

BCA SEMESTER V

COURSE CODE : BCA501 | COURSE TITLE : SOFTWARE TESTING

Total marks : 100 | Total credits : 05 | Total contact hours : 45

Course prerequisites : none

Course objectives : To study the concepts of software engineering with the aim of acquiring skills to develop software applications, following all standardized procedures and techniques

Course contents :

Unit		Topic			Weightage		References
#	Title	#	Content	Learning outcomes	hours	%	
I	Software testing principles	A	Software Testing <ul style="list-style-type: none"> • Need for testing • Psychology of testing • Testing economics • SDLC and Testing • Verification & Validation • Quality Assurance • Quality Control 	To understand the concept of software testing, and software quality maintenance	04	18	
II	Testing strategies and types	A	White box testing techniques <ul style="list-style-type: none"> • Statement coverage • Branch Coverage • Condition coverage • Decision/Condition coverage • Multiple condition coverage • Dataflow coverage • Automated code coverage analysis • Inspections • Walkthroughs • Code Review 	To learn to inspect and detect errors by going through each and every code segment	08	20	
		B	Black box testing techniques <ul style="list-style-type: none"> • Boundary value analysis • Robustness testing • Equivalence partitioning • Syntax testing • Finite state testing • Levels of testing • Unit, Integration and System Testing • Compatibility Testing • Domain Testing • Adhoc Testing • Use of Requirements • Traceability Matrix 				
		C	Integration Testing Waterfall <ul style="list-style-type: none"> • Top-down • Bottom up • Big bang • Sandwich 				
		D	System and Performance Testing <ul style="list-style-type: none"> • Types of system testing • Functional and non-functional testing • Acceptance Testing 				

			<ul style="list-style-type: none"> • Setting entry and exit criteria for phases and typical product release scenarios • Basic factors governing performance testing • Methodology for performance testing • Tools for performance testing 			
			Regression Testing <ul style="list-style-type: none"> • Purpose • Timing • Choice of tests • Smoke tests • Best practices 			
			Internationalization and Localization testing <ul style="list-style-type: none"> • Preliminary concepts • Adhoc testing • Pair testing • Extreme testing • Agile testing • Exploratory testing • Defect seeding 			
			Usability Testing <ul style="list-style-type: none"> • Factors in usability testing • Aesthetics testing • Accessibility testing • Tools for usability testing 			
III	Testing object oriented software		<ul style="list-style-type: none"> • Definitions and Challenge differences from testing non-OO Software • Class testing strategies Class Modality • State-based Testing • Message Sequence Specification 	05	15	
IV	People and organizational issues in testing	A	<ul style="list-style-type: none"> • Common people issues and myths in testing • Providing career paths in testing • Organizational structures for testing teams • Geographically distributed testing teams and success factors 	05	15	
V	Test Management and Automation	A	<ul style="list-style-type: none"> • Test Planning • Test Management • Test Process • Test Reporting • Test Automation • Factors to consider in automation • Challenges in test 	04	10	

			<ul style="list-style-type: none"> automation • Test Metrics • Product Metrics • Process Metrics • Progress Metrics • Use of metrics in ascertaining product release 			
VI	Importance of documentation	A	<ul style="list-style-type: none"> • Need for Software Documentation • Different types of documentation • Understanding task orientation • Analyzing users • Writing user scenarios • User informational needs • Document goals • User work motivations • User analysis checklist • Constructing a task list • Categorization • Writing steps as actions • Task analysis 		04	12
VII	Maintenance	A	<p>The Context of Maintenance</p> <ul style="list-style-type: none"> • Definitions • Economics of Maintenance • Evolution of Software Products • Maintaining Systems Effectively • Categorizing Software products • Deployment Models • Types of maintenance 		10	20
VIII	Software Configuration Management	A	<ul style="list-style-type: none"> • Baseline identification • Accounting • Control • Audit • Source and version control • Change control procedure • Tools used in SCM 		05	06

References :

1. Software Testing – Principles and Practices; Srinivasan Desikan and Gopaldaswamy Ramesh.
2. Integrated Approach to Software Engineering (3e); Pankaj Jalote, Narosa Edition.

