

**Bharati Vidyapeeth Deemed University, Pune**  
**Faculty of Management Studies**  
**Bachelor of Computer Application (BCA) Sem. - V**

<b>Subject Code</b>	<b>J030329</b>
<b>Title</b>	<b>Software Testing</b>
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>
<b>Objectives</b>	The primary goal of software testing is to reduce risk and acquire knowledge of software testing process using various techniques to improve the quality of software.
<b>Learning Outcomes</b>	After completing this course, students will be able to: <ul style="list-style-type: none"> <li>• Describe the software development V-Model, its critical activities, and where software testing and quality assurance fits in that process.</li> <li>• Describe the purposes of software testing and quality assurance.</li> <li>• Describe the generic test process and identify the inputs and outputs of each activity in the process.</li> <li>• Identify and describe several testing techniques.</li> <li>• Understand Use Case requirements and apply suitable techniques to derive a set of test cases from them.</li> </ul>
<b>Pre-requisites</b>	This course assumes students have these skills: <ul style="list-style-type: none"> <li>• Basic knowledge of software concepts.</li> <li>• Basic understanding of the roles within a software development team, such as the role of the Project Manager, System Analyst and Programmer</li> </ul>
<b>Text Book(s)</b>	1) Software Testing by Renu Rajani and Pradeep Oak 2) Software Engineering by Roger S. Pressman
<b>Syllabus</b>	

<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	<b>Introduction to software concepts</b>	Definition and Characteristics of Software.	Hand out
2		Overview of SDLC	Hand out
3	<b>Introduction to testing</b>	What is testing, Importance of Testing. Testing goals and characteristics.	Hand out & 2.Pages 420-423
4		Testing during planning stage, testing during design stage, coding stage	Hand out
5	<b>Software Testing Lifecycle</b>	Principles of Verification and Validation	2.Page 388 & Hand out
6		Techniques of verification (review, inspections, walkthroughs)	Hand out
7		V testing model a) Software development V & V	1.Pages 50-54
8		b) Software acquisition V & V c) Software supply V & V	1.Pages 54-55
9	<b>Software Testing Process</b>	Testing process a) Plan b) Develop c) Execute d) Manage	1.Pages 55-58

10		Conventional software Architectures	2.Pages 390-391	
11		Strategic Issues	2.Pages 393-394	
12	<b>Software Testing Strategies</b>	Test strategies for conventional software a) Unit Testing	2.Pages 394-397	
13		b) Integration Testing i) Top-Down Integration	2.Pages 397-399	
14		ii) Bottom-Up Integration	2.Pages 400-401	
15		iii) Regression Testing iv) Smoke Testing	2.Pages 401-402	
16		v) Integration test documents	2.Pages 403-404	
17		c) Validation Testing i) Test Criteria ii) Configuration Review III) Alpha and Beta Testing	2.Pages 406-407	
18		e) System Testing i) Recovery Testing ii) Security Testing	2.Pages 408-409	
19		i) Stress Testing ii) Performance Testing	2.Pages 409-410	
20		Difference between Testing and Debugging	Hand out	
21		The Art of Debugging a) Debugging Process	2.Pages 411-413	
22		b) Debugging strategies i) Debugging tactics	2.Pages 414-414	
23		c) Correcting the Error	2.Pages 416-416	
24		<b>Software Testing Techniques</b>	Black-Box and White-Box Testing	2.Pages 423-425
25	Basis Path Testing a) Flow Graph Notation		2.Pages 425-426	
26	b) Independent Program Paths		2.Pages 426-428	
27	c) Deriving Test Cases		2.Pages 428-430	
28	d) Graph Matrices		2.Pages 431-431	
29	Control Structure Testing a) Conditional Testing b) Data Flow Testing		2.Pages 432-433	
30	c) Loop Testing i) Simple Loops ii) Nested Loops iii) Concatenated Loops		2.Pages 433-434	
31	Black Box Testing		a) Graph Based Testing	2.Pages 434-437
32			b) Equivalence Partitioning	2.Pages 437-438
33			c) Boundary Value Analysis	2.Pages 438-438
34			d) Orthogonal Array Testing	2.Pages 439-431
35,36			Testing of client/server Architectures	2.Pages 452-453
37			Testing Documentation and Help Facilities	2.Pages 453-454
38			Testing for Real-Time Systems	2.Pages 454-455
39				

		a) Task Testing b) Behavioral Testing	
40		c) Intertask Testing d) System Testing	2.Pages 455-456
41		Testing Patterns a) Pair Testing b) Separate Test Interface c) Scenario Testing	2.Pages 456-457
42	<b>Risk Management</b>	Introduction and Characteristics of Risks Types of Risks a) Project Risks b) Technical Risks c) Business Risks d) Predictable Risks e) Unpredictable Risks	2.Pages 726-729
43		Role of Testing in Risk Management	Hand out
44	<b>Software Quality Assurance</b>	Definition and Importance of Software Quality	2.Pages 748-749
45		b) SQA Activities	2.Pages 749-750

**Reference Books:**

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|---|---------------|
| 1) Effective Methods for software Testing | William Perry |
| 2) Software Testing in Real World         | Edward Kit    |
| 3) Software Testing Techniques            | Beizer        |

