

SAURASHTRA UNIVERSITY RAJKOT- INDIA



**FOUR STARS
(Accredited by NAAC)**

**Bachelor of Science (Information Technology)
B.Sc. (I.T.)**

Syllabus of Semester - V & Semester - VI

(Effective from: June – 2009)

B. Sc.(IT) Semester - V

SR.NO	SUBJECT	NO. OF THEORY PER WEEK	NO. OF PRACTICALS PER WEEK
1	CS-25 PROGRAMMING WITH C# .NET	4+1	6
2	CS-26 ADVANCED JAVA PROGRAMMING	4+1	6
3	CS-27 SOFTWARE TESTING AND PROJECT MANAGEMENT	4+1	2
4	CS-28 PRACTICALS (BASED ON CS- 25 , CS-26 and cs-27)	4+1	As specified against CS-25,CS-26 and Cs-27
5	CS-29 PROJECT DEVELOPMENT	-	6

CS – 25 PROGRAMMING WITH C #.NET				
No	Topics	Details	Marks	Min Lec.
1.	.Net Framework	MS .Net Platform: Microsoft .NET Architecture Hierarchy Features of the .NET Platform: Multilanguage Development, Platform and Processor Independence, Automatic Memory Management, Easy Deployment, Distributed Architecture, Interoperability with Unmanaged Code, Security, Performance and Scalability Components of the .NET Architecture: MS .NET Runtime, Managed/Unmanaged Code, Intermediate Language, Common Type System, MS .NET Base Class Library (BCL), Assemblies, Metadata, Assemblies and Modules, Assembly Cache, Reflection, Just In Time Compilation, Garbage Collection	15	08
2.	Introduction to C # .Net	Introduction to visual studio, Project basics, types of project in .Net IDE of C# .NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The Environment Editor tab, format tab, general tab, docking tab. visual development & event drive Programming -Methods and events.	15	10
3	MS .Net Programming with C#	Introduction to C# .Net language Creating Your First C# Program Compiling and Executing, Defining a Class, Declaring the <i>main()</i> Method, Organizing Libraries with Namespaces, Using the <i>using</i> Keyword, Adding Comments (1 demo program using console)	5	2

3.	Basics Content C # . Net	Basic Variables – Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements conditional statement, loop statement. Msgbox & Inputbox.	10	8
4.	Working with GUI	Working with Forms Loading, showing and hiding forms, controlling One form within another. GUI Programming with Windows Form Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll-bar, Timer, ListView, TreeView, toolbar, StatusBar. There Properties, Methods and events OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menu's ContextMenu, access & shortcut keys.	15	10
5.	OOP	Object oriented Programming Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers Public Private, Protected. Overloading	15	08
6.	Database Programming With ADO.NET	ADO.NET Architecture Understanding the <i>ConnectionObject</i> Building the <i>Connection String</i> Understanding the <i>CommandObject</i> Understanding <i>DataReaders</i> Understanding <i>DataSets</i> and <i>DataAdapters</i> DataTable DataColumn	25	14

		DataRow Differences between <i>DataReader</i> Model and <i>DataSet</i> Model Understanding the <i>DataViewObject</i> Working with System.Data.OleDb Using <i>DataReaders</i> Using <i>DataSets</i>		
			100	60

Student Seminar	: 05 Lectures
Expert Talk	: 05 Lectures
Student Test	: 05 Lectures
Total	: 75 Lectures

REFERENCE BOOKS :

1. **C#.NET Programming Black Book by steven holzner –dreamtech publications**
2. **Introduction to .NET framework-Wrox publication**
3. **Microsoft ADO. Net, by Rebecca M. Riordan, Microsoft Press**

CS-26 : ADVANCED JAVA PROGRAMMING				
NO	TOPIC	DETAILS	MARKS	APPROX. LECT.
1	Distributed Computing using RMI	<ul style="list-style-type: none"> □ Introduction to RMI □ RMI Architecture □ Stubs and Skeleton 	5	5
2	Database Programming with JDBC	<ul style="list-style-type: none"> □ Introduction and Need for JDBC □ Database Drivers □ JDBC APIs for database Connectivity (Java.sql Package) □ Connection □ Statement □ Prepared statement □ Callable statement □ Result set □ Other JDBC APIs □ Database Meta Data □ Result Set Meta Data 	15	10
3	THE J2EE PLATFORM	<ul style="list-style-type: none"> □ Introduction □ 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 container □ Tomcat as a Web Container □ J2EE 1.4 as an Application Server 	10	5
4	Servlet Programming	<ul style="list-style-type: none"> □ Introduction to Servlets □ Servlets Implementation <ul style="list-style-type: none"> □ The Servlet interface □ The Generic Servlet class □ The single thread Model interface □ The Http Servlet class <ul style="list-style-type: none"> □ Service() □ DoGet() □ DoPost() □ DoDelete() □ DoOption() 	35	20

