St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Deemed to be University U/S 3 of the UGC Act,1956)
Avadi, Chennai – 600 054.

B.C.A. DEGREE PROGRAMME

(I to VI SEMESTERS)

REGULATIONS AND SYLLABI

REGULATIONS – 2016

(Effective from the Academic Year 2016-'17)

B.C.A. DEGREE PROGRAMME

Regulations – 2016

(Effective from the Academic Year 2016-'2017)

1. **Eligibility:**

   (i)   Candidates who passed Higher secondary Examinations conducted by the Government of Tamil Nadu or an Examinations accepted by the Institute as equivalent thereto are eligible for admission to three year B.C.A. Degree Programme.

   (ii)   Candidates with Diploma (3 years) in Computer Science and Engineering or Electrical and Electronics Engineering or Electronic and Communication Engineering awarded by Director of Technical Education, Government of Tamil Nadu or any other Diploma as equivalent thereto, shall be admitted to the Second year of the B.C.A Degree Course.

2. **Duration:**

   Three years comprising 6 Semesters. Each semester has a minimum of 90 working days with a minimum of 5 hours a day.

3. **Medium:**

   English is the medium of instruction and examinations except for the language subjects.

4. **Eligibility for the Award of Degree:**

   A candidate shall be eligible for the award of degree only if he/she has undergone the prescribed course of study in the University for a period of not less than three academic years (6 semesters), passed the examinations of all the six semesters prescribed carrying 138 credits and also fulfilled such conditions as have been prescribed thereof.

5. **Choice Based Credit System:**

   Choice Based Credit System is followed with one credit equivalent to one hour for theory paper and two hours for a practical work per week in a cycle of 18 weeks (that is, one credit is equal to 18 hours for each theory paper and one credit is equal to 36 hours for a practical work in a semester in the Time Table. The total credit for the B.C.A. Degree Programme (6 semesters) is 138 credits.

6. **Weightage for a Continuous and End Assessment**:

   The weightage for Continuous Assessment (CA) and End Assessment (EA) is 25:75 unless the ratio is specifically mentioned in the Scheme of Examinations. The question paper is set for a minimum of 100 marks.

7. **Course of Study and Scheme of Examinations:**

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
116UTMT01 / UTET01 / UHIT01/116UFRT01	**Part I:** Language -I (Tamil -I / Telugu -I / Hindi –I / French -I)		3	25	75	100
116UEHT02	**Part II:** English –I		3	25	75	100
116UCAT03	**Part III: Core Subject:**	Fundamentals of Digital Computers	4	25	75	100
116UCAP01		**Practical – I**: PC Software Lab	4	40	60	100
116UCAT04	**Allied Paper –I:** Mathematics - I		5	25	75	100
116UCAT05	**Non Major Elective :**		2	25	75	100
116UCCT01	Soft Skills (Common to all UG Branches)		2	50	50	100
		Total	**23**	**215**	**485**	**700**

NON MAJOR ELECTIVE:
1. MS ACCESS
2. Web Applications
3. FLASH
4. HTML

II Semester

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
216UTMT01 / UTET01 / UHIT01 / 216UFRT01	**Part I :** Language -II (Tamil -II / Telugu -II / Hindi –II / French -II)		3	25	75	100
216UEHT02	**Part II :** English –II		3	25	75	100
216UCAT03	**Part III : Core Subject:**	Programming in C	4	25	75	100
216UCAP01		**Practical – II:** Programming in C Lab	4	40	60	100
216UCAT04	**Allied Paper –II:** Mathematics II		5	25	75	100
216UCAP02	**Non Major Elective :**		2	40	60	100
216UCCT02	Soft Skills (Common to all UG Branches)		2	50	50	100
		Total	**23**	**230**	**470**	**700**

NON MAJOR ELECTIVE:
1. MS ACCESS Lab
2. Web Applications Lab
3. FLASH Lab
4. HTML Lab

III Semester

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
316UCAT01	**Core Subject:**	Programming in C++ and Data Structures	4	25	75	100
316UCAT02		Microprocessors and its Applications	4	25	75	100
316UCAT03		Numerical and Statistical Methods	4	25	75	100
316UCAP01		**Practical – III:** Programming in C++ using Data structures	3	40	60	100
316UCAT04	**Allied Paper – III :** Financial Accounting		4	25	75	100
316UCCT03	Soft Skills (Common to all UG Branches)		2	50	50	100
		Total	**21**	**190**	**410**	**600**

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
416UCAT01	**Core Subject:**	Programming in Java	4	25	75	100
416UCAT02		Operating Systems	4	25	75	100
416UCAT03		Computer Graphics	4	25	75	100
416UCAP01		**Practical – IV:** Java Programming Lab	4	40	60	100
416UCAT04	**Allied Paper – IV :** Cost and Management Accounting		4	25	75	100
416UEST01	**PART IV:** Environmental Studies (Common to all UG Branches)		2	25	75	100
416UCCT04	Soft Skills (Common to all UG Branches)		2	50	50	100
		Total	**24**	**215**	**485**	**700**

V Semester

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
516UCAT01	**Core Subject:**	Database Management System	4	25	75	100
516UCAT02		Software Engineering	4	25	75	100
516UCAT03		Resource Management Techniques	4	25	75	100
516UCAP01		**Practical – V:** RDBMS Lab	4	40	60	100
	Elective – I :		4	25	75	100
516UVET01	Value Education (Common to all UG Branches)		2	25	75	100
		Total	**22**	**165**	**435**	**600**

VI Semester

Code No.	Course Title		Credit	Marks		
				CA	EA	Total
616UCAT01	**Core Sub:**	Web Technology	4	25	75	100
616UCAT02		Data Communication and Networking	4	25	75	100
616UCAT03		Software Testing	4	25	75	100
616UCAP01		**Practical – VI:** Web Applications Lab	4	40	60	100
	Elective – II :		4	25	75	100
	Elective – III :		4	25	75	100
616UEAT01	Extension Activities (Common to all UG Branches)		1	-	-	-
		Total	**25**	**165**	**435**	**600**

List of Electives

Elective –I (Semester V)		Credits
516UCAT04	Visual Programming	4
516UCAT05	RDBMS with ORACLE	4
516UCAT06	Unix Programming	4
Elective - II & III (Semester VI)		
616UCAT04	Data Mining	4
616UCST05	E-Commerce	4
616UCST06	Object Oriented Analysis and Design	4
616UCST07	Multimedia Systems	4
616UCST08	Client Server Computing	4
616UCST09	Distributed Computing	4

8. **Passing Requirements:** The minimum pass mark (raw score) be 40% in End Assessment (EA) and 40% in Continuous Assessment (CA) and End Assessment (EA) put together. No minimum mark (raw score) in Continuous Assessment (CA) is prescribed unless it is specifically mentioned in the Scheme of Examinations.

9. **CLASSIFICATION OF SUCCESSFUL CANDIDATES:**
   PART – I TAMIL/OTHER LANGUAGES:
   TAMIL/OTHER LANGUAGES OTIIER THAN ENGLISH: Successful candidates passing the examinations for the Language and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND Class respectively. All other successful candidates shall be declared to have passed the examination in the THIRD Class.
   PART – II ENGLISH:
   ENGLISH: Successful candidates passing the examinations for English and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST arid SECOND Class respectively. All other successful candidates shall be declared to have passed the examination in the THIRD Class.
   PART - III CORE SUBJECTS, ALLIED SUBJECTS, AND PROJECT/ELECTIVES :
   Successful candidates passing the examinations for Part-III Courses together and securing the marks (i),60 percent and above (ii) 50 percent and above but below 60 percent in the aggregate of the marks prescribed for the Part-III Courses together shall be declared to have passed the examination in the FIRST and SECOND Class respectively. All other successful candidates shall be declared to have passed the examinations in the THIRD Class. .
   PART-IV: Passing requirement as given in para 8 is applicable for Environmental studies (EVS) and Value Education but there is no classification of successful candidates. Extension Activity is rated as satisfactory by the Head of the Department as requirement for the award of degree.

10. **Grading System:** Grading System on a 10 Point Scale is followed with 1 mark = 0.1 Grade point to successful candidates as given below.

CONVERSION TABLE
(1 mark = 0.1 Grade Point on a 10 Point Scale)

Range of Marks	Grade Point	Letter Grade	Classification
90 to 100	9.0 to 10.0	O	First Class
80 to 89	8.0 to 8.9	A	First Class
70 to 79	7.0 to 7.9	B	First Class
60 to 69	6.0 to 6.9	C	First Class
50 to 59	5.0 to 5.9	D	Second Class
40 to 49	4.0 to 4.9	E	Third Class
0 to 39	0 to 3.9	**F**	**Reappearance**

Procedure for Calculation

Cumulative Grade Point Average (CGPA) $=$ $\dfrac{\text{Sum of Weighted Grade Points}}{\text{Total Credits}}$

$$= \frac{\sum (CA+EA)\ C}{\sum C}$$

Where Weighted Grade Points in each Course $=$ Grade Points (CA+EA) multiplied by Credits

$$= (CA+EA)C$$

Weighted Cumulative Percentage of Marks(WCPM) $=$ CGPAx10

C- Credit, CA-Continuous Assessment, EA- End Assessment

11. **Effective Period of Operation for the Arrear Candidates :** Two Year grace period is provided for the candidates to complete the arrear examination, if any.

12. **National Academic Depository (NAD):** All the academic awards (Grade Sheets**,** Consolidated Grade Sheet, Provisional Certificate, Degree Certificate (Diploma) and Transfer Certificate) are lodged in a digital format in National Academic Depository organized by Ministry of Human Resource Development (MHRD) and University Grants Commission (UGC). NAD is a 24x7 online mode for making available academic awards and helps in validating its authenticity, safe storage and easy retrieval.