<b>Subject Code</b>	<b>J030330</b>
<b>Title</b>	<b>Computer Networks - II</b>
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>
<b>Objectives</b>	Various types of computer networks, advanced technologies behind networks and various application protocols, e-mail and network security concepts will be introduced to students through this subject.
<b>Learning Outcomes</b>	After completing this course, students will be able to: <ul style="list-style-type: none"> <li>• Demonstrate attitudes that are beneficial to maintaining the security of a computer/network system and assisting people to use that system or network.</li> <li>• Apply logical skills in various aspects of Networking.</li> <li>• Demonstrate a working knowledge of the Internet that includes effective strategies for online research and correct citation of internet based resources.</li> </ul>
<b>Pre-requisites</b>	This course assumes students should have fundamental knowledge of Networking Concepts
<b>Text Book(s)</b>	<b>Advanced Networking by Dr. Nitin Kulkarni (Vision Publications)</b>
<b>Syllabus</b>	

<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	<b>Review of Basic Concepts</b>	Introduction <ul style="list-style-type: none"> <li>a) What is Networking?</li> <li>b) Application - Why are Computers networked</li> </ul>	Pages 1-1 To 1- 3
2		Network Architecture <ul style="list-style-type: none"> <li>a) Layered Model</li> <li>b) Protocols, Services &amp; Interfaces</li> </ul>	Pages 1-3 To 1- 6
3 & 4		Reference Models <ul style="list-style-type: none"> <li>a) OSI reference model</li> <li>b) TCP/IP model</li> </ul>	Pages 1-6 To 1- 11
5	<b>Advanced Technology in Networking</b>	Local Area Network (LAN) <ul style="list-style-type: none"> <li>a) Ethernet</li> <li>b) Token Ring</li> </ul>	Pages 1-12 To 1- 15
6		c) Wireless LAN's 2) Point -to- Point WAN's	Pages 1-16 To 1- 18
7		a) Traditional modem b) DSL Technology c) Cable modem	Pages 1-19 To 1-21
8		d) T-Lines e) SONET(synchronous Optical Network)	Pages 1-21 To 1- 22
9		3) Switched WAN's 1 a) X.25 b) Frame Relay	Pages 1-22 To 1- 23
10-11		c) ATM (Asynchronous Transfer mode) 4) Connecting Devices a) Repeaters b) Hub c) Bridge d) Switches e) Routers f) Gateway	Pages 1-23 To 1-27
12-13-14	<b>Internet</b>	Internet Protocol <ul style="list-style-type: none"> <li>a) Datagram</li> <li>b) Packet Fragmentation and Reassembly</li> </ul>	Pages 2-1 To 2- 7

15-16	<b>Layer Protocols</b>	Internet Control Message Protocol(ICMP) a) Types of Messages b) Error Reporting	Pages 2-7 To 2- 10
17		c) ICMP Package i) Input Module ii) Output Module	Pages 2-10 To 2-12
18-19	<b>The Transport Layer</b>	Transport Service a) Services Provided b) Service Primitives c) Berkeley Sockets	Pages 5-1 To 5- 3
20		Elements of Transport Protocol a) Addressing	Pages 5-5 To 5- 6
21		b) Connection Establishment c) Coonction Release	Pages 5-7 To 5- 11
22-23		d) Folw Control and Buffering e) Multiplexing f) Crash Recovery	Pages 5-11 To 5- 13
24-25		UDP (User Datagram Protocol) a) Introduction to UDP Packet b) Remote Procedure Call	Pages 5-14 To 5- 16
26-27		Transmission Control Protocol(TCP) a) Service Model b) Protocol c) Frame Format	Pages 5-17 To 5- 19
28		<b>The Application Layer</b>	Domain Name System(DNS) a) Name for Machine b) Domain Name Space
29-30	c) DNS for Internet d) Name address Resolution e) DNS Messages		Pages 7-3 To 7- 6
31	Electronic Mail a) Email System Architecture		Pages 7-14 To 7- 15
32-33-34	b) Message Format i) Multipurpose Internet Mail Extension(MIME) c) Simple Mail Transfer Protocol(SMTP)		Pages 7-15 To 7- 19
35	<b>Network Security</b>		Cryptography
36		Secret Key Cryptography Algorithms a) Substitution cipher b) Transposition Cipher	Pages 9-2 To 9- 4
37		Public key Algorithm a) RSA Algorithm	Pages 9-7 To 9-8
38-39		Digital Signature a) Using Public key b) Using Message Digest	Pages 9-8 To 9-10
40		Firewalls	Pages 9-12 To 9-13

### Reference Books:

- |                                     |   |
|-------------------------------------|---|
| 1) Computer Networks                | Uyless Black                                  |
| 2) Computer Networks                | Andrew S. Tanenbaum (4 <sup>th</sup> Edition) |
| 3) Data Communications & Networking | Behrouz Ferouzan                              |