		<ul style="list-style-type: none"> q DoPut() q DoTrace() q Servlet Exceptions <ul style="list-style-type: none"> q The Servlet Exception class q The Unavailable Exception class q Servlet Lifecycle q Servlet Request and Response <ul style="list-style-type: none"> q The Http Servlet Request interface <ul style="list-style-type: none"> q GetAttribute() q setAttribute() q getAttributeNames() q getparameters() q getParameterNames() q getParameterValues() q getRemoteHost() q getRemoteAddr() q getCookies() q getHeaders() q getQueryString() q getSession() q The Http servlet Response interface <ul style="list-style-type: none"> q GetWriter() q GetcontentType() q AddCookie() q EncodeURL() q SendRedirect() q SetHeader() q SetStatus() q Session Tracking Approaches <ul style="list-style-type: none"> q URL Rewriting q Hidden Form Fields q Cookies q Session API q Session Tracking with Servlet API <ul style="list-style-type: none"> q The Http session interface <ul style="list-style-type: none"> q GetAttribute() q GetAttributeNames() q GetCreationTime() q GetId() q GetlastAccessedTime() q IsNew() q RemoveAttribute() 		
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		<ul style="list-style-type: none"> q SetAttribute() q SetMaxInactiveinterval() q Invalidate() q Servlet Collabration <ul style="list-style-type: none"> q Request Dispatching with Request Dispatcher interface q Forward() q Include() q Servlet Context <ul style="list-style-type: none"> qThe servletContext interface q GetContext() q GetRequestDispatcher() q GetServerInfo() q GetInitParameter() q GetInitParameterNames() q GetAttribute() q SetAttribute() q RemoveAttribute() 		
5	JSP Programming	<ul style="list-style-type: none"> q Introduction to JSP <ul style="list-style-type: none"> qJSP development qBasic JSP LifeCycle q JSP Elements <ul style="list-style-type: none"> qDirective Elements <ul style="list-style-type: none"> q Page Directive q Include Directive q Scripting Elements <ul style="list-style-type: none"> q Declaration q Scriptlets q Expressions q Action elements <ul style="list-style-type: none"> q Standard Action <ul style="list-style-type: none"> q <jps:param> q <jsp:include> q <jsp:forward> q <jsp:plugin> q Comments and template Data q Scope of JSP variables <ul style="list-style-type: none"> q Page q Request q Session q Application q Using Implicit Objects <ul style="list-style-type: none"> q The request Object q The response Object q The out Object 	35	20

		<ul style="list-style-type: none"> q The session Object q The config Object q The exception Object q The application Object q Handling Errors and Exception <ul style="list-style-type: none"> q Dealing with exception in the page directive q Dealing with exception in the Deployment Descriptor q Adding exception handling in JSP pages q Including and forwarding from JSP pages <ul style="list-style-type: none"> q Include Action q Forward Action q Introduction to JSP 2.0 EL(Exception Language) 		
Total			100	60

Student Seminar : 05 Lectures

Expert Talk : 05 Lectures

Student Test : 05 Lectures

Total : 75 Lectures

References Books

1. Complete reference J2EE
2. Professional Java Server Programming J2EE 1.3 Edition
Apress Publication
3. Beginning Java J2EE 5 from Novice to Professional
Apress Publication

CS – 27 Software Quality Assurance and Project Management				
No	Topic	Details	Marks	Apprx. Lects.
1	Concepts of Quality Assurance	<ul style="list-style-type: none"> § Introduction to QA § Quality Control (QC) § Difference between QA and Q § Quality Assurance activities 	5	5
2	Basics Of	§ Introduction to software Testing	10	8

SAURASHTRA UNIVERISTY
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Syllabus of Semester – V and Semester – VI
Effective from June – 2009

	Software Testing	<ul style="list-style-type: none"> § Software faults and failures <ul style="list-style-type: none"> Bug/Error/Defect/Faults/Failures § Testing Artifacts <ul style="list-style-type: none"> Test case Test Script Test Plan Test Harness Test Suite 		
3	Types of Software Testing, Verification and Validation	<ul style="list-style-type: none"> § Static Testing <ul style="list-style-type: none"> Informal Review Walkthrough Technical Review Inspection § Dynamic Testing § Test levels <ul style="list-style-type: none"> Unit Testing Integration Testing System Testing Acceptance Testing Techniques of software Testing § Black Box Testing <ul style="list-style-type: none"> Equivalence Partitioning Boundary Data Analysis Decision Table Testing State Transition Testing § White Box Testing <ul style="list-style-type: none"> Statement testing and coverage Decision testing and coverage § Grey Box Testing § Nonfunctional Testing <ul style="list-style-type: none"> Performance Testing Stress Testing 	20	15

