B.Sc. COMPUTER SCIENCE

SYLLABUS: 2011

CHOICE BASED CREDIT SYSTEM **(CBCS)**

St. JOSEPH'S COLLEGE (Autonomous)

Re-accredited with A+ Grade by NAAC

College with Potential for Excellence by UGC

TIRUCHIRAPPALLI - 620 002, TN

B.Sc. COMPUTER SCIENCE:

COURSE DETAIL – 2011

Sem.	Part	Code	Subject Title	Hrs	Credit
I	I	11UGT110001	General Tamil-I / French - I / Hindi - I	4	3
	II	11UGE120101	General English-I	5	3
	III	11UCS130201	Problem Solving using C	5	4
	III	11UCS130202	Digital computer fundamentals	5	4
	III	11UCS130203	Software Lab – I (Problem Solving using C)	3	2
	III	11UCS130401	Allied : Mathematics – I	6	5
	IV	11UFC141001	Value Education – I : Essentials of Ethics, Yoga & Stress Management	2	2
	IV	11UCE140801	Communicative English	-	5
			Total for Semester I	**30**	**28**
II	I	11UGT210002	General Tamil-II / French – II / Hindi - II	4	3
	II	11UGE220102	General English-II	5	3
	III	11UCS230204	Programming in COBOL	4	4
	III	11UCS230205	Discrete Mathematics	4	4
	III	11UCS230206	Software Lab – II (COBOL)	3	2
	III	11UCS230402	Allied : Mathematics – II	6	5
	IV	11UCE240802A	Office Automation	2	2
	IV	11UFC241002	Value Education – II: Fundamentals of Human Rights	2	1
			Total for Semester II	**30**	**24**
III	I	11UGT310003	General Tamil-III / French – III / Hindi – III	4	3
	II	11UGE320103	General English-III	5	3
	III	11UCS330207	Programming in C++	5	4
	III	11UCS330208	Software Lab – III (C++)	3	2
	III	11UCS330403A	Allied : Applied Physics – I	4	4
	III	@	Allied : Applied Physics Practical – I (OR)	2	
	III	11UCS330403B	Allied: Principles of Electronics	(4)	(4)
		@	Allied : Electronics Practical	(2)	
	IV	11UFC341003A	Professional Ethics – I Social Ethics (OR)	2	2
	IV	11UFC341003B	Professional Ethics – I Religious Doctrine	(2)	(2)
	IV	11UCE340901	Environmental Studies	4	2
			Library	1	-
			Total for Semester III	**30**	**20**

Sem.	Part	Code	Subject Title	Hrs	Credit
IV	I	11UGT410004	General Tamil-IV / Hindi-IV/ French- IV	4	3
	II	11UGE420104	General English-IV	5	3
	III	11UCS430209	Data structures and algorithms	4	4
	III	11UCS430210	Software Lab – IV (Data structures using C and C++)	3	2
	III	11UCS430404A	Allied : Applied Physics – II	4	4
	III	11UCS430405A	Allied : Applied Physics Practical – II / (OR)	2	2
	III	11UCS430404B	Allied : Communication Electronics	(4)	(4)
		11UCS430405B	Allied : Electronics Practicals	(2)	(2)
	III	11UCS430301A	Elective-I System Analysis and Design (or)	4	4
	III	11UCS430301B	Elective-I – Unified Modeling Languages	(4)	(4)
	IV	11UFC441004A	Professional Ethics – II : Social Ethics (OR)	2	2
	IV	11UFC441004B	Professional Ethics – II : Religious Doctrine	(2)	(2)
	III	11UCS430211	Soft Skills		(2)
			Total for Semester IV	**30**	**26**
V	III	11UCS530212	Programming in Java	5	4
	III	11UCS530213	Database Systems	5	4
	III	11UCS530214	Microcomputer architecture	5	4
	III	11UCS530302A	Elective – II – XML (OR)	4	4
	III	11UCS530302B	Elective – II – Software Engineering	(4)	(4)
	III	11UCS530215	Software Lab – V (Java)	3	2
	III	11UCS530216	Software Lab – VI (RDBMS)	3	2
	III	@	Hardware Lab (Electronics)	3	
	IV	11UCS540601A	Skill Based Elective-I: Office Automation (OR)	2	2
	IV	11UCS540601B	Skill Based Elective-I: Internet Concepts	(2)	(2)
			Total for Semester V	**30**	**22**
VI	III	11UCS630217	Computer Networks	5	4
	III	11UCS630218	Operating Systems	5	4
	III	11UCS630219	Hardware Lab (Electronics)	3	4
	III	11UCS630501	Operations Research *	5	(4)
	III	11UCS630303A	Elective – III – Computer Graphics (OR)	4	4
	III	11UCS630303B	Elective – III – Web Graphics	(4)	(4)
	III	11UCS630502	Software Lab – VII (ASP.Net) *	3	(2)
	III	11UCS630304	Project	3	3
	IV	11UCS640602A	Skill Based Elective-II: Fundamentals of Computer Networks (OR)	2	2
	IV	11UCS640602B	Skill Based Elective-II: E – Commerce	(2)	(2)
			Total for Semester IV	**30**	**21**
I-V	V	11UCE551101	Extension Service: SHEPHERD & Gender Studies		6
			Total Credits for All Semesters		**145**

@ → Exam at the end of the year

%% → Outside class hours

* → Additional credits (4+2=6) (Given to Soft skills in SEM IV and 2 core papers in VI)

பருவம் -1   மணி நேரம் - 4
11UGT110001   புள்ளிகள்   - 3

பொதுத்தமிழ் - I

நோக்கங்கள்

1. சமூக மாற்றச் சிந்தனைகளை உள்ளடக்கிய தற்கால இலக்கியங்களை அறிமுகம் செய்தல்.
2. புதுக்கவிதை, சிறுகதை, உரைநடை ஆகிய இலக்கியங்களின் நயம் பாராட்டுதல்.
3. சந்திப்பிழையின்றி எழுத மாணவர்களைப் பயிற்றுவித்தல்.

பயன்கள்

1. மாணவர்கள் சமூக மாற்றச்சிந்தனைகளை அறிந்துகொள்வர்.
2. சந்திப்பிழைகளை நீக்கி எழுதும் திறன் பெறுவர்.
3. புத்திலக்கியங்களைப் படைக்கும் திறனையும், திறனாய்வு செய்யும் திறனையும் பெறுவர்.

அலகு-1   *(10 மணி நேரம்)*

மகாகவி பாரதியார் கவிதைகள்
பாரதிதாசன் கவிதைகள்
உரைநடை–முதல் மூன்று கட்டுரைகள்
(கட்டுரைக்களஞ்சியம்)

அலகு-2   *(12மணி நேரம்)*

கவிமணி தேசிகவிநாயகம் கவிதைகள்
நாமக்கல்கவிஞர் வெ.இராமலிங்கம் கவிதைகள்
இலக்கணம் -வலிமிகும் இடங்கள்

அலகு-3   *(10 மணி நேரம்)*

கவிஞர் கண்ணதாசன் கவிதைகள்
இலக்கியவரலாறு- மூன்றாம் பாகம்
சிறுகதை- முதல் ஆறு சிறுகதைகள்

அலகு-4   *(14 மணி நேரம்)*

பாவலரேறு பெருஞ்சித்திரனார் பாடல்கள்
அப்துல் ரகுமான் கவிதைகள்
இலக்கிய வரலாறு – நான்காம் பாகம்
இலக்கணம் - வலி மிகா இடங்கள்

அலகு-5   *(14 மணி நேரம்)*

கவிஞர் மேத்தா கவிதைகள்
மொழிபெயர்ப்புக்கவிதைகள்
சிறுகதை- 7 முதல் 12 முடிய உள்ள சிறுகதைகள்
உரைநடை- 4முதல் 6 முடிய உள்ள கட்டுரைகள்
(கட்டுரைக்களஞ்சியம்)

பாடநூல்

1. பொதுத்தமிழ் - செய்யுள் திரட்டு- தமிழ்த்துறை வெளியீடு-2011-2014
2. சமூகவியல் நோக்கில் தமிழ் இலக்கிய வரலாறு, தமிழ்த்துறை வெளியீடு, தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2
3. உரைநடை நூல் - தமிழ்த்துறை வெளியீடு, 2011-2014
4. சிறுகதைத்தொகுப்பு
(கட்டுரைக்களஞ்சியம்)

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	6 (6 வினாக்கள்)	8 (2 வினாக்கள்)	15 (1 வினா)
உரைநடை	--------------	--------------	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	--------------
சிறுகதை	--------------	-------	15 (1 வினா)

Semester: I   **Hours :5**
Code:11UGE120101   **Credits: 3**

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GENERAL ENGLISH – I

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Objectives:

1. *To enable the students to develop their effective communicative skills in English.*
2. *To empower the students with fluency and accuracy in the use of English Language.*
3. *To transform them into globally employable persons with placement skills.*

UNIT-I   **12 Hrs**

Prose	Education.
	Employment.
	Unemployment.
Poem	William Shakespeare— "All the World's a Stage."
Letter Writing	Formal and Informal.
Short Story	O Henry – Robe of Peace. (Extensive Reading).

Essential English Grammar – 1-6 units

UNIT-II   **12 Hrs**

Prose	Application.
	Planning.
	Curriculum Vitae.
Poem	Ben Jonson—"On Shakespeare"
	Reading Comprehension
Short Story	Rudyard Kipling—The Miracle of Puran Bhagat (Extensive Reading).

Essential English Grammar – 7-12 units.

UNIT-III   **11 Hrs**

Prose	Interview.
	Reporting.
	General Knowledge.
Poem	Robert Herrick—"Gather Ye Rosebuds."
	Note Making
Short Story	H.G.Wells—The Truth About Pyecraft (Extensive Reading).

Essential English Grammar – 13-18 units

UNIT-IV   **20 Hrs**

Prose	Review.(Super Toys)
	Stress.
	No Time.
Poem	Oliver Goldsmith—" The Village Schoolmaster"
	Developing story from hints
Short Story	John Galsworthy—"Quality" (Extensive Reading).

Essential English Grammar – 19-24 units

UNIT-V   **15 Hrs**

Prose	Killers.
	Galloping Growth.
	A Short Story.
Poem	William Blake—" From Auguries of Innocence"
	Précis Writing
Short Story	William Somerset Maugham— Mabel (Extensive Reading).

Essential English Grammar – 25-30 units

Text Books

1. Krishnaswamy. N, Sriraman T. Current English for Colleges. Hyderabad: Macmillan Indian Ltd,2006.
2. Dahiya SPS Ed. Vision in Verse, An Anthology of Poems. New Delhi: Oxford University Press,2002.
3. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press,2009.
4. Seshadri, K G Ed. Stories for Colleges.Chennai: Macmillan India Ltd,2003.

Semester : I   **Hours/week : 5**
11UCS130201   **Credit   : 4**

PROBLEM SOLVING USING   C

Objective:
        To learn the problem solving techniques along with the features of 'C' language and to develop programming skills

Unit – I   **(15 Hrs.)**
        Introduction to Computers: Generation of computers – Types of computers – Components of computer – Types of software – programming languages.

Unit - II   **(15 Hrs.)**
        Algorithms – Flow charts – Developing algorithms and flowcharts for solving simple problems using sequential, selection and iterative programming structures.

Unit – III   **(15 Hrs.)**
        Data Types - Variables - Operators - Control structures - Looping structures - Arrays - Strings.

Unit – IV   **(15 Hrs.)**
        Functions – Built-in-functions - Types of functions - Scope of Variables – Call by value and call by reference.

Unit – V   **(15 Hrs.)**
        Pointers - Pointer to Array - Pointer Array - Pointer Arithmetic - Pointer of Pointer - Functions and Pointers - Structures and Pointers – Dynamic Allocation - Function pointer-Structure and Union.

