T. Y. B. Voc. (Software Development)

B. Voc. Software Development Syllabus for Third Year

Structure for Semester-I									
Course Code	**Course Name**	**Teaching Scheme (Hours/Week)**		**Examination Scheme and Marks**			**Credits**		
		Theory	**Practical**	**ISE**	**ESE**	**Total**	**TH**	**PR**	**Total**
BVSD-311	Project Internship	--	06	425	425	850	--	30	30
	Total	**--**	**06**	**425**	**425**	**850**	**--**	**30**	**30**

Structure for Semester-II									
Course Code	**Course Name**	**Teaching Scheme (Hours/Week)**		**Examination Scheme and Marks**			**Credits**		
		Theory	**Pract.**	**ISE**	**ESE**	**Total**	**TH**	**PR**	**Total**
BVSD-321	Android Application Development	03	---	50	50	100	03	---	03
BVSD-322	Cloud Computing	03	---	50	50	100	03	---	03
BVSD-323	Software Testing	03	---	50	50	100	03	---	03
BVSD-324	Technology Trends in IT	03	---	50	50	100	03	---	03
BVSD-325	Lab Course on Android Application Development	---	04	50	50	100	---	04	04
BVSD-326	Lab Course on Cloud Computing	---	04	50	50	100	---	04	04
BVSD-327	Mini Project	---	04	50	50	100	---	04	04
BVSD-327	Project/On Job Training *	---	06	75	75	150	---	06	06
	Total	**12**	**18**	**425**	**425**	**850**	**12**	**18**	**30**

***On Job Training should be carried out in any one subject per semester as per NBVSDC Guide lines for following Skill Sets:**

1. **Software Developer (SSC/Q6702)**
2. **Software Engineer (SSC/Q4601)**
3. **Application Developer – Web & Mobile (SSC/Q8403)**
4. **PRODUCT MANAGER – WEB & MOBILE (SSC/Q8401)**
5. **Application Architect – Web & Mobile (SSC/Q8402)**
6. **QA Engineer (SSC/Q1302)**
7. **UI Developer (SSC/Q0502)**
8. **Analyst (SSC/Q0701)**
9. **Test Engineer - Software (SSC/Q4901)**

Semester

II

Syllabus

Subject Name: Android Application development		
Course Code : BVSD-321	**Semester: II**	
Subject Name: Android Application Development		
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
The objective of this course is to understand the Android Operating System and develop applications using Google's Android open-source platform.		
Course Outcomes :		
1. Identify the basic knowledge on mobile application environment and technology		
2. Explain the concepts and processes of mobile application development;		
3. Discuss design and development issues specific to mobile applications;		
4. Design and develop mobile applications, using development tools and environments.		

	Contents	Hours
1	**Introduction to Android** 1.1 Overview 1.2. History 1.3. Features of Android 1.4. Architecture of Android • Overview of Stack • Linux Kernel • Native Libraries • Android Runtime • Application Framework • Applications 1.5. SDK Overview • Platforms • Tools – (JDK, SDK, Eclipse/Android Studio, ADT, AVD, Android Emulator) • Versions 1.6. Creating your first Android Application	6
2	**Activities, Fragments and Intents** 2.1. Introduction to Activities 2.2. Activity Lifecycle 2.3. Introduction to Intents 2.4. Linking Activities using Intents 2.5. Calling built-in applications using Intents 2.6. Introduction to Fragments 2.7. Adding Fragments Dynamically 2.8. Lifecycle of Fragment 2.9. Interaction between Fragments	9
3	**Android User Interface** 3.1. Understanding the components of a screen • Views and ViewGroups • LinearLayout • AbsoluteLayout • TableLayout • RelativeLayout • FrameLayout • ScrollLayout • ScrollView	2