<b>Subject Code</b>	<b>J030331</b>		
<b>Title</b>	<b>Object Oriented Programming-II</b>		
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>	<b>Make the students familiar with Object Oriented Programming principles using Java.</b>		
<b>Learning Outcomes</b>	<b>At the end of this course, student should be able Understand the most basic aspects of Java features.</b>		
<b>Pre-requisites</b>	<b>Any Programming Language</b>		
<b>Text Book(s)</b>	<b>E. Balgurusamy <i>Programming with Java</i> , Tata McGra-Hill, Third Edition, 2008</b>		
<b>Syllabus</b>			
<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	Introduction to Java	Overview of OOP concepts Features of Java,	Pages 3-8 Pages 13,42
2		Comparison of Java with C & C++ Structure of Java Program,	Pages 15-17 Pages 31-33
3		writing and executing simple Java Program	Pages 27-31
4		Java Tokens	Pages 33-37
5		Implementing a Java Program, Java compiler ,JVM	Pages 40-43
6		Java character set, Constants, Variables in Java	Pages 35,47
7		Data types in Java	Pages 50-53
8		Simple programs	
9		Programs using Read Statement	Pages 55
10		Operators and Expressions	Pages 66-83
11		Arithmetic Relational Operators	
12		Logical ,Conditional Operators Assignment	
13			
14		Bitwise, Special operators	Pages 74 -75
15		Type conversion	Pages 78
16		Mathematical functions	Pages 82
17		Decision making and Branching	Pages 88
18		If, if-else, Nesting of if-else	Pages 89-95
19		Else-if ladder, switch statement	Pages 98,102-106
20		While,do,for statement	Pages 111-121

21	Classes, Objects and Methods	Defining a class, Fields Declaration, Methods Declaration	Pages 127-129
22		Creating Objects, Accessing Class Members	Pages 130-133
23		Constructors	Pages 133-134
24		Methods Overloading	Pages 133-135
25		Static Members	Pages 135-136
26	Inheritance: Extending a class	Introduction, Defining a Subclass Single Inheritance	Pages 142-144
27		Overriding Methods	Page 147
28		Visibility Control	
29	Arrays	Introduction, One-dimensional Arrays, creating, declaring and Initializing an Array.	Pages 153-157
30		Array Length, Application of 1-D Array	Pages 157-158
31		Two-dimensional arrays, Application	Pages 158-161
32		Strings: String Arrays, String Methods	Pages 162-163
33		StringBuffer Class	Page 167
34		Wrapper Classes	Pages 171
35	Interfaces: Multilevel Inheritance	Defining Interfaces, Extending Interfaces	Pages 180-182
36		Implementing Interfaces	Pages 182-184
37		Accessing Interface Variables	Pages 184-186
38		Exception Handling	
39		Revision / Programs	
40	Packages	Introduction	Pages 188
41		Java API Packages	Pages 189
42		System packages	Pages 190
43		Naming Conventions	Pages 191
44		Creating, Accessing and Using a Package	Pages 192-194
45		Revision	

**Reference Book:**  
**E. Balgurusamy**

<b>Subject Code</b>	<b>J030332</b>		
<b>Title</b>	<b>Management V (Fundamentals of Organizational Behavior)</b>		
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>			
<b>Learning Outcomes</b>			
<b>Pre-requisites</b>			
<b>Text Book(s)</b>			
<b>Syllabus</b>			
<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	Concept Of OB	Historical Origin	
2		Nature and scope of OB (Why knowledge of OB needed?), Limitation under the study of OB	
3		Challenges under the study of OB, (Modern tools and techniques)	
4		OB – as a inter disciplinary concept, OB Vs Sociology, Psychology, Economics and Anthropology correlations	
5		Case study on basics of OB	
6		OB – Models – Group decision making	
7		OB – Models –SOBC and personality based models – Application into practice	
8		Case study on SOBC model	
9		Case study on Group decision making	
10	Concept of Motivation	Nature and scope, Motivation Process	
11		Morale – concept – measurement, Morale, Motivation and Productivity relationship – Incentive schemes (Monetary Vs Non- monetary)	
12		Theories of motivation – Process Vs Content theories – introduction	
13		Case study on motivation into practice	
14		Maslow's Hierarchy of Needs – concept, Application- criticism	
15		Herzberg's Model – concept –	



		Applications – criticism	
16		Case study on Maslow Vs Hertzberg's Models- applications	
17		Theory X Vs Theory Y – contents-significance/scope – criticism	
18		Case study on Theories of motivation into practice	
19	Organization	Meaning-Principles of organizing, Organization change- meaning – factors influencing organizational change	
20		Resistance to change – causes/factors influencing resistance to change	
21		Strategies to overcome resistance to change(Interpersonal communication)	
22		Strategies to overcome resistance to change – TA model, Johari Window	
23		Conflict – meaning - levels of conflict	
24		Organizational conflict – causes and effects	
25		Case studies on Organizational change(Internal evaluation)	
26		Case study on conflict Management	
27		Role play / Brain storming sessions on TA Model, Johari Window	
28		Strategies to overcome Interpersonal, Intrapersonal conflicts	
29	Leadership	Meaning, scope, Leadership Vs Managerialship, leader Vs Boss	
30		Leadership qualities, Leaders born or made?	
31		Theories of Leadership, Trait theory, Path Goal Theory	
32		Situational theory of Leadership, applications into practice	
33		Leadership styles, applications	
34		Case study on Leadership styles(Internal Evaluation)	
35		Managerial Grid – applications – Strategies into practice	
36		Case study – its applications relating to leadership theories	
37	Perception	Meaning, factors influencing Perception-sensation, Perception Process	

