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| **SN** | **Program Code-CS201** | **Course Title** | **L** | **T** | **P** | **C** | **CH** | **Course Type** |
| **5** | **Course Code(s)**  **20CST-355** | **Mobile Application Development with Lab** | 2 | 0 | 2 | 3 | 4 | CR |
| **PRE-REQUISITE** | | 21CSH-319- Project Based learning in java with Lab | | | | | | |
| **CO-REQUISITE** | | - | | | | | | |
| **ANTI-REQUISITE** | | - | | | | | | |

**Course Objectives**

* Install and configure Android application development tools.
* Design and develop user Interfaces for the Android platform.
* Save state information across important operating system events.
* Apply Java programming concepts to Android application development.

**Course Outcomes**

|  |  |
| --- | --- |
| CO1 | Design and develop User Interfaces for the Android platform. |
| CO2 | Ability to apply general programming knowledge in the field of developing mobile applications. |
| CO3 | Understanding of the specific requirements, possibilities and challenges when developing for a mobile context. |
| CO4 | Understanding of the interactions between user interface and underlying application infrastructure. |
| CO5 | At the end of this course student will Apply essential Android Programming concepts. |

**Syllabus**

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| **Unit-1** | **Introduction to Android** | **Contact Hours: 15** |
| **Chapter 1.1** | **Introduction:**  Cost of Mobile Application Development, Importance of Mobile Strategies, Challenges, Myths, Third-Party Frameworks, Mobile Web Presence, Applications Factors in Developing Mobile Applications: Mobile Software Engineering ,Frameworks and Tools, Generic UI Development ,Android User | |
| **Chapter 1.2** | **Introduction to Mobility:**Mobility Landscape, Mobile Platforms**,**Mobile apps development, Overview of Android Platform, Setting up the mobile apps development environment with emulator.Telephony :a. Deciding Scope of an App b. Wireless Connectivity and Mobile Apps  c. Android Telephony. | |
| **Chapter 1.3** | **Building block of Mobile apps:**App user Interface Designing, Layout, Widgets, User Interface elements, Draw-able, Menu, Activity states and lifecycle, Interaction among activities.  **App functionality based user interface**:Threads, Asynchronous task, Services-states and lifecycle, Notifications, Broadcast receivers, Telephony and SMS API**.** | |
| Experiment No 1.1 | Installation and configuration of Android Studio. | |
| Experiment No 1.2 | Create an application that takes the name from a "Text Box" and shows a "Hello" message along with the name entered in the "Text Box" when the user clicks the "OK" button. | |
| Experiment No 1.3 | Create an Android-based application using widgets. It can be embedded in other applications (such as the home screen) and receive periodic updates. | |
| **Unit-2** | **Data Handling** | **Contact Hours: 15** |
| **Chapter 2.1** | **Naïve Data Handling:** On Device File I/O, Shared preferences, Mobile Databases such as SQLite and enterprise data access. | |
| **Chapter 2.2** | **Sprucing up Mobile Apps:**Graphics and animation-custom views, canvas, animation API multimedia-audio/video playback and record, location aware.  **Testing Mobile apps**: Debugging Apps, White and Black Box Testing and test automation of apps. | |
| **Chapter 2.3** | **Creating Consumable Web Services for Mobile Devices:**What is a Web Service, Web Services Languages (Formats), Creating an Example Web Service, Debugging Web Services | |
| Experiment No 2.1 | Create an Android app that uses Intent and one button to create a page and passes values from one activity to another. | |
| Experiment No 2.2 | Create an Android App using various controls such TexEdit, CheckBox, RadioButton, RadioGroup, etc. | |
| Experiment No 2.3 | Create an Android-based application and use intent to send SMS. | |
| **Unit-3** | **User Interface Design** | **Contact Hours:15** |
| **Chapter 3.1** | **Mobile User Interface Design:**Effective Use of Screen Real Estate, Understanding Mobile Information Design, Android app Fragments, Understanding Mobile Application Users, Understanding Mobile Platforms, Using the Tools of Mobile Interface Design. | |
| **Chapter 3.2** | **Mobile Websites:**Choosing a Mobile Web Option, Adaptive Mobile Websites, Dedicated Mobile Websites Mobile Web Apps with HTML5  **Android:**Android as Competition to itself, connecting to the Google Play, Android Development Practices, Building an App in Android. | |
| **Chapter 3.3** | **Operating Systems iOS:**IOS Project, Debugging iOS Apps, Objective-C Basics, Building the Derby App in IOS  **Windows Phone 7:**Windows Phone 7 Project, Building an App in Windows Phone 7, Distribution. | |
| Experiment No 3.1 | Create an Android application using Fragments. | |
| Experiment No 3.2 | Implement building blocks for Android Application using different layouts (such as linear, relative and absolute). | |
| Experiment No 3.3 | Design the Android application using menus and action bar. | |
| Experiment No 3.4 | Create an Android application for user registration that stores the user details in a database table. | |

**Text Books:**

1. Jeff Mcwherter, Scott Gowell, Professional Mobile Application Development, Wrox Publisher (2012), 1st Edition.
2. Marko Gargenta and Masumi Nakamura, Learning Android: Develop Mobile Apps Using Java and Eclipse, 2nd Edition
3. ROGERS RICK, ANDROID APPLICATION DEVELOPMENT, Pearson Education, ISBN:9788184047332, 6th Edition.

**Reference Books:**

1.     Lauren Darcy, Shane Conder, Sams Teach Yourself Android Application Development in 24 Hrs, 1st ed.

2.      Himanshu Dwivedi, Chris Clark, David Thiel, Mobile Application Security, Tata McGraw Hill (2010), 1st Edition.

**Mode of Evaluation: The performance of students is evaluated as follows:**

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| --- | --- | --- |
|  | **Theory** | |
| **Components** | **Continuous Internal Assessment (CAE)** | **Semester End Examination (SEE)** |
| **Marks** | 40 | 60 |
| **Total Marks** | 100 | |

**CO-PO Mapping**

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| **Course Outcome** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| CO1 | 3 |  |  |  | - | - | - | - | - | - | - | - | - | - |
| CO2 | 3 |  | 3 |  | - | - | - | - | - | - | - | - | 3 | 2 |
| CO3 |  | 3 |  |  | - | - | - | - | - | - | - | - | 3 | 2 |
| CO4 |  |  | 3 |  | - | - | - | - | - | - | - | - | - | - |
| CO5 |  | 3 |  | 2 | - | - | - | - | - | - | - | - | 3 | 2 |

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| **Mapping Between COs and Pos** | | |
| **SN** | **Course Outcome (CO)** | **Mapped Programme Outcome (PO)** |
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|  |  | **Engineering Knowledge** | **Problem analysis** | **Design/development of solutions** | **Conduct investigations of complex** | **Modern tool usage** | **The engineer and society** | **Environment and sustainability** | **Ethics** | **Individual or team work** | **Communication** | **Project management and finance** | **Life-long Learning** |
| Course Code | Course Name | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **1**  **0** | **1**  **1** | **12** |
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