



Structure for B.C.A. – CBCS Programme

Semester-IV (SY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-401	ELECTIVE	Nano-Materials & Nano-Technology	02
BCA-FC-402	FOUNDATION	Business Communication – IV	02
BCA-CC-403	CORE	Advanced Operating System and Linux	03
BCA-CC-404	CORE	Application Development Using Vb.Net	03
BCA-CC-405	CORE	Web Application Development Using PHP	03
BCA-CC-406	CORE	Object Oriented Analysis and Design	03
BCA-CC-407	CORE	Practical (Based on BCA-CC-404 & BCA-CC-405)	12
TOTAL			28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-403, BCA-CC-404, BCA-CC-405, BCA-CC-405



B.C.A.
SEMESTER - IV

BCA-EC-401: Nano-Materials & Nano-Technology

Credit: 02

Total Marks: 100 Marks
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
1	Introduction and preparation Introduction to Nanomaterials, Optical, magnetic and chemical properties of Nanomaterials, Preparation of Nanoparticles: Chemical Approaches: Chemical reduction: sonochemical synthesis, Sol-Gel Synthesis, Self assembly. Physical Approaches, Aerosol, Laser vaporization and vapour deposition, sputtering.	09	20
2	Nanostructured materials Quantum dots, wells & wires, Carbon Nanotubes (CNTs), Single walled carbon nanotubes (SWCNTs), Multiwalled carbon nanotubes (MWNTs), Graphene, Fullerenes. Metal Oxide nanoparticles (NPs), Nanorods, Nanotubes and Nanofibers, Semiconductor quantum dots Polymer NPs.	09	20
3	Characterization Techniques for Nanomaterials-1: Particle size Analyser (Laser scattering), Optical Microscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Scanning Tunnel Microscopy (STM).	09	20
4	Characterization Techniques for Nanomaterials-2: Particle size Analyser (Laser scattering), Optical Microscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Scanning Tunnel Microscopy (STM). X-ray Diffraction (XRD), Auger Emission Spectroscopy, Electron Spectroscopy for Chemical Analysis (ESCA)	09	20
5	Application of Nanomaterials: Application Solar energy conversion and catalysis, Polymer with a special architecture: Liquid crystalline systems, Application in displays and other devices, Advanced organic materials, data storage, Photonics, Chemical and biosensors, Nanomedicine and Nanobiotechnology.	09	20

:: REFERENCE BOOK ::

1. Introduction To Nanotechnology: Understanding The Essentials, By Risal Singh And Shipra Mital Gupta
2. Textbook of Nanoscience And Nanotechnology, Textbook By B.S. Murty, Baldev Raj, James Murday, And P. Shankar



B.C.A.
SEMESTER – IV

FOUNDATION COURSE:

BCA-FC-402: Business Communication – IV

Credit: 02

Total Marks: 100 Marks
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

UNIT	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit- 1	<i>Communication: An Overview.</i> Meaning & Definition of Communication. Nature & Attributes of Communication. Purpose of Communication. Types of Communication. Internal & External Communication. Channels of Communication. Verbal & Non Verbal Communication.	09	14+06
Unit -2	<i>Written Communication.</i> Introduction. Essentials of a Good Business Letter. Basis Considerations while Writing Business Letters. Parts of Business Letter. Styles & Layout of Business Letter.	09	14+06
Unit-3	<i>Corporate Communication.</i> Corporate & Communication. Defining Corporate Communication. Employee Relations & Communication. Crisis & Disaster: Managing & Communicating.	09	14+06
Unit-4	<i>Conflict and Negotiation in Organizations.</i> What is Conflict? Defining Conflict. Origins of Conflict. Guidelines for Effective Conflict Management. Guidelines for Effective Conflict Management. Conflict and Negotiations in Industrial Relations. Guidelines for successful Negotiations Rights & Wrong.	09	14+06
Unit-5	<i>Tenses</i> Introduction of Tenses. Verb Forms. Active & Passive Voice.	09	14+06

Reference Books

- 1 Business Communication. Sathya Swaroop Debasish & Bhagaban Das. PHI Learning Private Limited. New Delhi.
- 2 Business Communication and Organization & Management. Rohini Aggarawal Taxman Publisher. New Delhi.
- 3 Business and Managerial Communication. Sailesh Sengupta. PHI Learning Private Limited. New Delhi.
- 4 A Practical English Grammar. A.J. Thomson & A.V. Martinet. Oxford University Press. New Delhi.