BOOKS FOR STUDY:
1.   S. Jaiswal, "Information Technology Today", Galgotia Publications, First Edition, 1999. (**Unit I, II**)

2.   E.Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, New Delhi, Third Edition, 2004 (**Unit III, IV, V**).

BOOK(S) FOR REFERENCE:
1.   Byron S.Gottfried, "Programming with C", Schaum's Outline Series, Tata McGraw Hill Edition, New Delhi, 1991.
2.   Brian W. Kernighan, Dennis M. Ritchie, "The C   Programming Language", Prentice Hall of India Pvt. Ltd., New Delhi, 1989.
3.   E. Karthikeyan, "A Textbook on C Fundamentals, Data Structures and Problem Solving", Prentice-Hall of India Private Limited, New Delhi - 110 001, 2008.

Semester : I   **Hours/week : 5**
11UCS130202   **Credit   : 4**

DIGITAL COMPUTER FUNDAMENTALS

Objective:

To give fundamental principles of digital electronics, semiconductor memories, A/D and D/A converters.

Unit – I   **(15 Hrs.)**

Number Systems: Number systems - Decimal, Binary, Octal, Hexadecimal - conversion from one to another. **Characters and codes:** ASCII code, Excess-3 code, gray code - binary addition, subtraction, multiplication and division - unsigned binary numbers - signed magnitude numbers - complements in number systems.

Unit – II   **(15 Hrs.)**

Logic Gates: AND, OR, NOT, NOR & NAND gates, EX-OR gates. **Boolean Algebra and Boolean laws and theorems:** De Morgan's theorems - Duality theorem - simplification of sum of product and product of sum expressions - Karnaugh map and simplifications.

Unit –III   **(15 Hrs.)**

Simple arithmetic circuits: Half and Full adders - Binary adder/ subtracter - BCD adder **Data processing circuits:** Multiplexers - Demultiplexers -Encoders and Decoders.

Unit – IV   **(15 Hrs.)**

Sequential Logic Design: Flip-flops - RS, JK, D & T Flip flops - Master/Slave Flip flop - Shift Registers - Counters - Asynchronous and Synchronous Counters. Digital to Analog Converters - Analog to Digital converters.

Unit – V   **(15 Hrs.)**

Memory Elements: RAM - static RAM - Dynamic RAM - ROM - Magnetic Disk memories - Magnetic tape – Cache Memory   (15)

BOOK (S) FOR STUDY:

1. Donald P.Leach and Albert Paul Malvino, "Digital Principles and Application", Fifth Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2003.
   UNIT I – Chapter 5;   UNIT II – Chapters 2 & 3;
   UNIT III – Chapter 6 & 4;   UNIT IV – Chapter 8, 9, 10;
2. Thomas C. Bartee, "Computer Architecture and Logic Design", McGraw Hill International Edition, New Delhi, 1991.
   UNIT IV – Chapter 7   UNIT V – Chapter 6;

BOOK FOR REFERENCE:

1. Virendra Kumar, "Digital Technology Principles and Practice", New Age International, New Delhi, 2006.

Semester: I   **Hours/week : 3**
11UCS130203   **Credit   : 2**

SOFTWARE LAB – I (PROBLEM SOLVING USING C)

1.   Simple programs using Operators, sequential structure

2.   Programs using Branching structures (If, switch, goto)

3.   Programs using looping structures (for, while, do-while)

4.   Operations on single dimensional array

5.   Matrix operations

6.   String manipulations (Using Array)

7.   Working with functions

8.   Working with Pointers

9.   Working with Structures

10.   Editing a record using function and structure pointer.

SEMESTER – I   **Hours/Week : 6**
Code 11UCS130401   **Credits   : 5**

ALLIED MATHEMATICS - I

[For I B.Sc. Physics, Chemistry, Computer Science, Electronics, I BCA]

UNIT – I

   Partial Fractions - Binomial Series - Summation of series - Finding terms - Coefficient of x^n (simple problems only).
      Book 1: Chap 1 - sec 1.1 - 1.2, pp: 1-27.

UNIT – II

   Exponential Series - Summation - Logarithmic Series - Summation.
      Book 1: Chap 1 - sec 1.3, pp: 28-48.

UNIT – III

   Matrices – Rank of a matrix - Solving simultaneous linear equation in three unknowns using Elementary operations method - Eigen values and Eigen vectors - Verification of Cayley Hamilton theorem.
      Book 1: Chap 3 - sec 3.2 - 3.4, pp: 137 - 160.

UNIT – IV

   Higher Derivatives - Formation of equations involving derivatives - Applications of Leibnitz's theorem.
      Book 1: Chap 6 - sec 6.1, pp: 266-281.

UNIT – V

   Expansions of cos nq and sin nq - Powers of sines and cosines off in terms of functions of multiples of q.
      Book 1: Chap 5 - sec 5.1 - 5.4, pp: 220-242.

Text Book:
Ancillary Mathematics, Vol-I, 2009 Edition, S. Narayanan, R. Hanumantha Rao T.K. Manicavachagom Pillay, Kandaswamy.

பருவம் -2   மணி நேரம் - 4
11UGT210002   புள்ளிகள் - 3

பொதுத்தமிழ் - II

நோக்கங்கள்

1. சமய நல்லிணக்க உணர்வை வளர்த்தல்.
2. தமிழ்க் காப்பியங்களில் அழகும், அறிவுணர்வும் ஊட்டும் பகுதிகளைப் படித்துப் புரிந்து கொள்ளுதல்.
3. உரைநடைக் கட்டுரை எழுதும் திறன் பெறுதல்.

பயன்கள்

1. தமிழைத் திருத்தமாகப் படிக்கவும், பேசவும், பிழையின்றி எழுதவும் கூடிய திறன் பெறுவர்.
2. இலக்கியங்களில் படித்தவற்றை முறையாக வாழ்க்கையில் கடைப்பிடிப்பர்.

அலகு : 1   *(12 மணி நேரம்)*

சிலப்பதிகாரம்   –அடைக்கலக் காதை - மதுரைக் காண்டம்
இலக்கிய வரலாறு –சைவம் வளர்த்த தமிழ் முதல் புராணங்கள் முடிய.

அலகு : 2   *(12 மணி நேரம்)*

மணிமேகலை   – சிறைக்கோட்டம் அறக்கோட்டம் ஆக்கிய காதை
பெரியபுராணம்   – திருநாளைப்போவார் நாயனார் புராணம்
உரைநடை   – 7 முதல் 9 முடிய உள்ள கட்டுரைகள்
                  (கட்டுரைக்களஞ்சியம்)

அலகு : 3   *(12 மணி நேரம்)*

கம்பராமாயணம்   வாலி வதைப்படலம்
செம்மொழியான தமிழ்மொழியே:1 – 20 பக்கங்கள்
இலக்கணம்   – எழுத்திலக்கணம்

அலகு : 4   *(12 மணி நேரம்)*

தேம்பாவணி   – மகன் நேர்ந்த படலம்
சீறாப்புராணம்   – அபீராகு வதைப்படலம்
உரைநடை   – 10 முதல் 12 வரையிலான கட்டுரைகள்
செம்மொழியான தமிழ்மொழியே – 21- 37 பக்கங்கள

அலகு : 5   *(12 மணி நேரம்)*

இராவண காவியம்   –   ஆரியப் படலம்
இலக்கிய வரலாறு   –   தமிழ் இலக்கண நூல்கள் முதல் சிற்றிலக்கியங்கள் முடிய.
இலக்கணம்   –   சொல்லிலக்கணம்

பாடநூல்கள்

1. செய்யுள் திரட்டு – தமிழாய்வுத்துறை வெளியீடு, 2011 – 2014.
2. இலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, 2010.
3. உரைநடைநூல், தமிழாய்வுத்துறை வெளியீடு, 2011-2014
4. செம்மொழியான தமிழ்மொழியே, சங்கம் வெளியீடு, மதுரை.2010

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	4 (4 வினாக்கள்)	4 (1 வினா)	15 (1 வினா)
உரைநடை	-------------	-------------	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	-------------
செம்மொழி	2 (2 வினாக்கள்)	4 (1 வினா)	15 (1 வினா)

Sem: II   **Hours :5**
Code: 11UGE220102   **Credits: 3**

GENERAL ENGLISH –II

Objectives:

1. *To enable the students to develop their effective communicative skills in English.*
2. *To empower the students with fluency and accuracy in the use of English Language.*
3. *To transform them into globally employable persons with placement skills.*

UNIT-I   **12 Hrs**

Prose   Environment.
                  A Dead Planet.
                  Riddles.
Poem   William Wordsworth—Nutting.
                  Shelley- Ozymandias.
                  Filling Money Order Chalan and Bank Chalan
Short Story   G.K.Chesterton – The Hammer of God (Extensive Reading)
Essential English Grammar: -31-36 Units

UNIT-II   **12 Hrs**

Prose   Qahwah
                  A Dilemma
                  Computeracy
Poetry   John Keats—La Belle Dame Sans Merci
                  Robert Browning- The Last Ride Together
Short Story   Katherine Mansfield—A Cup of Tea (Extensive Reading)
Dialogue Writing
Essential English Grammar:37-42Units

UNIT-III   **11 Hrs**

Prose   Review (Use Your English)
                  Entertainment
                  You and Your English
Poetry   Walt Whitman- I Celebrate Myself.
                  Mathew Arnold—Dover Beach.

Short Story   Thomas Wolfe—The Far and the Near (Extensive Reading)
Conversations
Essential English Grammar:43-48Units

UNIT-IV   **20 Hrs**

Prose   War Minus Shooting .
                  Usage and Abusage.
Poetry   Sarojini Naidu—The Gift of India..
                  Robert Frost—Design .
Short Story   R.K. Narayan—Half a Rupee Worth (Extensive Reading)
                  Manohar Malgonkar—Bacha Lieutenant
Story Telling
Essential English Grammar:49-54Units

UNIT-V   **15 Hrs**

Prose   Who's Who.
Poetry   Nissim Ezekiel. The Night of The Scorpion
Short Story   Anita Desai—A Devoted Son (Extensive Reading)
                  Ruskin Bond—The Boy Who Broke the Bank(Extensive Reading)
                  Report Writing
Letter to the Editor
Essential English Grammar: 55-60Units

Text Books

1. Krishnaswamy. N, Sriraman T. Current English for Colleges. Hyderabad: Macmillan Indian Ltd,2006.
2. Dahiya SPS Ed. Vision in Verse, An Anthology of Poems. New Delhi: Oxford University Press,2002.
3. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press,2009.
4. Seshadri, K G Ed. Stories for Colleges.Chennai: Macmillan India Ltd,2003

Semester : II   **Hours/week : 4**
11UCS230204   **Credit   : 4**

COBOL PROGRAMMING

Objective:
　　To expose different features of COBOL language and program development in COBOL.

UNIT I   **(12 Hrs.)**
　　Introduction to COBOL: History of COBOL – Coding Format for COBOL Programs – Structure of a COBOL Program – Character Set – COBOL Words – Data Names and Identifiers – Literals – Figurative Constants – Continuation of Lines – Language Description Notation **Identification and Environment division:** Identification Division – Environment Division.

UNIT II   **(12 Hrs.)**
　　Data Division: Introduction – Level Structure – Data Description Entries. Working-Storage Section: Editing – Classes and Categories of Data **Procedure Division and Basic Verbs:** Structure of the Procedure Division – Data Movement Verb: Move – Arithmetic Verbs – Sequence Control Verbs – Input and Output Verbs – Conditional Verbs – Categories of COBOL Statements.

UNIT III   **(12 Hrs.)**
　　Data Division: Usage Clause – Synchronized Clause – Justified Clause – Redefines Clause – Renames Clause – Qualification of Data Names – Sign Clause. **Data Movement Verbs and Arithmetic Verbs:** Elementary and Group Moves – Corresponding Option – Rounded Option – On Size Error Option – Compute Verb. **Conditional and Sequence Control Verbs:** Condition – IF Statement – GOTO with Depending Phrase – Alert Statement – Perform Statement – Exit Statement.

UNIT IV   **(12 Hrs.)**
　　Table Handling: Occurs clause and Subscripting – Assigning values to Table Elements – one and two dimensional Tables – Perform verb and Table Handling. **Sequential Files:** File Characteristics – File-Control Entries for Sequential Files – File Description – Fixed Length Records – Statement for Sequential Files – Example of Sequential File Processing.

