SAURASHTRA UNIVERSITY

RAJKOT – INDIA

CURRICULAM

FOR

B.C.A.

Bachelor of Computer Application

(Semester V and Semester VI)

Effective From June – 2014

Bachelor of Computer Application
(Semester – V and Semester - VI)
Saurashtra University
Effective from June - 2014

B.C.A. (Semester – V)			
SR.NO	**SUBJECT**	**NO. OF THEORY LECT. PER WEEK**	**NO. OF PRACTICAL PER WEEK**
1	**CS – 25** Advance Java Programming (J2EE)	5	6
2	**CS – 26** Programming with ASP.NET	5	6
3	**CS – 27** Web Searching Technology and Search Engine Optimization	5	3
4	**CS –28** Practical - 1 (based on CS-25)	5	-
5	**CS – 29** Practical – 2 (based On CS-26 and CS-27)	-	-
6	**CS – 30** Project Viva	-	6

Note:

1. Credit of each subject is 5. Total credit of semester is 30.
2. Total marks of each theory paper are 100 (university examination 70 marks + internal examination 30 marks).
3. Total marks of each practical and project-viva paper are 100. No internal examination marks in practical and project-viva papers.

CS-25 Advanced Java Programming (J2EE)				
Sr. No	**Topics**	**Details**	**Weightage in %**	**Approx Lectures**

1	**The J2EE Platform**	• Introduction to J2EE
		• Enterprise Architecture Styles:
		  ▪ Two-Tier Architecture
		  ▪ Three-Tier Architecture
		  ▪ N-Tier Architecture
		• Enterprise Architecture
		• The J2EE Platform
		• Introduction to J2EE APIs (Servlet, JSP, EJB, JMS, JavaMail, JSF, JNDI)
		• Introduction to Containers
		• Tomcat as a Web Container
			5	**3**

2	**JDBC (Java Database Connectivity)**	• Introduction of JDBC • JDBC Architecture • Data types in JDBC • Processing Queries • Database Exception Handling • Discuss types of drivers • JDBC Introduction and Need for JDBC • JDBC Architecture • Types of JDBC Drivers • JDBC API for Database Connectivity (java.sql package) • Statement, PreparedStatement • CallableStatement • ResultSetMetaData • DatabaseMetaData • Other JDBC APIs • Connecting with Databases (MySQL, Access, Oracle)	**10**	**6**
3	**RMI**	• RMI overview • RMI architecture • Stub and Skeleton • Developing and Executing RMI application	**10**	**6**
4	**Servlet**	• Servlet Introduction • Architecture of a Servlet	**15**	**9**

		• Servlet API (Javax.servlet and avax.servlet.http) • Servlet Life Cycle • Developing and Deploying Servlets • Handling Servlet Requests and Responses • Reading Initialization Parameters • Session Tracking Approaches (URL Rewriting, Hidden Form Fields, Cookies, Session API) • Servlet Collaboration • Servlet with JDBC		
5	**JSP**	• Introduction to JSP and JSP Basics • JSP vs. Servlet • JSP Architecture • Life cycle of JSP • JSP Elements: Directive Elements, Scripting Elements, Action Elements ▪ Directives Elements (page, include, taglib) ▪ Scripting Elements (Declaration, scriptlet, expression) ▪ Action Elements (JSP:param, JSP:include, JSP:Forward, JSP:plugin) • JSP Implicit Objects • JSP Scope • Including and Forwarding from JSP Pages • include Action • forward Action • Working with Session & Cookie in JSP • Error Handling and Exception Handling with JSP • JDBC with JSP	**15**	**10**
6	**Java Beans**	• JavaBean Properties • JavaBean Methods • Common JavaBean packaging	**5**	**5**
7	**MVC Architecture**	• Introduction to MVC • Implementation of MVC Architecture		
8	**EJB**	• Introduction • Benefits of EJB • Restriction on EJB • Types of EJB • Session Beans • Entity Beans • Message-driven beans	**5**	**3**

