

Dr. Mahalingam College of Engineering and Technology

(An Autonomous Institution)

Pollachi - 642 003

Curriculum and Syllabus for B.TECH. INFORMATION TECHNOLOGY

SEMESTER I to VIII




**Revision - 0
REGULATIONS 2014**



COLLEGE OF ENGINEERING AND TECHNOLOGY

Enlightening Technical Minds

Programme : B.Tech – Information Technology
Curriculum and Syllabus : Semesters – I to VIII
Approved by Academic Council

Action	Responsibility	Signature of Authorized Signatory
Designed and Developed by	BoS Information Technology	
Compiled by	Office of the Controller of Examinations	
Approved by	Principal	

DEPARTMENT OF INFORMATION TECHNOLOGY

REGULATIONS 2014

Curriculum for B.Tech. Information Technology from Semester I to VIII

Semester I

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
1	140CO0101	Technical English	2	0	2	3	100
2	140CO0102	Engineering Mathematics – I	3	1	0	4	100
3	140CO0103	Engineering Physics	3	0	0	3	100
4	140CO0104	Engineering Chemistry	3	0	0	3	100
5	140CO0105	C Programming	3	0	0	3	100
6	140IT0106	Basics of Electrical and Electronics Engineering	3	0	0	3	100
Practical							
7	140IT0107	Engineering Practices Laboratory (Electrical and Electronics and PC hardware)	0	0	3	2	100
8	140CO0108	C Programming Laboratory	0	0	3	2	100
9	140CO0109	Engineering Graphics	2	0	3	3	100
10	140CO0210	Engineering Physics and Chemistry Laboratory (Annual Pattern)	0	0	3	-	-

Semester II

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
11	140CO0201	Communication Skills	2	0	2	3	100
12	140CO0202	Engineering Mathematics – II	3	1	0	4	100
13	140CO0203	Material Science	3	0	0	3	100
14	140CO0204	Environmental Science	3	0	0	3	100
15	140IT0205	Data Structures and Object Oriented Programming with C++	3	0	0	3	100
16	140IT0206	Basics of Civil and Mechanical Engineering	3	0	0	3	100
Practical							
17	140IT0207	Engineering Practices Laboratory (Civil & Mechanical)	0	0	3	2	100
18	140IT0208	Data Structures and Object Oriented Programming with C++ Laboratory	0	0	3	2	100
19	140CO0210	Engineering Physics and Chemistry Laboratory (Annual Pattern)	0	0	3	2	100

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Semester III

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
20	140IT0301	Discrete Mathematics and Applications	3	1	0	4	100
21	140IT0302	Digital Principles and System Design	3	0	2	4	100
22	140IT0303	Design and Analysis of Algorithms	3	0	0	3	100
23	140IT0304	Database System Concepts	3	0	0	3	100
24	140IT0305	Computer Organization	3	0	0	3	100
25	140IT0306	Programming with JAVA	3	0	0	3	100
Practical							
26	140IT0307	Design and Analysis of Algorithms Laboratory	0	0	3	2	100
27	140IT0308	Database Management Systems Laboratory	0	0	3	2	100
28	140IT0309	Programming with JAVA Laboratory	0	0	3	2	100

Semester IV

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
29	140IT0401	Numerical Methods	3	1	0	4	100
30	140IT0402	Fundamentals of Digital Signal Processing	3	1	0	4	100
31	140IT0403	Software Engineering Concepts	3	0	0	3	100
32	140IT0404	Operating System Concepts	3	0	0	3	100
33	140IT0405	Data Communications and Networks	3	0	0	3	100
34	140IT0406	Microprocessor and Microcontrollers	3	0	0	3	100
Practical							
35	140IT0407	Operating System Concepts Laboratory	0	0	3	2	100
36	140IT0408	Data Communications and Networks Laboratory	0	0	3	2	100
37	140IT0409	Microprocessor and Microcontrollers Laboratory	0	0	3	2	100

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Semester V

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
38	140IT0501	Basic Communication Engineering	3	0	0	3	100
39	140IT0502	Theory of Computation	3	1	0	4	100
40	140IT0503	TCP/IP Design and Implementation	3	0	0	3	100
41	140IT0504	Object Oriented Analysis and Design	3	0	0	3	100
42	140IT0505	Web Technology	3	0	0	3	100
43	140IT0506	.Net Programming	3	0	0	3	100
Practical							
44	140IT0507	CASE Tools Laboratory	0	0	3	2	100
45	140IT0508	.Net Programming Laboratory	0	0	3	2	100
46	140IT0509	Web Technology Laboratory	0	0	3	2	100

Semester VI

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
47	140IT0601	Graphics and Multimedia	3	0	0	3	100
48	140IT0602	Information Coding Techniques	3	0	0	3	100
49	140IT0603	Cryptography and Network Security	3	0	2	4	100
50	140IT0604	Principles of Compiler Design	3	0	0	3	100
51	XXX	Elective - I	3	0	0	3	100
52	XXX	Elective - II	3	0	0	3	100
Practical							
53	140IT0607	Graphics and Multimedia Laboratory	0	0	3	2	100
54	140IT0608	Compiler Design Laboratory	0	0	3	2	100
55	140IT0610	Mini Project	0	0	3	2	100

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
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Semester VII

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
56	140IT0701	Principles of Management	3	0	0	3	100
57	140IT0702	Cloud Architecture and Services	3	0	0	3	100
58	140IT0703	Mobile Communication	3	0	0	3	100
59	140IT0704	Data Mining and Analytics	3	0	0	3	100
60	xxx	Elective –III	3	0	0	3	100
Practical							
61	140IT0707	Python Programming Laboratory	2	0	3	2	100
62	140IT0708	Distributed Component Laboratory	2	0	3	2	100
63	140IT0810	Project Work (Annual Pattern)	0	0	3	-	100



Semester VIII

S.No	Course Code	Course Name	L	T	P	C	M
Theory							
64	xxx	Elective- IV	3	0	0	3	100
65	xxx	Elective- V	3	0	0	3	100
66	xxx	Elective- VI	3	0	0	3	100
Practical							
67	140IT0810	Project Work (Annual Pattern)	0	0	12	8	200


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List of Electives

S.No	Course Code	Course Name	L	T	P	C	M
68	140IT9111	Embedded System Programming	3	0	0	3	100
69	140IT9112	User Interface Design	3	0	0	3	100
70	140IT9113	Software Project Management	3	0	0	3	100
71	140IT9114	UNIX Internals	3	0	0	3	100
72	140IT9115	Advanced Database Technology	3	0	0	3	100
73	140IT9116	Digital Image Processing	3	0	0	3	100
74	140IT9117	Network Programming and Management	3	0	0	3	100
75	140IT9118	Disaster Management	3	0	0	3	100
76	140IT9119	J2ME Programming	3	0	0	3	100
77	140IT9120	Service Oriented Architecture	3	0	0	3	100
78	140IT9121	Advanced Java Programming	3	0	0	3	100
79	140IT9122	Natural Language Processing	3	0	0	3	100
80	140IT9123	Soft Computing	3	0	0	3	100
81	140IT9124	Information Storage and Management	3	0	0	3	100
82	140IT9125	Communication Switching Techniques	3	0	0	3	100
83	140IT9126	Operations Research	3	0	0	3	100
84	140IT9127	Graph Theory	3	0	0	3	100
85	140IT9128	Artificial Intelligence	3	0	0	3	100
86	140IT9129	Human Computer Interaction	3	0	0	3	100
87	140IT9130	Total Quality Management	3	0	0	3	100
88	140IT9131	Cyber Law and Information Act	3	0	0	3	100
89	140IT9132	System Software	3	0	0	3	100
90	140IT9133	High Performance Networks	3	0	0	3	100
91	140IT9134	Visual Programming	3	0	0	3	100
92	140IT9135	Internet Programming	3	0	0	3	100
93	140IT9136	Software Quality and Testing Tools	3	0	0	3	100
94	140IT9137	Engineering Economics and Cost Analysis	3	0	0	3	100
95	140IT9138	Mobile Application Development	3	0	0	3	100


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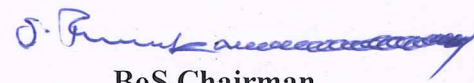

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Department of Information Technology

Regulation 2014 R0

New Electives

Course Code	Course Title	Hours/Week			Credits	Marks
		L	T	P		
THEORY						
140IT9139	Agile Software Development	3	0	0	3	100
140IT9140	Social Network Analysis	3	0	0	3	100


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SEMESTER - I

Course Code: 140CO0101	Course Title: TECHNICAL ENGLISH (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 2 : 0 : 2 : 3 : 100
Type: Lecture/Practical	Total Contact Hours: 60

Course outcomes

At the end of the course the student will be able to:

- CO1. Employ appropriate vocabulary in different academic & professional contexts.
- CO2. Comprehend lectures & technical oriented passages.
- CO3. Apply suitable reading strategies to any science texts.
- CO4. Speak effectively in real life & work related situations.
- CO5. Write grammatically correct sentences.

Course content:

UNIT I FUNCTIONAL ENGLISH GRAMMAR 6+6

Mechanical and grammatical structures of written English-Errors in writing mechanics -errors in spelling-Usage and punctuation-Cohesion and Discourse-Sequencing of jumbled sentences using connectives- Embedded questions-Incorrect English (Indian Scenario)

UNIT II LISTENING - PHONETICS 6+6

Sounds of language -Sounds-phonemes -Organs of speech-Articulation-Consonants-vowels-International Phonetic Alphabets (IPA)-Stress and Tones Stress, pause & intonation-Transcription-Listening Comprehension

UNIT III SPEAKING 6+6

Language for social purpose – Conversation-Making Introductions -Inviting questions and responses-Expressing Opinions-Individual Presentation-Extempore-Telephonic conversation

UNIT IV GRAMMAR 6+6

Prepositions -Sentence Pattern-Concord –Tenses-Articles -Active & Passive Voice-Comparative adjectives-Nominal Compounds-Modal Verbs-Writing definitions -Expressions of use and purpose-Expressions for compare and contrast- Phrasal verbs

UNIT V WRITING 6+6

Instructions –Recommendations -Sequencing of Sentences-Paragraph Writing- Transcoding data -Note Making

TEXT BOOK:

1. NiraKonar, "Communication Skills for Professionals", PHI Learning Private Limited, New Delhi, 2009.

UNIT V MULTIPLE INTEGRALS

9+3

Double integration-Cartesian and polar coordinates-Change of order of integration-Transformation from Cartesian to polar, spherical and cylindrical coordinates-Triple integration in Cartesian Coordinates-Applications: Evaluating area and volume using multiple integrals.