UNIT V   **(12 Hrs.)**
　　Sorting and merging of files: Simple sort verb – File Updation – Variations of Updation – Simple Merge verb - Input and Output Procedure in Sort Statement – Merge verb with Output Procedures. **Direct Access Files:** Relative Files – Indexed Sequential Files.

BOOK FOR STUDY:
1.　　MK Roy, DG Dastidar, "COBOL Programming", TATA Mc-Graw Hill, NewDelhi, 1990.

BOOK FOR REFERENCE:
1.　　Leonard J. Kazmir & Andreas S.Philipakis, "Structured COBOL" Mc Graw Hill, 1986.

Semester : II   **Hours/week : 4**
11UCS230205   **Credit   : 4**

DISCRETE MATHEMATICS

Objective:

To know the applications of graph theory, computer representations of graph, fundamental ideas of mathematical logic, concepts of set theory and boolean algebra.

UNIT I   **(12 Hrs.)**

Graph: Introduction – paths and circuits – isomorphism – sub graphs- connectedness – euler graph – operations – Hamiltonian paths and circuits – Traveling Salesman Problem.

UNIT II   **(12 Hrs.)**

Trees: properties of trees – distance and centers – rooted and binary tree – spanning tree- matrix representations of graph: Incidence matrix – adjacency matrix – graph theoretic algorithms – shortest path between two vertices – shortest path between all pairs.

UNIT III   **(12 Hrs.)**

Mathematical Logic: statements and notations – connectives – well formed formulas – tautologies – equivalence of formulas – duality law.

UNIT IV   **(12 Hrs.)**

Mathematical Logic: Normal forms: Disjunctive-Conjunctive-Principal disjunctive-Principal Conjunctive normal forms.   Sets:Basic concepts of set theory – operations on sets – venn Diagrams –Basic set identities – ordered pairs and tuples -cartesian products.

UNIT V   **(12 Hrs.)**

Relation and orderings: Relations-properties- relation matrix and graph – partion and covering- equivalence,compatibility relations- composition of binary relations.

Function: Definition- composition of functions- Inverse functions- Binary and n-ary operations-Boolean algebra.

BOOK(S) FOR STUDY:

1.   Narsing Deo, "Graph Theory with Applications to Engineering and Computer Science", Prentice Hall, 1974,
       Unit I and II: Chapters: 1,2, 3.1-3.7,7.1,7.9,9.1,9.2,11.5

2.   J.P.Tremblay, R. Manohar, "Discrete Mathematical Structure with Applications to Computer Science", McGraw-Hill International Edition,1987.
       Unit III: Chapters: 1-1, 1- 2.1 – 1-2.4, 1-2.6 – 1-2.10.
       Unit IV: Chapters: 1.3, 2-1.1 – 2-1.6, 2-1.8, 2-1.9.
       Unit V: Chapters:2-3.1 – 2-3.7,3-4.1 – 3-4.4, 4-2.1(only definition and applications, proof for theorems not preferred)

BOOK(S) FOR REFERENCE:

1.   Seymour Lipschutz and Mars Lipson, "Discrete Mathematics", Second Edition, Schaum's outline series, Tata McGraw-Hill publishing company Limited, New Delhi,1999

2.   Bernard Kolman & Robert C.Busby, "Discrete Mathematical Structure for Computer Science", Second Edition, Prentice Hall of India, New Delhi, 1987.

Semester II   **Hours/week : 3**
11UCS230206   **Credit   : 2**

SOFTWARE LAB – II (COBOL)

1.   Simple problems with arithmetic operators

2.   Simple problems using control structures

3.   Table handling (one and two dimensional)

4.   Payroll Processing using sequential files.

5.   Telephone bill/Electricity bill preparation using sequential files.

6.   Mark sheet Processing using random files.

7.   Bank transaction using random files

8.   Sorting and Merging of files.

SEMESTER – II	Hours/Week : 6
11UCS230402	Credits : 5

ALLIED   MATHEMATICS - II

UNIT - I

Integration - Integrals of functions containing linear functions of x - Integrals of functions involving $a^2 + x^2$ - integrals of Rational algebraic functions - Integration of irrational functions.

Book 1: Chap. I sec 6.1, 6.2, 7 (Omit 7.4), 8 case (i) to (iv) only
Page no: 7-13, 23-31, 39-47.

UNIT – II

Properties of definite integrals - Simple applications - Integration by parts - Bernoulli's formula.

Book 1: Chap. I Sec. 11, 12, 15
Page no: 61-72, 93, 94.

UNIT – III

Differential equations of first order - Variable separable - Homogeneous equations - Nonhomogeneous equations - Linear equation - Bernoulli's equation.

Book 1: Chap 4: Sec 1-5
Page no: 205-218.

UNIT – IV

Second order Linear equations with constant co-efficients - Particular integrals for $e^{(kx)}$, sin kx, cos kx, x^n and $e^{(kx)}$ X.

Book 2: Chap 3: Sec 1-4, Page no: 42-60.

UNIT – V

Laplace transform - Definition - Some general theorems - Inverse Transform.

Book 1: Chap 7: 7.1, 7.2, 7.3, 7.4, 7.5
Page no: 289-308.

Text Book:

1. Ancillary Mathematics, Vol-II (2009), S. Narayanan, R. Hanumantha Rao, T.K. Manicavachagom Pillay, Kandaswamy.
2. Ancillary Mathematics Book II: Narayanan, Manicavachagom PIllay.

Semester II	Hours/week : 2
11UCE240802A	Credit : 2

SKILL BASED PAPER – COMPUTER LITERACY
(OFFICE AUTOMATION)

Objective:

To impart the knowledge about the office automation and the features of Open-Office.

Unit - I   **(6 Hrs.)**

Office Automation: Introduction - Information - Nature of Office work - Functions of an Office - Office Communications - Services of an Office - Need for office automation – Summary of Office Automation.

Unit - II   **(6 Hrs.)**

WRITER: Introduction to WRITER - Editing Document - Formatting Text and Paragraph - Spelling Checking - Enhancing Document - Columns, Tables and Other Features - Using Graphics - Mail Merge.

Unit - III   **(6 Hrs.)**

CALC: Introduction to CALC - Using Commands and Functions - Inserting and Deleting Rows and Columns - Formatting a Worksheet - Printing the Worksheet - Creating Charts.

Unit - IV   **(6 Hrs.)**

IMPRESS: Introduction to IMPRESS - Creating Presentation - Running Slide Show - Printing Presentation.

Unit - V   **(6 Hrs.)**

BASE: Introduction to BASE - Creating a Simple Database and Tables - Entering and Editing Data - Finding, Sorting and Displaying Data.

BOOK FOR STUDY:

Andy Channelle, "Beginning OpenOffice 3: From Novice to Professional" APress series, Springer-Verlog, 2009

BOOK FOR REFERENCE:

Perry M. Greg, "Sams Teach Yourself OpenOffice.org All In One", Sams Publications, 2007.

பருவம் - 3   மணி நேரம் - 4
11UGT310003   புள்ளிகள் - 3

பொதுத் தமிழ் - III

நோக்கங்கள்

1. செம்மொழித் தமிழ்ச்செய்யுள்களான பதிணென்மேல் கணக்கு, பதிணென்கீழ்க் கணக்குப் பாடல்களைப் படித்துப் பொருள் புரிந்து கொள்ளும் திறன் பெறுதல்
2. பண்டைய இலக்கியங்களில் அமைந்துள்ள சமூகக் கருத்துக்களை உணர்தல்.
3. மரபுக் கவிதை வடிவங்களை அறிதல்.
4. கவிதைகளில் அணிகள் அமைந்துள்ள பாங்கைப்புரிதல்.
5. புதினம் வழித் தற்காலச் சமுதாயச் சிக்கல்களையும், அதற்கான தீர்வுகளையும் ஆராய்ந்தறிதல்.

பயன்கள்

1. செம்மொழியாம் தமிழ் மொழியின் சிறப்பை அறிந்துகொள்வர்.
2. பண்டைய இலக்கியங்கள் உணர்த்தும் அறக்கருத்துக்களை அறிந்து, மாணவர் ஒழுக்க நெறியில் வாழ்ந்து சமூகத்தை மேம்படுத்துவர்.
3. மாணவர் புதினத்தைக் கற்பதன் மூலம் சமுதாயச் சிக்கல்களை உணர்ந்து அவற்றிற்குத் தீர்வு காண்பர்.

அலகு : 1   *(16 மணி நேரம்)*

பத்துப்பாட்டு - குறிஞ்சிப்பாட்டு (முழுமையும்)

அலகு : 2   *(10 மணி நேரம்)*

நற்றிணை, குறுந்தொகை, யாப்பிலக்கணம் (வெண்பா, ஆசிரியப்பா)

அலகு : 3   *(10 மணி நேரம்)*

இலக்கிய வரலாறு   – 'தமிழ்மொழியின் தொன்மையும் சிறப்பும்' *முதல்* 'சங்கத் தொகை நூல்கள்' முடிய.

புதினம்   – முழுமையும்.

அலகு : 4   *(12 மணி நேரம்)*

கலித்தொகை, பதிற்றுப்பத்து, புறநானூறு, அணியிலக்கணம்.

அலகு : 5   *(12 மணி நேரம்)*

திருக்குறள்
இலக்கிய வரலாறு – சங்க இலக்கியங்களின் தனித்தன்மைகள் முதல் இரட்டைக் காப்பியங்கள் முடிய.

பாடநூல்கள்

1. செய்யுள் திரட்டு, தமிழாய்வுத்துறை வெளியீடு (2011 - 2014)
2. சமூகவியல் நோக்கில் தமிழிலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு,2010
3. புதினம் (ஒவ்வொரு கல்வியாண்டும் ஒவ்வொரு புதினம்).

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	6 (6 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
புதினம்	-------------	-------------	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	-------------

Sem: III   **Hours :5**
Code: 11UGE320103   **Credits: 3**

GENERAL ENGLISH -III

Objectives:
1. *To enable the students to complete the pre-reading task to comprehend the local and global issues in the lessons..*
2. *To enable the students to complete the post-reading task centering on Grammar and Skill Development*
3. *To empower the students with globally employable skills.*

UNIT-I   **12 Hrs**

Larry Collins & Dominque Lapierre
Freedom at Midnight (Extract)
Alfred Uhry
Driving Miss Daisy
Extensive Reading—Robinson Crusoe (Chapters 1-3)
Essential English Grammar—61-66.

UNIT-II   **12 Hrs**

Alfred Lord Tennyson
Ulysses
Nathanial Branden
Our Urgent Need for Self-esteem
Extensive Reading—Robinson Crusoe (Chapters 4-6)
Essential English Grammar—67-72.
Reader's Mail :The Hindu

UNIT-III   **11 Hrs**

Daniel Goleman
Emotional Intelligence
Marcel Junod
The First Atom Bomb.
Extensive Reading—Robinson Crusoe (Chapters 7-9)
Essential English Grammar—73-78.
Job Application.

UNIT-IV   **20 Hrs**

E.K.Federov
Climate Change and Human Strategy.
Paolo Mauro
Corruption: Cases, Consequences and Agenda for further Research.
Extensive Reading—Robinson Crusoe (Chapters 10-12)
Essential English Grammar—79-84.
Minutes Writing.

UNIT-V   **15 Hrs**

Anne Frank
The Diary of Young Girl
A.P.J.Abdul Kalam
Wings of Fire
Extensive Reading—Robinson Crusoe (Chapters 13-15)
Essential English Grammar— 85-90.
Resume Writing.

Text Books

1. Elango K. *Insights.* Hyderabad: Orient Blackswan Pvt Ltd,2009.

2. Murphy, Raymond. *Essential English Grammar*. New Delhi. Cambridge University Press India Ltd,2009.

3. Defoe, Daniel. *Robinson Crusoe*. Chennai: MacMillan India Ltd,2009.

4. Stevenson R L. *Treasure Island*. Chennai: MacMillan India Ltd,2009.

5. Ram N Ed. *The Hindu*. Tiruchirappalli.

Semester III	Hours/week : 5
08UCS330207	Credit : 4

PROGRAMMING IN C++

Objective:
To introduce the concepts of object oriented programming and to impart the programming skills in C++.