		• Timer service		
9	**Hibernate**	• Introduction to Hibernate • Need for hibernate • Features of hibernate • Disadvantages of Hibernate • Exploring Hibernate Architecture • Downloading and Configuring and necessary files to Hibernate in Eclipse • Jars files of hibernate. • Hibernate Configuration file • Hibernate Mapping file • Basic Example of Hibernate • Annotation • Hibernate Inheritance • Inheritance Annotations • Hibernate Sessions	**15**	**8**
10	**Spring**	• Introduction of Spring Framework • Spring Architecture • Spring Framework definition • Spring & MVC • Spring Context definition • Inversion of Control (IoC) in Spring • Aspect Oriented programming in Spring (AOP)	**10**	**5**
11	**Struts**	• Understanding Struts Framework • Comparision with MVC using RequestDispatcher and the EL • Struts Flow of Control • Processing Requests with Action Objects • Handling Request Parameters with FormBeans • Prepopulating and Redisplaying Input Forms • Using Properties Files	**10**	**5**
		Total	**100**	**60**

Reference Books:

(1) The Complete Reference Java 2 - Herbert Schildt and Patrick Naughton
(2) Java Server Programming For Professionals, Ivan Bayross, Sharanam Shah – Shroff publication
(3) Advanced Java Programming [ISBN: 978 - 93 - 81786 - 91 – 8] by Bharat & Company
(4) Developing Java Servlets – Techmedia
(5) JSP Beginner's Guide – Tata McGraw Hill by Gary Bolling, Bharathi Nataragan

(6) Spring and Hibernate, K. Santosh Kumar, - Tata McGraw-Hill
(7) Hibernate Made Easy: Simplified Data Persistence with Hibernate and JPA (Java Persistence API) Annotations by Cameron Wallace McKenzie, Kerri Sheehan
(8) Spring Framework: A Step by Step Approach for Learning Spring Framework - CreateSpace Independent Publishing Platform
(9) Beginning Hibernate Second Edition By Jeff Linwood, Dave Minte - APress

CS-26 Programming With ASP.NET				
Sr. No	**Topic**	**Detail**	**Weitage In %**	**Approx. Lectures**
1	**Framework And Web Contents**	• Overview of Asp.NET Framework • Client Server Architecture • Application Web Servers • Installation of IIS server • Types of Files in Asp.NET • Types of controls in Asp.NET • Page Architecture, Adding Controls to a Webpage • The Page Class • Webfor • Introduction to standard Controls (Buttons, Textbox, Checkbox, Lable, Panel, Listbox, Dropdownlist etc.) • Running an Asp.Net Application, File Upload Control	**10**	**6**
2	**Validation Controls**	• What is Validation? • Client Side Validation • Server Side Validation • Types (RequieredField Validator, Range Validator, CompareField Validator, RegularExpression Validator, Custom Validator, ValidationSummery Control)	**10**	**6**
3	**State Management**	• What is State? • Why is it Required in Asp.Net? • Client Side State Management • Server Side State Management • Various State Management Techniques (View State, Query String, Cookie, Session State, Application State)	**15**	**9**
4	**ADO.NET And Database**	• Architecture of ADO.NET • Connected Architecture • DisConnected Architecture • ADO.NET Classes (Connection, Command, • DataReader, DataAdapter, DataSet, DataColumn, DataRow, DataConstraints, DataView etc.) • The Gridview Control, The Repeater Control • Binding Data to DataBound Controls, • Diplaying Data in a webpage using SQLDataSource Control • DataBinding Expressions	**20**	**12**

5	**Master Pages and Theme**	• What is Master Page ? • Requirement Of a Master Page in an Asp.NET application • Designing Website with Master Page, Theme and CSS	**10**	**6**
6	**Caching Application Pages And Data**	• Overview • Page Output Caching • Partial Page Caching, Absolute Cache Expiration • Sliding Cache Expiration • Data Caching	**10**	**6**
7	**Working With XML**	• Reading Datasets From XML • Writing DataSets With XML • WebServices (Introduction, HTTP, SOAP, UDDI,XML, Creating a Web Servic, Consuming a Web Service)	**10**	**6**
8	**Asp.NET Application Configuration and Deployment of Application**	• Introduction To Web.Config • Common Configuration Sections • AppSettings • Tracing • Custom Errors • Authentication And Authorization • Deployment of Application in web server	**15**	**9**
		Total	**100**	**60**