38		Job and Job satisfaction – concepts - Factors influencing Job satisfaction – Job Analysis – meaning and scope	
39		Case study on: Perception Process, Role play or Brainstorming session on Perception Process	
40	Communication	Meaning – elements of communication – importance/scope of communication in day to day life – corporate communication	
41		Communication Process model – Barriers to communication	
42		Barriers to Communication – feedback mechanism – Remedies to overcome barriers	
43		Case study on Barriers to communication	
44		Modern Communication tools – e- communication, Internet Communication	
45		Seminar/Presentations on currents trends, challenges under the study of OB	

**Reference Book:**

- 1) **Human Behaviour at work – Keith Davis**
- 2) **Organizational Behaviour – Robbins**
- 3) **Organizational Behaviour – Fred Luthans**
- 4) **Organizational Behaviour – L. M. Prasad**
- 5) **Organizational Behaviour – Dr. Anjali Ghanekar**
- 6) **Magazine reference : Human Capital**

<b>Subject Code</b>	<b>J030333</b>
<b>Title</b>	<b>Dot Net Technologies</b>
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>
<b>Objectives</b>	After completion of this course the student will be able to write a simple programs using VB.NET using the Visual Studio programming environment.
<b>Learning Outcomes</b>	After completion of this course the students will be able write programs using Visual Basic techniques.
<b>Pre-requisites</b>	Paper No. J030217
<b>Text Book(s)</b>	<b>B1:Professional VB .Net by wrox</b> <b>B2: Mastering Visual Basic .Net Evangelos Petrousos</b>
<b>Syllabus</b>	

<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	<b>Introduction To Dot Net Technology</b>	What is Dot Net? Weaknesses in VB, difference between VB and VB.NET,	<b>B1:Pages 9-12</b>
2		An overview of Dot Net framework	<b>B1:Pages 13-14</b>
3		Dot Net CLR(Common Language Runtime), key design goals, simpler, faster development, excellent tool support, simpler and safer deployment, scalability, metadata, multiple language integration and support	<b>B1:Pages 14 - 17</b>
4	<b>Introduction To Visual Studio Dot Net</b>	What is Visual Studio Dot Net? – Solution Explorer, namespaces, new code window	<b>B1:Pages 28 - 34</b>
5		Tabs versus MDI, customizing the text editor, properties window, dynamic help	<b>B1:Pages 35 - 37</b>
		Useful features of VS.Net: Task list, command window, server explorer	<b>B1: Pages 54-56</b>
6	<b>Working with VB.NET</b>	Getting started with VB .Net: start page, starting a new project, windows form designer, project types	<b>B2: Pages 3 - 12</b>
7		Integrated Development Environment: IDE menu – file menu, edit menu, advanced submenu, intelliSense submenu, view menu, project menu, build menu, debug menu, data menu, format menu, tools menu, window menu, help menu,	<b>B2: Pages 19-23</b>
8		Toolbox window, solution explorer, properties window, output window, command window, task list window,	<b>B2: Pages 23-25</b>
9		Elements of .Net Applications : Assemblies, modules, types.	<b>B2: Pages 60-62</b>

10	<b>Variables and Data types</b>	Declaring Variables, types of variables, converting variable types	<b>B1: Pages 82-107</b>
11		Operators, Arrays, sub routines	
12		Controlling Flow-Control & Looping Constructs	
13	<b>Working with VB.Net</b>	Enhancing sample application: add a control and event handler, customizing the code, build configuration, building application	<b>B1: Pages 41-50</b>
14	<b>Working with Forms</b>	Appearance of a form, properties of a form, placing controls on forms, setting tab order	<b>B2: Pages 185-193</b>
15		Form events, loading and showing forms, controlling one form from within another, form versus dialog boxes	<b>B2: Pages 203-211</b>
16		Designing menus: menu editor, menu item object properties, manipulating menus at runtime, iterating a menus item	<b>B2: Pages 219-230</b>
17		Building dynamic forms at runtime	<b>B2: Pages 231-232</b>
18	<b>Basic Windows Controls</b>	Text Box Control: basic properties, text manipulation properties, text selection properties, text selection methods, capturing keystrokes	<b>B2: Pages 241-260</b>
19		List box, checkbox, combo box: Basic properties, items collection, searching	<b>B2: Pages 263-275</b>
20		The scroll bar and track bar control:	<b>B2: Pages 279-287</b>
21		Using Common Dialog Controls:	<b>B2: Pages 289-291</b>
22		Color dialog box, font dialog box, open and save as a dialog box, print dialog box	<b>B2: Pages 292-304</b>
23		Rich Text Box Control: Properties, methods, advanced editing features, cutting and pasting, searching in a rich text box control	<b>B2: Pages 305-316</b>
24	<b>Building Custom Classes</b>	What is a class? Building the minimal class, adding code to minimal class,	<b>B2: Pages 329-343</b>
25		property procedures, customizing default members, custom enumeration	
26		A "Real" class, parsing a filename string, reusing the string tools,	<b>B1: Pages 356-361</b>
27		Encapsulation and abstraction	<b>B1: Pages 362-367</b>
28		Inheritance	<b>B1: Pages 368-369</b>