Unit - I (15 Hrs.)

Object Oriented Programming - Advantages of OOP - Characteristics of OO languages - C++ programming basics - Functions: Simple Functions - Call by value - Call by reference - Returning values of different type - Function overloading - inline functions - Default arguments - Recursive functions.

Unit - II (15 Hrs.)

Class - Objects - Constructors - Destructors - Objects as function arguments - Returning objects from functions - Structures and Classes - Static data - Static function - Array of objects.

Unit - III (15 Hrs.)

Access specifiers - Friend function - Friend class - Operator overloading - Type casting - Pointers - Template.

Unit - IV (15 Hrs.)

Inheritance - Derived class constructors - Class hierarchies - Types of inheritance - Virtual base class - Function overriding - Virtual functions - Pure virtual functions - Abstract class.

Unit - V (15 Hrs.)

Files and Streams: I/O manipulators - Streams - String I/O - Character I/O - Object I/O - I/O with multiple objects - File pointers - Disk I/O with member functions.

BOOK FOR STUDY:
Robert Lafore, "Object-Oriented Programming in Microsoft C++", Galgotia Publications, New Delhi, 2000.

BOOK(S) FOR REFERENCE:
1. E.Balagurusamy, "Object-Oriented Programming with C++", Second Edition, 2002.
2. Bjarne Stroustrup, "The C++ Programming Language", Addison-Wesley, New York, 1999.

Semester : III	Hours/week : 3
11UCS330208	Credit : 2

SOFTWARE LAB - III (C++)

1. Functions using i) Call by value
   ii) Call by reference
   iii) Recursive call
            iv) Returning different data types.
2. In-line function, Overloaded function and Default arguments.
3. Operator overloading (Unary and Binary).
4. Class and All types of Constructors.
5. Static function and Array of objects with static data.
6. Friend function and Friend class.
7. i) Simple and Multilevel inheritance
   ii) Implementing derived class constructors.
8. i) Function overriding
   ii) Creating objects using Pointers.
9. Virtual functions, pure virtual functions and Abstract class.
10. Dynamic polymorphism.
11. Function Template and Class Template.
12. I/O Streams with text file and data file.

SEMESTER – III   Hours/Week : 4

11UCS330403A   Credits : 4

ALLIED: APPLIED PHYSICS- I

Objectives:

- To acquire knowledge of current electricity and Potentiometer.
- To understand the basic principle of electromagnetism and magnetic materials and circuits
- To study the basic principles of Laser and optical fibers and their applications .
- To learn about alternating current generation and distribution and a principle of a Transformer.

UNIT – I : Electricity and Capacitor

Electric current and its units – Definition of important parameters- Ohm's law and its verification- -Effect of temperature on resistance- Electric power and electric energy and their units- Principle of capacitor- capacity of parallel plate capacitor- Energy of charged capacitor – Potentiometer- Principle- calibration of ammeter and voltmeter.

UNIT – II : Electromagnetism

Magnetic lines of force – Magnetic field and magnetic induction- Magnetic flux – Magnetic field around a current carrying conductor- Direction of magnetic field –Biot –Savart's Law – Magnetic field inside the solenoid- Fleming's Left Hand rule- Galvanometer – shunt – Conversion of a galvanometer into an ammeter and voltmeter.

UNIT – III : Magnetic Properties of Materials And Magnetic Circuit

Force between magnetic poles – Permeability – Susceptibility, Magnetic field intensity and intensity of magnetization- Para, Dia,Ferro magnetic substances – Magnetic circuits – Magneto Motive force – Reluctance – Permeance – Ohm's law of magnetic circuits-Reluctance in series and parallel –comparison between magnetic and electric circuits – Magnetic bubble memories.

UNIT – IV : Laser and Optical Fibre

Spontaneous and stimulated emission – population inversion – pumping process and active medium - The Ruby Laser-CO_2 Laser – He-Ne Laser – Semiconductor Laser - uses of Lasers. Optical fibre – total internal reflection – Numerical aperture and acceptance cone – types of optical fibre- fibre optics communication system- applications

UNIT – V : Alternating Current and Transformer

Alternating currents – Basic Definitions – Effective value , R.M.S. value and Average value of AC- Generating of Alternating current – Distribution of AC currents- Transformer- Principle – working of transformer- step-up and step down transformers.

BOOK FOR STUDY:

1. A.S.Vasudeva, Modern Engineering Physics, S.Chand and CompanyLtd., 1988.
2. R.K.Gaur and S.L Gupta – Engineering Physics, Dhanapat Raj.

UNIT	BOOK	SECTIONS
I	1	2.2,2.3,5.4,6.10-6.13,9.10-9.13,9.17,15.7,15.8
II	1	2.2-2.5,3.1,3.2,3.7,3.8
III	1	3.2-3.4,3.15,3.16,1.2-1.4,1.7-1.10.
IV	1	8.2,8.3,8.8-8.15, 8.17, 8.20, 8.22, 8.24, 8.28, 8.34, 8.35
V	2	2.4,2.9,4.25-4.27,5.21,5.27,5.28,6.10

BOOKS FOR REFERENCE:

1. Electricity & Magnetism - Sehgal, Chopra, Sehgal, S. Chand & Sons, New Delhi, 2002.
2. Electricity & Magnetism - R. Murugesan, S. Chand & Company Ltd., New Delhi, 7th Revised Edition, 2008.
3. Applied Physics for Engineers - V. Rajendran, A. Marikani, Second Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 1996.

SEMESTER – III   **Hours/Week : 4**
11UCS330403B   **Credits   : 4**

ALLIED- I : PRINCIPLES OF ELECTRONICS

Objectives:
- To acquire the basics knowledge of principles of Electronics

UNIT – I :   SEMICONDUCTOR DIODES AND RECTIFIRES

The PN-Junction - Formation of Depletion Layer - Forward Biased PN Jjunction and Chracteristics - Reverse Biased PN Junction and Characteristics - PN Junction Diode - Zener Diode - LED - Photodiodes.

Rectifiers - Half Wave Rectifiers - Full Wave Rectifiers - Full Wave Bridge Rectifiers.

UNIT – II :   TRANSISTORS AND AMPLIFIERS

Bipolar Junction Transistor - Transistor Biasing - Configurations : CB, CE, CC - Transistor Static Characteristics : CB, CE and CC.

Classification of Amplifiers - Common Base (CB) Amplifier - Common Emitter (CE) Amplifer.

UNIT – III :   OSCILLATORS

Oscillator - Classification - Dampled and Undamped - Oscillatory Circuit - Frequency Statbility - Essentials of Feedback LC Oscillator - Tuned Base Oscillator - Tuned Collector Oscillator - Hartley Oscillator - Colpits Oscillator - Phase Shift Oscillator - Wien Bridge Oscillator.

UNIT – IV :   OPERATIONAL AMPLIFER

Operational Amplifier - Block Diagram - Symbol - Basic Application : Inverting - Non-inverting summing - subtractor - Integrator - differentiator - Comparator - Schmitt Trigger.

UNIT – V :   555

555 Timer - Pin Configuration - Functional Block Diagram of Timer - Monostatble Multivibrator - Applications - Astable Multivibrator - Applications

BOOKS FOR STUDY
1. Thereja, B.L., "Basic Electronics Solid State", S. Chand and Company Ltd., New Delhi, 2010
2. Ramakant, A. Gayakwad, "OP-AMPs and Linear Integrated Circuits" 4th Edition, PHI, New Delhi, 2004.

BOOKS FOR REFERENCE:
1. Bhargava, N.N., Kulshrestha, D.C., Gupta, S.C., "Basic Electronics and Linear Circuits", TMH, New Delhi.
2. Sedha, R.S., "Applied Electronics", S. Chand and Company Ltd, New Delhi, 2008.
3. Mehta, V.K., "Principles of Electronics", S. Chand and Company L:td, New Delhi, 2008.

UNIT	BOOK	SECTIONS
I	1	13.1, 13.2, 13.5, 13.6, 13.7, 13.9, 14.1, 15.1, 16.3, 16.8 - 16.11, 17.5 - 17.8
II	1	18.1, 18.2, 18.6 - 18.10, 19.1 - 19.6, 22.1 - 22.7
III	1	28.1, 28.3 - 28.12, 28.14, 28.21 - 28.23
IV	1	2.2, 2.3, 2.5, 7.5, 7.5.1 - 7.5.3, 7.12, 7.13, 9.2, 9.4
V	2	10.4, 10.4.1, 10.4.2, 10.4.3, 10.4.4

பருவம் - 4   மணி நேரம் - 4
11UGT410004   புள்ளிகள் - 3

பொதுத் தமிழ் - 4

நோக்கங்கள்

1. நாடகத்தின் நோக்கம், அதன் போக்கு, உத்திகள், பாத்திரப் பாங்கு, உரையாடல் முறை, கற்பனைத் திறம் போன்றவற்றை வெளிப்படுத்துதல்.
2. புதிய நாடகங்களைப் படைக்கும் திறனை மாணவர்களிடையே உருவாக்குதல்.

பயன்கள்

1. நாடகவழி அழகியல் உணர்வுகளை வளர்த்துக் கொள்வர்.
2. நாடகங்களைச் சமூகப் பயன்பாட்டிற்கு ஏற்ப உருவாக்கும் திறன் பெறுவர்.

அலகு : 1   *(12 மணி நேரம்)*

மனோன்மணீயம், பாயிரம், அங்கம் - 1, களம் 1 - 5 வரை.

அலகு : 2   *(12 மணி நேரம்)*

மனோன்மணீயம், அங்கம் - 2, களம் 1 - 3 வரை.

உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு
     (முதல் மூன்று நாடகங்கள்)

அலகு : 3   *(12 மணி நேரம்)*
மனோன்மணீயம், அங்கம் - 3, களம் 1 - 4 வரை.

அலகு : 4   *(12 மணி நேரம்)*
மனோன்மணீயம், அங்கம் - 4, களம் 1 - 5 வரை.

அலகு : 5   *(12 மணி நேரம்)*

மனோன்மணீயம், அங்கம் - 5, களம் 1 - 3 வரை.
உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு,
     (4, 5, 6 ஆம் நாடகங்கள்)

பாடநூல்கள்

1. சுந்தரனார், பெ. மனோன்மணீயம், தமிழாய்வுத்துறை (பதிப்பு), தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2. *(அங்கம் - 3 இல் களம் - 4 நீங்கலாக)*

2. உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு, அய்யா நிலையம், நாஞ்சிக் கோட்டை சாலை, தஞ்சாவூர் - 613 006.

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
மனோன்மணீயம்	20 (20 வினாக்கள்)	20 (5 வினாக்கள்)	60 (4 வினாக்கள்)
உரைநடை நாடகம்	-----------	----------	15 (1 வினா)

Sem: IV   **Hours :5**
Code: 11UGE420104   **Credits: 3**

GENERAL ENGLISH -IV

Objectives:

1. *To enable the students to complete the pre-reading task to comprehend the local and global issues in the lessons..*
2. *To enable the students to complete the post-reading task centering on Skill Development and Grammar..*
3. *To empower the students with globally employable soft skills.*

UNIT-I   **12 Hrs**
Life Stories   F.G.Herod
                                               Mother Teresa
                                               R.K.Narayan
                                               Swami and Friends
Extensive Reading   Treasure Island (1-4)
Essential English Grammar   91—95.
Film Review (The Hindu).

UNIT –II   **12 Hrs**
                                               Imogen Grosberg
                                               See Off the Shine
                                               George Orwell
                                               The Porting Spirit
Extensive Reading   Treasure Island (5-8)
Essential English Grammar   96-100.
Article Writing on Current Issues.