BCA SEMESTER V

COURSE CODE : BCA502 COURSE TITLE : WEB TECHNOLOGY

Total marks : 100 Total credits : 05 Total contact hours : 45

Course prerequisites : none

Course objectives : To understand the fundamentals of web designing and acquire skills in developing web applications using latest tools in web technology

Course contents :

Unit		Topic			Weightage		References
#	Title	#	Content	Learning outcomes	hours	%	
I	Introduction to Web Technology	A	History of World wide web	To study the origins and background of world wide web	05	10	
		B	Protocols governing web	To know the protocols of world wide web			
		C	Client/Server paradigm	To study the concept of client/server paradigm			
		D	Tiers <ul style="list-style-type: none"> • Concept of a Tier • Two-tier applications • Three-tier applications 	To study the concept of a tier, the difference between two tier and three tier web applications			
II	Web Servers and Web Browsers	A	Concept of a web server	To understand the role of a webserver, its functions and types of webserver	02	06	
		B	Functions of a webserver				
		C	Concept of a web browser	To understand the types of web browsers, features and types of web browsers			
		D	Features of a web browser				
III	Hypertext Markup Language	A	Introduction <ul style="list-style-type: none"> • Concepts of a markup language • Interpretation of tags 	To study the concept of a markup language	10	20	
		B	Basic tags	To study the various types of HTML tags			
		C	Table tags				
		D	Form tags				
		E	Meta tags				
		F	Framesets				
IV	Cascading Style Sheets	A	Introduction Applying CSS <ul style="list-style-type: none"> • Inline • Internally embedded • Externally linked 	To learn the role of style sheets for webpage formatting	03	10	
		B	Borders	To study the various CSS elements			
		C	Backgrounds				
		D	Text Effects				
		E	Fonts				
V	Client-side Scripting	A	Functions of client-side scripting	To study a client-side scripting language	06	14	
		B	Input/Output Statements				
		C	Decision Statements				
		D	Looping Statements				

		E	Functions			
		F	Form Validation			
VI	Document Object Model	A	Concept of DOM	To understand the document object model, and its applicability in client-side scripting	04	06
		B	DOM Hierarchy			
		C	DOM Objects			
		D	DOM Methods			
		E	Advantages and limitations of DOM			
VII	Server-side Scripting	A	Introduction <ul style="list-style-type: none"> Function of server-side scripting Types of server-side scripting 	To understand the concept of server-side scripting	06	14
		B	Input/Output Statements	To learn a server-side scripting language		
		C	Decision Statements			
			Looping Statements			
			Functions/Subroutines			
			Database Connectivity			
			Report Generation			
VIII	Extensible Markup Language	A	Introduction <ul style="list-style-type: none"> Need for XML Features of XML 	To study XML as a language for data exchange between applications	03	8
		B	XML Namespaces			
		C	XML DTD			
		D	XML Schemas			
		E	XML Sheets			
		F	Types of XML packages			
IX	Web Security	A	Principles of Security	To learn how to apply security to web applications	06	12
		B	Cryptography			
		C	Digital Certificates			
		D	Digital Signatures			
		E	Secure Socket Layer			

References :

1. Internet & World Wide Web - How to Program(2e); Deitel
2. HTML for the World Wide Web with XHTML and CSS; Elizabeth Castro
3. HTML5 24-Hour Trainer; Joseph W. Lowery, Mark Fletcher
4. Beginning HTML, XHTML, CSS, and JavaScript; Jon Duckett

BCA SEMESTER V

COURSE CODE : BCA505 COURSE TITLE : WEB TECHNOLOGY LABORATORY

Total marks : 100 Total credits : 05 Total lab sessions: 15

Course prerequisites : BCA502

Course objectives : To acquire skills in developing web applications using latest tools and technology in web designing

Course contents :

Unit		Topic		Weightage		References
#	Title	#	Content	Learning outcomes	Sessions	%
I	Webservers	A	Installation	To setup up and use a webserver for testing and deploying web applications	01	05
		B	Configuration and setup			
II	Hypertext Markup Language	A	Basic tags	To learn to create simple static webpages using html tags	02	20
		B	Table tags			
		C	Form tags			
		D	Meta tags			
		E	Framesets			
III	Cascading Style Sheets	A	Basic Style sheets	To learn styling using standardized pure CSS	01	05
		B	Classes and identifiers			
IV	Exercise – I	A	Develop a simple website using static pages	To implement all concepts learnt in Unit I,II and III	02	10
V	Client-side Scripting	A	Input/Output Statements	To learn client side scripting using a scripting language	02	15
		B	Decision Statements			
		C	Looping Statements			
		D	Functions			
		E	Form Validation			
VI	Document Object Model	A	DOM Hierarchy	To use DOM concepts for client side scripting	01	10
		B	DOM Identifiers			
		C	DOM methods			
VII	Exercise – II	A	Develop a web based game application	To implement all concepts learnt in Unit I,II,III,IV and V	02	10
VIII	Server-side Scripting	A	Input/Output Statements	To learn server side scripting using database connectivity and report generation	02	15
		B	Decision Statements			
		C	Looping Statements			
		D	Functions/Subroutines			
		E	Database Connectivity			
		F	Report Generation			
IX	Exercise – III	A	Develop a web based online database application	To implement all concepts learnt in Unit I,II,III,IV,V and VI	02	10