<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
29		Polymorphism	<b>B1: Pages 373-380</b>
30		Parent class keywords, derived class keywords, parent class member keywords	<b>B2: Pages 382-387</b>
31		derived class member keyword, mybase, myclass	
32	<b>Baisc Framework Classes</b>	Storing Data in collection: Sorting arrays, searching arrays, array operations, array limitations,	<b>B2: Pages 479-488</b>
33		Array List collection: creating an array list, adding & removing items	<b>B2: Pages 489-490</b>
34		Handling Strings, Characters and Dates: Char class, string class, string builder class,	<b>B2: Pages 529-544</b>
35		Handling dates, date time class, time span class	<b>B2: Pages 552-567</b>
36	<b>Working With Files and Folders</b>	Accessing folders and files : directory class, file class, DirectoryInfo class, FileInfo class, Path class	<b>B2: Pages 570-587</b>
37		Accessing Files: file stream object, stream writer object, stream reader object,	<b>B2: Pages 594-600</b>
38		Sending data to file: binary writer object, binary reader object	<b>B2: Pages 602-605</b>
39	<b>Error Handling &amp; Debugging</b>	Types of errors, design time errors, run time errors, logical errors	<b>B2: Pages 791-794</b>
40		Exception and structured exception handling	<b>B2: Pages 796-802</b>
41		Debugging: break points, stepping through, Local and watch window	<b>B2: Pages 803-809</b>
42	<b>Database Programming With VB.Net</b>	Creating a data set, using Data Grid Control	<b>B2: Pages 928-931</b>
43		Data Binding	<b>B2: Pages 942-946</b>
44		Programming ADO.Net Objects: Navigating the tables of Data Set, updating data set	<b>B2: Pages 963-970</b>
45		Data form Wizard	<b>B2: Pages 971-976</b>

### Reference Books:

1. Vb. Net by Radhaganesan
2. Professional VB .Net by wrox
3. Mastering Visual Basic .Net by Evangelos Petrousos

# Bharati Vidyapeeth Deemed University

## Faculty of Management Studies

### BCA Part III (Semester VI)

Sr. No.	Course Code	Course Title	Work Load				Marks		
			T	P	Tot	Uni.	Int.	Pr.	Tot.
1	J030336	Software Project Management	4	-	4	70	30	-	100
2	J030337	Data Warehousing and Data Mining	4	-	4	70	30	-	100
3	J030338	Data Structures	4	-	4	70	30	-	100
4	J030339	Management VI (Management Support Systems)	4	-	4	70	30	-	100
5	J030340	Management VII (e-Business Applications)	4	-	4	70	30	-	100
6	J030341	Software Project	-	4	4	-	60	140	200
7	J030342	Current Societal Concerns	2	-	2	-	50	-	50
	<b>Total</b>		<b>18</b>	<b>8</b>	<b>26</b>	<b>350</b>	<b>260</b>	<b>140</b>	<b>700</b>

# Bharati Vidyapeeth Deemed University

Faculty of Management Studies

## BCA-III (Sem.-VI)

<b>Subject Code</b>	<b>J030336</b>		
<b>Title</b>	<b>Software Project Management</b>		
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>	To provide basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT.		
<b>Learning Outcomes</b>	<ul style="list-style-type: none"><li>• Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities;</li><li>• Identify the resources required for a project and to produce a work plan and resource schedule;</li></ul>		
<b>Pre-requisites</b>			
<b>Text Book(s)</b>	<b>A) “software project management”Bob hughes and Mike cotterell,Third edition, Tata McGraw-Hill</b>  <b>B) “software project management”Bob hughes and Mike cotterell, Second edition, Tata McGraw-Hill</b>		
<b>Syllabus</b>			
<b>Lec. Num</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	Introduction to project management	Project , project management, software project management	A1 – 4 Hand out
2		characteristics of project, how software projects are diff. than other projects	
3		Problems with software projects.	Hand out
4		All parties (stakeholders) involved in project.	A 11 - 12
5		Role of Project Manager.	Hand out

6		Phases of project management life cycle.	A 4 – 6 Hand out
7	Project Management Body Of Knowledge	Project management institute, PMBOK, Role of PMBOK	B 315 – 318 B 320 – 321 Hand out
8		Knowledge area's identified by PMBOK, Various certifications provided by PMBOK with their importance	
9		Association for project management	
10	Project planning	Project planning, importance, various plans to be prepared	A 19 -35
11		Stepwise project planning	
12	Resource planning, scheduling and Resource Allocation	Importance of Project scheduling, project and activities, sequencing and scheduling activities	A 104 -106
13		Importance of resource allocation, nature of resources	A 154 - 156
14		Identifying resource requirement	A 156 - 163
15		Scheduling resources	
16		Work breakdown structure	Hand out
17		Gantt chart	A 177 - 179
18		Network Planning models, formulating network model	A 114 -128
19		Critical path analysis	A 118 - 123
20		PERT	Hand out
21	Cost and effort estimation	Where estimation done, problem with over and under estimation	A 79 - 84
22		Cost to be considered during estimation, factors affecting cost estimation	Hand out
23		Cost estimation methods – non algorithmic	A 85 - 88
24		COCOMO model	A 96 - 101
25		Function point analysis model	Hand out
26	Project risk management	The importance, Top risk in projects	135 -138 Hand out
27		Classic mistakes	Hand out