UNIT-III   **11 Hrs**
                                               Philip Agre
                                               Building an Internet Culture
                                               Satyajit Ray
                                               Odds Against Us
Extensive Reading   Treasure Island (9-12)
Essential English Grammar   101-105.
Mock Interviews

UNIT-IV   **20Hrs**
                                               Jerzy Kosinski
                                               TV as Babysitter.
                                               E.F.Scumacher
                                               Technology With Human Face.
Extensive Reading   Treasure Island (13-17)
Essential English Grammar   106-110.
Mock Group Dynamics

UNIT-V   **15 Hrs**
                                               Aluizio Borem, Fabrico
                                               R.Santos & David E.Bower
                                               Advent of Biology
                                               Mark Ratner & Daniel Ratner
                                               Nanotechnology
Extensive Reading   Treasure Island (18-22)
Essential English Grammar   111-114.
Presentation Skills

Text Books

1. Elango K. *Insights.* Hyderabad: Orient Blackswan Pvt Ltd,2009.
2. Murphy, Raymond. *Essential English Grammar*. New Delhi. Cambridge University Press India Ltd,2009.
3. Defoe, Daniel. *Robinson Crusoe*. Chennai: MacMillan India Ltd,2009.
4. Stevenson R L. *Treasure Island*. Chennai: MacMillan India Ltd,2009.
5. Ram N Ed. *The Hindu*. Tiruchirappalli.

Semester IV   **Hours/week : 4**
11UCS430209   **Credit   : 4**

DATA STRUCTURES AND ALGORITHMS

Objective:

To give a fundamental knowledge on data structures and exposure to development of algorithms related to data structures.

Unit - I   **(12 Hrs.)**

Arrays: Ordered Lists - Representation of arrays. Stacks and queues: fundamentals-evaluation of expressions-multiple stacks and queues.

Unit - II   **(12 Hrs.)**

Linked Lists: Singly Linked Lists- Linked stacks and queues- The Storage Pool - Polynomial Addition- More on Linked Lists. Doubly Linked Lists: Node Insertion and Node Deletion.

Unit - III   **(12 Hrs.)**

Trees: Basic terminology-Binary trees-Binary tree Representations - Binary tree traversal. Threaded Binary Trees- Binary Tree Representation of Trees.

Unit - IV   **(12 Hrs.)**

The Complete Development of an Algorithm; Algorithms – Basic Steps. Algorithm Design Methods: Sub goals – Hill Climbing - Working Backward – Heuristics – Backtrack Programming – Recursion.

Unit - V   **(12 Hrs.)**

Computer Science Algorithms: Sorting – Searching – Parallelism. Mathematical Algorithms : Magic Squares.

BOOK(S) FOR STUDY:

1.   Ellis Horowitz and Sartaj Sahni, "Fundamentals of Data structure", Galgotia Publications, New Delhi, 1985. Units I, II, III

2.   S.E. Goodman and S.T. Hedetniemi, "Introduction to the Design and analysis of algorithms", McGrawHill, International edition, 1988: Units IV,V

BOOK(S) FOR REFERENCE:

1.   Tanenbaum A.M. and Augustein M.J., "Data structures with Pascal", Prentice Hall of India Ltd, New Delhi, 1985.

2.   Ellis Horowitz and Sartaj Sahni, "Fundamentals of computer algorithms", Galgotia Publications, New Delhi, 1985.

Semester: IV   **Hours/week : 3**
11UCS430210   **Credit   : 2**

SOFTWARE LAB - IV
(DATA STRUCTURES USING C AND C++)

C++ PRACTICALS

1.   Create a class Array

2.   Create a class Stack

3.   Convert Infix to Postfix and evaluate Postfix using Stack class

4.   Create classes Queue and Circular Queue

C PRACTICALS

5.   Operations on Singly linked list

6.   Operations on Doubly linked list

7.   Binary Tree Creation and Traversals

8.   Analyze Bubble Sort with number of passes, comparisons and data moves

9.   Sequential and Binary Search

10.   Merge two sorted data files.

Semester – IV   **Hours/Week : 4**
11UCS430404 A   **Credits : 4**

ALLIED: APPLIED PHYSICS - II

Objectives:
- To understand the different switches and display devices supporting devices of a computer.
- To acquire knowledge of semiconductor diodes and transistors, op-amp and its applications.
- To understand the knowledge of different types of communication.

UNIT – I : Switches and Devices

Microphones – Digital displays – Loud speakers- , Head phones and ear pieces – Cathode Ray Oscilloscope (CRO) – Pick-ups – Heat and Light Sensors – Relays and switches

UNIT- II : Semiconductor Diodes and Transistors

Semiconductors – P-type and N-type semiconductors – Junction diode – Junction Diode characteristic – Semiconducting diode as a rectifier-Other diodes – Transistor characteristics- Transistor as a switch- Transistor as a current amplifier.

UNIT – III : Power Supplies , Safety and Instruments

Electricity at home – Dangers of electricity, safety precautions – Generating Electricity – Sources of EMF – Rectifier Circuits – Smoothing Circuits – Stabilizing Circuits.

UNIT – IV : Analog and Digital Electronics

Amplifiers and Feed back-Tuned LC oscillator – Operational Amplifier – OP-Amp voltage amplifier – OP-Amp summing amplifier -OP-Amp comparator – OP-Amp Integrators – OP-Amp oscillators – Logic Gates – Types of Logic Gates.

UNIT – V : Communication Systems

Audio systems – Sound recording – Complete Hi-fi system – Radio and Television- Radio waves , Radio system – Colour Television – Cable and Satellite TV – Telephone system , Simple Telephone circuits – Telephone exchange

BOOK FOR STUDY:
1. Tom Duncan , Electronics – For Today and Tomorrow, BPB Publications 3rd Edition.

UNIT	BOOK	CHAPTER	SECTIONS
I	1	1	**17-25**
II	1	2	26-35
III	1	3	36-42
IV	1	4	49-53,56
V	1	5	82,83,84-89,90-92.9496

BOOK FOR REFERENCE:
1. A.S. Vasudeva - Modern Engineering Physics, S. Chand and Company Ltd., 1988.
2. A Text Book of Applied Electronics - R.S. Sedhu, S. Chand & Company, New Delhi, 2006.
3. Electronic Devices and Circuits - Salevahavan, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2008.

Semester – IV　　　　　　　　　　　　　　　**Hours/Week : 4**
11UCS430404 B　　　　　　　　　　　　　　**Credits　　: 4**

ALLIED - II: COMMUNICATION ELECTRONICS

Objectives:
- To acquire knowledge about analog and digital modulation and demodulation technique
- To understand the concepts and techniques involved in mobile communication

UNIT – I :　SINGLE SIDEBAND AND COMMUNICATIONS SYSTEMS

Introduction - Definitions - Theory of amplitude modulation and modulation index - sidebands produced in amplitude modulation - Power distribution on an AM Waves - Methods of amplitude modulation - Phase modulation - INtroduction - Definition - Express for FM wave - sideband terms produced in frequency modulation - Phase modulation - Frequency Modulation method - Comparative advantages, disadvantages and merits of FM, PM and AM.

UNIT – II:　RADIO RECEIVERS

Introduction - classification fo radio receivers - Superheterodyne receivers - AM Receivers - Receiver Charactertics - Receiver Noise - SSB Receivers - FM Receiver - Effect of Noise - Amplitude and Frequency modulation.

UNIT – III :　DIGITAL AND DATA COMMUNICATION

Introduction - Types of analog pulse modulation - Generation and demodulation of PAM waves - pulse duration (width) modulation (PWM) - Pulse Position Modulation (PPM) - Generation and demodulation of PPM - Pulse Code Modulation (PCM) - Generation and demodulation of PCM - Multiplex Transmission - Frequency Division Multiplexing - Time Division Multiplexing.

UNIT – IV :　CELLULAR TELEPHONE COMMUNICATIONS & TRANSMISSION

History of wireless communication - A simplified reference model - Frequencies for radio transmission - multiplexing - frequency division multiplexing - time division multiplexing - code division multiplexing - modulation - amplitude shift keying - frequency shift keying - phase shift keying - advanced frequency shift keying - advanced phase shift keying - multi carrier modulation.

UNIT – V :　CELLULAR TELEPHONE COMMUNICATION SYSTEM

GSM - Mobile Services - System Architecture - Radio Interface - Protocols - Localisation and calling - Handover - Security - New Data Services.

BOOKS FOR STUDY :
1.　N.D. Deshpande, D.A. Deshpande, P.K. Rangole, Communication Electronics, Tata McGraw Hill Publishing Company Limited, Seventh Reprint, New Delhi.

2.　Jochen H. Schiller, Mobile Communication, Pearson Education Ltd., Seventh Impression 2008, New Delhi.

UNIT	BOOK	SECTIONS
I	1	3.1 - 3.6, 4.1 - 4.7
II	1	7.1, 7.2, 7.5, 7.10, 7.11, 7.13-7.15
III	1	12.1 - 12.3, 12.5 - 12.12
IV	2	1.2, 1.3, 2.1, 2.5, 2.6
V	2	4.1, 4.1.1 - 4.1.8

SEMESTER – III & IV	**Hours/Week : 2**
11UPH430405A	**Credits : 2**

ALLIED: PHYSICS PRACTICAL

Any 16 Experiments

1.   Resistance of a Thermistor- Multimeter

2.   EMF of a Thermocouple – Multimeter

3.   Temperature Co-efficient of Thermistor

4.   Potentiometer – Calibration of Ammeter

5.   Potentiometer – Calibration of Voltmeter

6.   Field along the axis of a coil

7.   Junction Diode – V-I characteristics

8.   Zener Diode –V-I Characteristics

9.   Bridge Rectifier - π filter circuit

10. Regulated Power supply Using Zener Diode

11. Transistor Characteristics – CE Mode

12. FET Characteristics –CG Mode

13. Ballistic Galvanometer – Figure of Merit

14. Single Stage R-C coupled amplifier – Frequency Response

15. Operational- Amplifier – adder, subtractor, comparator,

16. Basic Logic Gates – Using IC's

17. Logic gates using IC's to solve Boolean expressions.

18. Logic Gates Using IC's -The study of universal gates& Demorgan's Theorem

19. Encoders using Diodes

20. Encoders using OR gates.

21. Shift register using IC7495.

22. R-S, J-K , D,T Flip-flops using Logic gates IC's

SEMESTER – III & IV	**Hours/Week : 2**
11UPH430405B	**Credits : 2**

ALLIED: ELECTRONICS PRACTICAL

1.   Study of Diode Characteristics

2.   Study of Zener Diode Charactersitics

3.   Study and construction of Half Wave Rectifier with & without filter

4.   Study of Transistor Characteristics - CB Configuration

5.   Study of Transistor Characteristics - CE Configuration

6.   Study of Transistor Characteristics - CC Configuration

7.   Study of Photo Electronic Devices (LED and Photodiode)

8.   Construction and Study of Hartley Oscillator - Transistor

9.   Construction and Study of Phase Shift Oscillator - Transistor

10.   Construction and Study of Colpitts Oscillator - Transistor

11.   Study of Basic Operations of Operational Amplifer

12.   Study of Operational Operational Amplifier Applications

13.   Study and Construction of Astable & Monostable MVT using 555

14.   Study of PAM, PPM and PWM

15.   Study of Transmission Line Characteristics

Semester IV   **Hours/week : 4**
11UCS430301 A   **Credit   : 4**

ELECTIVE – I : SYSTEMS ANALYSIS AND DESIGN

Objective:

　　To give basic concepts of System, System Analysis, Design and Implementation

UNIT I   **(12 Hrs.)**

　　System Concepts and the Information Systems Environment: Introduction - The System Concept – Characteristics of a system – Elements of a system – Types of systems. **System Development Life Cycle:** Introduction - The System Development Life Cycle – Consideration for Candidate systems. **Role of the Systems Analyst:** Introduction – Historical Perspective – The Multifaceted Role of the Analyst – The Place of the Analyst in the MIS Organization – Rising Positions in System Development.

UNIT II   **(12 Hrs.)**

　　System planning and the Initial Investigation: Introduction **-** Bases for Planning in Systems Analysis – Initial Investigation. **Information Gathering:** Introduction – Information – Gathering Tools.

UNIT III   **(12 Hrs.)**

　　Tools of Structured Analysis: Introduction – Decisions Tree Analysis. **Feasibility Study:** Introduction – System Performance Definition – Feasibility Study. **Cost/ Benefit Analysis:** Introduction - Cost / Benefit Analysis.