TEXT BOOK:



1. Veerarajan.T, "Engineering Mathematics", Updated 2nd Edition, Tata McGraw Hill, New Delhi, 2010.
2. Ramakrishna Prasad.A, " Kreyszig's Engineering Mathematics I " , 1stEdition,Wiley India Pvt. Ltd., India, 2011.

REFERENCES:

1. Venkatraman.M.K, "Engineering Mathematics-Volume I", 4th edition, National publishing company, Chennai, 2008.
2. Kandasamy.P, Thilagavathy. K., Gunavathy. K.,"Engineering Mathematics", Revised 9th Edition,S. Chand and Company Ltd., New Delhi, 2011.
3. Grewal.B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, New Delhi, 2007.
4. Louis.C.Barrett, Ray Wylie.C, "Advanced Engineering Mathematics", 6th Edition, McGraw-Hill Publishing Company Ltd, New Delhi, 2003.

WEB REFERENCES:

1. <https://www.edx.org/>
2. www.iitk.ac.in/gate/gate2012/pdf/files/xea.pdf


 **BoS Chairman**

Course Code: 140CO0103	Course Title: ENGINEERING PHYSICS (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours:45

Course outcomes

At the end of the course the student will be able to:

- CO1. To know the production and detection of ultrasonics.
- CO2. To know the working of laser and its applications
- CO3. To know the types of fibers, fabrication and its applications.
- CO4. To know the behavior of particle.
- CO5. Solving the miller indices and to know the crystal defects

Course content:

UNIT I ACOUSTICS AND ULTRASONICS 9

Acoustics: Sound intensity – Decibel - Reverberation - Sabines' formula. Factors affecting acoustics of buildings and remedies, Noise pollution and control, Noise control in machines. Ultrasonics: Magnetostriction and Piezoelectric generators. Detection and Properties of Ultrasonics – Cavitation - Industrial applications: Drilling, welding, soldering and cleaning – NDT: Pulse echo system, through transmission, resonance system - A, B and C scan displays with respect to flaw detection.

UNIT II LASERS 9

Laser principles: Stimulated and spontaneous emissions of radiations - Population inversion and pumping methods – Properties of lasers - Nd: YAG laser - He-Ne gas laser - CO₂ molecular laser and semiconductor lasers – Applications of Lasers: welding, drilling, cutting and heat treatment of materials. Holography: construction, reconstruction and applications - Medical applications of lasers (qualitative).

UNIT III FIBER OPTICS 9

Principle of light propagation in optical fibres - Numerical aperture and acceptance angle - Types of fibres: based on material, refractive index, and mode of propagation. Fabrication of fibre using double crucible technique, splicing - Light sources: LD & LED. Detectors: PN, PIN & Avalanche photo diodes. Fibre optical communication systems and its advantages - Fibre optic sensors: temperature and displacement - Endoscope.

UNIT IV QUANTUM PHYSICS 9

Schrodinger's wave equations: Time independent and time dependent - Physical significance of the wave function - Particle in a potential box - Electron microscopes: Scanning electron, transmission electron and Scanning transmission electron microscope.

Amorphous and Crystalline materials. Lattice - Unit cell - Bravais lattices. Crystal structures: SC, BCC, FCC and HCP – Calculation of number of atoms per unit cell, Coordination number, nearest neighbor distance, Atomic radius and packing factor - Diamond, NaCl structures. Miller indices – Interplanar distance Crystal defects: point, line and surface defects and their influence on the properties of materials (Qualitative)

TEXT BOOK:

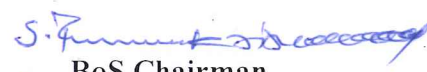

1. Avadhanulu.M.N and Kshirsagar.P.G, “Text Book of Engineering Physics”, S. Chand & Company Ltd., New Delhi, 2009.

REFERENCES:

1. Palanisamy.P.K, “Engineering Physics”, Scitech Publishers, Chennai, 2006.
2. Jayakumar.S, “Engineering Physics”, R.K. Publishers, Coimbatore, 2008.
3. Rajendran.V, “Engineering Physics”, Tata McGraw-Hill Co, New Delhi, 2007.
4. Arthur Beiser, “Modern Physics”, Tata McGraw-Hill Co, New Delhi, 2003.

WEB REFERENCES:

1. <https://physics.stanford.edu/undergraduate-program/bs-engineering-physics>
2. <http://ocw.mit.edu/courses/physics/>
3. http://provost.illinois.edu/programsofstudy/2013/fall/programs/undergrad/engin/engin_physics.html


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UNIT IV FUELS AND LUBRICANTS

9

Coal – classification – Calorific value -proximate and ultimate analysis of coal (method only)- metallurgical coke – manufacture by Otto-Hoffmann method -Ordinary, Premium, White and Speed Petrol - Knocking – octane number and cetane number - Gaseous fuels- water gas, producer gas, CNG and LPG. Flue gas analysis – Orsat method. Lubricants –classification and properties- (viscosity, viscosity index, flash and fire points, cloud and pour points)

UNIT V ENGINEERING MATERIALS AND ENERGY STORAGE DEVICES 9

Abrasives –natural and synthetic abrasives – diamond, silicon carbide and boron carbide (properties and uses only). Engineering Plastics- classification – preparation and uses of PVC, Teflon, polycarbonate, polyurethane, nylon-66, PET- Biodegradable plastics. Energy storage devices – Dry cell–alkaline batteries–lead–acid, nickel–cadmium and lithium ion batteries. Fuel cells – (Hydrogen –oxygen fuel cell).

TEXT BOOK:

1. Jain.P.C and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi, 2002

REFERENCES:

1. Sharma.B.K, “Engineering chemistry” Krishna Prakasan Media (P) Ltd., Meerut, 2001.
2. Sivasankar.B, “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2008.
3. Roop Chand Bansal and Meenakshi Goyal, “Activated Carbon Adsorption”, Taylor & Francis Group, LLC, 2005
4. Rajput.R.K, “Engineering Materials”, S. Chand & Co. Pub. New Delhi, 2006
5. Samir Sarkar, “Fuels and Combustion”, Orient Longman, India, 1996.

WEB REFERENCES:

1. <http://nptel.ac.in/courses/122106028/>
2. <http://nptel.ac.in/courses/122101001/>
3. <http://www.learnerstv.com/Free-Chemistry-Video-lectures-ltv044-Page1.htm>
4. <http://www.myopencourses.com/subject/engineering-chemistry-i-1>

S. Prasad
BoS Chairman

Course Code: 140CO0105	Course Title: C PROGRAMMING (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours:45

Course Outcomes:

At the end of the course the student should be able to:

- CO1. Enumerate the significant aspects of software development and problem solving techniques
- CO2. Exhibit the various types of control flow in C language
- CO3. Illustrate the effective usage of arrays, functions and structures in C.
- CO4. Demonstrate the implementation of pointers in arrays, structures and functions.
- CO5. Analyze file access methods and the features of preprocessor directives

Course content:

UNIT I INTRODUCTION 9

Introduction to computers – Computer Software – Software development life cycle - Need for studying Computer Programming Languages - Problem Definition and Analysis -Flow Chart, Developing algorithm - Procedural Programming (modular and structural)- Compilers and Interpreters - Program compilation, execution, debugging, testing - C program development environment.

UNIT II C LANGUAGE BASICS 9

Overview of C – Constants, Variables and Data Types – Operators and Expressions – Managing Input and Output operators – Decision Making - Branching and Looping. Enumerated Data type, Renaming Data type with typedef – Type Casting

UNIT III ARRAYS, FUNCTIONS AND STRUCTURES 9

ARRAYS: Definition- Declaration- Initialization- Assignment- Processing array- Passing array to a function-Two and multi dimensional array

FUNCTIONS: Defining a function- Accessing a function-Passing argument to functions- Function prototypes- Nested function call - Storage classes. Handling of character strings.

STRUCTURES: Definitions - processing structure-User defined data types- - Passing structure to functions –Self referential structures- Nested structures. Defining a Union- Processing union- Structures and unions comparison- Bit fields.

UNIT IV POINTERS 9

Pointer variable declaration- Initialization and assignment- Pointers to a function- Pointers and one dimensional array and multi dimensional array- Operating a pointers- Array of pointers- Passing function to other functions. Structures and pointers – Linked Lists.

UNIT V FILES

9

Introduction to files-File access-File organization-File operations (open, close, read, write, etc.)- Command line arguments. C Preprocessors – Features – Macro Expansion – File inclusion- Conditional compilation – Miscellaneous Directives – simple Header files functions.

TEXT BOOKS:

1. Byron Gottfried, "Schaum's Outline of Programming with C", 2nd Edition, (Indian Adapted Edition), TMH publications, New Delhi, 2006.
2. YashwantKanetkar, "Let Us C", 5th Edition, BPB Publications, New Delhi, 2004.

REFERENCES:

1. Balagurusamy.E, "Programming in ANSI C" Tata McGRaw-Hill Publishing Company Limited, New Delhi 2007
2. Herbert Schildt, "C – The Complete Reference", Fourth Edition, Tata McGraw Hill publishing Company, New Delhi, 2005.
3. Behrouz.A.Forouzan and Richard.F.Gilberg, "A Structured Programming Approach Using C", II Edition, Brooks-Cole Thomson Learning Publications,UK, 2007.
4. Ashok.N.Kamthane, "Computer Programming", Pearson Education (India),New Delhi, 2008.