28		Elements of risk management – Risk identification, risk analysis	Hand out A 138 - 153
29		Elements of risk management – Risk prioritization , risk control	
30	Managing Contract	Types of contract	A 192 -198
31		Stages in contract placement	A 198 -203
32		Typical terms in contract	A 203 - 206
33		Contract management and acceptance	A 206 - 207
34	Managing people and organizing teams	Organizational behavior, understanding behavior	A 209 -212
35		Selecting Right person for right job	A 212 -214
36		motivation	A 214 -217
37		Becoming a team and decision making	A 218 - 221
38		Leadership styles	A 221 -223
39		Organizational structures	A 223 -226
40	Software quality	Place of software quality in planning	A 229 -231
41		Defining software quality and importance of it.	A 231 -234
42		Software quality measures	A 237 -238
43		ISO standards	Hand out
44		CMM standards	Hand out
45		Quality Assurance document	Hand out

### Reference Books:

Basics of Software Project Management, NIIT, Prentice-Hall India, 2004

Software Project Management in Practice, Pankaj Jalote, Pearson Education, 2002

### SOFTWARE REQUIREMENTS

#### Microsoft project 2003

Designed By: Prof. Ramchandra V. Mahadik  
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Contact No. : 9922755450

<b>Subject Code</b>	<b>J030337</b>		
<b>Title</b>	<b>Data Warehousing &amp; Data Mining</b>		
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>	<p>One of the core objectives of computer science is data handling. As we are deluged by data which comes from different areas like medical, demographic, financial, marketing &amp; scientific, there is a need to organize and store this data efficiently with some better architecture. Also through this paper students are expected to enhance their skills to write efficient algorithms for analyzing, classifying and summarizing data as well as they will be acquainted with the application of statistics, visualization, artificial intelligence and machine learning in this field.</p>		
<b>Learning Outcomes</b>	<p>At the completion of this course student should be able to design database architecture for storing huge amount of data and with the help some existing data mining software should analyze this data. It is also expected the appropriate algorithm and technique should be developed to do certain operations like association, classification and clustering for a given data set.</p>		
<b>Pre-requisites</b>	<ul style="list-style-type: none"> <li>• It is assumed that students should have some knowledge of the concepts and terminology associated with database systems as database querying.</li> <li>• Students should have some programming experience. They should be able to read pseudo code and understand simple data structures as multidimensional array.</li> <li>• It will be helpful to have some preliminary background in statistics.</li> </ul>		
<b>Text Book(s)</b>	Data Mining Concepts and Techniques By Jiawei Han & Micheline Kamber		
<b>Syllabus</b>			
<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	<b>Data Warehousing</b>	Definition, Characteristics of data warehouse	Pages 39 - 42
2		Benefits, Need for a separate data warehouse	Pages 42 - 44

3		OLAP and OLTP	Pages 43
4		Multidimensional Data Models: Tables, Spreadsheets and data cubes	Pages 44 - 48
5		Schemas for multidimensional data models	Pages 48 - 51
6		OLAP Operations.	Pages 58 - 61
7		Data Marts & types of data marts	Hand Outs
8		Design of a Data Warehouse,	Pages 62 - 63
9		Process of Data Warehouse design.	Pages 63-65
10		Three tier Data Warehouse Architecture	Pages 65 - 69
11		Types of OLAP Servers: ROLAP, MOLAP, HOLAP Data Warehouse back end tools & utilities	Pages 69 – 71, 84 - 85
12	<b>Data Preprocessing</b>	Need, Objectives and Techniques	Pages 105 - 108
13		Data Cleaning	Pages 109 - 112
14		Data Integration	Pages 112 - 114
15		Data Transformation	Pages 114 - 116
16		Data Reduction	Pages 116 - 130
17		Discretization	Pages 130 - 136
18	<b>Introduction To Data Mining</b>	Definition, Need for Data Mining, KDD Process, Data Mining Architecture	Pages 1 – 2, 5 - 9
19		Evolution of Database Technology	Pages 2 - 4
20		Types of data that can be mined	Pages 10 - 20
21		Data Mining Functionalities	Pages 21 - 26
22		Classification of Data mining Systems	Pages 28 - 30
23		Major issues in Data Mining	Pages 30 - 33
24	<b>Association Rule Mining</b>	Market Basket Analysis, Basic Concepts	Pages 225 - 228
25		Road Map, Classification of Association Rules	Pages 229 - 230

26	<b>Classification &amp; Prediction</b>	What is Classification, What is Prediction	Pages 279 - 282
27		Issues regarding classification & Prediction	Pages 282-283
28		Comparing Classification Methods	Pages 284-295
29		Classification by Decision Tree Induction	Pages 284-295
30		Attribute Selection Measures	
31	<b>Cluster Analysis</b>	Introduction, Need, Major clustering methods	Pages 335-338 346-349
32		Types of Data in Cluster Analysis	Pages 338-346
33		Partitioning Methods: 1. K-Means Method 2. K-Medoids Method	Pages 349-353
34	<b>Data Mining Cases</b>	Data Mining for Financial Data Analysis	Hand Outs
35		Data Mining for Retail Industry	Hand Outs
36		Healthcare Analysis	Hand Outs
37		Examples of commercial Data Mining Systems	Hand Outs
38		Case Study	Hand Outs
39		Case Study	Hand Outs
40	<b>Data Mining &amp; Confidentiality</b>	Privacy, Views	Hand Outs