UNIT IV   **(12 Hrs.)**

　　Process and Stages of Systems Design: Introduction – Process of Design – Design Methodologies – Major Development Activities – Audit Considerations. **Input / Output and Forms Design:** Introduction – Input Design – Forms Design - **File Organization and Database Design:** Introduction – File Organization – Data Base Design.

UNIT V   **(12 Hrs.)**

　　System Testing and Quality Assurance: Introduction – The Test Plan – Quality Assurance – Role of the Data Processing Auditor. **Implementation and Software Maintenance:** Introduction – Conversion – Post-Implementation Review.

BOOK FOR STUDY:

　　Elias M Awad, "Systems Analysis and Design", Galgotia Publications, New Delhi, 2001.

BOOK(S) FOR REFERENCE:

1.　　Hawryczkiewycz I.T "Introduction to System Analysis and Design", PHI NewDelhi, 1994.

2.　　S.A. Kelkar, "Structures Systems Analysis and Design: A Concise Study", PHI Learning Private Limited, New Delhi, 2009.

3.　　B. Lee, "Introduction to System Analysis and Design", John Wiley & Sons, 1983.

Semester IV   **Hours/week : 4**
11UCS430301 B   **Credit   : 4**

ELECTIVE – I
UNIFIED MODELING LANGUAGES

Objective:
   To specify, visualize, construct and document the artifacts of a software systems

UNIT - I   **(12 Hrs.)**
   UML : Introduction to UML – Basic Structural Modeling: Classes – Relationships-Common Mechanism – Diagrams – Class diagrams.

UNIT - II   **(12 Hrs.)**
   Advanced Structural Modeling : Advance classes – Advance relationships – Interfaces - Types and Roles – Packages - Instances – Object diagrams.

UNIT - III   **(12 Hrs.)**
   Basic Behavioral Modeling – Interactions – Use Cases –Use Case diagrams- Interaction Diagrams – Activity diagram.

UNIT - IV   **(12 Hrs.)**
   Advanced Behavioral Modeling: Events and Signal – State machines – Process and Threads – Time and Space – State chart diagrams.

UNIT - V   **(12 Hrs.)**
   Architectural Modeling – Components –Deployment –Collaborations.

BOOK FOR STUDY:
   Grady Booch, James Rumbaugh and Ivar Jacobson, "The Unified Modeling Language User Guide", Addison – Wesley Longman Pvt.Ltd., Singapore, 2001

BOOK FOR REFERENCE
   Grady Booch, James Rumbaugh and Ivar Jacobson, "The Unified Modeling Language Reference Manual", Addison Wesley Longman Pvt. Ltd, Singapore, 2000.

Semester : IV	Hours/week : 2
11UCS430211	Credit : 2

SOFT SKILLS

Objective:
- Imparting effective communication skills (Spoken and Written)
- Developing effective presentation skills
- Becoming a self confident person through a mastery of interpersonal skills, team management skills and leadership skills
- Developing a broad career plan matching the job requirements
- Achieving a mature outlook and becoming industry ready

UNIT - I (6 Hrs.)

Reading Skill: Types of reading – Reading micro skills – Developing vocabulary – Reading comprehension – Speed reading techniques – Reading retention techniques Characteristics of efficient reading – SQ3R technique.

UNIT - II (6 Hrs.)

Writing Skills : Effective Writing techniques – Writing good essays, assignments and articles – Letter writing – Good E-mail writing – Effective resume writing – Tips for better Bio-data writing.

UNIT - III (6 Hrs.)

Speaking Skills : Conversation skills – Tips for effective talk – Presentation Techniques – Proficient Public Speaking: Preparation, Delivery, Removing stage fear, Captivating audience, Body language, Speech fluency.

UNIT - IV (6 Hrs.)

Listening Skills : Types of Listening – Roadblocks to listening – Improving listening Skills – Listening to feelings – Preparing for job interview – Listening in interviews – Bargaining in interview.

UNIT - V (6 Hrs.)

Learning Skills : Learning styles – Learning methods: SQ4R, Soprano, Cornull, Memletic study techniques – Concentration techniques – Learning for exams and tests – Psychological factors of memory potential – Memory triggers – Boosting memory power through mnemonic devices.

BOOK(S) FOR STUDY

1. Fr. Francis Thamburaj, 'Communication Soft Skills for Professional Excellence', Grace Publications, 2009
2. Prof G. Ravindran, Dr. S.P.B. Elango, Dr. L. Arockiam, 'Success Through Soft Skills', Institute for Communication and Technology, Trichy, 2009.

Semester : V   **Hours/week : 5**
11UCS530212   **Credit   : 4**

PROGRAMMING IN JAVA

Objective:

To impart sound knowledge and programming skills in JAVA**.**

Unit - I   **(15 Hrs.)**

Java Features - Overview of Java language – Classes - Objects – Constructors – Method Overloading – Static members - Inheritance – Overriding methods- final variable – final method – final class – finalize methods – Abstract Methods and Classes- Visibility Control.

Unit - II   **(15 Hrs.)**

Arrays – Strings – Vectors – Wrapper Classes – Interfaces – Packages - Multithreaded Programming: Thread Life Cycle – Thread Exceptions – Thread Priority – Synchronization. Managing Errors and Exceptions : Multiple Catch – finally – Throwing our own exception.

Unit - III   **(15 Hrs.)**

Applet Programming : Applet Life Cycle – HTML – Applet Tag- Passing Parameters to Applets. Graphics Programming: Lines – Rectangles- Circles – Ellipses – Arcs – Polygons. Managing I/O streams in Java: Stream Classes – Byte Stream – Character Stream – I/O Exceptions – Sequential Files.

Unit - IV   **(15 Hrs.)**

Swing: JApplet – Icons – JLabel – JTextField – JButton – JCheckBox – JRadioButton – Menus - JSlider - JComboBox – **Networking**: Networks, Domains names and Protocols – Layers in Network Communication – Ports – TCP – UDP approach – Accessing resources on the Internet.

Unit V   **(15 Hrs.)**

Java Database Connectivity: Establishing connection – Creation, Entering, Updating Tables – Statement object- Prepared statements –result set - stored procedures – **Servlets**: Servlets and dynamic web pages – Life cycle – Simple servlet.

BOOK(S) FOR STUDY:

1.   E. Balagurusamy, "Programming with Java", Tata McGraw Hill Publishing Company Ltd., (Unit I, II, III)
2.   C. Muthu, "Programming with Java", Vijay Nicole Imprints Pvt. Ltd., Chennai, 2004, ISBN: 981-254-265-5 (Unit IV,V)

BOOK FOR REFERENCE:

Patrick Naughton and Herbert Schildt, "JAVA 2 - The Complete Reference", Fifth Edition, Tata-McGraw-Hill, New Delhi, 2002.

Semester: V   **Hours/week : 5**
11UCS530213   **Credit : 4**

DATABASE SYSTEMS

Objective:

To understand the basic concepts and organization of a database and to impart basic knowledge on relational database.

UNIT - I   **(15 Hrs.)**

Introduction: Flat File – Database System – Database – Actionable for DBA. The Entity – Relationship Model: Introduction – The Entity Relationship Model. Data Models: Introduction – Relational Approach – The Hierarchical Approach – The Network Approach.

UNIT - II   **(15 Hrs.)**

Storage Structure: Introduction – File Organization and Addressing Schemes. Relational Data Structure: Introduction – Relations – Domains.

UNIT - III   **(15 Hrs.)**

Normalization: Introduction - Normalization – Definition of Functional Dependence (FD) – Normal Forms: 1NF, 2NF, 3NF and BCNF.

UNIT - IV   **(15 Hrs.)**

Structured Query Language: Features of SQL – Select SQL Operations – Grouping the Output of the Query – Querying from Multiple Tables – Retrieval Using Set operators – Nested Queries. T-SQL – Triggers and Dynamic Execution: Transact-SQL..

UNIT - V   **(15 Hrs.)**

Procedural Language- SQL: PL/SQL Block Structure – PL/SQL Tables. Cursor Management and Advanced PL/SQL: Opening and Closing a Cursor – Processing Explicit Cursor – Implicit Cursor – Exception Handlers – Sub Programs in PL/SQL – Functions – Precaution While Using PL/SQL Functions – Stored Procedure – Object Oriented Technology.

BOOK FOR STUDY:

Rajesh Narang, "Database Management Systems", PHI Learning Private Limited, New Delhi, sixth printing, 2010.

BOOK FOR REFERENCE:

S.K. Singh, "Database Systems – Concepts, Design and Appplications", Dorling Kindersley (India) Pvt. Ltd., Second Impression, 2008.

Semester : V   **Hours/week : 5**
11UCS530214   **Credit : 4**

MICROCOMPUTER ARCHITECTURE

Objective:

    To impart knowledge on architectures and assembly language Programming concepts of 8-bit & 16-bit Processors.

Unit – I   **(15 Hrs.)**

    Microprocessor Architecture: Intel 8085 - Instruction Cycle - Timing diagram - Instruction Format - Addressing modes - Instructions -Stacks - Subroutines.

Unit – II   **(15 Hrs.)**

    Programming: Simple examples - 8-bit addition and subtraction - 16-bit addition - 8-bit decimal subtraction - complements of 8-bit and 16-bit number - shifting bits - masking bits - finding square - finding largest of two numbers - finding largest and smallest in an array - ordering data array - sum of series of numbers - 8-bit multiplication and division – multibyte addition and subtraction.

Unit – III   **(15 Hrs.)**

    8086 Architecture and assembly language Programming: Basic 8086 Configuration - minimum mode and maximum mode - CPU Architecture - Internal Operation - Machine language Instructions - instruction Execution timing - Assembler instruction format.

Unit – IV   **(15 Hrs.)**

    Data transfer instructions - arithmetic instructions - branch instructions - LOOP, NOP, HLT instructions - flag manipulation - shift, rotate and logical instructions Modular Programming for manipulating segment registers.

Unit – V   **(15 Hrs.)**

    BIOS and DOS services – DOS interrupts.

BOOK(S) FOR STUDY:

1. N. K. Srinath., "8085 Microprocessors Programming and Interfacing", PHI Learning Private Ltd, New Delhi, 2009. Unit I : Ch 1, Unit II: Ch 2, Ch 3.
2. Y.C. Liu and G.A.Gibson, "Microcomputer Systems: The 8086/8088 family Architecture, programming and Design", Prentice Hall of India, New Delhi, 1986. Unit III : Ch 2, Unit IV : Ch 3.1 - 3.9, 4.1.
3. Steven Armbrust and Ted Forgeron "Programmer's Reference Manual for IBM personal computers", Galgotia Publishers Pvt. Ltd, New Delhi. 1992. Unit V : Ch 2, Ch 3.

BOOK(S) FOR REFERENCE:

1. K.A. Krishanamurthy "Ten Days with 8085 Microprocessor", PHI Learning Private Ltd, New Delhi, 2010.
2. Albert Paul Malvino and Donald P.Leach, "Digital Principles and Applications", McGraw-Hill International Edition, New Delhi, 1986.
3. Ramesh S. Gaonkar , "Microprocessor Architecture, Programming and Applications with the 8085/8080A", Wiley Eastern Ltd, New Delhi, 1989.
4. Barry B Brey, "The Intel Microprocessors 8086/8088, 80186, 80286, 80386, 80486, Pentium and Pentium Pro processors Architecture, Programming and Interfacing", Prentice Hall of India, New Delhi, 2002.

Semester : V   **Hours/week : 4**
11UCS530302 A   **Credit   : 4**

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ELECTIVE – II
XML

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Objective:

     To impart data representation techniques with XML and to study various features of XML

Unit - I   **(12 Hrs.)**

     Introduction to XML – XML Document structure – elements and attributes - Well-Formed XML Document.

Unit - II   **(12 Hrs.)**

     Formatting Languages: CSS – XSL documents – XSL Basics - linking XSL with XML – XSL Tags.

Unit - III   **(12 Hrs.)**

     Validity - Document Type Declaration - Document Type Definitions (DTDs) - DTD Syntax: Element and Attribute Declarations – Entity Declaration.

Unit - IV   **(12 Hrs.)**

     Xlink: Simple and extended links – Xpath – Xpointers – XML namespaces.