Recommended reading:

1. Business Communication - K. K. Sinha - Galgotia Publishing Company, New Delhi.
2. Media and Communication Management - C. S. Rayudu - Himalaya Publishing House, Bombay.
3. Essentials of Business Communication - Rajendra Pal and J. S. Korlhalli - Sultan Chand & Sons, New Delhi.
4. Business Communication – HomaiPradhan, Bhende D.S., Thakur Vijaya
5. Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.
6. Business Communication - Dr. S.V. Kadvekar, Prin. Dr. C. N. Rawal and Prof. Ravindra Kothavade - Diamond Publications, Pune.
7. Business Correspondence and Report Writing - R. C. Sharma, Krishna Mohan - Tata McGraw-Hill Publishing Company Limited, New Delhi.
8. Business Communication and Organisational Management – RohiniAggrawal – Taxman
9. Business Communication Strategies – MonipallyMathukutty M.- Tata McGraw –Hill Publishing Company Limited, New Delhi.
10. Handbook of Communication – Narula Uma
11. A Handbook of Commercial Correspondence – A. Ashley – Oxford University Press
12. Business Communication and Organisational Management – C.B.Gupta
13. Comprehensive Business Communication – SarojKarnik, P.P.Mehta,- P.V.Kulkarni



B.C.A.	Course: Advanced Operating System and Linux	Course No: BCA-CC-403	
Semester: 04	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	File Management	9	14
	<ul style="list-style-type: none">– File format, Characteristics of file, File operations, File system structure,– File access methods: Sequential , direct and Index sequential.		
Unit-2	Directory Management	9	14
	<ul style="list-style-type: none">– Directory structure: single level, two level, tree level ,– Directory operations, directory implementation: Linear list, Hash table– Disk Space Allocation Method : Continuous, Linked, Index, Free Space Management.		
Unit-3	I/O Management	9	14
	<ul style="list-style-type: none">– Typical PC Bus structure, Pooling and Interrupts, DMA Controller , Kernel I/O Subsystem: I/O Scheduling, Buffering, Caching, Spooling, Error Handling.– Mass Storage Structure and Disk scheduling algorithm (FIFO, SSTF, SCAN, C- SCAN.)		
Unit-4	Introduction to Unix and Linux Operating System (Open Source)	9	14
	<ul style="list-style-type: none">– History of Unix Operating System Definition of Kernel, Shell, File, Process,– System Calls., Linux Operating System, Features of Unix and Linux Operating System, Application area of Linux Operating System , Various Linux Flavors, Desktop Environment : (a) X Window Basics (b) KDE Basics (c) GNOME Basics, Advantages and Disadvantages of Linux		
Unit-5	File Structure and Linux Shells.	9	14
	<ul style="list-style-type: none">– Understanding File system hierarchy standard, Directory Commands, File and Directory commands, Understanding Job (process).– Process Commands, User commands: Misc Commands, Keyboard commands using ctrl key.		
Reference Books			
<ol style="list-style-type: none">1. Silberschatz, Galvin and Gange: Operating System Concepts, Wesley.2. Tanenbaum A.S., "Modern Operating Systems", 4th Edition, PHI, 20013. Stallings W, "Operating Systems", 6th edition, Prentice Hall India.4. Sumitabha Das: Concepts and Application of UNIX 4th edition Tata McGraw Hill5. Yashwant Kanitkar: Unix Shell Programing, BPB Publication			



B.C.A.	Course: Application Development Using VB.NET	Course No: BCA-CC-404	
Semester: 04	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction	09	14
	<ul style="list-style-type: none">- .Net Framework, Common Language Runtime- Feature & Advantages of CLR.- JIT & It's Types : Pre-JIT, Econo-JIT, Normal-JIT- Introduction to Integrated Development Environment (IDE)- Programming Construct – Variable, Datatype, Type Casting, control structure, looping statement, array, function & procedure, Exception Handling.		
Unit-2	Basic Controls	09	14
	<ul style="list-style-type: none">- Introduction of form.- Label, Textbox, Button.- Link Label, Combo box, List box, Checkbox, Radio button, Scrollbar.- Timer Control, Group box, Panel- Event Handling, Method & Property of controls.		
Unit-3	Advance Control	09	14
	<ul style="list-style-type: none">- MDI & SDI form, Main Menu Strip & Context Menu.- Rich text box, Picture box, Date time Picker.- Track bar, Notify Icon, Progress Bar, Tool tip- Built In Dialog box (Open File Dialog, Save File Dialog, Color Dialog, Font Dialog, Folder Browser Dialog)		
Unit-4	Database Connectivity	09	14
	<ul style="list-style-type: none">- ADO.Net Architecture.- Create database using MS Access and accessing database using server explorer.- Database connectivity using programming code.- Database binding with Data Grid View & combo box.- Crystal Report.		
Unit-5	Object Oriented Programming	09	14
	<ul style="list-style-type: none">- Class, Object & it's characteristics- Inheritance, Polymorphism.- Function Overloading- Properties: Read Only Properties, Write Only Properties.- Constructor & Destructor.- Small application development.		
Reference Books			
1. Steven Holzner: Visual Basic .NET Programming Black Book DeramTech Press.			
2. Rod Stephens: Visual Basic 2005 Programmer's			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY

NAAC Accreditation Grade "B"
(With effect from Academic Year: 2017-18)

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction	09	14
	<ul style="list-style-type: none">– Fundamental of webpage, website and apache server– Static and Dyanamic Website– Introduction of PHP-Features, Advantages and Limitations– Data Type, Variable, Constant– Operator in PHP		
Unit-2	Basic of PHP	09	14
	<ul style="list-style-type: none">– Conditional Statement– Looping Statement– Array- Types of Array(Numeric, Associative, Multi-dimensional)– PHP Server variables– Built-in-functions:<ul style="list-style-type: none">o String (print(), echo(), chr(), trim(), ltrim(), rtrim(), soundex(), str_word_count(), strcmp(), strcmpi(), strstr(), strlen(), strpos(), strrchr(), substr(), strtolower(), ucfirst(), ucwords(), substr_replace())o Mathematical (abs(), sqrt(), log(), floor(), ceil(), pow(), max(), min())o Date/Time (Date(), time(), getdate(), gettimeofday(), localtime(), checkdate())		
Unit-3	Working with form	09	14
	<ul style="list-style-type: none">– Form elements- TextBox, TextArea, Password, RadioButton, Check Box, Combo Box, Image– Buttons – Submit and Reset– Uploading File to webserver– POST & GET method– PHP include and require statement		
Unit-4	Cookie, Session and Error Handling	09	14
	<ul style="list-style-type: none">– Basic of Cookie-Setting Cookies, Accessing Cookies, Deleting Cookies.– Basic of Session- Starting a Session, Destroying a session.– Error Handling- Try, Catch and Throw block, die() function– Page redirection in PHP		
Unit-5	Database Connectivity	09	14
	<ul style="list-style-type: none">– PHP-MySQL architecture– Database interaction –Creating and connecting database– Executing commands- Selecting, Inserting, Updating, Deleting– Small application development		

Reference Books

1. Ivan Bayross,Sharanam Shah:PHP 5.1 For Beginners,Sh off Publishers & Distributors(SPD)
2. Janet Valade: PHP5 & MYSQL Projects,Wiley Dreamtech
3. Dave W. Mercer: Beginning PHP5,Wiley India Edition
4. Steven Holzer:The Complete Reference PHP,Tata McGRAW-HiLL,New Delhi.



B.C.A.	Course: Object Oriented Analysis and Design	Course No: BCA-CC-406	
Semester: 04	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	SYSTEM DESIGN	9	14
	<ul style="list-style-type: none">- Introduction to database?- System development in database environment- Design of database – Normalization- Principles of Software Design		
Unit-2	SYSTEM TESTING & IMPLEMENTATION	9	14
	<ul style="list-style-type: none">- System Testing- Testing Strategies- Types of system testing- Level of Testing- System conversion methods – parallel, direct cut over, pilot & phase-in method.		
Unit-3	OBJECT ORIENTED MODEL	9	14
	<ul style="list-style-type: none">- What is object oriented model?- Characteristics of OOM – class & object, Link & association, Generalization & Inheritance.- Benefits of OOM- Introduction to OOA & Advantages & Disadvantages of OOA		
Unit-4	OBJECT ORIENTED ANALYSIS & DESIGN	9	14
	<ul style="list-style-type: none">- Analysis Techniques – Object Modeling, Dynamic Modeling & Functional Modeling.- Object design process, steps & solution- Defining classes & its implementation, inheritance, association & object representation.- Breaking system into sub system & managing data store.		
Unit-5	MODELING & IMPLEMENTATION STRATEGIES	9	14
	<ul style="list-style-type: none">- Object modeling – identifying object classes, user object model , object modeling notations.- Dynamic modeling – state diagram- Functional modeling – steps of constructing function model, DFD- Structural Diagram – what is structural diagram & class Diagram.- Implementation strategies		
Reference Books			
<ol style="list-style-type: none">1. James A Senn: Analysis and Design of Information Systems, McGraw Hill Intl. Std. Edn2. Yourdon E. and Constantine L. L : Structured Analysis & Design Yourdon press NY3. Object Oriented Analysis and Design by James Rumbaugh, Michael Blaha, William Premerlain, Frederick Eddy, William Lorensen			



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NAAC Accreditation Grade "B"
(With effect from Academic Year: 2017-18)

B.C.A.	Course: Practical	Course No: BCA-CC-407
Semester: 04	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	Practical Sessions per Week: 12	Teaching Hours: 180 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Practical Based on 404	90	50
Unit-2	Practical Based on 405	90	50