BCA SEMESTER VI

COURSE CODE : BCA601 COURSE TITLE : MANAGEMENT INFORMATION SYSTEMS

Total marks : 100 Total credits : 05 Total contact hours : 45

Course prerequisites : none

Course objectives : To develop an in-depth understanding of essential components comprising management information systems implemented through software

Course contents :

Unit		Topic			Weightage		References
#	Title	#	Content	Learning outcomes	hours	%	
I	Introduction to MIS		Definition of MIS	This topic introduces the concept of MIS and explains the definition of MIS.	03	16	
			Distinction between Data and Information	To learn the subtle yet important differences between 'data' and 'information'			
			Information and Management	To explore the vital role 'information' plays in organisational management			
II	Information and Decisions		Types and Sources of Information	To levarious types of organisational information and the sources that are tapped in order to acquire information.	08	15	
			Attributes of Information	To learn how to assess the quality of any information by understanding the attributes/characteristics of information.			
			Types of Decisions (Idealistic vs. Realistic)	To learn the differences between the classical/idealistic and administrative/realistic decisions			
			Models of Decision Making	To expose to important decision making models			
			Tools for Decision Making	To describe various tools used by managers for making decisions in organisations.			
III	Information and Knowledge		Distinction between Information, Knowledge and Wisdom	To explore the process of how information leads to knowledge and how knowledge helps in attaining wisdom of judgement.	06	15	
			Introduction to Knowledge Management	To introduce the concept of knowledge management explaining the			

			importance of capturing, storing and utilizing knowledge in an organisation			
		Types of Knowledge	To learn the classifications of knowledge and different perspectives on knowledge.			
		The Spiral of Knowledge Creation	To describe the process of how knowledge is created and converted from one form to another in order to utilise it for the benefit of the organisation.			
		Tools for Knowledge Conversion	To covers some basic tools like metaphors, analogies and models for converting knowledge from tacit to explicit form.			
IV	Types of Information Systems	Office Automation System (OAS) <ul style="list-style-type: none"> • Features • Advantages and limitations 	To study the concept of office automation systems	12	24	
		Expert System (ES) <ul style="list-style-type: none"> • Features • Advantages and limitations 	To study the concept of an expert system			
		Executive Support System (ESS) <ul style="list-style-type: none"> • Features • Advantages and limitations 	To study the concept, features and benefits of an ESS			
V	Information Systems in Organizations	Overview of Various Information Systems	To give an overview of different information systems like ERP, SCM and CRM systems	10	20	
		ERP Systems	To learn the basics of Enterprise Resource Planning systems, which have become a part and parcel of today's corporate world.			
		SCM Systems	To provide elementary knowledge of Supply Chain Management systems.			
		CRM Systems	To provide introductory information about Customer Relationship Management systems and how they help marketing people.			

VI	Information Systems - Case Studies	Information systems for <ul style="list-style-type: none"> • Accounting • Finance • Production • Manufacturing • Marketing • HRM functions 	To study some real-world information systems	06	10	
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References :

1. Management Information Systems;(10e) Kenneth J Laudon, Jane P. Laudon
2. Management Information Systems; (3e) W. S. Jawadekar
3. MIS; Ralph Stair
4. Introduction to Information System;(12e) James A. O' Brien McGraw Hill
5. Management Information Systems;(1e) S.Sadagopan
6. Management Information Systems; (3e) Effy Oz, Thomson Course Technology
7. Corporate Information Strategy and Management;(7e) Lynda M AppleGate, Robert D Austin et al

BCA SEMESTER VI

COURSE CODE : BCA602 COURSE TITLE : MULTIMEDIA TECHNOLOGY

Total marks : 100 Total credits : 05 Total contact hours : 45

Course prerequisites : BCA201

Course objectives : To learn the design concepts of computer multimedia and its applications

Course contents :