	3.2. Adapting to Display Orientation • Anchoring Views • Resizing and Repositioning 3.3. Managing Changes to Screen Orientation • Persisting State Information during Changes in Configuration • Detecting Orientation Changes • Controlling the Orientation of the Activity 3.4. Utilizing Action Bar • Adding Action Items to the Action Bar • Customizing the Action Items and Application Icon	
4	**Designing Your User Interface with Views** 4.1. Using Basic Views • TextView • Button, ImageButton, EditText, CheckBox • ToggleButton, RadioButton, and RadioGroup Views • ProgressBar View • AutoCompleteTextView View 4.2. Using Picker Views • TimePicker View • DatePicker View 4.3. Using List Views to Display Long Lists • ListView View • Using the Spinner View 4.4. Understanding Specialized Fragments • Using a ListFragment • Using a DialogFragment • Using a PreferenceFragment	**10**
5	**Displaying Pictures and Menus** 5.1. Using Image Views to Display Pictures • Gallery and ImageView views • Image Switcher • Grid View 5.2. Using Menus with Views • Creating the helper methods • Options Menu • Context Menu	**5**
6	**Databases SQLite** 6.1. Introduction to SQLite 6.2. SQLiteOpenHelper and SQLiteDatabase 6.3. Creating , opening and closing database 6.4. Working with cursors, Insert, Update, Delete 6.5. Building and executing queries	**6**
8	**Location-Based Services and Google Map** 8.1. Display Google Maps • Creating the project • Obtaining the Maps API Key • Displaying the Map • Displaying the Zoom Control • Changing Views • Navigating to a specific location • Adding Markers • Getting the location that was touched • Geocoding and Reverse Geocoding 8.2. Getting Location Data 8.3. Monitoring a Location	**8**

Reference Books		
Wei-Meng Lee WILEY	Beginning Android4 Application Development	India Edition WROX Publication
By Reto Meier	. Professional Android 4 Application Development	WROX Publication
Digital Reference		
https://developer.android.com		

Subject Name: Cloud Computing		
Course Code : BVSD-322	**Semester: II**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
• To understand the principles and paradigm ofCloud Computing • To appreciate the role of Virtualization Technologies • Ability to design and deploy Cloud Infrastructure • Understand cloud security issues and solutions		
Course Outcomes :		
It provides a way to centralize the setup, implementation, maintenance, and management of integrated computation services to individual and corporate end users.		
	Contents	**Hours**
1	**Introduction to Cloud Computing Overview** Layers and Types of Cloud, Desired Features of a Cloud, Benefits and Disadvantages of Cloud Computing, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Multitenant Technology. Cloud-Enabling Technology: Broadband Networks and Internet Architecture, Data Center Technology, Virtualization Technology. Infrastructure as a Service, Platform as a Service, Software as a Service, Cloud Deployment Models.	**13**
2	**Abstraction and Virtualization** Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hyper visors, Virtual Machines Provisioning and Manageability Virtual Machine Migration Services, Provisioning in the Cloud Context Virtualization of CPU, Memory , I/O Devices, Virtual Clusters and Resource management	**12**
3	**Programming, Environments and Applications**	**9**

	Features of Cloud and Grid Platforms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments, Applications: Moving application to cloud, Microsoft Cloud Services, Google Cloud Applications, Amazon Cloud Services, Cloud Applications.	
4	**Security In The Cloud Security Overview –** Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control, Disaster Recovery in Clouds	**11**

TEXT BOOKS		
Name of Author	**Title of the Book**	**Publisher**
Cloud Computing: Technologies and Strategies of the Ubiquitous Data Center Brian J.S. Chee and Curtis Franklin CRC Press, ISBN :9781439806128	Cloud Computing: Technologies and Strategies of the Ubiquitous Data Center Brian J.S. Chee and Curtis Franklin CRC Press, ISBN :9781439806128	Cloud Computing: Technologies and Strategies of the Ubiquitous Data Center Brian J.S. Chee and Curtis Franklin CRC Press, ISBN :9781439806128
RajkumarBuyya, Christian Vecchiola, S. ThamaraiSelvi	Mastering Cloud Computing: Foundations and Applications Programming	McGraw Hill, ISBN: 978 1259029950, 1259029956
Reference Books		
Byron Gottfried	Programming with C	Tata McGraw Hill
YashavantKanetkar	Exploring C	BPB Publication
Kernighan BW, Dennis M.	The C Programming Language	PrenticeHall
Digital Reference		
1. http://www.cprogramming.com/tutorial/c-tutorial.html		
2. http://nptel.ac.in/courses/106104128/		
3. http://nptel.ac.in/courses/106105085/1		