		<p>Load Testing Usability Testing Security Testing</p>		
4	Software Development Life Cycle Models	<p>§ Waterfall Model § Iterative Model § V-Model § Spiral Model § Big Bang Model § Prototyping Model</p>	10	2
5	Automated Testing	<p>§ Introduction Concept of Freeware, Shareware, licensed tools § Theory and Practical Case-Study of Testing Tools Win runner Load runner QTP Rational Suite</p>	10	8
6	Project Economics	<p>§ Concepts of Project Management § Project Costing based on metrics § Empirical Project Estimation Techniques. § Decomposition Techniques. § Algorithmic methods. § Automated Estimation Tools</p>	10	5
7	Project scheduling and Tracking	<p>§ Concepts of project scheduling and tracking § Effort estimation techniques § Task network and scheduling methods</p>	15	6

		§ Timeline chart § Pert Chart § Monitoring and control progress § Graphical Reporting Tools		
8	CAD Project Management Tool	§ MS – VISIO for designing & Documentation § MS – Project for controlling and Project Management	10	5
9	UML	§ UML designing and skill based tools	10	6
Total			100	60

Student Seminar : 05 Lectures
 Expert Talk : 05 Lectures
 Student Test : 05 Lectures
 Total : 75 Lectures

Reference book :

1. Roger Pressman , “Software Engineering”
2. Rajib Mall “Fundamentals of Software Engineering”

Link for reference

1. http://en.wikipedia.org/wiki/Software_testing
2. <http://www.onestoptesting.com/>

Link to open source functional testing tools:

1. <http://www.opensourcetesting.org/functional.php>

CS-28 : Practicas based On CS-25 And CS –26 and CS-27	
Topics	Marks
CS-25	40
CS-26	40
CS-27	20

CS-29 : Project Development	
Presentation of Project and Viva- Voce	100

Note :

- 1. Any learned Tools, technologies, languages can be used for project development.**
- 2. At the time of Presentation of project and Viva-Voce examination, each student must have certified hard copy and soft copy of developed project.**

B. Sc.(IT) Semester - VI

SR.NO	SUBJECT	NO. OF THEORY PER WEEK	NO. OF PRACTICALS PER WEEK
1	CS-30 Programming with ASP.Net	4+1	6
2	CS-31 MS SQL-Server 2005 Database Administration	4+1	2
3	CS-32 Network Management & Information Security	4+1	2
4	CS-33 PRACTICALS (BASED ON CS-30)	-	As specified against CS-30, CS-31 and CS-32
5	CS – 34 Project Development		12

CS – 30 Programming with ASP.Net				
No	Topics	Details	Marks	Min Lec

1.	Framework & Web Contents	<p>Overview of ASP.NET framework, Understanding ASP.NET Controls, Applications Web servers, installation of IIS.</p> <p>Web forms, web form controls server controls, client controls, web forms & HTML, Adding controls to a web form ,Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box, etc. Running a web Application, creating a multiform web project.</p>	20	13
2.	Validation & State Management	<p>Form Validation Client side validation, server Side validation</p> <p>Validation Control Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control.</p> <p>State management View state, Session state, Application state</p>	15	07
3.	ADO.Net & Database	<p>Architecture of ADO.NET</p> <p>Connected and Disconnected Database, Create Connection using ADO.NET Object Model, Connection Class, Command Class, DataAdapter Class, Dataset Class.</p> <p>Display data on data bound Controls and Data Grid.</p> <p>Database Accessing on web applications Data Binding concept with web, creating data grid, Binding standard web server controls.</p> <p>Display data on web form using Data bound controls.</p>	30	20
4.	Using XML	Writing datasets to XML, Reading datasets with XML.	15	10

		Web services Introduction, Remote method call using XML, SOAP, web service description language, building & consuming a web service, Web Application deployment.		
5.	Web Application and Configuration	Overview Asp.net Configuration, Common Configuration , Tracing, Custom Error, Authentication & Authorization, Web Services	20	10
			100	60

Student Seminar : 05 Lectures
 Expert Talk : 05 Lectures
 Student Test : 05 Lectures
 Total : 75 Lectures