Registrar

13. **Syllabus**

116UCAT03 - FUNDAMENTALS OF DIGITAL COMPUTERS

Objective:
>   To introduce the basic concepts of computers and fundamentals of Digital Principles

Unit 1: Fundamentals of computers – Characteristics of computers – Computer Language – Operating Systems – Generation of Computers.

Unit-2: Number systems - Conversion from one number system to another - compliments- Binary codes - Binary logic - Logic gates - Truth tables.

Unit 3: Boolean Algebra - Axioms - Truth table simplification of Boolean function - map method (upto 5 Variables) - Mc-Clausky tabulation method

Unit-4: Sequential logic – RS, JK, D and T Flip flops - Registers –Shift Registers - Counters – Ripple Counters – Synchronous Counter – Design of Counters

Unit-5 : Adders – Subtractors – Decoders – Encoders – Multiplexer - Demultiplexer – Design of Circuits using decoders/Multiplexers – ROM – PLA – Designing circuits using ROM/PLA

Recommended Texts
   1. M.M. Mano, Digital Logic and Computer Design, Pearson Education.
   2. V.Rajaraman,2002, Fundamentals of Computers, Third Edition,PHI, New Delhi.

Reference Books
   1. T.C.Bartee,1991, Computer Architecture and logical Design, McGraw Hill.

116UCAP01   -   PRACTICAL – I: PC SOFTWARE LAB

Objective : To give training on the experiments of Digital Electronics

1. **Study of logic gates**
   a. Logic gates using discrete components
   b. Verification of truth table for AND, OR, NOT, NAND, NOR and EXOR gates
   c. Realisation of NOT, AND , OR, EX-OR gates with only NAND gates
   d. Realisation of NOT, AND , OR, EX-OR gates with only NOR GATES

2. **Implementation of logic circuits**
   a. Verification of associative law for AND, OR GATES
   b. Karnaugh's map reduction and logic circuit implementation

3. **Adder and subtractor**
   a. Verification of Demorgan's law
   b. Implementation of Half-adder and Half –subtractor
   c. Implementation of Full-adder and full-subtractor
   d. Four bit binary adder
   e. Four bits binary subtractor using 1s and 2s complement

4. **Shift registers**
   a. Implementation of shift register, serial transfer
   b. Ring counter
   c. 4 – bit binary counter
   d. BCD Counter
   e. Counters for arbitrary sequence

116UCAT04
Semester I - Allied Paper –I - Mathematics -I
(Effective from the Academic Year 2015-16)

ALLIED MATHEMATICS PAPERS FOR OHER BRANCHES OF B.Sc. DEGREE COURSES
(For B. Sc Physics, Physics with Computer Application, Chemistry, Bio-Chemistry, Electronic Science, Geophysics and Computer Science, Bachelor of Computer Application (BCA) Major only)

UNIT – I ALGEBRA and NUMERICAL METHODS:
Algebra: Summation of series - simple problems.
Numerical Methods: Operators E, Δ, ∇, difference tables; Newton-Raphson method; Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula.
Chapter 2, Section 2.1.3, 2.2, 2.2.1, 2.3, 2.3.3
Chapter 3, Section 3.4.1 and Chapter 5, Section 5.1 and 5.2.

UNIT- II MATRICES:
Symmetric,   Skew-Symmetric, Orthogonal, Hermetian, Skew-Hermetian and Unitary matrices. Eigen values and Eigen-vectors, Cayley-Hamilton theorem (without proof) – verification- Computation of inverse of matrix using Cayley - Hamilton theorem.
Chapter 4, Section 4.1.1 to 4.1.6, 4.5, 4.5.2, 4.5.3.

UNIT- III   THEORY OF EQUATIONS:
Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equation.Newton's method to find a root approximately - simple problems.
Chapter 3, Section 3.1 to 3.4.1

UNIT IV   TRIGONOMETRY:
Expansions of $\sin(n\theta)$ and $\cos(n\theta)$ in a series of powers of $\sin\theta$ and $\cos\theta$ - Expansions of $\sin^n\theta$, $\cos^n\theta$, $\tan^n\theta$ in a series of sines, cosines and tangents of multiples of "θ" - Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of "θ" – Hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers.
Chapter 6, Section 6.1 to 6.5

UNIT V DIFFERENTIAL CALCULUS:
Successive differentiation, n^{th} derivatives, Leibnitz theorem (without proof) and applications, Jacobians, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables, Lagrange's multipliers - Simple problems
Chapter 1, Section 1.1 to 1.3.2 and 1.4.3

Content and treatment as in
Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

Book for Reference:
1. S. Narayanan and T.K. ManickavasagamPillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu.

116UCST05

1. MS ACCESS

UNIT- I : Introduction to database - What is a Database , Why use a Relational Database, Overview of database design – Data Normalization(Determining tables, Determining Fields, Determining Relationships)Integrity Rules (Primary/Foreign Key, One-to-Many, Many-to-Many, One-to-One) Introduction to MS Access .

UNIT- II : Create a Table in MS Access - Data Types, Field Properties , Fields:names, types, properties--default values, format, caption, validation rules Data Entry Add record delete recode and edit text Sort, find/replace, filter/select, re-arrange columns, freeze columns . Edit a Tables- copy, delete, import, modify table structure find replace.

UNIT – III : Setting up Relationships- Define relationships, add a relationship, set a rule for Referential Integrity, change the join type, delete a relationship, save relationship Queries & Filter – difference between queries and filter , filter using multiple fields AND,OR , advance filter Queries create Query with one table , fiend record with select query, find duplicate record with query , find unmatched record with query, run query ,save and change query.

UNIT – IV : Introduction to Forms Types of Basic Forms: Columnar, Tabular, Datasheet, Main/Subforms, add headers and footers, add fields to form, add text to form use label option button, check box ,combo box, list box Forms Wizard, Create Template.

UNIT – V : Introduction to Reports , Types of Basic Reports: Single Column,Tabular Report Groups/Total, single table report multi table report preview report print report, Creating Reports and Labels, Wizard

Reference Books
1. A first course in Computers , Sanjay Saxena, Vikas Publishing house Pvt Ltd.,New Delhi
2. Ms Office XP complete BPB Publications
3. Ms Access 2002 fast and easy by Faithe Wempen PHI

2. WEB APPLICATION

Unit – I
Basics of Adobe Photoshop – Getting started with Photoshop – title bar – Menu bar - option bar – tool box – screen modes.

Unit – II
Introduction to digital Image editing , Create your own painted images – Edited scanned images – import rendered visuals – Working with images and colors

Unit – III
Using tools and palettes – selection tools, Painting and editing tools – menu commands – creating type – change the type settings – styles

Unit – IV
Methods and Techniques of Adobe photoshop - Layers – working with layers – merging layers –linking layers –transforming layers and layer effects- filters

Unit – V
Getting started with Dreamweaver – creating web applications with Dreamweaver.

Books for Reference :
1. Photoshop – The Complete reference – Greenberg – TMH Dream Weaver – Complete reference

3. FLASH

Unit – I
Introduction to Flash – simple drawing techniques – adding some easy animations – learning the tools - buttons

Unit – II
Controlling drawing object – creating symbols – instances- making use of Library – painting – motion guide path.

Unit – III
Flash tweening – suing masking techniques – layers and frames.

Unit – IV
Overview of animation -Animating your production – sound – video - publish flash movies – importing.

Unit – V
 Introduction to scripting - Action script applications

Books for Reference :
   1. Mr. K. K. Thyagharajan, A.P., **.** B. **Anbumani**, K.K, "**Flash** 2004" **.**4 Robert Reinhardt, Flash 5 Bible

4. HTML

UNIT - I
Introduction :Web Basics: What is Internet – Web browsers – What is Web page – HTML Basics: Understanding tags.

UNIT- II
Tags for Document structure(HTML, Head, Body Tag). Block level text elements: Headings paragraph(<p> tag) – Font style elements: (bold, italic, font, small, strong, strike, big tags)

UNIT - III
Lists: Types of lists: Ordered, Unordered – Nesting Lists – Other tags: Marquee, HR, BR-Using Images – Creating Hyperlinks.

UNIT - IV
Tables: Creating basic Table, Table elements, Caption – Table and cell alignment – Rowspan, Colspan – Cell padding.

UNIT - V
Frames: Frameset – Targeted Links – No frame – Forms : Input, Textarea, Select, Option.

Recommended Texts
1. HTML Complete Reference, Teach Yourself Web Publishing with HTML –   Laura Lemay.

Reference Books
1. (HTML – E Stephen Mack, Janan Platt.

116UCCT01 - SOFT SKILLS (COMMON TO ALL UG BRANCHES)

Semester-I-. Essentials of Language and Communication – Level I

Unit I
Recap of Language Skills – Speech, Grammar, Vocabulary, Phrase, clause, sentence, Punctuation.

Unit II
Fluency building
What is fluency – Why is fluency important – Types of fluency – Oral fluency – Reading fluency – Writing fluency – Barriers of fluency – How to develop fluency.

Unit III
Principles of communication: LSRW in communication.
What is meant by LSRW Skills – Why it is important – How it is useful – How to develop the skills?
Oral – Speaking words, articulation, speaking clearly.
Written communication – Generating ideas/ gathering data organizing ideas, Setting goals, Note taking, Outlining, Drafting, Revising, Editing and Proof reading.
Non verbal communication – Body language, Signs and symbols, Territory/Zone, Object language.

Recommended Texts:
1. Hewing, Martin. 1999. Advanced English Grammar: A Self-study Reference and practice   Book   for South Asian Students. Reprint 2003. Cambridge University Press. New Delhi.
2. Lewis, Norman. 1991. Word Power Made Easy. Pocket Books.
3. Hall and Shepherd. The Anti-Grammar Book: Discovery Activities for Grammar Teaching   Longman.
4. Powell. In Company. MacMillan.
5. Cotton, et al. Market Lader. Longman.