<b>Subject Code</b>	<b>J030338</b>		
<b>Title</b>	<b>Data Structures</b>		
<b>Weight age for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>	<b>The syllabus covers study of Data structures concepts with implementation in a C language. The Arrays, Stacks, Queues, Linked list &amp; tree, with their applications are taught.</b>		
<b>Learning Outcomes</b>	<b>At the end of this course, student should be able Understand the most basic aspects of data structures including Stacks, Queue, Linked list &amp; tree.</b>		
<b>Pre-requisites</b>	<b>Elementary Algorithm and Introduction to C</b>		
<b>Text Book(s)</b>	<b>Rajni Jindal <i>Data Structures Using C</i>, Umesh Publications,2003</b>		
<b>Syllabus</b>			
<b>Lec. Num</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	Data Structures	Concept, Data types, Data objects,	Pages 12-20
2		Definition of data structure	Pages 12-20
3		Abstract data type (ADT)	Pages 12-13
4		Examples	Handouts
5	Arrays	Concept: Array as a data structure	Pages 14-18
6		Operations on Array	Pages 26-28
7		Applications	Handouts
8	Stack	Definition & Concept	Pages 74-76
9		Operations On Stacks	Pages 77-78
10		Implementation of a Stacks	Pages 78-81
11		Applications -Recursion	Handouts
12		Inter conversion between Infix, Postfix & Prefix Expression	Pages 84-90
13		Inter conversion between Infix, Postfix & Prefix Expression	Pages 91,92
14	Queue	Concept & Definition	Pages 95,96
15		Operations On Queue	Pages 96,97
16		Types of QUEUE	Pages 104-106

17		implementation of Linear Queue	Hand outs Pages 97-102
18		Concept :Circular Queue	Handouts
19		Advantages of Circular Queue	Handouts
20		Queue Applications	Pages 106-110
21	Linked List	Concept ,node ,node structure,	Pages 38-40
22		Dynamic memory allocation	Pages 33-35
23		Implementation,	Pages 53-59
24		Operations	Pages 40-48
25		Types	Pages 59-64
26		Stack using Linked List	Pages 82-84
27		Queue using Linked List	Pages 103-104
28	Trees	Concept	Page 129
29		Terminology	Page 130
30		Representation of binary trees	Pages 131-133
31		Tree traversals	Pages 147-151
32		Node structure of a binary tree	Page 134
33		Creating a binary search tree	Pages 136-142
34		Breadth first search	Handout
35		Depth First Search	Handout
36		Applications of tree	Pages 155-160
37	Sorting	Concept & Application	Pages 220-221
38		Bubble sort	Pages 222-224
39		Insertion sort	Pages 227-228
40		Selection sort	Pages 224-226
41		Quick sort	Pages 231-234

42		Revision & Comparison of all sorting methods	Handout
43	Searching	Concept, Application	Pages 166-167
44		Linear Search	Pages 167-168
45		Binary Search	Pages 171-176

**Reference Book:**

Rajni Jindal

Subject Code	<b>J030339</b>		
Title	<b>Management VI(Management Support Systems)</b>		
Weight age for Examinations	Int: 30 Univ: 70		
Objectives	This module enables students to understand the application of computer-based information systems used in business for the support of management decision-making, e.g. Management Information Systems, Decision Support Systems, Expert Systems, Executive Information Systems, etc.		
Learning Outcomes			
Pre-requisites			
Text Book(s)	References Books: 1. Management Information System -Gordan Devis, Margrethe H. Oison. 2. Information Systems for Modern Management (Ch. 6) -Robert Murdick, Joel e. Ross. 3. Decision Support & Expert System -Efraim Turban 4. MIS - Javadekar 5. Analysis and Design of Information System - V.Rajaraman. 6. Reference book- Information System Control and Audit - Ron Weber.		
Syllabus			
Lec. Num.	Unit Title	Details	Learning Resources
1 - 6	System Concept	1.1 General Model 1.2 Types of systems 1.3 Subsystems 1.4 Organizational structure and functions 1.5 Systems approach to organization 1.6 Dynamics to Decision Making, 1.7 Control by exception 1.8 Feedback control 1.9 Law of requisite variety 1.10 Cases related to Feedback Control	Decision Support & Expert System - Efraim Turban Ch 1
7 - 14	Information Concepts	2.1 Definition 2.2 Types of Information	Decision Support &



		<p>2.3 Quality of information</p> <p>2.4 Value of information,</p> <p>2.5 Information needs of managers at different levels</p> <p>2.6 Cases related to Information</p>	<p>Expert System</p> <p>-Efraim Turban</p> <p>Ch 2</p>
15 - 20	Management Information Systems	<p>3.1 Definitions</p> <p>3.2 Integrated system</p> <p>3.3 MIS Vs Data processing</p> <p>3.4 MIS and other academic disciplines</p> <p>3.5 Structure of MIS based on management activity and functions</p> <p>3.5 Systems concepts to MIS</p>	<p>Decision Support &amp; Expert System</p> <p>-Efraim Turban</p> <p>Ch 3</p>
21 - 23	Humans As Information Processors	<p>4.1 Newell-Simon model</p> <p>4.2 Limits on Human Information Processing</p> <p>4.3 Characteristics of Human Information Processing performance</p>	<p>Decision Support &amp; Expert System</p> <p>-Efraim Turban</p> <p>Ch 4</p>
24 - 29	Information Systems for Functional Areas	<p>5.1 Information for financial</p> <p>5.2 Marketing</p> <p>5.3 Inventory control</p> <p>5.4 Production function</p> <p>5.5 Personnel function</p> <p>Cases related to information requirement for above functional areas.</p>	<p>Management Information System</p> <p>-Gordan Devis,</p> <p>Margrethe H. Oison</p>
30 - 36	Decision Making Systems and Modeling	<p>.1 Modeling process</p> <p>6.2 Information needed for different phases &amp; decision making</p> <p>6.3 Sensitivity analysis</p> <p>6.4 Static and dynamic models</p> <p>6.5 Simulation</p> <p>6.6 Operations Research Techniques</p> <p>6.7 Heuristic programming</p> <p>6.8 Case studies</p>	<p>Decision Support &amp; Expert System</p> <p>-Efraim Turban</p> <p>Ch 4</p>