Reference Books :

(1) Asp.Net – Unleashed
(2) Asp.Net – Wrox Publication
(3) Programming With ASP.NET [ISBN: 978 - 81 - 909634 - 7 – 3] by Bharat & Company
(4) Beginning.ASP.NET.3.5.in.C.Sharp.2008.From.Novice.to.Professional - Apress

CS-27 Web Searching Technology and Search Engine Optimization				
Sr. No	**Topic**	**Detail**	**Weitage In %**	**Approx. Lectures**
1	**The Search Engines: Reflecting Consciousness and Connecting Commerce**	• The Mission of Search Engines • The Market Share of Search Engines • The Human Goals of Searching • Determining Searcher Intent: A Challenge for Both Marketers and Search Engines • How People Search? • How Search Engines Drive Commerce on the Web? • Eye Tracking: How Users Scan Results Pages? • Click Tracking: How Users Click on Results? Natural Versus Paid	**10**	**6**
2	**Search Engine Basics**	• Understanding Search Engine Results • Algorithm-Based Ranking Systems: Crawling, Indexing, and Ranking • Determining Searcher Intent and Delivering Relevant • Fresh Content • Analyzing Ranking Factors • Using Advanced Search Techniques • Vertical Search Engines • Country-Specific Search Engines	**10**	**6**
3	**Determining SEO Objectives and Defining Site's Audience**	• Setting SEO Goals and Objectives • Developing an SEO Plan Prior to Site Development • Understanding Audience and Finding Niche • SEO for Raw Traffic • SEO for E-Commerce Sales • SEO for Mindshare/Branding • SEO for Lead Generation and Direct Marketing • SEO for Reputation Management • SEO for Ideological Influence	**10**	**6**
4	**First Stages of SEO**	• The Major Elements of Planning • Identifying the Site Development Process and Players • Defining Site's Information Architecture • Auditing an Existing Site to Identify SEO Problems • Identifying Current Server Statistics Software and Gaining Access • Determining Top Competitors	**15**	**9**

		• Assessing Historical Progress • Benchmarking Current Indexing Status • Benchmarking Current Rankings • Benchmarking Current Traffic Sources and Volume • Leveraging Business Assets for SEO • Combining Business Assets and Historical Data to Conduct SEO/Website SWOT Analysis		
5	**Keyword Research**	• The Theory Behind Keyword Research • Traditional Approaches: Domain Expertise • Site Content Analysis • Keyword Research Tools • Determining Keyword Value/Potential ROI, Leveraging the Long Tail of Keyword Demand, Trending, Seasonality, and Seasonal Fluctuations in Keyword Demand	**10**	**6**
6	**Developing an SEO-Friendly Website**	• Making Site Accessible to Search Engines • Creating an Optimal Information Architecture • Root Domains, Subdomains, and Microsites • Optimization of Domain Names/URLs • Keyword Targeting • Content Optimization • Duplicate Content Issues Controlling Content with Cookies and Session IDs • Content Delivery and Search Spider Control • Redirects, Content Management System (CMS) Issues • Optimizing Flash • Best Practices for Multilanguage/Country Targeting	**15**	**9**
7	**Optimizing for Vertical Search**	• The Opportunities in Vertical Search • Optimizing for Local Search • Optimizing for Image Search • Optimizing for Product Search • Optimizing for News, Blog, and Feed Search • Others: Mobile, Video/Multimedia Search	**10**	**6**
8	**Tracking Results and Measuring Success**	• Why Measuring Success Is Essential to the SEO Process • Measuring Search Traffic • Tying SEO to Conversion and ROI • Competitive and Diagnostic Search Metrics Key Performance • Indicators for Long Tail SEO	**10**	**6**