II Semester

216UCAT03 - Programming in C

Unit 1
C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

Unit-2
Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while , for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

Unit 3
Functions –Definition - proto-types - Passing arguments - Recursions. Storage Classes - Automatic, External, Static, Register Variables – Multi-file programs.

Unit-4
Arrays - Defining and Processing - Passing arrays to functions – Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures – Unions - Bit wise operations.

Unit-5
Pinters - Declarations - Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files : Creating , Processing ,Opening and Closing a data file.

Text Books
1. E.Balaguruswamy, 1995,Programming in ANSI C, TMH Publishing Company Ltd.

Reference Books
1. i.B.W. Kernighan and D.M.Ritchie, 1988,The C Programming Language, 2nd Edition, PHI.
2. ii.H. Schildt, C,2004, The Complete Reference, 4th Edition, TMH
3. iii. Gottfried,B.S, 1996,Programming with C, Second Edition, TMH Pub.Co.Ltd., New Delhi .
4. iv. Kanetkar Y., 1999,Let us C, BPB Pub., New Delhi.

216UCAP01 - Practical – I Programming in C

I Summation of Series :
1. Sin(x), 2. Cos(x),   3. Exp(x) (Comparison with built in functions)
II   String Manipulation :
1.   Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines
2.   Reverse a string & check for palindrome.
3.   Substring detection, count and removal
4.   Finding and replacing substrings
III   Recursion :
1. ^nP_r, ^nC_r
2.   GCD of two numbers
3.   Fibonacci sequence
4.   Maximum & Minimum
5.   Towers of Hanoi.
IV   Matrix Manipulation :
1.Addition & Subtraction
2.Multiplication
3.Transpose, and trace of a matrix
4.Determinant of a Matrix
V   Sorting and Searching :
1.   Insertion Sort
2.   Bubble Sort
3.   Linear Search
Binary Search

216UCAT04

Semester II - Allied Paper – II - Mathematics -II

Unit-I   INTEGRAL CALCULUS:

Bernoulli's formula.   Reduction formulae - $\int_o^{\frac{\pi}{2}} sin^n x dx$, $\int_o^{\frac{\pi}{2}} cos^n x dx$, $\int_o^{\frac{\pi}{2}} sin^m x cos^n x dx$ (m, n being positive integers), Fourier series for functions in (α, $\alpha+2\pi$), Half range sine and cosine series.
Chapter 2, Section 2.7 and 2.9
Chapter 4, Section 4.1 to 4.2

Unit-II   DIFFERENTIAL EQUATIONS

Ordinary Differential Equations: second order non- homogeneous differential equations with constant coefficients of the form ay″ +by'+ cy = X where X is of the form $e^{\alpha x} cos\beta x$ and $e^{\alpha x} sin\beta x$
Partial Differential Equations: Formation, complete integrals and general integrals, four standard types and solving lagrange's linear equation P p +Q q= R
Chapter 5, Section 5.2
Chapter 6, Section 6.1 to 6.4

Unit-III   LAPLACE TRANSFORMS:

Laplace transformations of standard functions and simple properties, inverse Laplace transforms, Application to solution of linear differential equations up to 2nd order- simple problems.
Chapter 7, Section 7.1.1 to 7.1.4 and 7.2 to 7.3

Unit – IV   VECTOR DIFFERENTIATION

 Introduction, Scalar point functions, Vector point functions, Vector differential operator∇, Gradient, Divergence, Curl, Solenoidal, irrotational, identities.
Chapter 8, Section 8.1 to 8.4.4

Unit – V   VECTOR INTEGRATION

Line, surface and volume integrals, Gauss, Stoke's and Green's theorems (without proofs). Simple problems on these.
Chapter 8, Section 8.5 to 8.6.3
Content and treatment as in
Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

Book for Reference:
1.   S. Narayanan and T.K. ManickavasagamPillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2.   Allied Mathematics by Dr. A. Singaravelu.

NON MAJOR ELECTIVE

216UCSP05

1. MS ACCESS LAB

1. Pay Bill
2. Electricity Bill
3. Mark list preparation of a student
4. Inventory report preparation
5. Invoice report preparation
   Income tax preparation

2. WEB APPLICATION LAB

1. 1.Working with the clone stamp tool
2. 2.Drawing Watch using custom shapes
3. 3.Testing lab mode
4. 4.Using multichannel mode
5. 5.Using the sponge Tool
6. Antique framing
7. Creating a supernova
8. Adding an arrowhead.
9. Isolating a Complex Image
10. 10.Removing an element from an image
11. Captain kirk myopia effect
12. Adjusting the focus
13. 13.Creating an edge mask
14. Applying Transformations
15. Correcting brightness and contrast.

3. FLASH LAB

1. 1.Drawing a Semi Circle by snap tool, a sine wave , 24 spokes on a wheel, five pointed star using , a flower by changing the center coordinates
2. 2.Placing a text along a curved path.
3. Changing on objects shape using shape tweening , text tweening,
4. Application using buttons, animating the button
5. Tweening a using the shape hints , motion tweening
6. An application to show the masking effect in Flash
7. 7.Slide show presentation (minimum 5 slides)
8. 8.Creating smudge effect for an image using Hybrid Tweening.
9. 9.Applications using Action scripts
10. Usage of textbox, dynamic text box, buttons with action scripts

4. HTML LAB

1 Write a script to create an array of 10 elements and display its contents.

2 Create a simple calculator using form fields. Have two fields for number entry and one field for the result. Allow the user to be able to use plus, minus, multiply and divide.

3 Create a document and add a link to it. When the user moves the mouse over the link, it should load the linked document on its own. (user is not required to click on the link)

4 Create a document which opens a new window without a toolbar, address bar or a status bar that unloads itself after one minute.

5 Design an HTML page that includes document structure tags, title, line break, multiple headings and link to e-mail address.

6 Create an HTML file which is the main page with an image and some text messages along with hyperlinks which is linked to various pages. The navigation should be such that the links take you to the appropriate page and then back to the main page.

7 Create a HTML page to demonstrate the usage of Frames. Choose the content of the page on your own.

8 Design an application for pay slip through HTML forms.

216UCCT02 - SOFT SKILLS (COMMON TO ALL UG BRANCHES)

Semester-II- Essentials of Language and Communication – Level – II

Unit-I
Speaking Skills
Formal and Informal Conversation – Conversation in the work place – Interviews – Public Speech – Lectures.

Unit – II
Listening Skill
Comprehending – Retaining – Responding – Tactics – Barries to Listening – Overcoming listening barriers – Misconception about listening.

Unit – III
Reading Skill
Acquiring reading – Reading Development – methods teaching – Reading difficulties.

Unit – IV
Writing skill
Note-making – CV's – Report writing, copy writing, Agenda – Minutes – Circular – Essay writing on any current issues – paragraph – Essay writing, Writing Research papers – Dissertation.

Unit- V
Business Correspondence
Meaning of Business correspondence – Importance of Business Correspondence essential qualities of a business letters. Different types of business letters – cover letter, thank you letters, message through email and Fax, Acceptance letters, rejection letters, and withdrawal letters.

Recommended Texts:
1. Minippally, Methukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw – Hill. New Delhi.
2. SasiKumar. V and P.V. Dharmija. 1993. Spoken English: A Self-Learning Guide Conversation Practice. 34th reprint. Tata McGraw – Hill. New Delhi.
3. Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting
4. Through to Family, Friends and Business Associates. Prentice Hall Press. New York.
5. John, Seely The Oxford guide to writing and speaking. Oxford U P, 1998, Delhi.
6. The Process of Writing: Planning and Research, Writing, Drafting and Revising.

316UCAT01 - PROGRAMMING IN C++ AND DATA STRUCTURES

Unit 1
Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers - Functions in C++ - Main Function -Function Prototyping - Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions

Unit-2
Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading. Inheritance : Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.

Unit 3
Working with Files: Classes for File Stream Operations - Opening and Closing a File - End-of-File Deduction - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments. Data Structures: Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists

Unit-4
Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues- Operations on Queues, Queue Applications, Circular Queue. Singly Linked List- Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications

Unit-5
Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

Text Books
1. E. Balagurusamy,1995,Object Oriented Programming with C++, Tata McGraw-Hill Publishing Company Ltd.
2. E.Horowitz and S.Shani,1999,Fundamentals of Data Structures in C++ , Galgotia Pub.

Reference Books
1. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
2. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998
3. R. Kruse C.L. Tondo and B. Leung ,1997, Data Structures and Program design in C,PHI.
4. Cangsam,Auguenstein,Tenenbaum,Data Structures using C & C++,PHI
5. D.Samantha,2005, Classic Data Structures, PHI,New Delhi.

316UCAT02 - MICROPROCESSORS AND ITS APPLICATIONS

Objective: To introduce the fundamental concepts of Microprocessors.

Unit 1: Introduction to microcomputers-microprocessor and assembly languages-microprocessor architecture and its operations-8085 MPU-8085 instruction set and classifications.

Unit 2: Writing assembly level programs-programming techniques such as looping-counting and indexing addressing modes-data transfer instructions-arithmetic and logic operations-dynamic debugging.

Unit 3: Counters and time delays-hexadecimal counter modulo 10 counter-pulse timings for flashing lights-debugging counter and time delay program-stack-subroutine-conditional call and return instructions.

Unit 4: BCD to binary and binary to BCD conversions-BCD to HEX and HEX to BCD conversions-ASCII to BCD to ASCII conversions-BCD to seven segment LED code conversions-binary to ASCII and ASCII to binary conversions-multi byte addition-multi byte subtraction-BCD addition-BCD subtraction-multiplication and division.

Unit 5: Interrupt-implementing interrupts-multiple interrupt 8085-trap-problems on implementing 8085 interrupt-DMA memory interfaces-RAM & ROM –I/O interface-direct I/O memory mapped I/O.