WEB REFERENCES:

- Introduction to programming in C. URL: <http://nptel.ac.in/courses/106104128/>
- Practical Programming in C URL: <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/>


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UNIT IV BASIC MEASURING INSTRUMENTS

9

Units and standards-Essentials of indicating instruments - Meters: MC and MI instruments - operation of regulated power supply, CRO and function generator (qualitative study only).

UNIT V FUNDAMENTALS OF COMMUNICATION ENGINEERING

9

Types of Signals: Analog and Digital signals - Modulation and Demodulation: amplitude and frequency modulations - Communication Systems: radio, TV, satellite and optical fiber (block diagram approach only) - Wireless and mobile networks: structure and function of wireless networks, performance of wireless networks.

TEXT BOOK:

1. Vincent Del Toro, "Electrical Engineering Fundamentals", Prentice Hall of India, New Delhi (India), 1999.
2. Metha.V.K, "Principles of Electronics", S.Chand and Company Ltd, New Delhi (India), 1999.

REFERENCES:

1. Jegathesan.V, Vinoth Kumar.K and Saravanakumar.R, "Basic Electrical and Electronics Engineering", Wiley India Pvt. Ltd., New Delhi (India), 2011.
2. Theraja.B.L and Theraja.A.K, "A Text book of Electrical Technology", (Volume I and II), S.Chand and Company Ltd., New Delhi (India), 2001:
3. Murugesh Kumar.K, "Basic Electrical Science and Technology", Vikas Publishing House Pvt. Ltd., New Delhi (India), 2002.
4. Simon Haykin, "Communication Systems", 4th Edition, John Wiley & Sons, New York (US), 2001.
5. Theodore.S.Rappaport, "Wireless Communications", Pearson Education, New Delhi (India), 2002.

WEB REFERENCES:

1. Basic Circuit Analysis Method (KVL and KCL Method) URL: <http://www.learnerstv.com/video/Free-video-Lecture-861-Engineering.htm>
2. Useful laws in Basic Electronics.URL: <http://www.learnerstv.com/video/Free-video-Lecture-1681-Engineering.htm>


 **BoS Chairman**

Course Code: 140IT0107	Course Title: ENGINEERING PRACTICES LABORATORY (Common to IT,CSE & CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours:45

Course Outcomes:

At the end of the course the student should be able to:

- CO1. Understand the basic electrical symbols, measuring instruments, protecting equipment and home appliances.
- CO2. Solve simple faults in electric circuits in home appliances and their components.
- CO3. Study the basic electronic symbols and troubleshoot electronic components like CRO, function generator etc.,
- CO4. Identify hardware parts of a computer and assemble them

List of experiments:

ELECTRICAL ENGINEERING PRACTICE

1. Electrical symbols, safety aspects of electrical wiring and earthing practices.
2. Introduction to the connection of voltmeter, ammeter and multimeter.
3. Stair case wiring, assembling and testing of a fluorescent lamp circuit & fault finding.
4. Domestic lighting circuits and use of megger.
5. Diagnosing simple faults in grinder, mixie, iron box, ceiling & table fans.
6. Introduction to types of fuses, MCB and types of wires and cables.

ELECTRONICS ENGINEERING PRACTICE

1. Symbols of basic electronic components and equipments.
2. Color coding of resistors and identification of capacitor values.
3. Study and method of using CRO, function generator, power supply units with fault identification and trouble shooting.
4. Study of AC signal parameters (amplitude, frequency, phase) using CRO.
5. Logic gates (AND, OR, NOT, NAND, NOR, EX-OR).
6. Soldering and testing a given simple electronic circuits using PCB.

COMPUTER HARDWARE

- 1 a) Study of PC hardware
b) Assembling the computer system
- 2 a) Formatting and Partitioning HDD
b) Configuring CMOS-Setup
c) Installation of OS

REFERENCES:

1. Jeyachandran.K, Natarajan.S & Balasubramanian.S, "A Primer on Engineering Practices Laboratory", Anuradha Publications, Tamilnadu (India), 2007.
2. Jeyapooan.T, Saravanapandian.M & Pranitha.S, "Engineering Practices Lab Manual", Vikas Puplicing House Pvt. Ltd., Uttar Pradesh (India), 2006.
3. Rourke.J & Zacker.C, "The complete reference", Tata McGraw Hill publishing company Ltd, Uttar Pradesh (India), 2001.
4. Gilster & Ron. "A Beginners Guide", Tata McGraw Hill publishing company Ltd, Uttar Pradesh (India), 2001.


BoS Chairman

Course Code: 140CO0108	Course Title: C PROGRAMMING LABORATORY (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course Outcomes:

At the end of the course the student should be able to:

- CO1. Evaluate complex expressions using apt operators and data types.
- CO2. Differentiate the types of control flow in a program using decision making and looping statements.
- CO3. Be expertise in handling complex data types and operations using structures, arrays and functions.
- CO4. Design applications using file operations and pointers.

LIST OF EXPERIMENTS:

1. Program to process Data types, formatting inputs and outputs.
2. Program using operators and Expression Evaluation
3. Program using decision making
4. Program using looping Statements
5. Program using Functions
6. Program using Arrays
7. Program for String Handling
8. Program using Structures
9. Program using Pointers
10. Program on basic File Operations
11. Develop a mini project implementing the concepts from 1 to 10


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Course Code: 140CO0109	Course Title: ENGINEERING GRAPHICS (Common to IT,CSE & CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 2 : 0 : 3 : 3 : 100
Type: Theory/Practical	Total Contact Hours:75

Course outcomes

At the end of the course the student will be able to:

- CO1. Sketch different engineering curves
- CO2. Generate multiple views of planes and solids using orthographic projection technique
- CO3. Prepare development of lateral surfaces of objects

Course content:

UNIT I INTRODUCTION TO ENGINEERING GRAPHICS 15

Importance of graphics in engineering applications – General principles of engineering graphics – principles of orthographic projection – angles of projection - multiple views and their placement – layout of views.

Use of conventional drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning- Methods of Dimensioning.

Geometric shapes of objects - Mathematical representation of geometrical shapes - their engineering applications – Construction of polygonal shapes, their importance and application.

Conics sections – Construction of ellipse, Parabola and hyperbola by eccentricity method – construction of cycloid and involutes of square and circle – construction of spirals and helices – Meaning of tangents and normal to the above curves.

UNIT II PROJECTION OF LINES, PLANES AND SOLIDS 15

Projection of points and lines- Concept of polygonal surfaces and circular lamina inclined to both reference planes – Concept of true lengths and true inclinations.

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to two reference plane.

UNIT III DEVELOPMENT OF SURFACES AND SECTIONS OF SOLIDS 15

Development of lateral surfaces of simple and truncated solids – Prisms, pyramids, cylinders and cones. Need for sectioning of solids – Sectioning of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by cutting planes inclined to one reference plane and perpendicular to the other. – Orthographic views of sections of simple solids.

UNIT IV ORTHOGRAPHIC AND ISOMETRIC PROJECTION OF SOLIDS 15

Orthographic projection of solids – Practices on three view projection of solids. Isometric Projection of solids – practices on simple solids

Need and advantages of modeling software over conventional drawing methods - Representation of three Dimensional objects –3D modeling techniques – constructive solid geometry (CSG) and boundary representation (BRep) techniques - Boolean operations, extrude, revolve, mirror, array, etc. Modeling of isometric views of engineering components. Introduction to perspective projection .Meaning of house plans-different types representation of different details-meaning of area of a house and site.

REFERENCES:

1. Dhananjay.A.Jolhe, “Engineering Drawing with an introduction to AutoCAD” Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
2. Bhatt.N.D, “Engineering Drawing “46th Edition, Charotar Publishing House , Gujarat, India, 2003
3. BasantAgarwal and Agarwal.C.M, “Engineering Drawing”, Tata McGraw Hill PublishingCompany Limited, New Delhi, 2008.
4. Gopalakrishnan.K.R, “Engineering Drawing” (Vol. I&II), Subhas Publications, Chennai, 1998.
5. Natrajan.K.V, “A text book of Engineering Graphics”, Dhanalakshmi Publisher, Chennai, 2006.
6. Manuals of 2D and 3D modeling software packages.

WEB REFERENCES:

1. <http://www.engineeringdrawing.org/>
2. <http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html>


BoS Chairman

Course Code: 140CO0210	Course Title: ENGINEERING PHYSICS AND CHEMISTRY LABORATORY (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Measure optical parameters of laser and optical fiber.
- CO2. Estimate electrical properties of metal and semiconductor.
- CO3. Evaluate magnetic properties of a soft magnetic material
- CO4. Measure corrosion rate of a mild metal.
- CO5. Determine concentration of a solution through electrical method

Course content:

A. ENGINEERING PHYSICS LAB

List of experiments:

1. Velocity of ultrasonic waves and compressibility of given liquid - ultrasonic interferometer
2. Wavelength of laser and particle size determination using laser
3. Insulation of thin wire – Interference technique
4. Thermal conductivity of insulator - Lee' disc method
5. Band gap of a Thermistor – Post office box
6. Resistivity of metal and alloy – Carey Foster's bridge
7. Band gap of a diode – Reverse characteristics
8. Thermal conductivity of metallic wire - Meter bridge method
9. Numerical aperture of the given optical fiber
10. Hysteresis Loss of a ferromagnetic material
11. Study of characteristics of given LDR
12. Efficiency of Solar Cell
13. Rigidity modulus of metallic wire -Torsional pendulum method
14. Young's modulus of the material - Cantilever method
15. Co-efficient of viscosity of the liquids
16. Hall coefficient determination
17. Dielectric constant determination

B. CHEMISTRY LABORATORY

List of experiments:

WEIGHING AND PREPARATION OF STANDARD SOLUTIONS

Preparation of molar and normal solutions of oxalic acid, sodium carbonate and standard hard water.