9	**An Evolving Art Form: The Future of SEO**	• The Ongoing Evolution of Search • More Searchable Content and Content Types, Search becoming More Personalized and User-Influenced • Increasing Importance of Local, Mobile, and Voice • Recognition Search • Increased Market Saturation and Competition • SEO As an Enduring Art Form	**10**	**6**
		Total	**100**	**60**

Reference Books:

(1) The Art of SEO : Mastering Search Engine Optimization By Eric Enge, Stephan Spencer, Rand Fishkin, Jessie C Stricchiola, O'Reilly Media, October, 2009
(2) Web Searching Technology and Search Engine Optimization[ISBN: 978 - 93 - 81786 - 92 - 5] by Bharat & Company
(3) SEO: Search Engine Optimization Bible, By Jerri L. Ledford, 2nd Edition, Wiley India, April, 2009
(4) SEO Warrior: Essential Techniques for Increasing Web Visibility By John I Jerkovic, O'Reilly Media, November, 2009

CS-28 : Practical And Viva Based On CS – 25	
Topics	Marks
CS – 25	100

CS-29 : Practical And Viva Based On CS – 26 and CS-27	
Topics	Marks
CS – 26 and CS - 27	100

Note :

- Practical examination may be arranged before or after theory exam.

CS-30 : Project Viva	**Total Marks: 100**
Project must be developed **in** the computer laboratory of concern institute under the supervision of faculties of concern institute on any subject of previous semester or current semester. **(At the time of Project-Viva examination student must show all the Workouts, SDLC, Documentation, Program codes and project in running mode)**	

Note :

- Project must be submitted before two week of commencement of theory exam.
- Project viva examination may be arranged before or after theory exam.
- During the project viva examination project must be run.

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B.C.A. (Semester – VI)			
SR.NO	**SUBJECT**	**NO. OF THEORY LECT. PER WEEK**	**NO. OF PRACTICAL PER WEEK**
1	**CS – 31** Mobile Computing using Android and iPhone	5	6
2	**CS – 32** Data Warehousing and Data Mining	5	6
3	**CS – 33** Administration of SQL Server 2012	5	3
4	**CS –34** Practical - 1 (based on CS-31)	5	-
5	**CS – 35** Practical – 2 (based On CS-32 and CS-33)	-	-
6	**CS – 36** Project Viva	-	6

Note:

(1) Credit of each subject is 5. Total credit of semester is 30.
(2) Total marks of each theory paper are 100 (university examination 70 marks + internal examination 30 marks).
(3) Total marks of each practical and project-viva paper are 100. No internal examination marks in practical and project-viva papers.

CS-31 Mobile Computing using Android and iPhone				
Sr. No	**Topic**	**Detail**	**Weitage In %**	**Approx. Lectures**
1	**Introduction to Android**	• The Open Handset Alliance • The Android Platform • Android SDK • Building a sample Android application	**04**	**02**
2	**Android Application Design**	• Anatomy of an Android applications • Android terminologies • Application Context, Activities, Services, Intents • Receiving and Broadcasting Intents • Android Manifest File and its common settings • Using Intent Filter, Permissions • Managing Application resources in a hierarchy • Working with different types of resources	**20**	**15**
3	**Android User Interface Design**	• User Interface Screen elements • Designing User Interfaces with Layouts • Drawing and Working with Animation	**20**	**10**
4	**Database Connectivity Using SQLite**	• Using Android Data and Storage APIs • Managing data using SQLite • Sharing Data Between Applications with Content Providers	**15**	**12**
5	**Location Based Services (LBS)**	• Using Global Positioning Services (GPS) • Geocoding Locations • Mapping Locations • Many more with location based services	**3**	**2**
6	**Common Android API**	• Android networking API • Android web API • Android telephony API	**5**	**2**
7	**Notifications**	• Notifying the user • Notifying wih the status bar • Vibrating the phone • Blinking the lights • Customizing the notifications	**3**	**1**
8	**Services**	• Services • Application development using JSON in MySQL	**3**	**2**
9	**Deployment of applications**	• Publish android application	**2**	**1**
10	**Introduction To iPhone**	• Introduction To X-Code (IDE) • Framework, Design User Interface for button, text view, text field, etc.	**25**	**13**