Unit - V   **(12 Hrs.)**

     XML Applications: Mathematical markup languages – chemical markup languages – wireless markup languages – Data interchange.

BOOK(S) FOR STUDY

1.   Elliotte Rusty Harold, "XML Bible", Wiley, 2 Edition, 2001.
2.   Sandra Eddy & John E. Schnyder, "Teach yourself XML" Hungry Minds, 1999.

BOOK FOR REFERENCE:

1.   Erik T. Ray, "Learning XML", O'Reilly Media, First Edition, 2001.

Semester V   Hours/week : 4
11UCS530302 B   Credit   : 4

ELECTIVE – II
SOFTWARE ENGINEERING

Objective:

To introduce the basic concepts of Software Engineering and the various phases in Software Development.

UNIT - I   **(12 Hrs.)**

Introduction: The Software Engineering Discipline - Software Development Projects - Emergence of Software Engineering - Software Life Cycle Models: Classical Waterfall Model - Iterative Waterfall Model - Prototyping Model - Spiral Model.

UNIT - II   **(12 Hrs.)**

Software Project Management: Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project Estimation Techniques - Empirical Estimation Techniques - COCOMO - Risk Management - Requirements Analysis and Specifications: Requirements Gathering and Analysis - SRS.

UNIT - III   **(12 Hrs.)**

Software Design: Cohesion and Coupling - Function-Oriented Software Design: Structured Analysis - DFDs - Structured Design - Object Modeling: Overview of Basic Object-Orientation Concepts - UML Diagrams - Activity Diagram - State Chart Diagram - User Interface Design: Characteristics of a Good User Interface - Basic Concepts.

UNIT - IV   **(12 Hrs.)**

Coding and Testing: Coding **-** Software Documentation - Testing - Unit Testing - Black-Box Testing - White-Box Testing - Debugging - Integration Testing - System Testing - Software Reliability and Quality Management: Software Reliability - Software Quality and Management System.

UNIT - V   **(12 Hrs.)**

Computer Aided Software Engineering: Case Environment - Characteristics of CASE Tools - Maintenance: Characteristics of a Software Maintenance - Software Reverse Engineering - Estimation of Maintenance Cost - Software Reuse: A Reuse Approach.

BOOK FOR STUDY:

Rajib Mall, " Fundamentals of Software Engineering", PHI Learning, Private Limited, New Delhi, Third Edition, 2010.
Unit I   :   Chapters 1& 2
Unit II :   Chapters 3 & 4
Unit III: Chapters 5, 6, 7 & 9
Unit IV: Chapters 10, 11
Unit V :   Chapters 12, 13 & 14

BOOK FOR REFERENCE:

K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International Publishers, Revised Second Edition, 2005.

Semester : V
11UCS530215

Hours/week : 3
Credit : 2

SOFTWARE LAB -V (JAVA)

1. Create classes for entities

2. Arrays and Vector classes

3. Inheritance and Method overriding

4. Interfaces

5. Packages

6. Multithread programming

7. I/O Streams

8. Applets and Swing

9. JDBC

10. Network (TCP/IP and UDP)

11. Simple Servlet

Semester : V
11UCS530216

Hours/week :3
Credit : 2

SOFTWARE LAB – VI (RDBMS)

SQL

1. Table Creation, data Insertion, Deletion, Updation and Selection.

2. DML: Operators (Arithmetic, Relational, Logical), SQL Functions (Single Row Function, Group Functions).

3. DML: Set operations, Join operations

4. Nested queries

5. Creation of Synonym, Sequence & Index, Creation and manipulation of View.

PL/SQL

6. PL/SQL- block

7. Cursors

8. Functions & Procedure

9. Packages

10. Triggers

Semester : V   Hours/week : 2
11UCS540601A   Credit   : 2

SKILL BASED ELECTIVE
OFFICE AUTOMATION

Objective:

To understand the need of Office Automation, Word, Excel and PowerPoint.

UNIT - I   **(10 Hrs.)**

Office Automation: Introduction - Information - Nature of Office work - Functions of an Office - Office Communications - Need for Office Automation - Summary of Office Automation. MS Word: Introduction to Word - Editing Document - Formatting Text and Paragraph - Spelling Checking - Tables - Mail Merge.

UNIT - II   **(10 Hrs.)**

MS Excel: Introduction to Excel - Using Commands and Functions - Inserting and Deleting Rows and Columns - Formatting a Worksheet - Printing the Worksheet - Creating Charts.

Unit - III   **(10 Hrs.)**

MS PowerPoint: Introduction to PowerPoint - Creating Presentation - Running Slide Show - Printing Presentation. MS Access: Introduction to Access - Creating a Simple Database and Tables - Entering and Editing Data - Displaying Data.

BOOK FOR STUDY:

Taxali, R.K: PC Software for WINDOWS Made Simple, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 1998.

BOOK FOR REFERENCE:

Sanjay Saxena: A First Course in Computers, Vikas Publishing House Pvt. Ltd., New Delhi, 1999.

Semester : V   Hours/week : 2
11UCS540601B   Credit   : 2

SKILL BASED ELECTIVE : INTERNET CONCEPTS

Objective:

To understand the concepts of Internet, Facilities of E-mail and the use of HTML to design web pages

UNIT – I   **(10 Hrs.)**

Internet and World Wide Web: The Webmaster: History of the web – internet services – The Internet Specialist: the browser– Domain name - surfing the web – search engines - The Technical Designer: protocols and transport layers – internet standards – accessibility.

UNIT – II   **(10 Hrs.)**

Email: Electronic Mail – creating an account - selecting a client – answering and forwarding mail – mail attachments – using mail filters – sending mail as html – web based email – email to group of people.

UNIT – III   **(10 Hrs.)**

HTML: Introduction to HTML and Block Tags: Introduction to HTML – origin of HTML – editors – tags and attributes – tables - Forms - Frames - Text formatting and alignment, Fonts, colours, ordered and unordered lists – Text Level Tags: basic structures – physical and logical styles – form elements – image – anchors.

BOOK(S) FOR STUDY

1.   James L. Mohler, "Teach Yourself How to Become a Webmaster in 14 Days", Techmedia, New Delhi, 1998. Unit I & III: Ch. 1, 2, 5, 8, 9
2.   Fred. T. H., "Internet Technologies at Work", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2005. Unit II : Ch. 3

BOOK FOR REFERENCE

1.   Young M.L., "The complete Reference: Internet", Millennium Edition, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1999.

Semester : VI   **Hours/week : 5**
11UCS630217   **Credits   : 4**

COMPUTER NETWORKS

Objective:

    To give the concepts of network model and the applications of various layers in the network model.

Unit – I   **(15 Hrs.)**

    Introduction – Data Communication- Networks – Protocols and Standards – Standards and Organizations - Basic Concepts – Line Configuration – Topology – Transmission Mode – Categories of Networks – Inter networking - The OSI Model – Transmission Media – Guided media – Unguided Media – Transmission Impairment –and Performance .

Unit-II   **(15 Hrs.)**

    Data Link Control – line Discipline – Flow Control – Error Control - Data Link Protocols – Asynchronous and Synchronous protocols –Bit Oriented Protocols – Link access procedures - Local Area Networks – Metropolitan Area Networks – Switching – Circuit Switching – Packet Switching and Message Switching.

Unit-III   **(15 Hrs.)**

    Point to Point Protocol – PPP Layers – Link Control Protocol(LCP) – Authentication – Network Control Protocol (NCP)– Frame Relay –Frame Relay Operation – Frame Realy layers – Congestion Control – leaky Bucket Algorithm – Traffic Control - ATM – Design –architecture – Switching – Switch Fabrics – ATM layers – Service Classes – ATM Applications.

Unit – IV   **(15 Hrs.)**

    Networking and Internetworking Devices – Repeaters – Bridges – Routers – Gateways – Other Devices – Routing Algorithms – Distance Vector Routing – Link State Routing - Transport Layer – Duties of the Transport Layers – Connection – The OSI Transport Protocol - Upper OSI Layers – Session Layer – Presentation Layer and Application Layer.

Unit – V   **(15 Hrs.)**

    TCP/IP Protocol Suite – Overview of TCP/IP – Network Layer – Addressing – Subnetting – Other Protocols - VLANs and VPNs – Network Security – Four Aspects of Security – Privacy – Digital Signature –PGP- Access and Authorization.

BOOK FOR STUDY:

Behrouz A Forouzan, "Data Communications and Networking", Tata McGraw Hill, 3rd Edition, New Delhi - 2003.
Unit-I: Chapters 1,2,3 & 7
Unit –II : Chapters 10,11,12,13 &14
Unit- III : Chapters 15, 18 &19
Unit-IV: Chapters 21, 22,23
Unit – V : Chapters 24, 26,27

BOOK(S) FOR REFERENCE:
1.   Andrew S Tenenbaum, "Computer Networks", Pearson Education, India Ltd, Fourth Edition, 2003.
2.   William Stalings, "Data and Computer Communications", Pearson Education, India Ltd, Seventh Edition, 2003.

Semester : VI   **Hours/week : 5**
11UCS630218   **Credits   : 4**

OPERATING SYSTEMS

Objective:
       To gain the basic knowledge about the operating systems and its various schemes and services

UNIT I   **(15 Hrs.)**
       Operating system Overview –Basic concepts and terminologies operating system resource manager – process view point – Hierarchical and extended machine view – I/O programming and interrupt programming – I/O programming – Interrupt structure and processing.

UNIT II   **(15 Hrs.)**
       Memory Management - Single Contiguous allocation – multiprogramming – partitioned allocation – relocatable partitioned memory management –paged memory management – page removal algorithms – thrashing – segmented memory management – segmented and demand paged memory management.

UNIT III   **(15 Hrs.)**
       Processor management – Process State Model - job scheduling- Process scheduling – Multiprocessor systems – Process synchronization – resolving deadlocks.

UNIT IV   **(15 Hrs.)**
       Device management – Techniques –device characteristics – I/O traffic controller – I/O scheduler and device handlers - virtual devices – spooling.

UNIT V   **(15 Hrs.)**
       Information Management: File system model – Symbolic , basic file system –Access Control verification – Logical, Physical file system –Allocation strategy, Device Strategy Modules.

BOOKS FOR STUDY:
       S.E Madnick and J J Donovan "Operating Systems" McGraw Hill International Book Co, New Delhi , 1987.

BOOK(S) FOR REFERENCE:
1.   Harvey M Deitel " AN introduction to operating system" Addison – Wesley Publishing Co. New York, 1984.
2.   James L.Peterson & Abraham Silbertschatz " An Introduction to operating system" Addison– Wesley Publishing Co. New York, 1987.

Semester : VI   **Hours/week : 5**
11UCS630501   **Credits   : 4**

OPERATIONS RESEARCH

Objective:

To give an overall idea about the various Optimization techniques and their usages.

UNIT-I   **(15 Hrs.)**

Linear Programming – General formulation of the LP Model and its Graphical solution. The Simplex Method – Computational Procedure. Artificial Variable Techniques - The M Technique and the Two Phase Technique – Special cases in Simplex Method.

UNIT –II   **(15 Hrs.)**

Duality in Linear Programming – The Dual Problems – Primal Dual Relationships, Primal – Dual Computations – Dual Simplex Method.

UNIT-III   **(15 Hrs.)**

Transportation Problems – Transportation Model – Determining the starting solution of Transportation Model, North – West Corner Rule, Least – Cost Method and Vogel's Approximation Method. Determining the optimum solution of Transportation Problems – Assignment Problems and its solution by Hungarian method.

UNIT-IV   **(15 Hrs.)**

Project Scheduling by PERT-CPM – Network diagram representations – Critical path calculations – Probability considerations in Project Scheduling – Cost consideration.