WATER ANALYSIS

- i) Determination of total, temporary and permanent hardness of water sample by EDTA method.
- ii) Determination of Dissolved oxygen content by Winkler's method
- iii) Determination of COD of waste water by dichromate method
- iv) Determination of heavy metals in water by spectrophotometry (any one-Iron, Cr, Hg)

VISCOMETRY

- v) Determination of molecular weight of a polymer

ELECTROCHEMISTRY

- vi) To determine the strength of given acid – pH metrically
- vii) To determine the amount of ferrous ions by potentiometry
- viii) Determination of emf of electrochemical cell
- ix) Determination of corrosion rate – weight loss method
- x) Determination of inhibitor efficiency – corrosion

REFERENCES:

1. Jeffery.G.H, Bassett.J, Mendham.J and Denny.R.C, Vogel's "Text book of quantitative Chemical Analysis", Oxford, ELBS, London, 2002.
2. Shoemaker.D.P and Garland.C.W, "Experiments in Physical Chemistry", Tata McGraw-Hill Pub. Co. Ltd., London, 2003.


BoS Chairman


SEMESTER - II

Course Code: 140CO0201	Course Title: COMMUNICATION SKILLS (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits :(L:T:P:C:M) – 2 : 0 : 2 : 3 : 100
Type: Lecture/Practical	Total Contact Hours:60

Prerequisites: The student should have undergone the course(s):

➤ 140CO0101 Technical English

Course outcomes

At the end of the course the student will be able to:

CO1. Use listening skills for academic and professional purposes.

CO2. Speak effectively in real life situations.

CO3. Inculcate and develop the habit of reading.

CO4. Write letters and reports effectively in formal & business situations.

CO5. Use appropriate vocabulary in different business contexts.

Course content:

UNIT I LISTENING

6+6

Listening to fill up gapped texts -Listening to identify context and Speaker's opinion-Note Taking-Listening to Conversation

UNIT II READING

6+6

Exposure to different reading techniques-Skimming, identifying the topic sentence and its role in each paragraph-Scanning - Inferring and identifying the lexical and textual message-Comprehension & Note Making

UNIT III SPEAKING

6+6

Verbal and Non-verbal Communication-Introducing Oneself-Describing objects and Situations-Expressing opinions - Agreement & Disagreement-Group Discussion- Mock interview-Power Point Presentation-Soft Skills-Behavioral attitude, Dress code, Dining etiquette

UNIT IV TECHNICAL REPORT WRITING

6+6

Writing Business Messages (Advertisement), Caption, Slogan Writing- Documentation-Preparation of Brochure, Pamphlets, notices, agenda, minutes- Writing Business Letters- calling for quotations, placing orders, a letter of complaint regarding manufacturing defects, seeking permission to use certain facilities in a company-Preparation of comparative statements- Letter

of application - content, format & Resume writing- E-Mail, Memos & Proposals-Process Description, Analytical Writing, Argumentative Writing-Writing Instructions-Proof Reading

UNIT V VOCABULARY

6+6

Word formation-prefixes & suffixes - Abbreviations and Acronyms - Foreign Words and Phrases - British & American English - Idioms and phrases (computer- related) - Scientific and technical terms-jargons-Technical Register-Pairs of confused words

TEXT BOOKS:

1. Sangeetha Sharma & Binod Mishra, "Communication Skills for Engineers and Scientists", PHI Learning Private Limited, New Delhi, 2009.

REFERENCES:

1. I. Halliday. M.A.K, An introduction to Functional English Grammar, Edward Arnold Publishers Ltd., U.S.A, 1985
2. Walter. E. Oliu., Writing That Works- How to Write Effectively on the Job, St. Martin's Press, New York, 1980
3. Joe Ayres, Effective Public Speaking, Brown Company Publishers, 1983
4. Richard Huseman, Business Communication-Strategies and Skills, Alger Press, 1988
5. Herta. A. Murphy, Effective Business Communication, McGraw-Hill Ryerson, 1990
6. Martin Hewings, Advanced English Grammar, Cambridge University Press, 1999

WEB REFERENCES:

- <http://nptel.ac.in/courses/109104031/>
- <https://www.businesstrainingworks.com/onsite-training-courses-directories/communication-skills-training-courses-directory>
- <http://www.ilsc.in/communication-courses>


BoS Chairman

Course Code: 140CO0202	Course Title: ENGINEERING MATHMATICS-II (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits : (L:T:P:C:M) – 3 : 1 : 0 : 4 : 100
Type: Lecture/Tutorial	Total Contact Hours:60

Prerequisites: The student should have undergone the course(s):

- 140CO0102 Engineering Mathematics I

Course outcomes

At the end of the course the student will be able to:

- CO1. Solve second and higher order linear ordinary differential equations.
- CO2. Understand the concepts of vector differentiation and integration.
- CO3. Use the functions of a complex variable and construct analytic functions.
- CO4. Use the concept of complex integration to solve contour integrals.
- CO5. Apply the Laplace transform techniques to solve differential equations.

Course content:

UNIT I DIFFERENTIAL EQUATIONS

9+3

Second and third order linear differential equations with constant coefficients -Method of variation of parameters-Cauchy and Legendre's linear equations for variable coefficients-Simultaneous first order linear equations with constant coefficients.

UNIT II VECTOR CALCULUS

9+3

Gradient, divergence and curl, irrotational and solenoidal vector fields- Directional derivatives-Green's theorem in a plane (without proof)-Gauss divergence theorem (without proof) - Stoke's theorem (without proof)-Verification and evaluation of integrals using Green's, Gauss's and Stoke's theorem.

UNIT III ANALYTIC FUNCTIONS

9+3

Function of a complex variable-Analytic function -Singular points –Cauchy Riemann equations-Sufficient conditions (without proof) – Properties-Construction of analytic functions-Conformal mapping: Bilinear transformation, Special mappings: $w = z + a$, $w = az$, $w = 1/z$.

UNIT IV COMPLEX INTEGRATION

9+3

Taylor and Laurent expansions- Types of singularity -Cauchy's fundamental theorem (without proof) – Residues-Cauchy Residue theorem-Evaluation of integrals –Applications: Evaluation of real integrals using Contour integration with no poles on the real axis.

UNIT V LAPLACE TRANSFORM

9+3

Laplace transform-Conditions for existence-Transform of elementary functions- Properties- Transform of derivatives, integrals, unit step function and unit impulse function – Transformation of periodic functions-Inverse Laplace transform-Convolution theorem-Initial and final value theorems-Solution of linear ODE of second order with constant coefficients using Laplace transform.

TEXT BOOK:

1. Veerarajan.T, “Engineering Mathematics”, Updated 2nd Edition, Tata McGraw Hill, New Delhi, 2010.
2. Ramakrishna Prasad.A, “Kreyszig’s Engineering Mathematics I”, 1st Edition, Wiley India Pvt. Ltd., India, 2011.

REFERENCES:

1. Venkatraman.M.K, “Engineering Mathematics-Volume II”, 5th edition, National publishing company, Chennai, 2007.
2. Kandasamy.P, Thilagavathy. K., Gunavathy. K., "Engineering Mathematics", Revised 9th Edition, S.Chand and Company Ltd., New Delhi, 2011.
3. Grewal.B.S, “Higher Engineering Mathematics”, 40th Edition, Khanna Publications, New Delhi, 2007.
4. Louis.C.Barrett, Ray Wylie.C, “Advanced Engineering Mathematics”, 6th Edition, McGraw-Hill Publishing Company Ltd, New Delhi, 2003.

WEB REFERENCES:

- <https://www.edx.org/>
- www.iitk.ac.in/gate/gate2012/pdf/files/xea.pdf


BoS Chairman

Course Code: 140CO0203	Course Title: MATERIAL SCIENCE (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

➤ 140CO0103 Engineering Physics

Course outcomes

At the end of the course the student will be able to:

- CO1. To know the properties of conducting and semiconducting materials
- CO2. To know the properties and applications of magnetic and superconducting materials
- CO3. To know the types of dielectric materials and its applications
- CO4. To know the behavior of particle.
- CO5. Knowing the new engineering materials and its applications

Course content:

UNIT I CONDUCTING MATERIALS 9

Formation of bands (qualitative) - Classification of solids based on bands – Classical free electron theory, Expression for electrical and thermal conductivity, Weidmann Franz law - Sources of resistivity - Mattheissen's rule. - Low and high resistivity materials and their applications.

UNIT II SEMICONDUCTING MATERIALS 9

Intrinsic and extrinsic semiconductors - Expression for carrier concentration - Variation of carrier concentration and Fermi level with temperature for n – type - Elemental and compound semiconductors - Hall effect : Hall coefficient in extrinsic semiconductors, experimental determination of Hall coefficient and applications of Hall effect, LDR, Solar Cells and strain gauges.

UNIT III MAGNETIC MATERIALS AND SUPERCONDUCTORS 9

Introduction to magnetic materials - Ferromagnetic materials - Properties - Domain theory of ferromagnetism - Hysteresis - Hard and soft magnetic materials - Ferrites: structure and applications. Magnetic storage devices: magnetic recording and magneto optical recording – Materials for permanent magnets. Superconductors – Properties - Types of superconductors - High Tc superconductors - Applications: SQUID - Cryotron - Magnetic levitation.

UNIT IV DIELECTRIC MATERIALS

9

Polarization – Polarizability – Polarization vector, Electrical susceptibility, Dielectric constant - Polarization mechanisms (Qualitative) –Internal Field- ClausiusMossotti relation-Frequency and temperature dependence of polarization - Dielectric loss - Dielectric breakdown mechanisms – Ferro electric materials, Classification and its Properties –Piezoelectric materials – classification of Insulating materials.

UNIT V MODERN ENGINEERING MATERIALS

9

Shape Memory alloys (SMA): Characteristics, properties of NiTi alloy. Applications of SMA. Metallic glasses: Preparation, properties and applications. Nano Materials: Top down processes: Ball Milling - Bottom up processes: Physical vapor deposition, Nanomaterials, properties and applications (Qualitative). Carbon nanotubes: Fabrication - CVD, electric arc discharge method, Properties and applications.

TEXT BOOKS:

1. William.D.CallisterJr, "Material Science and Engineering – An Introduction", John Wiley and Sons Inc., Sixth Edition, New York, 2007.
2. Jayakumar.S, "Materials science", R.K. Publishers, Coimbatore, 2008.