		• Creating And Building Simple Application • Cocoa Touch And MVC		
		TOTAL	**100**	**60**

Reference Books:

(1) Android Wireless Application Development By Lauren Darcey and Shane Conder, Pearson Education, 2nd ed. (2011)
(2) Beginning iOS 6 Development By David Mark , Jack Nutting , Jeff LaMarche , Fredrik Olsson Apress Publication.
(3) Using SQLite By Jay A. Kreibich, Publisher: O'Reilly Media
(4) Mobile Computing using Android and iPhone [ISBN: 978 - 93 - 81786 - 93 – 2] by Bharat & Company
(5) Professional Android 2 Application Development Reto Meier, Wiley India Pvt Ltd (2011)
(6) Beginning Android Mark L Murphy, Wiley India Pvt Ltd

CS-32 Data Warehousing and Data Mining				
Sr. No.	**Topic**	**Detail**	**Weitage In %**	**Approx. Lectures**
1	**Introduction of Data Warehouse**	• Operational and Informational systems, • OLTP and DSS systems • Characteristics of Data Warehouse • Data Warehouse software and hardware architecture • Basic steps to develop data warehouse architecture • Architectural components of data warehouse • Data warehouse system architecture (Two-Tiered and Three-Tiered)	**10**	**6**
2	**Data Marts**	• Data Mart structure • Usage of Data Mart ▪ Security in Data Mart ▪ Data warehouse and Data Mart	**5**	**3**
3	**Online Analytical Transactional Process**	• OLTP and OLAP systems • Types of OLAP (MOLAP, ROLAP and HOLAP) with advantages and disadvantages	**5**	**3**
4	**ETL**	• Extraction of Data • Transformation of Data • Loading of Data • Comparison and contradiction of various ETL tools • Practical study of popular ETL tools	**10**	**6**
5	**Data Mining**	• Foundation of Data Mining • Data Mining Process • Data Understanding • Data Preparation • Creating database for data mining • Exploring database • creating for data mining model • building a data mining model • evaluating a data mining model • deployment of data mining model	**10**	**6**
6	**Data Mining Techniques**	• Statistics ▪ Point Estimation,	**20**	**12**

		▪ Model based ummarization, ▪ Bayes theorem, ▪ Hypothesis testing, ▪ Correlation and regression • Machine Learning • Decision Trees • Neural Networks		
7	**Data Mining Algorithms (Modeling and Development)**	• Genetic Algorithms ▪ Cross-over techniques ▪ Mutation Function ▪ Fitness Function • Association Rules ▪ Apriori Algorithm ▪ Sampling Algorithm ▪ Partitioning algorithm ▪ Pincer-Search algorithm ▪ FP-Tree Growth algorithm • Clustering ▪ Hierarchical algorithm, ▪ Agglomerative algorithm ▪ Divisive clustering ▪ K- Means ▪ Nearest Neighbor ▪ clustering large database	**20**	**12**
8	**Practical study in WEKA Environment**	• Implementation of data set into WEKA • Rules generated using charts • Analysis of data using WEKA • Comparison of various algorithms	**5**	**3**
9	**Case Study**	• Theoretical study, practically development and implementation of Data mining models (case studies) in following areas. ▪ Insurance ▪ Financial services ▪ Healthcare and medicine ▪ Telecommunications ▪ Retail Marketing ▪ Government ▪ Education	**15**	**9**
		Total	**100**	**60**

Reference Books:

(1) Data mining Explained A manager's guide to customer centric business intelligence by
(2) Data Warehousing and Data Mining [ISBN: 978 - 93 - 81786 - 94 – 9] by Bharat & Company
(3) Rhonda Delmater, Monte Hancock, Digital Press
(4) Data mining by Pieter Adriaans, Dolf Zantinge
(5) Data warehousing in the real world A practical guide for business DSS by Sam Anahory,
(6) Dennis Murray