Recommended Texts

1. R.S.Ganokar-1990- Microprocessor architecture-Programming and Application with 8085/8080A-Wiley Eastern Limited.

2. A.Mathur-1993-Introduction to Microprocessor-3rd Edition-Tata McGraw Hill.

316UCAT03 - NUMERICAL AND STATISTICAL METHODS

Objective :To introduce the concepts of Numerical Analysis and Statistical Methods.

Unit-1: Introduction- Mathematical Preliminaries- Errors: Computations, Formula - Errors in a Series Approximation- Roots of Equations- Linear Equations: Bisection , False Position Methods- Newton-Raphson Method- Secant Method- Muller's Method- Lin-Bairstow's Method- Simultaneous Linear Equations: Matrix Inversion Method- Gauss Elimination, Gauss-Jordan, LU Decomposition Methods- Gauss-Seidel Method.

Unit-2: Numerical Differentiation- Errors in Numerical Differentiation- Cubic Spline Method- Numerical Integration- Trapezoidal Rule- Simpson's 1/3 and 3/8 Rules- Romberg Integration- Ordinary Differential Equations- Taylor's Series Method- Euler's Method- Runge-Kutta 2nd and 4th Order Methods-Predictor-Corrector Methods.

Unit-3: Sampling- Frequency Distribution- Cumulative Frequency Function- Grouped Sample- Measures of Central Tendency: Mean, Median and Mode- Geometric Mean- Harmonic Mean – Dispersion: Range, Mean Deviation, Variance and Standard Deviation- Moments- Computation of Moments.

Unit-4: Probability- Characteristics: Addition, Multiplication and Conditional Probability Laws- Discrete Distributions: Random Variable- Density and Distribution Functions.- Binomial Distribution- Poisson Distribution- Hypergeometric Distribution- Mathematical Expectation.

Unit-5: Correlation and Regression Analysis: Linear Least Squares Fit- Nonlinear Fit- Fitting a Polynomial Function- Coefficient of Correlation- Properties- Multiple Correlation – Partial Correlation- Rank Correlation- Tests of Significance- Chi square Test- Goodness of Fit, Algorithm and Analysis of Contingency Tables- *t*-Test and F-Test.

1.Recommended Texts
1. S.S.Sastry, 2005, Introductory Methods of Numerical Analysis, 4th Edition, Prentice-Hall of India Pvt. Ltd.
2. E.Balagurusamy, 2000, Computer Oriented Statistical and Numerical Methods-Macmillan India Ltd.

2. Reference Books
1. V. Rajaraman, 2005, Computer Oriented Numerical Methods, 3rd Edition, Prentice-Hall of India Pvt. Ltd..
2. K. S. Trivedi, 2005, Probability and Statistics with Reliability, Queuing and Computer Science Applications, Prentice-Hall of India Pvt. Ltd.
3. E. Balagurusamy,1999, Numerical Methods, Tata McGraw-Hill Publishing Co.Ltd..
4. P. Niyogi, 2003, Numerical Analysis and Algorithms, Tata McGraw-Hill Publishing Co.Ltd..

316UCAP01 - PRACTICAL – III

PROGRAMMING IN C++ USING DATA STRUCTURES

1. Implement PUSH, POP operations of stack using Arrays.
2. Implement PUSH, POP operations of stack using Pointers.
3. Implement add, delete operations of a queue using Arrays.
4. Implement add, delete operations of a queue using Pointers.
5. Conversion of infix to postfix using stack operations
6. Postfix Expression Evaluation.
7. Addition of two polynomials using Arrays and Pointers.
8. Creation, insertion, and deletion in doubly linked list.
9. Binary tree traversals (in-order, pre-order, and post-order) using linked list.
10. Depth First Search and Breadth first Search for Graphs using Recursion

316UCAT04 - ALLIED PAPER – III : FINANCIAL ACCOUNTING

Objective: To introduce the concepts of Financial Accounting.

Unit-1: The Accounting structure: Basic accounting concepts and conversions - Accounting equation - Meaning of accounting - Groups interested in accounting information - trial balance, final accounts (emphasis to be given to important adjustments) - Rectification of errors - Suspense account.

Unit-2: Depreciation accounting - Meaning of depreciation - Methods of providing depreciation - Fixed percentage on original cost - Fixed percentage on diminishing balance (including change in the method of depreciation) Single entry: Definition and salient features Statement of affairs method - Conversion method. Average due date - Account current and investment accounts.

Unit-3: Branch Accounts: Debtors system - profit and Loss Accounts - Stock and debtors system - Distinction between wholesale profit and retail profit - Independent branch (foreign branch excluded) - Departmental Accounts: Basis for allocation of expenses - Inter departmental transfer at cost or selling price - Treatment of expenses which cannot be allocated.

Unit-4: Hire purchase and Instalment purchase: Meaning and legal position - Accounting aspects - Default and re-possession - Hire purchase trading account -Instalment system - Accounting aspect**.** Sale or Return: Meaning and legal position - Accounting procedure under different circumstances.

Unit-5: Partnership Accounts: Section 13 of Indian Partnership Act - Fixed and fluctuating capital - Final accounts of firms - Admission of a partner - Retirement of a partner - Death of a partner - dissolution of partnership - Insolvency of a partner - (Garner Vs Murray) - Insolvency of all partners Gradual realization of assets and piecemeal distribution.

Recommended Texts & Reference
1. Gupta R.L, Advanced Accountancy, S.Chand, Delhi.
2. Agarwala A.N, Higher Science of Accountancy, KitabMahal,Allahabad.
3. S.P. Jain and K.L. Narang, Financial Accounting
4. M.C.Shukla and T.S.Grawel, AdavncedAccounts(Vol. I)
5. Gillespie Accounting system, Procedure & methods, Prentice Hall India Ltd, New Delhi.

316UCCT03 - SOFT SKILLS (COMMON TO ALL UG BRANCHES)

Semester- III-   COMPUTING SKILLS – LEVEL - I

Objective:
The major objective in introducing the course is to impart hands on training to students in Microsoft Office essentials like MS Word, MS Excel and MS Access. The course is basic course offered at two levels exclusively meant for students who have no computer knowledge. Course is designed as a practical oriented course and not for chalk and board teaching.

Pre- requisite: NIL

Unit 1 : Introduction to computers – classification of computers; Computers inside – Hardware(processing, memory i/o, storage etc), Software (Systems, application); Operating Systems – DOS, LINUX, UNIX, Windows ; Programming – Overview, need and skills; Networking Basics; Virus; Hacking

Unit 2   : Word processing - Operating of word documents like open, close, save, print ; Editing Text – tools, formatting , bullets, layout ; Navigating word – Keyword, mouse, document formatting ; paragraph alignment - indentation, headers, footers, numbering; printing – preview, options

Unit 3   :   File Management – Importance of file management, backing of files, files and folders- editing, deleting, retrieving, renaming, subfolders; Manipulating windows – minimize, mazimize; power point basics- terminology- templates, viewing

Unit 4 : Spreadsheets – MS Excel – opening, entering text and data, formatting, navigating; Formulas- entering, handling and copying; charts- creating, formatting and printing, header and footer, centering of data; printing

Unit 5 : Networking - Internet explorer; www – working, browsing, searching, saving; bookmark – features, favorite, create, delete ; printing webpage; email – creating, receiving, reading and sending messages

Note – Unit 2 -5 are to be taught as practical with hands on experience

References :

1. Introduction to Computers – Peter Norton, Tata McGraw-Hill, India
2. Microsoft 2003 – Jennifer Ackerman Kettel et al., Tata Mc-Graw Hill, India
3. Working In Microsoft office 2006– Ron Mansfield , Tata Mc-Graw Hill, India

Examinations :

1. Sessional tests could be based on Theory and practical 2. End semester is based on practical examination only 3.

416UCAT01 - PROGRAMMING IN JAVA

Unit 1

Introduction to Java-Features of Java-Basic Concepts of Object Oriented Programming-Java Tokens-Java Statements-Constants-Variables-Data Types- Type Casting-Operators- Expressions-Control Statements: Branching and Looping Statements.

Unit-2

Classes, Objects and Methods-Constructors-Methods Overloading-Inheritance-Overriding Methods-Finalizer and Abstract Methods-Visibility Control –Arrays, Strings and Vectors- String Buffer Class-Wrapper Classes.

Unit 3

 Interfaces-Packages-Creating Packages-Accessing a Package-Multithreaded Programming- Creating Threads-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Priority-Synchronization-Implementing the Runnable Interface .

Unit-4

Managing Errors and Exceptions-Syntax of Exception Handling Code-Using Finally Statement-Throwing Our Own Exceptions-Applet Programming-Applet Life Cycle-Graphics Programming-Managing Input/Output Files: Concept of Streams-Stream Classes-Byte Stream Classes-Character Stream Classes – Using Streams-Using the File Class-Creation of Files-Random Access Files-Other Stream Classes

Unit-5

Network basics –socket programming – proxy servers – TCP/IP – Net Address – URL – Datagrams -Java Utility Classes-Introducing the AWT: Working with Windows, Graphics and Text- AWT Classes- Working with Frames-Working with Graphics-Working with Color- Working with Fonts-Using AWT Controls, Layout Managers and Menus.

Text Books
1. E. Balagurusamy,2004,Programming with JAVA, 2nd Edition,Tata McGraw-Hill Publishing Co.Ltd.
2. Herbert Schildt,2005,The Complete Reference Java^{TM}2, 5^{th}Edition,Tata McGraw- Hill Publishing Co. Ltd.

Reference Books
1. Y. Daniel Liang ,2003, An Introduction to JAVA Programming, Prentice-Hall of India Pvt. Ltd.
2. Cay S. Horstmann and Gary Cornell,2005, Core Java^{TM}2 Volume I-Fundamentals, 7th Edition- Pearson Education.
3. Ken Arnold, James Gosling and David Holmes,2003, The Java^{TM} Programming Language, 3rd Edition, Pearson Education.