Subject Name: Software Testing		
Course Code : BVSD-323	**Semester: II**	
Subject Name: Software Testing		
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
•Study fundamental concepts of software testing and its application in various scenarios with the help different testing strategies, methods and tools		
Course Outcomes :		
• Understand importance of testing techniques in software quality management and assurance (Understand)		
• Identify various types of software risks and its impact on different software application. (Analyze)		
• Create test case scenarios for different application software using various testing techniques. (Create)		
• Apply different testing methodologies used in industries for software testing. (Apply) Prerequisite: Software Engineering and UML		
	Contents	**Hours**
1	**Introduction:** Software Testing, Importance of testing, Roles and Responsibilities, Testing Principles, Attributes of Good Test, V-Model, Test Case Generation , SDLC Vs STLC, Software Testing Life Cycle-in detail.	**6**
2	**Types of Testing: Testing Strategies:** Unit Testing, Integration Testing, System Testing, Smoke, Regression Testing, Acceptance Testing. Clean Room Software Engineering.	**7**
3	**Functional/NonFunctional Testing**. Testing Tools, Categorization of testing methods: Manual Testing, Automation Testing and Automated Testing Vs. Manual Testing.	**7**
4	**Software Testing Methodologies:** Validation & Verification, White/Glass Box Testing, Black Box Testing, Grey Box Testing, Statement Coverage Testing, Branch Coverage Testing, Path Coverage Testing, Conditional Coverage Testing, Loop Coverage Testing, Boundary Value Analysis, Equivalence Class Partition, State Based Testing, Cause Effective Graph, Decision Table, Use Case Testing, Exploratory testing and Testing Metrics, Testing GUI	**7**

5	**Software Testing Life Cycle:** Requirements Analysis/Design, Traceability Matrix, Test Planning, Objective, Scope of Testing, Schedule, Approach, Roles & Responsibilities, Assumptions, Risks & Mitigations, Entry & Exit Criteria, Test Automation, Deliverables.	**6**
6	**Test Cases Design:** Write Test cases, Review Test cases, Test Cases Template, Types of Test Cases, Difference between Test Scenarios and Test Cases. Test Environment setup, Understand the SRS, Hardware and software requirements, Test Data.	**5**
7	**Test Execution:** Execute test cases, Error/Defect Detecting and Reporting, DRE(Defect Removal Efficiency), Object ,Types of Bugs , Art of Debugging,. Debugging Approaches, Reporting the Bugs, Severity and priority, Test Closure, Criteria for test closure, Test summary report	**5**
8	**Test Metrics:** Test Measurements, Test Metrics, Metric Life Cycle, Types of Manual Test Metrics.	**2**
Reference Books 1. Software Engineering – A Practitioners Approach, Roger S. Pressman, 7 thEdition, Tata McGraw Hill, 20 2. Effective Methods of Software Testing		

Subject Name: Technology trends in IT		
Course Code : BVSD-324	**Semester: II**	
Subject Name: Technology Trends in IT		
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		

Course Objectives :

To make aware student the changes in technologies, applications and Systems around us.

Course Outcomes :

Discuss the impact of disruptive technologies on project design, implementation, and transformation.

Identify major areas where technologies can be applied and their implications for organizational change.

Recognize current and emerging disruptive technologies and their potential to impact social conditions, the economy, and daily life.

Design a project plan that incorporates a new and emerging technology and illustrates its impact on organizations and industries.