References

ASP.Net – Unleashed

ASP.Net - Wrox Publications

CS –31 SQL Server 2005- Administrator Syllabus				
No.	Topic	Detail	Marks	Min. Lect.
1	Configuration Of SQL Server	Configuration Server Configuration Database Configuration Network Security Configuration SQL Server Edition, Capacity, Licencing Installing and Upgrading SQL Server 2005	5	3
2	Roles Of DBA	Production DBA Development DBA Architect DBA ETL DBA OLAP DBA Basic Duties of DBA Basic knowledge of DBACC Commands	10	5
3	I/O Planning & RAID Configuration	I/O Fundamental RAID Fundamental – Independent RAID SAN Advantages	15	8
4	Creating DB & DB Snapshot	Understanding Database Create user Database Viewing Database Details along with different kind of Graphs(2005) Fundamental of Database Snapshot	5	2
5	Fundamentals of Indexes	What is Index? Types of Index. Index Architecture Index Maintenance & Tuning Indexed Views	10	5
6	Backup Fundamentals	Backup Fundamentals Requirement of Backup Types of Backup Advantages of	15	10

		Transactional log backup Recovery Models & Logging Information. Backup of System Database		
7	Fundamentals of Restore	What is Restore ? Restore & Recovery Concepts Restoring Database from Backup or Database.	10	7
8	Transaction & Locking mechanism	What is Transaction? ACID Properties Isolation Levels Types of New Isolation level in SQL Server 2005 Fundamentals of Locks Row,Page & Table level Locks Advantage and Disadvantage of Lock in OLTP Systems.	15	10
9	High Availability of Server	Disaster Recover Failover Clustering Log Shipping Database Mirroring What is replication Types of Replication	15	10
			100	60

Student Seminar : 05 Lectures
 Expert Talk : 05 Lectures
 Student Test : 05 Lectures
 Total : 75 Lectures

Reference:

1. SQL Server 2005 –Administrator’s Companion – MicroSoft press
2. Professional SQL Server 2005 Programming – Robert Vieira, Wiley Publication

CS- 32 NETWORK MANAGEMENT & INFORMATION SECURITY				
No	Topics	Details	Marks	Mi Le
1.	Introduction to Information Security	Attributes of Information Security: Confidentiality, Integrity, Availability. Threats & Vulnerabilities: Unauthorized Access, Impersonation, Denial of Service, Malicious Software; Trap Doors, Logic Bomb, Trojan Horses; Viruses, Worms & Bacteria; Security Strategies & Processes; Importance of Security Policies and Audits.	15	10
2.	Network Management : SNMP	Network Management System with (configuration mgmt, fault mgmt, performance mgmt, security mgmt, accounting mgmt,) SNMP (Simple Network Management Protocol) including MIB (Management Information Base)	10	4
3	Network Security -I	OSI Model, Maximum Transfer Unit, IP, TCP, UDP, ICMP; ARP, RARP and DNS; Ping, Traceroute. Security Services : Message Confidentiality, Integrity, Authentication, nonrepudiation Message Confidentiality : confidentiality with symmetric key & Asymmetric key	15	10
4	Network Security - II	Network Attacks: Buffer Overflow, IP Spoofing, TCP Session Hijacking, Sequence Guessing, Network Scanning: ICMP, TCP sweeps, Basic Port Scans; Denial of Service Attacks: SYN Flood, Teardrop attacks, land, Smurf Attacks. Virtual Private Network Technology: Tunneling, IPSEC: Traffic Protocols: Authentication Headers, ESP Internet Key Exchange (IKE), Security Association PPTP, L2TP.	20	12
5	Identification & Authentication	Definitions, Types of authentication, Password Authentication, Password Vulnerabilities & Attacks: Brute Force &	15	10

		Dictionary Attacks. Password Policy & Discipline, Single Sign-on - Kerberos, Alternate Approaches: Biometrics: Types of Biometric Techniques: False Rejection, False Acceptance, Cross Over Error Rates..		
6	Cryptography	Introduction Cryptography Basics: Plain Text, Cipher Text, Encryption Algorithm, Decryption Algorithm; Requirements for Cryptography. Symmetric –Key Cryptography Asymmetric – Key Cryptography including RSA and Diffie- Hellman algorithms	15	10
7.	Internet Security	Proxy Servers, Firewalls, , Smurf Attacks on ISP : How Virus works on Internet, How Cookies, Passports and Web Tracking Work, , Privacy and Digital Certificates, Parental Controls on the Internet	10	4
			100	60

Student Seminar : 05 Lectures
 Expert Talk : 05 Lectures
 Student Test : 05 Lectures
 Total : 75 Lectures

References

William Stallings, "Network Security Essentials"
Behrouz A Forouzan " Data Communication And Networking"
Professional Reference, "Internet Security"
Gollmann, Dieter, "Computer Security"

CS-33 Practicals CS-30, CS-31 and CS-32	
Topics	Marks
CS-30	70
CS-31	15
CS-32	15

CS-34 : Project Development	
Topics	Marks
Presentation of Project and Viva-Voce	100

Note:

1. Any learned Tools, technologies and languages learned during the Semester V and Semester VI can be used for project development.
2. At the time of Presentation of project and Viva-Voce examination, each student must have certified hard copy and soft copy of developed project.