416UCAT02 - OPERATING SYSTEMS

Unit 1
Introduction: Views –Goals –Types of system – OS Structure –Components – Services - System Structures – Layered Approach -Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling – Cooperating Process –Threads - Interprocess Communication. CPU Scheduling : CPU Schedulers – Scheduling criteria – Scheduling Algorithms

Unit-2
Process Synchronization: Critical-Section problem - Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Critical Region – Monitors. Deadlock : Characterization – Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.

Unit 3
Memory Management : Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space - Contiguous Allocation – Internal & External Fragmentation . Non Contiguous Allocation:Paging and Segmentation schemes – Implementation – Hardware Protection – Sharing - Fragmentation.

Unit-4
VirtualMemory **:**: Demand Paging – Page Replacement - Page Replacement Algorithms – Thrashing. – File System: Concepts – Access methods – Directory Structure –Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.

Unit-5
I/O Systems: Overview - I/O Hardware – Application I/O Interface – Kernel I/O subsystem – Transforming I/O Requests to Hardware Operations – Performance. Secondary Storage Structures : Protection – Goals- Domain Access matrix – The security problem – Authentication – Threats – Threat Monitoring – Encryption..

Text Book
1. Silberschatz A., Galvin P.B., Gange,. 2002 , Operating System Principles ,Sixth Edition, John Wiley & Sons.

Reference Books
2. H.M. Deitel ,1990, An Introduction to Operating System,- Second Edition,Addison Wesley.

416UCAT03 - COMPUTER GRAPHICS

Unit 1
INTRODUCTION TO COMPUTER GRAPHICS :Brief Survey of Computer Graphics – Graphics Systems: Video Display Devices – Types – Raster-Scan Systems and Random-Scan Systems – Input Devices – Hard-Copy Devices – Graphics Software.

Unit-2
OUTPUT PRIMITIVES AND THEIR ATTRIBUTESLine-Drawing (DDA and Bresenham's) Algorithms – Circle-Generating (Midpoint) Algorithm – Ellipse-Generating (Midpoint) Algorithms- Area-Filling (Boundary-Fill and Flood-Fill) Algorithms - Line Attributes - Color and Grayscale Levels – Character Attributes – Inquiry Functions.

Unit 3
TWO-DIMENSIONAL TRANSFORMATIONS AND VIEWING : Basic Transformations - Matrix Representations and Homogeneous Coordinates – Composite Transformations - Other Transformations – Window-to- Viewport Coordinate Transformation – Clipping Algorithms: Cohen-Sutherland Line Clipping and Sutherland- Hodgeman Polygon Clipping – Basic Modeling Concepts - Interactive Input Methods: Logical Classification of Input Devices – Interactive Picture-Construction Techniques.

Unit-4
THREE-DIMENSIONAL CONCEPTS: Three-Dimensional Display Methods: Parallel and Perspective Projections – Depth Cueing - Visible Line and Surface Identification – Polygon Surfaces: Polygon Tables, Plane Equations and Polygon Meshes - Three-Dimensional Transformations: Basic, Other and Composite Transformations.

Unit-5
THREE-DIMENSIONAL VIEWING : Viewing Pipeline and Coordinates – Transformation from World to Viewing Coordinates – Projection Transformations - Matrices - View Volumes - Hidden Surface and Hidden Line Elimination Methods: Back-Face Detection , Depth-Buffer and A-Buffer Methods –Wireframe Methods- Light Sources – RGB,CMY and HLS Color Models – Computer Animation: Design of its Sequences and Languages

Text Books
i. D. Hearn and M.P. Baker,2005,Computer Graphics, 2nd Edition, Pearson Education, Prentice Hall, 19th Reprint.

Reference Books
i.   S. Harrington,1987, Computer Graphics , 2nd Edition , McGraw-Hill Book Co.
ii. W.M. Newman and R.F. Sproull ,1997, Principles of   Interactive Computer
      Graphics, 2ndEdition,Tata McGraw-Hill Publishing Co. Ltd.
   iii. D.P. Mukherjee ,1999,Fundamentals   of   Computer   Graphics   and   Multimedia ,
1st
        Edition, Prentice-Hall of India Pvt. Ltd.
  iv. N. Krishnamurthy ,2002, Introduction to Computer Graphics, 1st Edition, Tata
          McGraw-Hill Publishing Co. Ltd.
   v. D.F.Rogers ,2001,Procedural Elements for Computer Graphics, 2nd Edition,
        Tata McGraw-Hill Publishing Co. Ltd.
  vi. Z. Xiang and R.A. Plastock,2002, Computer Graphics, Schaum's Outline Series,
        Tata McGraw-Hill Publishing Co.

416UCAP01 - PRACTICAL – IV: JAVA PROGRAMMING LAB

APPLICATIONS:

1. Substring Removal from a String. Use String Buffer Class.
2. Determining the Perimeter and Area of a Triangle. Use Stream Class.
3. Determining the Order of Numbers Generated randomly using Random Class.
4. Usage of Calendar Class and Manipulation.
5. Implementation of Point Class for Image Manipulation.
6. String Manipulation Using Char Array.
7. Database Creation for Storing E-mail Addresses and Manipulation.
8. Usage of Vector Classes.
9. Interfaces and Packages
10. Implementing Thread based Applications and Exception Handling.
11. Application using Synchronization such as Thread based, Class based and Synchronized Statements.
12. Textfiles (copy, display, counting characters, words and lines)
13. Data file creating and processing for electricity billing.
14. Data file creating and processing for telephone billing

APPLETS:

15. Working with Frames and Various Controls.
16. Working with Dialog Box and Menus.
17. Working with Colors and Fonts.
18. Drawing various shapes using Graphical statements.
19. Working with panel and all types of Layout.
20. Design a simple calculator with minimal of 10 operations
21. Usage of buttons, labels, text components in suitable application
22. Usage of Radio buttons, check box ,choice list in suitable application.

416UCAT04
ALLIED PAPER – IV : COST AND MANAGEMENT ACCOUNTING

Objective : To introduce the concepts of Cost and Management Accounting

Unit-1: Cost Accounting: Definition, Meaning and objectives - Distinction between Cost and Financial Accounting. Elements of cost and preparation of cost sheets and tender. Management Accounting – Definition and objectives – Distinction between management and financial accounting.

Unit-2: Stores Records - Purchase Order - Goods Received. Note - Bin Card - Stores Ledger - Purchase, Receipt and Inspection - Inventory Control - ABC Analysis - Economic Ordering Quantity - Maximum, Minimum and Reordering levels - Methods of Pricing Issued.
Labour: Importance of Labour Cost Control - Various Methods of Wage Payment - Calculation of wages - Methods of Incentive for Schemes

Unit-3: Overheads: Factory, Administration, Selling and Distribution of overheads - Classification - Allocation and Apportionment-Redistribution (Secondary Distribution) - Absorption of Overheads including 'Machine Hour Rate.

Unit-4: Funds Flow and Cash Flow Analysis**:** Schedule of changes in working capital - Preparation of 'funds flow statement'-Preparation of 'Cash Flow Statement' - Importance of funds flow and cash flow Analysis - Difference between funds flow and cash flow.
Ratio Analysis: Utility and limitations of Accounting Ratios - calculation of Accounting Ratios - Ratio Analysis for Liquidity, Solvency, Profitability and Leverage.

Unit-5: Marginal Costing: The Concept - Break Even Analysis - Break - Even Chart - Importance and assumptions - Application of Profit Volumes Ratio - Different types of problems (with special emphasis on decision making problems). Budget and Budgetary Control: Procedure and Utility - Preparation of different types of Budget including Flexible Budget

Recommended Texts & Reference
 1. Wheldon A.J., Cost Accounting and Costing Methods.
 2. Iyengar S.P., Cost Accounting: Principles and Practice.
 3. Bhar B.K., Cost Accounting: Methods and problems.
 4. Bigg W.W., Cost Accounts.
 5. Prasad N.K, Cost Accounting: Principles and Problems.
 6. Jain S.P. and Narang K.L., Advanced Cost Accounting.
 7. Agarwal M., Theory and Practices of Cost Accounting
 8. Robert Anthony: Management Accounting: Text and cases.
 9. Maheswari S.N., Principles of Management Accounting.

416UEST01 - ENVIRONMENTAL STUDIES

CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES
FOR UNDER GRADUATE COURSES OF ALL BRANCHES
OF HIGHER EDUCATION

Vision

The importance of environmental science and environmental studies cannot be disputed. The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forget, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues. The United Nations Conference on Environment and Development held in Rio de Janerio in 1992 and world Summit on Sustainable Development at Johannesburg in 2002 have drawn the attention of people around the globe to the deteriorating condition of our environment. It is clear that no citizen of the earth can afford to be ignorant of environment issues. Environmental management has captured the attention of health care managers. Managing environmental hazards has become very important.

Human beings have been interested in ecology since the beginning of civilization. Even our ancient scriptures have emphasized about practices and values of environmental conservation. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices. India is rich in biodiversity, which provides various resources for people. It is also basis for biotechnology. Only about 1.7 million living organisms have been described and named globally. Still many more remain to be identified and described. Attempts are made to conserve them in ex-situ and in-situ situations. Intellectual property rights (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plants and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution have been found to be responsible for the loss of a large number of life-forms. It is feared that a large proportion of life on earth may get wiped out in the near future.

Inspite of the deteriorating status of the environment, study of environment has so far not received adequate attention in our academic programmes. Recognizing this, the Hon'ble Supreme Court directed the UGC to introduce a basic course on environment at every level in college education. Accordingly, the matter was considered by UGC and it was decided that a six months compulsory core module course in environmental studies many be prepared and compulsorily implemented in all the University/Colleges of India. The experts committee appointed by the UGC has looked into all the pertinent questions, issues and other relevant matters. This was followed by framing of the core module syllabus for environmental studies for undergraduate courses of all branches of Higher Education. We are deeply conscious that there are bound to be gaps between the ideal and real. Geniune endeavour is required to minimize the gaps by intellectual and material inputs. The success of this course will depend on the initiative and drive of the teachers and the receptive students.