REFERENCES:

1. Palanisamy.P.K, "Materials science", Scitech publications, Chennai, 2004.
2. Kasap.S.O, "Principles of Electronics Materials and Devices", McGraw Hill Higher Education, New Delhi, 2002.
3. Rajendran.V, "Engineering Physics", Tata McGraw-Hill Co, New Delhi, 2007.
4. Avadhanulu.M.N, "Engineering Physics", S. Chand, New Delhi, 2009.

WEB REFERENCES:

- <http://ocw.mit.edu/courses/materials-science-and-engineering/>
- <https://www.ox.ac.uk/admissions/undergraduate/courses-listing/materials-science?wssl=1>
- <https://www.imperial.ac.uk/study/ug/courses/materials-department/materials/>

S. Praveen Kumar
BoS Chairman

Course Code: 140CO0204	Course Title: ENVIRONMENTAL SCIENCE (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

➤ 140CO0104 Engineering Chemistry

Course outcomes

At the end of the course the student should be able to:

CO1. Describe the ways to maintain ecological balance and preserve bio-diversity.

CO2. Explain the causes of pollution and the methods to reduce & recycle.

CO3. Describe the way from unsustainable to sustainable development through effective usage & conservation of energy.

CO4. Describe the global environmental issues and the laws passed to control it.

CO5. Describe the role of man & technology in environmental management

Course content:

UNIT I ENVIRONMENTAL SCIENCE AND BIO SYSTEMS

9

Multidisciplinary nature of Environmental studies – Definition, Scope and Importance of Environmental studies – Natural resources– Over exploitation of resources and impacts. Ecosystem – Structure and function of an ecosystem – concept, structure and function with relevant examples- Food chain, Food web and Ecological pyramids. Biodiversity – Endemic, endangered and extinct species – Habitat – Hotspots – values of biodiversity -threats to biodiversity - conservation of biodiversity.

UNIT II ENVIRONMENTAL POLLUTION

9

Causes, effects and control of – Air pollution, Water pollution, Marine pollution, Thermal pollution, Noise pollution- solid waste management – types and sources of solid waste- 3R principles, advantages of recycling and waste utilization, E –waste, hazardous waste management.

UNIT III ENERGY AND SUSTAINABILITY

9

Energy resources- types - the role of renewable sources of energy- Principle involved in energy conversion advantages and limitations of hydro energy, solar energy, wind energy, bio energy, geothermal energy, ocean energy. Sustainable development – equitable use of resources for sustainable development.

UNIT IV GLOBAL ENVIRONMENTAL ISSUES AND LAWS

9

Facts and impacts of - Climate change, Global warming, ozone layer depletion, waste lands. Environmental disasters - disaster management approach. International Conventions, protocols for environmental protection. Environmental ethics - Environmental protection act in India - Role of Pollution control boards.

UNIT V HUMAN POPULATION AND ENVIRONMENT

9

Population growth, population explosion, environment and human health, Role of technology in environmental management. Public awareness, Eco-labeling. Role of NGO's in environmental management. Case studies.

TEXT BOOK:

1. Kaushik Anubha & Kaushik.C.P “Environmental Science and Engineering”, 3 rd edition, reprint 2010, New Age International Publishers, New Delhi.

REFERENCES:

1. William.P.Cunningham – “Principles of Environmental Science”, Tata McGraw Hill, New Delhi, 2007
2. Linda.D.Williams – “Environmental Science Demystified”, Tata McGraw Hill Publishing Company Limited , 2005, New Delhi,
3. Shyam Divan, Armin Rosencranz “Environmental Law and Policy in India –cases, materials and Statutes”, Oxford University Press, New Delhi, 2001.
4. Gilbert.M.Masters, “Introduction to Environmental Engineering and Science”, Second edition, Prentice –Hall of India private limited, New Delhi, 2004.
5. Tyler Miller.G, JR “Environmental Science “, 10th edition, Thomson Asia Private Limited, Singapore, 2004.

WEB REFERENCES:

- <http://www.environmentalscience.org/>
- <http://uncw.edu/career/environmentalscience.html>
- <http://www.ensci.iastate.edu/>

S.P. Ramesh
BoS Chairman

Course Code: 140IT0205	Course Title: DATA STRUCTURES AND OBJECT ORIENTED PROGRAMMING WITH C++ (Common to IT&ECE)
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

➤ 140CO0105-C Programming

Course outcomes

At the end of the course the student will be able to:

- CO1. Examine the basic programming constructs used in C++.
- CO2. Develop programs using object oriented features like inheritance, data abstraction, encapsulation and polymorphism
- CO3. Recognize the characteristics and operations of linear data structures
- CO4. Apply the terminology and operations of non-linear data structures in relevant applications
- CO5. Understand the need of sorting and algorithm design techniques

Course content:

UNIT I PRINCIPLES OF OBJECT ORIENTED PROGRAMMING 9

Introduction- Tokens-Expressions-constant Structures –Functions in C++, classes and objects, constructors and destructors, operators overloading and type conversions.

UNIT II ADVANCED OBJECT ORIENTED PROGRAMMING 9

Inheritance, Extending classes, Pointers, Virtual functions and polymorphism, File Handling Templates, Exception handling, Manipulating strings.

UNIT III DATA STRUCTURES & ALGORITHMS 9

Algorithm, Analysis, Lists, Stacks and queues, Priority queues-Binary Heap-Application, Heaps–hashing-hash tables without linked lists.

UNIT IV NONLINEAR DATA STRUCTURES 9

Trees-Binary trees, search tree ADT, AVL trees, Graph Algorithms-Topological sort, shortest path algorithm network flow problems-minimum spanning tree - Introduction to NP - completeness.

UNIT V SORTING AND SEARCHING

9

Sorting – Insertion sort, Shell sort, Heap sort, Merge sort, Quick sort, Indirect sorting, Bucket sort, Introduction to Algorithm Design Techniques –Greedy algorithm (Minimum Spanning Tree), Divide and Conquer (Merge Sort), Dynamic Programming (All pairs Shortest Path Problem).

TEXT BOOKS:

1. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, 3rd edition, Pearson Education Asia, New Delhi, 2007. (UNIT -III, IV, V)
2. Balagurusamy.E, “ Object Oriented Programming with C++”, 4th edition, Tata McGraw Hill, New Delhi 2008 (UNIT -I , II)

REFERENCES:

1. Michael.T.Goodrich, “Data Structures and Algorithm Analysis in C++”, Wiley student edition, New Delhi,2007.
2. Sahni, “Data Structures Using C++”, The McGraw-Hill, New Delhi, 2006.
3. Seymour, “Data Structures”, The McGraw-Hill, New Delhi ,2007.
4. Robert Lafore, Object oriented programming in C++, Galgotia Publication,New Delhi

WEB REFERENCES:

- <http://www.cosc.canterbury.ac.nz/mukundan/dsal/appldsal.html>
- <https://www.cs.usfca.edu/~galles/visualization/Algorithms.html>.
- <http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms>


BoS Chairman

Course Code: 140IT0206	Course Title : BASICS OF CIVIL AND MECHANICAL ENGINEERING (Common to IT&CSE)
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Outline the various Civil Engineering materials used in field and understand the importance of surveying
- CO2. Identify the principle behind architectural aspects involved in construction and Illustrate the techniques involved in construction of substructure and superstructure
- CO3. Recognize the various manufacturing process for making a product.
- CO4. Decide various parameters in designing air conditioning and refrigeration systems.
- CO5. Define the fundamentals of I.C Engine and its principle of working.

Course content:

A. CIVIL ENGINEERING

UNIT I CIVIL ENGINEERING MATERIALS & SURVEYING 8

Infrastructure projects- Role of civil Engineers, Basic areas in Civil Engineering and its scope - Civil Engineering Materials and classification - stones, bricks, sand, aggregate, cement & types of cement, mortar, concrete, concrete grades, types of concrete, Plain cement concrete (PCC) - Reinforcement cement concrete(RCC), surveying objectives and types, common methods and instruments for distance and angle measurements

UNIT II PRINCIPLES OF ARCHITECTURAL DESIGN 7

Aesthetic qualities in building to include, unity, proportion, scale, balance, symmetry and rhythm – study of examples, Factors in architectural design, such as: requirements, circulation, anthropometrics, site & landscape, climate, space standards, safety regulations, layout regulations, building rules , Basic services – basics of interior design and landscaping, Integration of building services.

UNIT III BUILDING COMPONENTS 8

Sub structure: Nature of soil – problems with soil, selection of foundation based on soil condition – functions of foundation, bearing capacity - requirement of good foundations. Super structure: types of masonry – brick masonry, stone masonry, Beams, columns, Lintels & floors.

Course Code: 140IT0207	Course Title: ENGINEERING PRACTICES LABORATORY (Common to IT&CSE)
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Know the use of hand tools and equipments used in fabrication workshop.
- CO2. Select the various tools and equipments used in the fabrication workshop.
- CO3. Make various models in carpentry, fitting, sheet metal, welding and plumbing.
- CO4. Demonstrate the working of domestic appliances.

List of experiments:

I. CIVIL ENGINEERING PRACTICE

Study of plumbing and carpentry components of residential and industrial buildings, Safety aspects.

(a) Plumbing Works:

1. Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, and elbows in household fittings.
2. Hands on exercise on basic pipe connections – mixed pipe material connection – pipe connections with different joining components.

(b) Carpentry works:

1. Study of the joints in roofs, doors, windows and furniture.
2. Hands-on-exercise: Wood work, joints by sawing, planning and cutting.
3. Demonstration on Carpentry using Power Tools only.

II MECHANICAL ENGINEERING PRACTICE

(a) Welding:

1. Study of welding processes, tools and safety aspects.
2. Hands on exercise for making butt joints, lap joints and tee joints using arc welding.
3. Hands on exercise on Gas welding practice.