	Contents	Hours
1	**E-Commerce Introduction:** E-commerce as Business need-commerce Types, Advantages, Disadvantages, e-Commerce Architecture, Internet Payment Systems - Characteristics - 4C Payment Methods - SET Protocol for Credit Card Payment - E-Cash,E-Check - Overview of Smart Card .	**10**
2	**E-mail & Internet:** Introduction E-mail Account & Its Functions Search Engine Surfing WebPages Basics of Social Networking Site	**10**
3	**E-Banking Transactions :** Inter Banking, Intra Banking, Electronic Payments, (Payment – Gatewa y Example) Securities in E-banking (SSL, Digital Signatu res – Examples) Services Provided : ATM, Smart Card ECS(Electronic Clearing System) e.g. Telephone , Electricity Bills	**10**
4	**E – Governance & E – Agriculture E –Governance Models :**(G2B,G2C,C2G,G2G),Challenges to E – Governance, Strategies and tactics for implementat ion of E – Governance, Types of Agriculture information (Soil, Water, Seeds, Market rate) & Technique dissemination , Futu re trade marketing, Corp Management , Query redresses System, (Information Kiosk, IVR etc), Case Study	**8**
5	**E-learning**	**7**

	– Models WBT, CBT, Virtual Campus , LMS & LCMS, Video Conferencing, Chatting Bulleting, Building Online Community, Asynchronous / Synchronous Learning, Case Study	

Books:

1. Internet (Use of Search Engines Google & yahoo etc)
2. E–Commerce :C.V.S.Murty
3. Fire Wall and Internet Security: William Cheswick, Stevens, Aviel Rubin
4. The Essential Guide to Knowledge management :AmritTiwana
5. The GISBook:GeorgeB.Karte.
6. Management Information System: Laudon&Laudon

Text Books :

1. E – Commerce : Milind Oka

BVSD - 325: Lab Course on Android application development

Practical Assignments

Sr. No.	Assignment
1	Introduction to Android Install Android Studio and build simple Hello World application.
2	Activities, Fragments and Intents 1. Design Login Activity shown below. 2. Create application to display details of selected list item on second activity (Use Fragmentation). 3. Create first activity to accept information like first name, last name, date of birth, email-id and display all information on second activity when user click on submit button.

3	Android User Interface and Event Handling 1. Create the simple calculator shown below. Also, perform appropriate operations. 2. Create application to calculate GPA. 3. Create chat application.
4	Designing Your User Interface with Views 1. Create a custom "Contact" layout to hold multiple pieces of information, including: Photo, Name, Contact Number, E-mail id. 2. Create application to demonstrate date and time picker.
5	Displaying Pictures and Menus 1. Construct an app that toggles a light bulb on and off when the user clicks on toggle button. 2. Create application as shown below. 3. Create gallery application to display all images date wise (Use Grid View).
6	Databases – SQLite 1. Create login activity (referAssignment 2 Example 1). If Email and password matches with database display “login successful” message else display error message. 2. Construct a simple notes list that lets the user add new notes but not edit them. Demonstrates the basics of ListActivity.Use a SQLite database to store the notes. 3. Create tables: Course (id, name, and instructor) and Student (id, name). Course and Student have a many to many relationship. Create a GUI based system for performing the following operations on the tables: 1. Course: Add Course, View All students of a specific course 2. Student: Add Student, Delete Student, View All students, Search student
7	Messaging and E-mail 1. Create application to send and receive messages. 2. Create application to send email with validation. 3. Create application to send email with attachment.
8	Location-Based Services and Google Map 1. Write a program to find the current location of an Android device and display details of the place like Street name, city with Geocoding. 2. Write a program to track android device usingGoogle Maps. 3. Write a program todraw path along a route in Google map.

BVSD - 326: Lab Course on Cloud Computing

Practical Assignments

Sr. No.	Assignment
1	Working and Implementation of Infrastructure as a service.
2	Working and Implementation of Software as a service.
3	Working and Implementation of Platform as a services.
4	Practical Implementation of Storage as a Service.

5	Working of Google drive to make spreadsheet and notes.
6	Working and Implementation of identity management.
7	Write a program for web feed.
8	Execute the step to Demonstrate and implementation of cloud on single sign on.
9	Practical Implementation of cloud security.
10	Installing and Developing Application Using Google App Engine.
11	Installation and configuration of cloud Hadoop and demonstrate simple query.
12	Create a sample mobile application using Amazon Web Service (AWS) account as a cloud service. Also provide database connectivity with implemented mobile application