SYLLABUS
Unit 1 : Multidisciplinary nature of environmental studies
Definition, scope and importance, need for public awareness. (2 lectures)

Unit 2 : Natural Resources :
Renewable and non-renewable resources :
Natural resources and associated problems.
  (a) Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
  (b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

    (c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
    (d) Food resources : World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
    (e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
    (f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles. (8 lectures)

Unit 3 : Ecosystems
- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystems :-
    (a) Forest ecosystem
    (b) Grassland ecosystem
    (c) Desert ecosystem
    (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)

Unit 4 : Biodiversity and its conservation (8 lectures)
- Introduction – Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- Inida as a mega-diversity nation
- Hot-sports of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit 5 : Environmental Pollution (8 lectures)
Definition
• Cause, effects and control measures of :-
    a. Air pollution
    b. Water pollution
    c. Soil pollution
    d. Marine pollution
    e. Noise pollution
    f. Thermal pollution
    g. Nuclear hazards
- Solid waste Management : Causes, effects and control measures of urban and
- industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Diaster management : floods, earthquake, cyclone and landslides.

Unit 6 : Social Issues and the Environment (7 lectures)
- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rahabilitation of people; its problems and concerns. Case
- Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear
- accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

Unit 7 : Human Population and the Environment (6 lectures)
- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.
- VII
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.

Unit 8 : Field Work
- Visit to a local area to document environmental assets rivers/forest/grassland/hill/moutain.
- Visit to a local polluted site – urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond,river,hill slopes,ect. (Field work Equal to 5 lecture hours)

416UCCT04 - SOFT SKILLS (COMMON TO ALL UG BRANCHES)

Semester- IV-   COMPUTING SKILLS – LEVEL II

Objective:
The major objective in introducing the course is to impart hands on training to students in Microsoft Office essentials like MS Word, MS Excel and MS Access. The course is basic course offered at two levels exclusively meant for students with no computer knowledge. Course is designed as a practical oriented course and not for chalk and board teaching.

Pre- requisite :   Essentials of Microsoft office as given in Level I

Unit 1   : Word processing - Auto formatting; Paragraph and character styles – creating , modifying and using styles; Templates – modifying, attaching and controlling; Tables and columns - creating, manipulating and formulating; mail merge; labels- creating

Unit 2   :   Data Management – MS Access - Introduction, concepts and terms; database and tables- creating, data types, editing fields, renaming, resizing of fields, finding, sorting and displaying of data –printing

Unit 3 : Spreadsheets – MS Excel – Worksheets – moving, copying, sorting, inserting of cells, rows, columns; Charts – creating, editing, adding, rotating, printing, deleting and controlling; graphics- creating and placing, drawing lines and shapes; using multiple worksheets ; printing

Unit 4 : Presentations – Power point- starting, browsing and saving, creating, editing, formatting of text and paragraphs, inserting tables and charts; Presentation through slides, handouts and printing.

Unit 5 : Graphics and Multimedia - Clip art – create and insert; shapes- draw, insert and copy; create a flow

Note – Unit 1 -5 are to be taught as practical with hands on experience

References :

1. Introduction to Computers – Peter Norton, Tata McGraw-Hill, India
2. Microsoft 2003 – Jennifer Ackerman Kettel et al., Tata Mc-Graw Hill, India
3. Working In Microsoft office 2006– Ron Mansfield , Tata Mc-Graw Hill, India

Examinations :

1. Sessional tests could be based on Theory and practical
2. End semester is based on practical examination only

516UCAT01 - DATABASE MANAGEMENT SYSTEM

Unit 1
Advantages and Components of a Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Integrity – Converting Class Diagrams to Normalized Tables – Data Dictionary.

Unit-2
Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Subqueries – Joins – DDL & DML – Testing Queries

Unit 3
Effective Design of Forms and Reports – Form Layout – Creating Forms – Graphical Objects – Reports – Procedural Languages – Data on Forms – Programs to Retrieve and Save Data – Error Handling.

Unit-4
Power of Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations – Data Storage Methods – Storing Data Columns – Data Clustering and Partitioning.

Unit-5
Database Administration – Development Stages – Application Types – Backup and Recovery – Security and Privacy – Distributed Databases – Client/Server Databases – Web as a Client/Server System – Objects – Object Oriented Databases – Integrated Applications.

Text Books
 1. G. V. Post – Database Management Systems Designing and Building Business Application – McGraw Hill International edition – 1999.

Reference Books
1.RaghuRamakrishnan – Database Management Systems – WCB/McGraw Hill – 1998.
2.C.J. Date – An Introduction to Database Systems – 7th Edition – Addison Wesley   - 2000.

516UCAT02 - SOFTWARE ENGINEERING

Unit 1
Introduction to Software Engineering Some definition – Some size factors – Quality and productivity factors – Managerial issue. Planning a Software Project: Defining the problem – Developing a solution strategy – planning the development process – planning an organization structure – other planning activities.

Unit-2
Software Cost Estimation: Software – Cost factors – Software cost estimation techniques – specification techniques – level estimation – estimating software maintenance costs. The software requirements specification – formal specification techniques - languages and processors for requirements specification

Unit 3
Software Design: Fundamental Design concepts – Modules and modularizing Criteria – Design Notations – Design Techniques – Detailed Design Consideration – Real time and distributed system design – Test plan – Mile stones walk through and inspection.

Unit-4
Implementation issues : Structured Coding techniques – coding style – standards and guidelines – documentation guidelines – type checking – scooping rules – concurrency mechanisms.

Unit-5
Quality assurance – walk through and inspection - Static analysis – symbolic exception – Unit testing and Debugging – System testing – Formal verification: Enhancing maintainability during development – Managerial aspects of software maintenance – Configuration management – source code metrics – other maintenance tools and techniques.

Text Books
i. Richard E.Fairly - Software Engineering Concepts - Tata McGraw-Hill book Company.

Reference Books
i. R.S.Pressman, 1997, Software Engineering – 1997 - Fourth Ed., McGraw Hill.
ii. Rajib Mall ,2004,Fundamentals of Software Engineering,2nd Edition, PHI.

516UCAT03 - RESOURCES MANAGEMENT TECHNIQUES

Objective : To introduce the concepts of Resource Management Technique

Unit-1: Basics of Operations Research (OR): Characteristics of O.R - Necessity of O.R in Industry -OR and Decision making - Role of computers in O.R. Linear programming: Formulations and Graphical solution (of 2 variables) canonical & standard terms of Linear programming problem. Algebraic solution: Simplex method.

Unit-2: Algebraic solution: Charnes method of penalties - two phase simplex method - concept of Duality - properties of duality - Dual simplex method.

Unit-3: Transportation model: Definition - formulation and solution of transportation models - the row - minima, column - minima, matrix minima and vogel's approximation methods. Assignment model: Definition of Assignment model - comparison with transportation model - formulation and solution of Assignment model - variations of Assignment problem.

Unit-4: Sequencing problem: Processing each of n jobs through m machines - processing n jobs through 2 machines - processing n jobs through 3 machines - processing 2 jobs through m machines - processing n jobs through m machines - travelling salesman problem. Game Theory: Characteristics of games -Maximin, Minimax criteria of optimality - Dominance property - algebraic and graphical method of solution of solving 2 x 2 games.

Unit-5: Pert - CPM: Networks - Fulkerson's Rule - measure of activity - PERT computation - CPM computation - resource scheduling. Simulation: Various methods of obtaining random numbers for use in computer simulation - Additive, multiplicative and mixed types of congruence random number generators - Monte Carlo method of simulation - its advantages and disadvantages.

Recommended Texts
1. Hamdy A. Taha: 1996, Operation Research - An Introduction, 5th edition, Prentice Hall of India, Pvt. Ltd., NewDelhi.
2. Ackoff R.L. and Sasieni M. W, 1968, Fundamentals of Operations Research, John Wiley and sons, New York.
3. Charnes A. Cooper W. and Hendersen A, 1953, Introduction to Linear Programming, Wiley and Sons, New York.
4. Srinath L.S, 1973, PERT and CPM principles and applications, Affiliated East West Press Pvt. Ltd., NewYork.

516UCAP01 - Practical – V: RDBMS LAB

Create database and performing the operations given below using a Menu Driven program: Insertion, (b)Deletion, (c)Modification, (d)Generating a reports (Simple) for the following Systems using any RDBMS package :

Payroll
Mark sheet Processing
Savings bank account for banking
Inventory System
Invoice system
Library information system
Student information system
Income tax processing system
Electricity bill preparation system
Telephone directory maintenance.

516UCAT04 - VISUAL PROGRAMMING

Unit 1
Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers.

Unit-2
Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures.

Unit 3
Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping.

Unit-4
VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics

Unit-5
Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.

Text Books
Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill – 1999

516UCAT05 - RDBMS AND ORACLE

Unit 1
Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Denormalization – Another Example of Normalization.

Unit-2
Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

Unit 3
Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

Unit-4
PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

Unit-5
PL/SQL Composite Data Types: Records – Tables – Varrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.

Text Book
1. DATABASE SYSTEMS USING ORACLE – Nilesh Shah, 2nd edition, PHI.

Reference Books
1. DATABASE MANAGEMNET SYSTEMS – ArunMajumdar&Pritimoy Bhattacharya, 2007, TMH.
2. DATABASE MANAGEMENT SYSTEMS – Gerald V. Post, 3rd edition, TMH.