(b) Sheet Metal Work:

1. Study of sheet metal works, tools and measuring instruments.
2. Hands on exercise on:
 - (i) Forming & bending.
 - (ii) Model making – Trays, Funnels, Cones etc.

(c) Machine assembly practice:

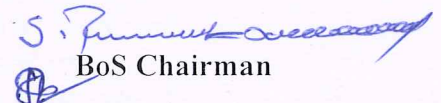
1. Centrifugal Pump

(d) Demonstration on:

1. Turning, milling and drilling practices.
2. Smithy operations, upsetting, swaging, setting down and bending. Example
3. Foundry operations like mould preparation for gear and step cone pulley.
4. Fitting – Preparation of square fitting and vee – fitting models.
5. Air-conditioner.
6. Working of IC Engine

REFERENCES:

1. Jeyachandran.K, Natarajan.S & Balasubramanian.S, “A Primer on Engineering Practices Laboratory”, Anuradha Publications, 2007.
2. Rajendra Prasad.A & Sarma.P.M.M.S, “Workshop Practice”. Sree Sai Publication, 2002.
3. Kannaiah.P. & Narayana.K.L, “Manual on Workshop Practice”, Scitech Publications, 1999.


BoS Chairman

Course Code: 140CO0210	Course Title: ENGINEERING PHYSICS AND CHEMISTRY LABORATORY (Common to IT,CSE,ECE,EEE,EI,ICE&CIVIL)
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Measure optical parameters of laser and optical fiber.
- CO2. Estimate electrical properties of metal and semiconductor.
- CO3. Evaluate magnetic properties of a soft magnetic material
- CO4. Measure corrosion rate of a mild metal.
- CO5. Determine concentration of a solution through electrical method

Course content:

A. ENGINEERING PHYSICS LAB

List of experiments:

1. Velocity of ultrasonic waves and compressibility of given liquid - ultrasonic interferometer
2. Wavelength of laser and particle size determination using laser
3. Insulation of thin wire – Interference technique
4. Thermal conductivity of insulator - Lee' disc method
5. Band gap of a Thermistor – Post office box
6. Resistivity of metal and alloy – Carey Foster's bridge
7. Band gap of a diode – Reverse characteristics
8. Thermal conductivity of metallic wire - Meter bridge method
9. Numerical aperture of the given optical fiber
10. Hysteresis Loss of a ferromagnetic material
11. Study of characteristics of given LDR
12. Efficiency of Solar Cell
13. Rigidity modulus of metallic wire -Torsional pendulum method
14. Young's modulus of the material - Cantilever method
15. Co-efficient of viscosity of the liquids
16. Hall coefficient determination
17. Dielectric constant determination

Normal subgroups – Normal algebraic system with two binary operations - Codes and group codes – Basic notions of error correction - Error recovery in group codes.

UNIT V FINITE FIELDS AND NUMBER THEORY 9 + 3



Rings – Properties - Sub rings - Fields - Subfields - Integral domain - Finite Fields - Number Theory - Operations on set of integers - Absolute value – Divisibility - GCD, LCM - Prime and Composite integers - Congruence of integers - Fermat's Theorem - Euler's theorem.

TEXT BOOK:

1. Trembly J.P and Manohar R, “Discrete Mathematical Structures with Applications to Computer Science”, Tata McGraw–Hill Pub. Co. Ltd, New Delhi 2007.

REFERENCES:

1. Kenneth H.Rosen, “Discrete Mathematics and its Applications”, Sixth Edition, Tata McGraw – Hill Pub. Co. Ltd., New Delhi 2006
2. Bernard Kolman, Robert C. Busby, Sharan Cutler Ross, “Discrete Mathematical Structures”, Fourth Indian reprint, Pearson Education Pvt Ltd., New Delhi 2003.
3. Ralph. P. Grimaldi, “Discrete and Combinatorial Mathematics: An Applied Introduction”, Fourth Edition, Pearson Education Asia, Delhi 2002.
4. Vasishtha.A.R. & Vasishtha.A.K, “Modern Algebra”, Krishna Prakashan Media (P) Ltd.


BoS Chairman


Course Code: 140IT0302	Course Title: DIGITAL PRINCIPLES AND SYSTEM DESIGN
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 2 : 4 : 100
Type: Lecture/Practical	Total Contact Hours: 75

Course outcomes

At the end of the course the student will be able to:

- CO1. Students will be able to represent numerical values in various number systems and perform number conversions between different number systems.
- CO2. Able to analyze and design digital combinational circuits like decoders, encoders, multiplexers, and de-multiplexers including arithmetic circuits (half adder, full adder, multiplier).
- CO3. Able to analyze sequential digital circuits like flip-flops, registers, counters.
- CO4. Knowledge of the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD, FPGAs, etc.
- CO5. Understand the importance and need for verification, testing of digital logic and design for testability.

Course content:

UNIT I	BOOLEAN ALGEBRA AND LOGIC GATES	8
Review of binary number systems - Binary arithmetic – Binary codes – Boolean algebra and theorems - Boolean functions – Simplifications of Boolean functions using Karnaugh map and tabulation methods – Logic gates		
UNIT II	COMBINATIONAL LOGIC	9
Combinational circuits – Analysis and design procedures - Circuits for arithmetic operations - Code conversion – Introduction to Hardware Description Language (HDL)		
UNIT III	DESIGN WITH MSI DEVICES	8
Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits		
UNIT IV	SYNCHRONOUS SEQUENTIAL LOGIC	10
Sequential circuits – Flip flops – Analysis and design procedures - State reduction and state assignment - Shift registers – Counters – HDL for Sequential Circuits.		
UNIT V	ASYNCHRONOUS SEQUENTIAL LOGIC	10
Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables – Race-free state assignment – Hazards. ASM Chart.		

LAB COMPONENTS:



1. Verification of Boolean theorems using digital logic gates
2. Design and implementation of combinational circuits using basic gates for arbitrary functions.
3. Design and implementation of 4-bit binary adder / subtractor using basic gates and MSI devices
4. Design and implementation of Synchronous and Asynchronous counters
5. Simulation of combinational circuits using Hardware Description Language
6. Simulation of sequential circuits using HDL

TEXT BOOK:

1. Morris Mano. M., "Digital Design", 3rd edition, Pearson Education, New Delhi 2007.

REFERENCES:

1. Charles H.Roth, Jr. "Fundamentals of Logic Design", 4th Edition, Jaico Publishing House, New Delhi Latest Edition.
2. Donald D.Givone, "Digital Principles and Design", Tata McGraw-Hill, New Delhi 2007.


BoS Chairman


Course Code: 140IT0303	Course Title: DESIGN AND ANALYSIS OF ALGORITHM
Core/Elective: Core	Credits(L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0205 Data Structures And Object Oriented Programming With C++

Course outcomes

At the end of the course the student will be able to:

- CO1. Identify and apply the fundamental principles of algorithm analysis for various problems
- CO2. Implement and analyze various sorting and searching techniques
- CO3. Develop, compare, and report on different algorithmic solutions to the same problem
- CO4. Decide on the suitability of a specific algorithm design technique for a given problem
- CO5. Elaborate and compute the running time complexity of nonlinear algorithms

Course content:

UNIT I ANALYSIS OF ALGORITHMS 9

Introduction – Notion of algorithm, Fundamentals of algorithmic problem solving, Important problem types-Fundamentals of The Analysis of Algorithm Efficiency – Analysis framework, Asymptotic notations and basic efficiency classes, Mathematical analysis of non-recursive algorithms, Mathematical analysis of recursive algorithms.

UNIT II SORTING TECHNIQUE 9

Brute Force – Selection sort and bubble sort, Sequential search and brute-force string Matching, Divide-and-Conquer – Merge sort, Quick sort, Binary search, Binary tree traversals and related properties.

UNIT III SEARCHING TECHNIQUE 9

The General method- All pairs shortest path- Optimal binary tree- Multistage graphs, Heaps and heap sort

UNIT IV BACKTRACKING 9

The General method- Solution space and tree organization- The Eight Queens problem- Sum of subset problem- Graph coloring- Knapsack problem

Greedy Technique – Prim’s algorithm, Kruskal’s algorithm, Dijkstra’s algorithm, Huffman trees, Traveling Salesman Problem, NP hard and complete problem Introduction.

TEXT BOOK:



1. AnanyLevitin, Introduction to the Design & Analysis of Algorithms, Third Edition Pearson Education, New Delhi 2011.

REFERENCES:

1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, “Fundamentals of Computer Algorithms”, second edition, Galgotia Publications, New Delhi 2007
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, “Introduction to Algorithms”, Third Edition, MIT Press and McGraw-Hil Publications
3. Aho. A.V., Hopcroft. J. E. and Ullman. J. D., “The Design and Analysis of Computer Algorithms”, Third Edition, Pearson Education Asia 2003.
4. Sara Baase and Allen Van Gelder, “Computer Algorithms - Introduction to Design and Analysis”, Third Edition, Pearson Education Asia 2003.

WEB REERENCES:

1. <http://webpages.uncc.edu/ras/ITCS2215.html>
2. <http://www.pearsoned.co.in/prc/book/anany-levitin-introduction-design-analysis-algorithms-2e-2/9788131718377>
3. <https://vtucsenotes.wordpress.com/fourth-sem/design-and-analysis-of-algorithms/>


BoS Chairman


Course Code: 140IT0304	Course Title: DATABASE SYSTEM CONCEPTS
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Construct the Entity Relationship Model for obtaining the structure of a database.
- CO2. Convert and compute the ER diagrams to relational database schema.
- CO3. Identify and normalize conceptual data models
- CO4. Characterize the basics of query evaluation techniques and query optimization
- CO5. Recognize the database facilities, concurrency control and backup & recovery for a database system.

Course content:

UNIT I AN OVERVIEW OF DATABASE SYSTEMS 9

Introduction – Database system applications, Database versus file systems, View of data, Data models, Database languages, Database users and administrators, Database system structure, Entity – Relationship Model – Basic concepts, Constraints, Keys, Design issues, ER diagram, Weak entity sets, Design of an ER database schema.