UNIT-V   **(15 Hrs.)**

Inventory Management: Inventory Control – ABC analysis – Economic Lost size problems – EOQ with uniform demand and shortages – Limitations of Inventories – Buffer stock – Determination of Buffer stocks.
(**Note**: Stress may be on the working of numerical problems)

BOOK(S) FOR STUDY:

1. Hamdy A Taha , "Operations Research", The Macmillan Publishing Company, Fourth Edition, 1987. Units I, II, III, IV: 2.1, 2.2, 3.1 to 3.3, 4.1 to 4.4, 8.1 to 8.4, 11.4 to 11.4.4.
2. Kanti Swarup, P K Guptha & Manmohan, "Operations Research", Sultan Chand & Sons, New Delhi, 1984. Unit V: Chapters: 17.1 to 17.9

BOOK(S)FOR REFERENCE:

1. Rathindra P. Sen, "Operations Research Algorithms and Applications", PHI, New Delhi, EEE. 2010
2. R. Panneer Selvam, "Operations Research", PHI, New Delhi, Second Edition, 2010
3. Nita H. Shah, Ravi M. Gor & Hardik Soni, "Operations Research", PHI, New Delhi, EEE. 2010.

Semester : VI   **Hours/week : 4**
11UCS630303 A   **Credits : 4**

ELECTIVE - III
COMPUTER GRAPHICS

Objective:

To impart the basic principles of generating primitives, shapes, package development, interactive graphics, raster graphics, two and three dimensional graphics and their transformations.

Unit - I   **(12 Hrs.)**

Introduction: point plotting systems: Coordinate system – line and circle drawing algorithms. Display devices: storage-tube display – refresh line drawing display – two-dimensional transformation: principles – concatenation – matrix representation. Clipping and windowing: line clipping algorithm – polygon clipping algorithm – viewing transformation – windowing transformation.

Unit - II   **(12 Hrs.)**

Graphic packages: simple graphics package: ground rules – graphic primitives – windowing and miscellaneous functions – display code generator. Segmented display files: segments – posting and unposting segments – appending segments. Display file compilation: free storage allocation – display file compilation. Geometric models: simple modeling example – geometric modeling – symbols and instances. Picture structure: Defining symbols – display procedures – structured display file.

Unit - III   **(12 Hrs.)**

Interactive Graphics: graphical input devices: pointing and positioning devices – mouse – tablets – light pen – three dimensional input devices – comparators. Graphical input techniques: positioning techniques – pointing and selection – inking and painting – online character recognition. Event handling: polling – interrupts – event queue – functions for handling events – polling tald design light pen interrupts. Input functions: Dragging and fixing – hit detection – online character recognition.

Unit - IV   **(12 Hrs.)**

Raster Graphics: Raster graphics fundamentals – frame buffer display – representing raster image – scan conversion – displaying characters – speed of scan conversion – natural images. Solid-area scan conversion: Geometric representation of areas – scan converting polygons – priority – X-Y algorithms – properties of scan conversion algorithms. Interactive Raster Graphics: updating the display – the painting model – moving parts of an image. Raster graphic systems: representation – raster manipulation functions – raster display hardware.

Unit - V   **(12 Hrs.)**

Three-dimensional graphics: Realism in three-dimensional graphics – techniques for achieving realism – modeling and realism. Curves and surfaces: parametric functions – Bezier and B-Spline methods. Three-dimensional transformations and perspectives: transformation – modeling – viewing – clipping. Perspective depth: Screen, Homogeneous coordinate systems – perspective transformation. Hidden-surface elimination: Depth-buffer algorithm – area and scan-line coherence algorithms – sorting and coherence: Shading: shading model – special effects – applying shading model.

BOOK(S) FOR STUDY:

William M. Newman and Robert F. Sproull, "Principles of Interactive Computer Graphics", Second Edition, TMH Edition, New Delhi, 1997. Chapters 1 to 25.

BOOK(S) FOR REFERENCE:

Malay K. Pakhira, "Computer Graphics, Multimedia and Animation", Second Edition, PHI Edition, 2010.

Semester : VI   **Hours/week : 4**
11UCS630303 B   **Credits   : 4**

ELECTIVE – III WEB GRAPHICS

Objective:
        To offer the knowledge of creating and working with digital images and to produce a presentation package using multimedia tools.

Unit I   **(12 Hrs.)**
        Introduction to multimedia - **PhotoShop**: Environment – layers and workpath – Image editing – channels, masks and actions – filters – rollovers and animations.

Unit II   **(12 Hrs.)**
        Dreamweaver: environment – developing a website – tables and images – navigating in a website – CSS stylesheet – layers , frames and forms – behaviour.

Unit III   **(12 Hrs.)**
        Flash: introduction – drawing and colouring tool – animation – tweening – interactive elements.

Unit IV   **(12 Hrs.)**
        Illustrator: interface – working with shapes – layers – blend, path and mask.

Unit V   **(12 Hrs.)**
        Director: work space – animation and effects – sound and video.
BOOK FOR STUDY:
        BPB Editorial Board, "Multimedia and Web Design Course", BPB Publications, New Delhi, 2005.
BOOK FOR REFERENCE:
        NIIT, "Interactive Communication Through Multimedia – An Overview", Prentice Hall of India, New Delhi, 2004.

Semester VI   **Hours/week : 3**
11UCS630503   **Credits   : 2**

SOFTWARE LAB VII (ASP.NET)

1.   Simple web page creation using HTML

2.   HTML form validation using VB Scripts

3.   Simulating a Calculator

4.   Testing Request and Response Objects

5.   Testing Application and Session Objects

6.   Testing Validation Controls

7.   Database Access – ADO.NET

8.   Components Creation and Usage

9.   Use of DataGrid and DataList

10.   File Accessing

11.   Creating Web Services and Access

BOOK FOR REFERENCE:
        Bill Evjen, Scott Hanselman, Devin Rader, Farhan Muhammad, Srinivasa Sivakumar, "Professional ASP.NET 2.0 Special Edition" Wiley Publishing, 2006.

Semester : V & VI   **Hours/week : 3**
11UCS630219   **Credits   : 4**

HARDWARE LAB (ELECTRONICS)

Non-Clocked Experiments:

1.   Encoders and Decoders

2.   Multiplexers and De-Multiplexers

3.   ALU

Clocked Experiments:

4.   Memory Devices

5.   Flip-Flops and Counters

6.   Shift Registers

Arithmetic Experiments:

7.   Adders and Subtractors

8.   4-bit Adder and BCD adder

Arithmetic Experiments:

9.   8085 Programming – 1

10.   8085 Programming – 2

11.   8086 Programming – 1

12.   Interfacing – output Devices

13.   Interfacing – input Devices Micro-computer based

14.   Interfacing – Stepper Motor

15.   Hardware Assembling & Diagnostics

16.   OS Installation and CMOS Setup

17.   Networking – Creaming/Hub/Switch

18.   Wi-Fi - Bridging, Routing

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11UCS630304   **PROJECT**   Hours/week: **3**

                                                  Credits :**3**

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Semester : VI   **Hours/week : 2**
11UCS640602A   **Credit   : 2**

SKILL BASED ELECTIVE
FUNDAMENTALS OF COMPUTER NETWORKS

Objective:

   To give the concepts of network model and the applications of various layers in the network model.

Unit-I   **(10 Hrs.)**

   Introduction to Computer Networks and Data Communication: Need for computer networks - evolution - Data Communication - Data Transmission - Transmission media - Classification of Networks - Switching and Routing - Routing - Multiplexing and Concentration Concentrator - Terminal Handling - Components of a Computer Network.

Unit-II   **(10 Hrs.)**

   Network Standards and OSI - Need for network standard - OSI reference model - Physical layer - Data link layer - Network layer - Transport layer - Session layer - Application layer.

Unit-III   **(10 Hrs.)**

   LAN: Evolution - Architecture - Advantages and Services - Characteristics - LAN Topologies - LAN access Protocols.

BOOK FOR STUDY:

   R.S.Rajesh, K.S.Eswarakumar & R. Balasubramanian, 'Computer Networks - Fundamentals and Applications', Vikas Publishing House Pvt. Ltd., First Edition, 2002.

   Unit I : Ch 1- 2

   Unit II: Ch 3

   Unit III: Ch 5.1 – 5.6

BOOK(S) FOR REFERENCE:

1.   Vijay Ahuja, "Design and Analysis of Computer Communication Networks", McGraw Hill, New York, 1985.

2.   Andrew S Tanenbaum , "Computer Networks" , Prentice Hall of India, New Delhi, 3rd Edition, 1999.

Semester : VI	Hours/week : 2
11UCS640602B	Credit : 2

SKILL BASED ELECTIVE
E-COMMERCE

Objective:

  To give the concepts of E-Commerce & Internet and their applications of Business.

Unit-I   **(10 Hrs.)**

  Electronic Commerce - Electronic data interchange - Benefits of EDI - E-commerce over the Internet - Internet commerce - Examples – Commercenet - Electronic communication - PCs and networking: Networking - Network topology - Communication Media - VSAT.

Unit-II   **(10 Hrs.)**

  The Internet: Introduction - Communication protocols - Services and resources - Mail - Internet search - Browsers.

Unit-III   **(10 Hrs.)**

  Getting connected to internet - Setting up a web site - Web servers - Business to business E-commerce Payments for goods and services - Bottlenecks.

BOOK FOR STUDY:

  Kamlesh K. Bajaj and Debjani Nay, "E-Commerce - The Cutting Edge of Business" Tata McGraw Hill Publishing Co. Ltd., New Delhi, 2000.
  Unit I : Ch 1 - 2
  Unit II : Ch 5 - 6
  Unit III: Ch 17

BOOK FOR REFERENCE:

  P.T. Joseph, SJ, "E-Commerce – An Indian Perspective", Third edition, PHI Publishing Co. Ltd., New Delhi, 2009.

Semester : III & IV	Hours/week : 2
11UPH430405B	Credits : 2

SOFTWARE LAB
ALLIED: COMPUTER SCIENCE PRACTICALS: WEB DESIGN

HTML

1. Simple Page with Text Formatting

2. List (Ordered List and Unordered List)

3. HTML Pages with Images and Links

4. Tables using different attributes

5. Frames

6. Designing forms using simple tags

VB SCRIPT (Client side)

7. VB Scripting Basics

8. VB Script functions

9. VB Script Control Statements

10. VB Script Input and Output

VB SCRIPT (Server side)

11. Simple Web page Interaction

12. Getting the Server time

13. A Simple Calculations using arithmetic operators with drop down list.

SKILL BASED ELECTIVES

BOTANY

11UBO540601	Mushroom Culture
11UBO640602	Herbal Technology

BUSINESS ADMINISTRATION

11UBU540601	Personality Development
11UBU640602	Managerial Skills

CHEMISTRY

11UCH540601	Food and Nutrition
11UCH640602	Everyday Chemistry

COMMERCE

11UCO540601A	Accounting for Executives
11UCO540601B	Soft Skills for Managers
11UCO640602A	Total Quality Management
11UCO640602B	Fundamentals of Accounting Packages

COMMERCE (CA)

11UCC540601	Soft Skills
11UCC640602	Basics of Accounting

COMPUTER APPLICATIONS (Dept of IT)

11UBC540601A	Fundamentals of IT
11UBC540601B	Internet Concepts
11UBC640602A	Visual Programming
11UBC640602B	Flash

COMPUTER SCIENCE

11UCS540601A	Office Automation
11UCS540601B	Internet Concepts
11UCS640602A	Fundamentals of Computer Networks
11UCS640602B	E-Commerce

ECONOMICS

11UEC540601	Security Analysis
11UEC640602	Economics of Insurance

ELECTRONICS

11UEL540601	DVD Troubleshooting and Assembling
11UEL640602	PC Assembling

ENGLISH LITERATURE

11UEN540601	Business English Writing
11UEN640602	Media Skills

HISTORY

11UHS540601	Indian History for Competitive Exams
11UHS640602	Tourism and Travel Management

MATHEMATICS

11UMA540601	Mathematics for Competitive Exams
11UMA640602	MATLAB

PHYSICS

11UPH540601	Cell Phone Servicing
11UPH640602A	Electrical Wiring
11UPH640602B	Videography

STATISTICS

11UST540601	Data Analysis for Competitive Exams
11UST640602	Statistics for Management

TAMIL

11UTA540601	தமிழ் இலக்கியத்தில் மனித உரிமைகள்
11UTA640602	மைய அரசுப் பணித் தேர்வுத்தமிழ்