on input * Work with HTML5 canvas * Draw various shapes * Display some of the graphical gadgets * Draw graphs |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Projectile App Calculations and Input Validation, slides 2-7 * Lab, slide 8   10:30 AM – 10:45 AM   * Break   10:45 AM – 12 PM   * Temperature Converter app Design and Calculations, slides 9-12 * Lab, slide 13   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * HTML5 Graphics, slides 14-18 * Lab, slide 19 |
| **Review / Assessment:** | 3 Labs (+ one optional homework) assignments are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 3 of 5

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Apache Cordova Development Framework |
| **Subject Topics:** | Introduction to Cordova  Cordova Architecture  Local Storage of Data |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JAVASCRIPT AND JQUERY |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Develop mobile apps using Apache Cordova Framework * Understand the pros and cons of various client side data store alternatives. |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:30 AM   * Introduction to Apache Cordova, slides 2-5 * Cordova Architecture, slides 6-7   10:30 AM – 10:45 AM   * Break   10:45 AM – 12:30 PM   * Lab, slide 8   12:30 PM – 1:00 PM   * Lunch break   1:00 PM – 3 PM   * Local Storage of Data, slides 9-16 * Summary, slide 17 * Lab, slide 18 |
| **Review / Assessment:** | 2 Lab assignments are planned to assess students understanding of the material. |

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### **Lesson Plan**

##### Day 4 of 5

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Apache Cordova Development Framework |
| **Subject Topics:** | Cordova hands-on lab |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JAVASCRIPT AND JQUERY |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Develop mobile apps using Apache Cordova Framework |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:30 AM   * Lab, slides 2-3   10:30 AM – 10:45 AM   * Break   10:45 AM – 12:30 PM   * Lab, slides 2-3   12:30 PM – 1:00 PM   * Lunch break   1:00 PM – 3 PM   * Lab, slides 2-3 * Student project presentation, slide 4 |
| **Review / Assessment:** | 1 Lab assignment and project presentation are planned to assess students understanding of the material. |

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### **Lesson Plan**

##### Day 5 of 5

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Android App Development with Android Studio |
| **Subject Topics:** | Introduction to Android Studio  App Development Exercises |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JAVASCRIPT AND JQUERY |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Develop mobile apps using Android Studio |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Introduction to Android Studio, slides 2-3 * Lab, slide 4   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * Lab, slide 4   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Lab, slide 5 * Learning Progress Assessment, slide 6 |
| **Review / Assessment:** | 1 Lab assignment and project presentation are planned to assess students understanding of the material. |

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