UNIT II DATA MODELS 9

Relational model - Structure of relational databases – The relational algebra – Tuple relational calculus, Domain relational calculus, SQL – Background, Basic structure, Set operations, Aggregate functions, Null values, Nested sub queries, Views, Joined relations, DDL, Embedded SQL, Dynamic SQL, Integrity and security – Domain constraints, Referential integrity, Assertions, Triggers.

UNIT III RELATIONAL DATABASES DESIGN 9

Relational database design – First normal form, Second normal form - Pitfalls in relational database design, Functional dependencies, Decomposition, Desirable properties of decomposition, BCNF, Third normal form, Fourth normal form.

UNIT IV INDEXING AND QUERYING 9

Indexing and hashing – Basic concepts, Ordered indices, B+ tree index files, B tree index files – Static hashing, Dynamic hashing, Comparison of ordered indexing and hashing, Multiple key access - Query Processing – Overview, Measures of query cost, Selection operation, Sorting, Join operation - Query Optimization – Overview, Estimating statistics of expression results, Transformation of relational expressions.

**UNIT V TRANSACTION, CONCURRENCY CONTROL AND RECOVERY
MANAGEMENT**

9

Transactions – Transaction concept, Transaction state, Implementation of atomicity and durability, Concurrent executions, Serializability, Recoverability, Testing for serializability - Concurrency control – Lock based protocols, Timestamp based protocols, Validation based protocols, Multiple granularity, Multiversion schemes, Recovery system – Failure classification, Storage structure, Recovery and atomicity, Log based recovery, Shadow paging, Recovery with concurrent transactions, Buffer management, Failure with loss of nonvolatile storage, Advanced recovery techniques, Remote backup systems.

TEXT BOOK:

1. Silberschatz, Korth, Sudarshan, “Database System Concepts”, Sixth Edition, McGrawHill International Edition, New Delhi 2010.
2. Date C.J., Kannan A, Swaminathan S, “An introduction to database systems”, Eighth Edition, Pearson Education, New Delhi, 2009.
- 3.

REFERENCES:

1. Elmasri, R., Navathe, S.B., “Fundamentals of database systems”, Sixth Edition, Pearson Education, New Delhi, 2010.
2. Raghuram Ramakrishnan, Johannes Gehrke. “Database Management Systems”, Third Edition, McGrawHill International Edition, New Delhi 2007
3. Bipin C Desai, “An Introduction to Database Systems”, Eleventh Edition, Galgotia Publications Pvt. Ltd., New Delhi, 2001.
4. Jeffrey D. Ulman and Jennifer Widom, “A First Course in Database Systems”, Third Edition, Prentice-Hall, New Delhi, 2007.

WEB REFERENCES:

1. <http://www.sanfoundry.com/database/>
2. <http://codex.cs.yale.edu/avi/db-book/db6/slide-dir/>



BoS Chairman



Accessing I/O devices – Programmed Input/output –External Devices-I/O Modules-
Programmed I/O-Interrupt-Driven I/O-Interrupts – Direct Memory Access-I/O Channels and
Processors – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, and USB).

TEXT BOOK:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, Tata McGraw Hill, New Delhi 2002.

REFERENCES:

1. Morris Mano, Michael Ciletti, “Digital Design”, Fourth Edition, Pearson Publication, New Delhi, 2008.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Seventh Edition, Pearson Education, New Delhi 2006.
3. John P. Hayes, “Computer Architecture and Organization”, Third Edition, Tata McGraw Hill, New Delhi 1998.
4. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Third Edition, Elsevier, New Delhi 2005

WEB REFERENCES:

1. www.technolamp.co.in/2011/04/computer-organization-carl-hamacher.html

S. Kumar
BoS Chairman
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Course Code: 140IT0306	Course Title: PROGRAMMING WITH JAVA
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s)

- 140IT0205 - Data Structures And Object Oriented Programming With C++

Course outcomes

At the end of the course the student will be able to:

- CO1. Use integrated development environment (IDE) for Java application development.
- CO2. Use inheritance and packages in order to attain code minimization and reusability.
- CO3. Differentiate multi- threading and multi- tasking concepts and incorporate threads in java application.
- CO4. Apply the exception handling mechanism in java application to improve the efficiency
- CO5. Design and develop Graphical User Interface (GUI) by using SWING and AWT classes based on user requirements.

Course content:

UNIT I INTRODUCTION 9

Java features - Comparison with C and C++ – Java program structures – Java tokens –Java statements – Java virtual machine – Command line arguments - Constants –Variables – Data types – Scope of variables – Operators. Defining a class – Adding variables and methods – Creating objects – Accessing class members – Constructors –Method overloading – Static members –Final variables and methods – Final classes –Abstract methods and classes – Visibility control- classes -garbage collection-Arrays.

UNIT II INHERITANCE, PACKAGES AND INTERFACES 9

Inheritance: Extending a class – Overriding methods – Basics- Super keyword- Multilevel Hierarchy. Packages- Access Protection –Importing a Packages- Interfaces- Extending Interfaces – Implementing Interfaces - Hiding Classes .Special String Operations – Character Extraction –String Comparison – Modifying a String –String Buffer.

UNIT III EXCEPTION HANDLING AND THREAD 9

Exception Types – Uncaught Exceptions – Using Try Catch – Multiple Catch – Nested Try – throw- throws- finally – Built in Exceptions- Using Exceptions- Thread-Extending the

Course Code: 140IT0308	Course Title: DATABASE MANAGEMENT SYSTEM LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes



At the end of the course the student will be able to:

- CO1. Develop an Entity Relationship Model with the appropriate entities, attributes, relationships
- CO2. Create database with different types of integrity constraints and use the SQL
- CO3. commands such as DDL, DML, DCL, TCL to access data from database objects.
- CO4. Access and manipulate data using PL/SQL blocks.
- CO5. Connect database to front end using JDBC and ODBC driver.
- CO6. Develop a mini project application along with front end and backend.

List of experiments:

1. Study and Practice of SQL: Primitive Data Types – User Defined data Types – Built-in Functions – Parts of Speech of create, alter, drop, select, insert, delete, update, commit, rollback, save point, grant, revoke.
2. Study and Practice of Query Types: Queries involving Union, Intersection, Difference, Cartesian product, and Divide Operations – Sub Queries – Join Queries – Nested Queries – Correlated Queries Recursive Queries.
3. Study and Practice of Procedural Query Language: Blocks, Exception Handling, Functions, Procedures, Cursors, Triggers, Packages.
4. Study of front end software: Working with Controls – Text Box, Label, Command Button, Picture Box, List Box, Combo Box, Check Box, and Radio Button.
5. Application: Design and develop any two of the following:
 - Library Information System
 - Students' Information System
 - Ticket Reservation System
 - Hotel Management System
 - Hospital Management System
 - Inventory Control
 - Retail Shop Management
 - Employee Information System
 - Payroll System
 - Any other Similar System.

(Experiments are to be carried out in DB2 / ORACLE and VB/ Open source DBMS package with the required front end software)


BoS Chairman


Course Code: 140IT0309	Course Title: PROGRAMMING WITH JAVA LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

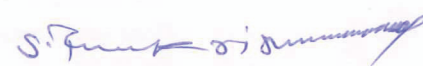
Course outcomes

At the end of the course the student will be able to:

- CO1. Use integrated development environment (IDE) for Java application development.
- CO2. Use inheritance and package concepts in order to attain code minimization and reusability.
- CO3. Understand and implement multi- threading concepts by creating threads in java applications development.
- CO4. Apply exception handling mechanism in java application developed.
- CO5. Create Graphical User Interface (GUI) by using SWING and AWT classes based on user requirements.

List of experiments:

1. Creation of classes and use of different types of functions
2. Count the number of objects created for a class using static member function
3. Programs using inheritance
4. Write programs using function overloading
5. Simple Package creation
 - a. Developing user defined packages
 - b. Import of user defined packages
6. Interfaces
 - a. Developing user-defined interfaces
 - b. Use of predefined interfaces
7. Threading
 - a. Creation of thread in Java applications
 - b. Multithreading
8. Exception Handling Mechanism in Java
 - a. Handling pre-defined exceptions
 - b. Handling user-defined exceptions
9. Programs using files
10. Programs using AWT
11. Programs on swing
12. Development of project using above listed concept.



BoS Chairman



SEMESTER IV

Course Code: 140IT0401	Course Title: NUMERICAL METHODS
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 1 : 0 : 4 : 100
Type: Lecture/Tutorial	Total Contact Hours: 60

Prerequisites: The student should have undergone the course(s):

- 140IT0301– Discrete Mathematics And Applications

Course outcomes

At the end of the course the student will be able to:

CO1. Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.

CO2. Apply numerical methods to obtain approximate solutions to mathematical problems.

CO3. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.

CO4. Analyse and evaluate the accuracy of common numerical methods.

CO5. Implement numerical methods in Matlab and Write efficient, well-documented Matlab code and present numerical results in an informative way.

Course content:

UNIT I SOLUTION OF SYSTEM OF LINEAR EQUATIONS 9+3

Solution of linear system - Gaussian elimination and Gauss-Jordan methods - LU - decomposition methods - Crout's method - Jacobi and Gauss-Seidel iterative methods - sufficient conditions for convergence - Power method to find the dominant eigen value and eigen vector.

UNIT II SOLUTION OF NON LINEAR EQUATIONS & CURVE FITTING 9+3

Solution of nonlinear equation - Bisection method - Regula falsi method - Newton- Raphson method - Order of convergence of these methods- Curve fitting - Method of least squares and group averages.

UNIT III INTERPOLATION & NUMERICAL DIFFERENTIATION AND INTEGRATION 9+3

Newton's forward, backward and divided difference interpolation – Lagrange's interpolation – Numerical Differentiation and Integration – Trapezoidal rule – Simpson's 1/3 and 3/8 rules – Double integration-Trapezoidal rule.

UNIT IV SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 9+3

Numerical Solution of Ordinary Differential Equations- Euler's method - Euler's modified method - Taylor's method and Runge-Kutta method of fourth order to solve first order differential equations- and second order equations – Multi step methods - Milne's and Adams' methods.