516UCAT06 - UNIX PROGRAMMING

Unit 1
INTRODUCTION: File and common commands - Shell - More about files - Directories- Unix system - Basics of file Directories and filenames - Permissions - modes - Directory hierarchy - Devices - the grep family - Other filters - the stream editor sed - the awk pattern scanning and processing language - files and good filters.

Unit-2
CONCEPTS OF SHELL: Command line structure - Metacharacters - Creating new commands - Command arguments and parameters - program output as arguments - Shell variables - More on I/O redirection - loop in shell programs - Bundle - Setting shell attributes, Shift command line parameters - Exiting a command or the shell, evaluating arguments - Executing command without invoking a new process - Trapping exit codes -- Conditional expressions.

Unit 3
SHELL PROGRAMMING: Customizing the cal command, Functions of command, While and Until loops - Traps - Catching interrupts - Replacing a file - Overwrite - Zap - Pick command - News command - Get and Put tracking file changes.

Unit-4
FEATURES IN UNIX: Standard input and output - Program arguments - file access - A screen at a time printer - On bugs and debugging - Examples - Zap - pick - Interactive file comparison program - Accessing the environment - Unix system calls - Low level I/O, File system Directories and modes, Processors, Signal and Interrupts

Unit-5 PROGRAM DEVELOPMENT AND DOCUMENT PREPARATION:
Program development - Four function calculator - Variables and error recovery - Arbitrary variable names, Built in functions, Compilation into a machine, Control flow and relational operators, Functions and procedures - Performance evaluation - Ms macro package - Troff level - Tbl and eqn preprocessors - Manual page - Other document preparation

Text Book
1. Brian W. Kernighan, Rob Pike - The UNIX Programming Environment - Prentice Hall of India(1984).

Reference Books
I. Steven Earhart - The UNIX System for MSDOS Users - Galgotia book source P. Ltd. (1990).
2. StefenPrata - Advanced UNIX - A Programmer Guide.

516UVET01 - VALUE EDUCATION (COMMON TO ALL UG BRANCHES)

PART- IV VALUE EDUCATION - III YEAR – FIFTH SEMESTER CREDITS : 2

Objective : Values are socially accepted norms to evaluate objects, persons, and situations that form part and parcel of sociality. A value system is a set of consistent values and measures. Knowledge of the values are inculcated through education. It contributes in forming true human being, who are able to face life and make it meaningful. There are different kinds of values like, ethical or moral values, doctrinal or ideological values, social values and aesthetic values. Values can be defined as broad preferences concerning appropriate courses of action or outcomes. As such, values reflect a person's sense of right and wrong or what "ought" to be. There are representative values like, "Equal rights for all", "Excellence deserves admiration". "People should be treated with respect and dignity". Values tend to influence attitudes and behavior and help to solve common human problems. Values are related to the norms of a culture.

Unit I: Value education-its purpose and significance in the present world – Value system – The role of culture and civilization-Holistic living – Balancing the outer and inner – Body, Mind and Intellectual level- Duties and responsibilities.

Unit II : Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity , and inclusiveness, Self esteem and self confidence, punctuality – Time, task and resource management – Problem solving and decision making skills- Interpersonal and Intra personal relationship – Team work – Positive and creative thinking.

Unit III : Human Rights – Universal Declaration of Human Rights – Human Rights violations – National Integration – Peace and non-violence – Dr. A P J Kalam's ten points for englightened citizenship – Social Values and Welfare of the citizen – The role of media in value building.

Unit IV: Environment and Ecological balance – interdependence of all beings – living and non-living. The binding of man and nature – Environment conservation and enrichment.

Unit V : Social Evils – Corruption, Cyber crime, Terrorism – Alcoholism, Drug addiction – Dowry – Domestic violence – untouchability – female infanticide – atrocities against women- How to tackle them.

Books for Reference:
1. M.G.Chitakra: Education and Human Values,
A.P.H.Publishing Corporation, New Delhi, 2003

616UCAT01 - WEB TECHNOLOGY

Unit 1
Introduction to` VBScript - Adding VBScript Code to an HTML Page -   VB Script Basics -
VBScript Data Types - VBScript Variables - VBScript Constants - VBScript Operators –
mathematical- comparison-logical - Using Conditional Statements - Looping Through Code -
VBScript Procedures – type casting variables - math functions –date functions – string
functions –other functions - VBScript Coding Conventions - Dictionary Object in VBScript -
Err Object

Unit-2
Introduction to Javascript – Advantages of Javascript – Javascript syntax - Data type –
Variable - Array – Operator & Expression – Looping – control structures - Constructor
Function – user defined function Dialog Box .

Unit 3
Javascript document object model – Introduction – Object in HTML – Event Handling –
Window object – Document object – Browser object – Form object – Navigator object –
Screen object – Build in object – User defined object – Cookies.

Unit-4
ASP.NET Language Structure – Page Structure – Page event , Properties & Compiler
Directives . HTML server controls – Anchor, Tables, Forms, Files . Basic Web server Controls
– Lable, Text box, Button, Image Links, Check & radio Button, Hyperlink, Data List Web
Server Controls – Check box list. Radio button list, Drop down list, List box, Data grid,
Repeater.

Unit-5
Request and Response Objects, Cookies, Working with Data – OLEDB connection class,
command class, transaction class, data adaptor class, data set class. Advanced issues –
email, Application issues, working with IIS and page Directives, error handling. Security –
Authentication, IP Address, Secure by SSL & Client Certificates.

Text Books
1. i.I.Bayross, 2000, Web Enable Commercial Application Development Using HTML,
   DHTML, Javascript, Perl CGI, BPB Publications.
2. ii. A.Russell Jones, Mastering Active Server Pages 3, BPB Publications.

Reference Books
1. HathleenKalata, Internet Programming with VBScript and JavaScript, Thomson
   Learning
2. Mike McGrath, XML Harness the Power of XML in easy steps, Dreamtech Publications
3. T.A. Powell, 2002,Complete Reference HTML , TMH.
4. J.Jaworski, 1999, Mastering Javascript, BPB Publications.
5. Powell, Thomas; Schneider, Fritz, JavaScript: The Complete Reference, 2nd
   edition2004, TMH

616UCAT02 - DATA COMMUNICATION AND NETWORKING

Unit 1
Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OSI Model.

Unit-2
Parallel and Serial Transmission - DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface - Interface standards - Modems - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Corrections.

Unit 3
Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet - Token Bus - Token Ring - FDDI - IEEE 802.6 - SMDS - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

Unit-4
History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol - ATM - ATM Topology - ATM Protocol.

Unit-5
Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.

Text Book
1. Behrouz and Forouzan,2001,Introduction to Data Communication and Networking, 2^{nd}Edition,TMH.

Reference Books
1. i.JeanWalrand 1998,Communication Networks (A first Course),Second Edition, WCB/McGraw Hill.
2. ii. Behrouz and Forouzan,2006,Data Communication and Networking,3nd Edition ,TMH.

616UCAT03 - SOFTWARE TESTING

Unit 1
Introduction: Purpose – Productivity and Quality in Software – Testing Vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.

Unit-2
Flow/Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques

Unit 3
Data Flow Testing Strategies - Domain Testing: Domains and Paths – Domains and Interface Testing .

Unit-4
Linguistic –Metrics – Structural Metric – Path Products and Path Expressions. Syntax Testing – Formats – Test Cases .

Unit-5
 Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.

Text Books
 1. B. Beizer , 2003, Software Testing Techniques, II Edn., DreamTech India, New Delhi.
 2. K.V.KK. Prasad , 2005, Software Testing Tools, DreamTech. India, New Delhi.

Reference Books
 1. I.Burnstein, 2003, Practical Software Testing, Springer International Edn.
 2. E. Kit, 1995, Software Testing in the Real World: Improving the Process, Pearson Education, Delhi.
 3. R.Rajani, and P.P.Oak, 2004, Software Testing, Tata Mcgraw Hill, New Delhi.

616UCAP01 - PRACTICAL – VI -WEB APPLICATIONS LAB

VB SCRIPT & JAVASCRIPT

1. Write a program outputs the squares, roots, cubes and complements of integers between 1 and 100.
2.Create a calculator.
3. Write a script to Sort numbers and strings
4. Create a program to generate a hit counter
5. Create a program to verify whether email address provided by user is valid or invalid.
6. Write a program to scroll the text on status bar.
7. The form consists of two multiple choice list and one single choice list
a. the first multiple choice list display the major dishes available.
b. the second Multiple choice list display the stocks available.
c. The single choice list display the miscellaneous (Milkshakes, soft drinks, softy available etc.)
8. Write a sript to create a digital clock.
9. Create a web page using two image file which switch black and white one another as the mouse pointer moves over the image. Use the On Mouse over and On Mouse event, onDblclick handler
10. Build a WWW page with an image and 3 buttons., Pick three favorite graphics, Label the buttons and make each one swap in the graphic you have chosen
11. Create a frameset that has two frames, side by side.
 1. Make the left-hand frame contain a form with 3 radio buttons
 2. The buttons should be for three search engines:
    a. Yahoo (http://www.yahoo.com)
    b. Altavista (http://www.altavista.com)
    c. Infoseek (http://www.infoseek.com)
3. When the user clicks on of the option buttons, the frame on the right hand side should be loaded with the right search engine.
12.Write a program to implement Employee database with all validation

ASP

1.Create a login form, to expire, if the user does not type the password within 100 seconds
2.Create an employee database and manipulate the records using command object in ASP
3. Develop an application to illustrate the usage of Request and Response Objects in ASP.
4. Write an ASP program using Request Object to give the exact list of headers sent by the browser to the Web server.
5. Create an Active Server Page to display the records one by one from a student database. The student database should contain roll no, name, marks & total.
7. Design an ASP application that describes books in the Online Bookshop.(Use AD Rotator Component, Content Rotator Component, Content Linking Component)
8. Create a document and add a link to it. When the user moves the mouse over the link it should load the linked document on its own (User is not required to click on the link).
9. Create a document, which opens a new window without a toolbar, address bar, or a status bar that unloads itself after one minute.
10. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on.