Unit		Topic			Weightage		References
#	Title	#	Content	Learning outcomes	hours	%	
I	Introduction to Multimedia	A	Multimedia <ul style="list-style-type: none"> • Types • Applications 	To study the different aspects of multimedia	06	15	
		B	Multimedia Design Principles	To know the issues and principles in design and use of multimedia			
		C	Multimedia Technologies <ul style="list-style-type: none"> • Image(Graphic) • Sound(Audio) • Motion Picture(Video) 	To learn the different forms of multimedia			
III	Graphic Media	A	Definition	To study the concepts of graphic media	12	25	
		B	Types of graphics <ul style="list-style-type: none"> • Vector Graphics 				
		C	Graphic Formats <ul style="list-style-type: none"> • JPEG • GIF • TIFF • CGM • PNG • BMP 	To study the different file formats of graphic media, with focus on its storage and representation			
		C	Graphic Formats Design Issues <ul style="list-style-type: none"> • File Storage principle • Differences between the different formats • Use of each format 				
		D	Conversion from one format to another	To learn the issues in inter-conversion of graphic formats			
		E	Color modes <ul style="list-style-type: none"> • RGB • CMYK • Grayscale 	To study the different color modes of graphics			
		F	Graphic manipulation effects	To study the different effects used for graphic quality enhancement			
IV	Audio Media	A	Definition	To study the concepts of audio media	10	25	
		B	Audio Formats <ul style="list-style-type: none"> • WAV • MP3 	To study the different file formats of audio media, with focus on its storage			

			<ul style="list-style-type: none"> • WMA • OGG 	and representation			
		C	Common Audio Formats <ul style="list-style-type: none"> • Storage issues • Differences between the different formats • Use of each format 	To study the different application packages to create and edit audio streams			
		D	Audio Streaming	To understand the need and concept of audio streaming			
		E	Audio Effects	To study the different effects used for audio quality enhancement			
V	Video Media	A	Definition	To study the concepts of video media	12	25	
		B	Video Formats <ul style="list-style-type: none"> • AVI • MPEG • MP4 • DIVX • 3GP • VCD • DAT • DVD • SWF 	To study the different file formats of video media, with focus on its storage and representation			
		C	Common Vide Formats <ul style="list-style-type: none"> • Storage issues • Differences between the different formats • Use of each format 				
		D	Video Codecs	To know the concept of video coding and decoding			
		E	Video Effects	To study the different effects used for video enhancement			
VI	Other Media	A	Web culture and Media	To learn the characteristics of the different multimedia used on the web	05	10	
		B	Print Media	To know the newer concepts in print media			

BCA SEMESTER VI

COURSE CODE : BCA605 COURSE TITLE : MULTIMEDIA LABORATORY

Total marks : 100 Total credits : 05 Total lab sessions: 15

Course prerequisites : BCA201

Course objectives : To learn different multimedia formats and use the different media to create applications

Course contents :

Unit		Topic			Weightage		Softwares
#	Title	#	Content	Learning outcomes	Sessions	%	
I	Introduction Multimedia	A	Multimedia	To study the different multimedia components	01	05	Gimp, Audacity, Movie maker
		B	Types of Multimedia				
		C	Applications of Multimedia	To learn the different forms of multimedia as applicable for effective presentation			
II	Components of Multimedia	A	Graphics	To study the major components of multimedia and their integrated effect	01	10	Gimp, Audacity, Movie maker
		B	Audio				
		C	Video				
III	Graphic Media	A	Graphic Formats <ul style="list-style-type: none"> • JPEG • GIF • BMP 	To study the different formats and application packages to create and edit graphics	04	25	Gimp
		B	Graphic Packages				
		C	Animation Techniques	To learn the concepts and techniques of computer animation			
IV	Audio Media	A	Audio Formats <ul style="list-style-type: none"> • Wav • MP3 	To study the different audio file formats	03	25	Audacity
		B	Audio Editing	To study the different application packages to create and edit audio streams			
V	Video Media	A	Video Formats <ul style="list-style-type: none"> • Avi • MPEG • MP4 	To study the different video file formats	04	25	Movie maker
		B	Video Capturing and Editing	To learn the techniques of video capturing and conversion using different software applications			
		C	Video Effects and transitions	To learn to apply different video editing effects			
VI	Web Media	A	Web Multimedia Formats	To learn to use the	02	10	AUDACITY,

				different multimedia components customized for the web			Movie maker, GIMP
		B	Conversion of Formats	To study the transportation of media through the web			