37 - 42	Management support systems- Overview	7.1 Decision making phases 7.2 Concept of decision making 7.3 Decision Support Systems 7.4 Differences between MIS and DSS	Decision Support & Expert System -Efraim Turban Ch 8
43 - 46	Executive Information and Support Systems	8.1 Needs 8.2 Characteristics 8.3 Software and Hardware 8.4 Integrated EIS and DSS 8.5 EIS implementation	Decision Support & Expert System -Efraim Turban Ch 10
47 - 50	Expert Systems	9.1 Basic concepts of Expert Systems 9.2 Comparison of conventional & Expert Systems 9.3 Structure of Expert Systems.	Decision Support & Expert System -Efraim Turban Ch 10

<b>Subject Code</b>	<b>J030340</b>		
<b>Title</b>	<b>Management VII (e-Business Applications)</b>		
<b>Weightage for Examinations</b>	<b>Int: 30 Univ: 70</b>		
<b>Objectives</b>			
<b>Learning Outcomes</b>	<b>At the end of this course, student should be able to know about E-commerce, security issues of ecommerce, various payment systems of e-commerce and how to design a good website.</b>		
<b>Pre-requisites</b>			
<b>Text Book(s)</b>	<b>1) E-commerce Concepts, Models, Strategies by C. S. V. Murthy</b>		
<b>Syllabus</b>			
<b>Lec. Num.</b>	<b>Unit Title</b>	<b>Details</b>	<b>Learning Resources</b>
1	<b>Overview of E-Commerce</b>	Brief History of E-commerce, Definitions, Broad Goals of E-commerce,	Handouts
2		Technical Components Functions of E-commerce,	Handouts
3		Scope of E-commerce, prospectus of E-commerce, Segments of E-commerce	Handouts
4		Advantages and Disadvantages of ecommerce	Handouts
5		E-commerce Technical Architecture, E-commerce strategies, E-commerce foundations	Handouts
6		E-commerce goals V/s Business goals, E-commerce V/s Traditional Business,	Handouts
7		B2C ecommerce and B2B ecommerce	Handouts
8		C2C ecommerce , C2B ecommerce, Value Chain in E-commerce.	Handouts
9	<b>E-Commerce and Internet</b>	Electronic Data Interchange, requirements of EDI, Advantages of EDI, Standards of EDI	Handouts
10		Types of EDI. Disadvantages of EDI	Handouts
11		Internet Service Providers, types of ISP,	Handouts

		Choosing an ISP	
12		Cookies, World Wide Web and E-commerce,	Handouts
13		Domain Name, types of Domains	Handouts
14		How to register a domain for your site	
15		Role of Intranet in B2B applications	Handouts
16	<b>E-commerce Security</b>	Security issues, Privacy issues,	Handouts
17		Basic computer security Secure transaction	Handouts
18		Security threats, Risk	Handouts
19		Security tools	
20		Hacking, Viruses, Denial of Service Attacks	Handouts
21		Malicious Code, Intruders, Attacking methods	Handouts
22		Cryptography, Types of Cryptography Symmetric and Asymmetric Cryptography.	Handouts
23		Data Encryption Standard	Handouts
24		Firewall, Types of Firewall, Components of Firewall.	Handouts
25		Digital signature, Digital Certificate	Handouts
26		Secure Electronic Transactions	Handouts
27		Secure Socket Layer	Handouts
28	<b>E-commerce Payment System</b>	Overview of Electronic Payment technology	Handouts
29		limitations of the traditional payment system	Handouts
30		Requirements for E- Payment system	Handouts
31		Electronic or digital cash, Properties of digital cash, how it works.	Handouts
32		electronic checks, properties and how it works	Handouts

33		Online Credit Card payment system	Handouts
34		Smart Card	Handouts
35	<b>E-commerce Applications</b>	Electronic Commerce and Banking	Handouts
36		Electronic commerce and retailing	Handouts
37		Electronic commerce and online publishing	Handouts
38		Online Marketing	Handouts
39		E-advertising	Handouts
40		E-branding	Handouts
41	<b>E-Commerce Website</b>	The system development Life Cycle	Handouts
42		System Analysis –Identify business objective, system functionality and business objectives	Handouts
43		System Design – hardware and software platforms	Handouts
44		Building the system In house V/s Outsourcing	Handouts
45		Hosting the websites, Testing the website	Handouts
45		Implementation and maintenance of the website.	Handouts

### Reference Books:

1. Electronic Commerce A Manager's Guide by Ravi Kalakota and Andrew Whinston,
2. E-Commerce A managerial perspective by P. T. Joseph.
3. Electronic Commerce from Vision to Fulfillment by Elias M. Awad.