616UCAT04 - DATA MINING

Unit1: Introduction: Data mining – Functionalities – Classification – Introduction to Data Warehousing – Data Preprocessing : Preprocessing the Data – Data cleaning – Data Integration and Transformation – Data Reduction

Unit-2: Data Mining, Primitives, Languages and System Architecture:
Data Mining – Primitives – Data Mining Query Language,. Architectures of Data mining Systems. Concept Description, Characterization and Comparison: Concept Description, Data Generalization and Summarization, Analytical Characterization, Mining Class Comparison – Statistical Measures.

Unit 3: Mining Association Rules: Basics Concepts – Single Dimensional Boolean Association Rules From Transaction Databases, Multilevel Association Rules from transaction databases – Multi dimension Association Rules from Relational Database and Data Warehouses.

Unit-4:Classification and Prediction: Introduction – Issues – Decision Tree Induction – Bayesian Classification – Classification of Back Propagation. Classification based on Concepts from Association Rule Mining – Other Methods. Prediction – Introduction – Classifier Accuracy.

Unit-5: Cluster Analysis: Introduction – Types of Data in Cluster Analysis, Petitioning Methods – Hierarchical Methods Density Based Methods – GRID Based Method – Model based Clustering Method.

Text Books
i.J.Han and M. Kamber,2001,Data Mining Concepts and Techniques,Harcourt India Pvt. Ltd - New Delhi.

Reference Books
i. K.P. Soman , ShyamDiwakar, V.Ajay ,2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.

Website, E-learning resources
  i http:// www.academicpress.com
  ii. http://www.mkp.com

616UCST05 - E-COMMERCE

Objective : To give an exposure to the Electronic Commerce

Unit-1: Electronic Commerce and Opportunities: Background
The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview: Electronic Data Interchange.

Unit-2:.Approaches to Safe Electronic Commerce. Overview – Secure Transport Protocols – Secure Transaction – Secure Electronic Payment Protocol (SEPP) – Secure Electronic Transaction (SET)

Unit-3:. Certificates for Authentication – Security on Web Servers – Payment Schemes: Internet Monetary Payment and Security Requirements- Payment and purchase order process – Online electronic cash.

Unit-4:. Internet / Intranet Security Issues and Solutions : The Need for Computer Security – Specific Intruder Approaches – Security Strategies- Security Tools – Encryption – Enterprise Networking and Access to the Internet Antivirus Programs.- Security Teams.

Unit-5: MasterCard/Visa Secure Electronic Transaction : Introduction –Business Requirements – Concepts – payment Processing.
E-mail and secure e-mail technologies for Electronic Commerce: Introduction _ The Means of Distribution – A model for Message Handling- MIME, S/MIME, MOSS , MIME and Related Facilities for EDI over the Internet.

Recommended Texts:
  1. Daniel Minoli& Emma Minoli, "Web Commerce Technology Handbook". Tata McGraw Hill – 1999.

Reference Book:
  1. K.Bajaj& D Nag , "E-Commerce", Tata McGraw Hill – 1999.
  2. MamtaBhusry – "E-Commerce"

616UCST06 - OBJECT ORIENTED ANALYSIS AND DESIGN

Unit 1
System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach – UML

Unit-2
Use-Case Models - Object Analysis - Object relations - Attributes - Methods - Class and Object responsibilities - Case Studies.

Unit 3
Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies.

Unit-4
User Interface Design - View layer Classes - Micro-Level Processes - View Layer Interface - Case Studies.

Unit-5
Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies.

Text Books

1. Ali Bahrami - Object Oriented Systems Development - McGraw Hill International Edition - 1999.
2. Grady Booch- Object Oriented Analysis and design –Addison Wesley.

616UCST07 - MULTIMEDIA SYSTEMS

Objective: To give an exposure to Multimedia and its applications.

Unit-1: What is Multimedia**:** Definitions - CD-ROM and the Multimedia Highway - Where to use Multimedia - Introduction to Making Multimedia: The stages of a Project - What You Need – Multimedia Skills and Training**:** The team - Macintosh and Windows Production Platforms**:** Macintosh Versus PC - The Macintosh Platform - The Windows Multimedia PC Platform - Networking Macintosh and Windows Computers-Hardware Peripherals**:** Connection - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices.

Unit-2: Basic Tools**:** Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image-Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories - Making Instan tMultimedia: Linking Multimedia Objects - Office Suites - Word Processors - Spreadsheets - Databases - Presentation Tools**.** Multimedia Authoring Tools: Types of Authoring Tools - Card-and-Page-Based Authoring Tools - Icon-Based Authoring Tools - Time-Based Authoring Tools - Object-Oriented Authoring Tools - Cross-Platform Authoring Notes

Unit-3: Text: The Power of Meaning - About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext - Sound**:** The Power of Sound - Multimedia System Sounds - MIDI Versus Digital Audio - Digital Audio - Making MIDI Audio - Audio File Formats - Working with Sound on the Macintosh - Notation Interchange File Format (NIFF) - Adding Sound to Your Multimedia Project - Toward Professional Sound: The Red Book Standard - Production Tips

Unit-4: Images: Making Still Images -Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animations That Work -Video**:** Using Video - How Video works - Broadcast Video Standards - Integrating Computers and Television - Shooting and Editing Video - Video Tips - Recording Formats - Digital Video.

Unit-5:. Planning and Costing **:** Project Planning - Estimating - RFPs and Bid Proposals **-** Designing and Producing **:** Designing - Producing - Content and Talent **:** Acquiring Content - Using Content Created by Others - Using Content Created for a Project - Using Talent - Delivering **:** Testing - Preparing for Delivery - Delivering on CD-ROM - Compact Disc Technology - Wrapping It Up - Delivering on the World Wide Web.

Recommended Texts:

1. Tay Vaughan - Multimedia: Making it Work. - Fourth Edition - Tata McGraw Hill Edition - 1999.
2. Walterworth John A - Multimedia Technologies and Application - Ellis Horwood Ltd. - London - 1991.
3. John F Koegel Buford - Multimedia Systems - Addison Wesley - First Indian Reprint - 2000.

616UCST08 - CLIENT SERVER COMPUTING

Unit 1

Introduction to Client/Server Computing – What is Client/Server Computing – Benefits of Client/Server Computing – Evolution of C/S Computing – Hardware Trends – Software Trends-Evolution of Operating Systems – N/w Trends – Business Considerations.

Unit-2

Overview of C/S Applications: Components of C/S Applications – Classes of C/S Applications – Categories of C/S Applications . Understanding C/S Computing : Dispelling the Myths – Obstacies – Upfront & Hidden – Open Systems & Standards – Standards – Setting Organizations – Factors of Success.

Unit 3

The Client Hardware & Software : Client Component – Client Operating Systems – What is GUI – Database Access – Client Software Products : GUI Environments – Converting 3270/5250 Screens – Database Tools – Client Requirements : GUI Design Standards – Open GUI Standards – Interface Independence – Testing Interfaces .

Unit-4

The Server : Categories of Servers – Features of Server Machines – Classes of Server Machines – Server Environment : N/W Management Environment – N/W Computing Environment – Extensions – Network Operating System – Loadable Module.

Unit-5

Server Operating System : OS/2 2.0 – Windows New Technology – Unix Based OS – Server Requirements : Platform Independence – Transaction Processing – Connectivity – Intelligent Database – Stored Procedure – Triggers – Load Leveling – Optimizer – Testing and Diagnostic Tools – Backup & Recovery Mechanisms

Text Books

1. Patrick Smith &SteaveGuengerich, "Client/Server Computing". PHI
2. Dawna Travis Devire, "Client/Server Computing". TMH

616UCST09 - DISTRIBUTED COMPUTING

Objective: To introduce the concepts of Distributed databases and Distributed File system and its Hardware concepts.

Unit-1: Distributed data base – Security and Integrity – New Data base application – Design of data bases – Knowledge based case studies for relational network and hierarchical systems. Distributed processing – Models for distributed computing – Load balancing – Remote procedure calls – process migration – concurrency issues on data bases.

Unit-2: Hardware concepts – Switched multiprocessor, Bus based multi computers, Switched multi computers – Software concepts – Network operating systems and NFS – Time distributed systems.- Design Issues : Transparency – Flexibility – Reliability – performance and scalability.

Unit-3: Communications in distributed systems – The client – server model, Blocking vs Unbuffered primitives - Implementation of client-server model.

Unit-4: Synchronization in distributed systems – Clock synchronization – Mutual exclusion – Election algorithms – Atomic transactions – Deadlocks in distributed system – Threads – Thread usage and Implementation of thread packages – processor allocation.

Unit-5 : Distributed File system : File service interface – semantics of the file sharing – Distributed file system – Implementation of new trends in distributed file systems.

Text Books
1. A.S Tanenbaum, " Modern Operating Systems " , Pearson Education

Reference Books
1. James Martin, "Computer Networks and Distributed Processing, Software Techniques and Architectures", Pearson Education.

616UEAT01 - EXTENSION ACTIVITY (COMMON TO ALL UG BRANCHES)

A candidate shall be awarded a maximum of 1 Credits for Complusory Extension Service.

All the Students shall have to enrol for NSS /NCC/ NSO (Sports & Games) Rotract/ Youth Red cross or any other service organizations in the college and shall have to put in Complusory minimum attendance of 40 hours which shall be duly certified by the Principal of the college before 31st March in a year. If a student LACKS 40 HOURS ATTENDANCE in the First year, he/she shall have to compensate the same during the subsequent years.

Students those who complete minimum attendance of 40 hours in One year will get HALF A CREDIT and those who complete the attendance of 80 or more hours in Two Years will ONE CREDIT.

Literacy and population Education Field Work shall be compulsory components in the above extension service activities.

Registrar