CS-33 Administration of SQL Server 2012				
Sr. No.	**Topic**	**Detail**	**Weitage In %**	**Approx. Lectures**
1	**Configuration Of SQL Server 2012**	• Evaluating installation requirement of SQL 2012 • Designing the installation • Planning scale up v/s scale out basics of SQL 2012 • Shrinking and growing Database • Designing storage of new database • Capacity constraints • Standby database for reporting purpose • Window level and service level security for SQL 2012 • Performing core model installation of SQL 2012 • SQL Server Edition, Capacity, Licensing • Installing and Upgrading from SQL Server 2005,2008 R2 to SQL 2012	10	6
2	**Roles Of DBA & Database Developers**	• Production DBA • Development DBA • Architect DBA • ETL DBA • OLAP DBA • Basic Duties of DBA • Basic knowledge of DBCC Commands	10	6
3	**I/O Planning & RAID & Window (2012) Cluster Configuration**	• I/O Fundamental • Window Cluster Configuration • Active & Passive Cluster configuration • DNS & IP Benchmarking • Network level security and antivirus • RAID Fundamental –Independent RAID • SAN Advantages	10	6
4	**Creating DB & DB Snapshot**	• Understanding Database • Create user Database • Viewing Database Details along with different kind of Graphs(2012) and customize level reporting • Fundamental of Database Snapshot • Managing Full text indexing • Configuring Filestream • Configure File table	10	6

5	**Fundamentals of Indexes**	• What is Index? • Understanding Anatomy of Balanced Tree (B-Tree) • Understanding index type and structure • Tracking missing indexes • Types of Index. • Index Architecture • Index Maintenance & Tuning • Indexed Views	10	6
6	**Backup Fundamentals**	• Backup Fundamentals • Requirement of Backup • Backing up Replicated Database, System database and Mirrored database • Types of Backup • Advantages of Transactional log backup • Recovery Models & Logging Information. • Backup of System Database	10	6
7	**Fundamentals of Restore**	• What is Restore? • Performing File Restores • Performing Page restore • Restoring database protected with Transparent data encryption • Restore & Recovery Concepts • Restoring Database from Backup or Database.	10	6
8	**Transaction & Locking mechanism**	• What is Transaction? • ACID Properties • Isolation Levels • Types of New Isolation level in SQL Server 2012 • Fundamentals of Locks • Row, Page & Table level Locks • Advantage and Disadvantage of Lock in OLTP Systems.	15	9
9	**High Availability of Server**	• Disaster Recover • Failover Clustering • Log Shipping • Database Mirroring • What is replication • Types of Replication • Clustering Always On Feature of SQL 2012 • Multi Sub net Failover Clustering	15	9
		Total	**100**	**60**

Reference Books:

(1) SQL Server 2012 Administration– MicroSoft Press
(2) SQL Server 2012 Unleashed – BPB Publication
(3) Amazing Power of SQL Server 2012 – PHI Publication
(4) Administration of SQL Server 2012 [ISBN: 978 - 93 - 81786 - 95 – 6] by Bharat & Company

CS-34 : Practical And Viva Based On CS – 31	
Topics	Marks
CS – 31	100

CS-35 : Practical And Viva Based On CS – 32 and CS-33	
Topics	Marks
CS – 32 and CS – 33	100

Note :

- Practical examination may be arranged before or after theory exam.

CS-36: Project Viva	**Total Marks: 100**
Project must be developed in the computer laboratory of concern institute under the supervision of faculties of concern institute on any subject of semester-V or semester-VI. **(At the time of Project-Viva examination student must show all the Workouts, SDLC, Documentation, Program codes and project in running mode)**	

Note :

- Project must be submitted before two week of commencement of theory exam.
- Project viva examination may be arranged before or after theory exam.
- During the project viva examination project must be run.