UNIT V SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS 9+3

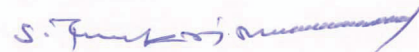
Numerical solution of Laplace equation and Poisson equation by Liebmann's method - solution of one dimensional heat flow equation - Bender - Schmidt recurrence relation - Crank - Nicolson method - Solution of one dimensional wave equation.

TEXT BOOKS:

1. Sastry S.S. "Introductory methods of Numerical Analysis", 3rd edition, PHI, 2003.
2. Grewal, B.S. and Grewal, J. S., "Numerical methods in Engineering and Science", 6th Edition, Khanna Publishers, New Delhi, 2004.
3. SankaraRao, K. "Numerical methods for Scientists and Engineers", 3rd Edition Prentice Hall of India Private Ltd., New Delhi, 2007.

REFERENCES:

1. Gerald, C. F. and Wheatley, P. O., "Applied Numerical Analysis", 6th Edition, Pearson Education Asia, New Delhi, 2006.
2. Jain M. K., Iyengar, S. R. and Jain, R. K., "Numerical Methods for Scientific and Engineering Computation", Wiley Eastern Company.



BoS Chairman

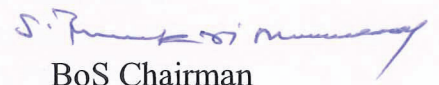


TEXT BOOK:

1. Oppenheim A.V, Schaffer R.W., “Discrete-time Signal Processing”, Prentice Hall India, New Delhi, 2009.

REFERENCES:

1. John Proakis. G., Dimtris G Manolakis, Digital Signal Processing Principles, Algorithms and Application, PHI, 2009.
2. Mitra. S.K., Digital Signal Processing- A Computer based approach, Tata McGraw-Hill, New Delhi 2010.
3. Johny R.Johnson: Introduction to Digital Signal Processing, Prentice Hall, 2006.
4. Alan V Oppenheim, Alan S Wilsky., and Hamid Nawab S., “Signals and Systems”, Prentice Hall of India, New Delhi, 2007.


BoS Chairman



Course Code: 140IT0403	Course Title: SOFTWARE ENGINEERING CONCEPTS
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Analyze and identify the suitable software process model for the given problem.
- CO2. Identify and apply the relevant requirements to build the requirement model based on use cases, activities and classes.
- CO3. Examine the design concepts and evaluate the mapping of dataflow into software architecture
- CO4. Identify the testing strategies of conventional software along with test cases.
- CO5. Recognize the principles and practices of software design to develop software applications.

Course content:

UNIT I SOFTWARE ENGINEERING – INTRODUCTION 9

Definition & Scope of Software Engineering – Process Framework – PSP & TSP Models - Process Models: Water fall, Incremental, Spiral, WINWIN spiral, Evolutionary, RAD, Prototyping, Object oriented, Iterative enhancement Model – Verification & Validation Process – The Unified Process - Project management Concepts

UNIT II SOFTWARE REQUIREMENTS: ANALYSIS & SPECIFICATION 9

Requirement Engineering – RE Groundwork – Eliciting Requirements – Building the Requirement model - Documenting and Validating Requirements - Software Prototyping – Requirement Analysis - Analysis Modeling: Scenario-based, Behavioral, Data, Class and Functional Models - Data Dictionary

UNIT III SOFTWARE DESIGN 9

Design Objectives - Design process and concepts – Modular design – Design Model - Architectural styles and Design– Architectural mapping using Dataflow– Object Oriented design – Component level Design – Pattern-based Design – User Interface design

UNIT IV SOFTWARE TESTING & MAINTENANCE 9

Testing Objectives – Internal and External view - Black- Box testing - White- Box Testing – Unit, Integration Testing – Validation Testing - System Testing –Path Testing – Control Structure Testing – User Interface Testing – Performance Testing - Debugging Techniques – CASE Tools - Software Maintenance – Reengineering Process – Reverse Engineering & Forward Engineering .

Quality concepts - Software Measurements –Metrics for software quality – COCOMOII – Review Techniques – SQA: Tasks, Goals, Elements and Metrics - Six sigma – ISO 9000 Quality standards – CMMI Process Improvement Framework - Software Configuration Management process – Clean room Approach.

TEXT BOOK:

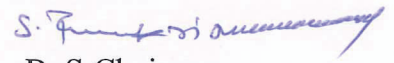
1. Roger S. Pressman, “Software Engineering – A practitioner’s Approach”, Seventh Edition, McGraw-Hill International Edition, New Delhi, 2009.

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1. Ian Sommerville, “Software engineering”, Eighth Edition, Pearson Education Asia, 2009.
2. Aggarwal.K.K. and Yogesh Singh, “Software Engineering”, Third Edition, New Age International Publishers, 2008.
3. James F.Peters and Witold Pedrycz, “Software Engineering, An Engineering Approach”, Wiley-India, 2007.
4. Pankaj Jalote, “ An Integrated Approach to Software Engineering”, Springer Verlag, New Delhi, 2010.

WEB REFERENCES:

1. <http://nptel.ac.in/video.php?subjectId=106101061>
2. <http://freevidelectures.com/Course/2318/Software-Engineering>


S. Prasad
BoS Chairman



I/O Systems – I/O Hardware – Application I/O interface – Kernel I/O subsystem – Transforming I/O to Hardware Operations-STREAMS – Performance. Mass-Storage Structure: Disk structure- Disk scheduling – Disk management – Swap-space management – RAID structure– Disk attachment – Stable storage implementation – Tertiary storage structure.

TEXT BOOK:

1. Silberschatz, Galvin, and Gagne, “Operating System Concepts”, Sixth Edition, Wiley India Edition reprint, New Delhi 2007.

REFERENCES:

1. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Pearson Education/PHI, New Delhi 2001
2. Gary Nutt, “Operating Systems”, Third Edition, Pearson Education, New Delhi 2004.
3. Harvey M. Deital, “Operating Systems”, Third Edition, Pearson Education, New Delhi 2004.
4. Charles Crowley,” Operating Systems A Design –Oriented Approach”, Tata McGraw Hill edition, New Delhi reprint 2002.

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2. <http://fivedots.coe.psu.ac.th/~cj/os/slides/slide-ppt.html>
3. <http://www.wiley.com/college/silberschatz6e/0471417432/slides/slides.html>
4. <http://engineeringppt.blogspot.in/2009/07/operating-system-concepts-8th-edition.html>

S. Ramesh Babu
BoS Chairman

SR

Course Code 140IT0405	Course Title: DATA COMMUNICATIONS AND NETWORKS
Core/Elective: Core	Credits (L : T : P : C : M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0304 – Database System Concepts

Course outcomes

At the end of the course the student will be able to:

- CO1. Describe the networking functionalities and characteristics associated with OSI layer.
- CO2. Provide solution for various error control and Flow Control problems.
- CO3. Create a sub -net for a given topology or business profile.
- CO4. Exhibit the knowledge in using socket to design and implement networking protocols.
- CO5. Examine the functionalities associated with transport and application layer protocols

Course content:

UNIT I DATA COMMUNICATIONS 8

Components - Data Representation - Data Flow – Networks - The Internet - Protocols and Standards - ISO / OSI model - Addressing – Transmission Modes - Transmission media (Guided and Unguided Media).

UNIT II DATA LINK LAYER 10

Error - Detection and Correction - Parity - Hamming Code - CRC - Flow Control and Error Control - Simple Protocol - Stop and Wait Protocol - Go Back N ARQ - Sliding Window - Selective Repeat ARQ- HDLC - IEEE 802.11.

UNIT III NETWORK LAYER 10

IPv4 Addresses - IPv6 Addresses - Internetworking - IPv4 - IPv6 - Transition from IPv4 to IPv6 - Address Mapping - ICMP - IGMP - ICMPv6 - Distance Vector Routing - LinkState Routing.

UNIT IV TRANSPORT LAYER & APPLICATION LAYER 9

Process to Process Delivery - User Datagram - Protocol (UDP) - Transmission Control Protocol (TCP) - Congestion Control - Quality of services (QOS) - Integrated Services - Domain Name Space (DNS) - FTP – HTTP- WWW & HTTP.

UNIT V NETWORK MANAGEMENT 8

Network Management System – SNMP – Audio & video Compression – streaming stored Audio/Video – Real Time Interactive Audio & video – RTP – RTCP – Voice over IP

TEXT BOOK:

1. Behrouz A. Forouzan, "Data communication and Networking", Fourth Edition, Tata McGraw-Hill Publishing Co. Pvt., Ltd., New Delhi 2007.

REFERENCES:

1. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Pearson Education, Fifth Edition, New Delhi 2009.
2. Andrew S. Tanenbaum, "Computer Networks", Fourth Edition. Prentice Hall, New Delhi, 2002.
3. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, New Delhi 2000.
4. Prakash C Gupta, "Data Communications and Computer Networks", PHI Learning Pvt. Ltd., New Delhi 2009.
5. Alberto Leon Garcia and Indra Widjaja, "Communication Networks Fundamental Concepts and key Architectures", Second Edition, Tata McGraw-Hill Publishing Co. Pvt., Ltd., New Delhi 2009.

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1. http://highereducation.com/sites/0072967757/student_view0/index.html.
2. <http://www.studytonight.com/computer-networks/complete-osi-model>.
3. <http://computernetworks5e.org>
4. https://books.google.co.in/books?id=6HaNKmfBK1oC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.
5. <http://accessengineeringlibrary.com/browse/data-communications-and-networking-fourth-edition#p2000f7cb9970027001>



BoS Chairman



Addressing modes - Instruction set - Assembly language programming of 8051 – Applications of 8051.

UNIT V MULTIPROCESSOR & HIGH END PROCESSORS

9

Coprocessor configuration – Closely coupled configuration – Loosely coupled configuration – 8087 Numeric data processor – Data types – Architecture – 8089 I/O Processor – Architecture – Communication between CPU and IOP. 32/64 Bit Processors

TEXT BOOKS:


1. Ramesh S. Gaonkar ,”Microprocessor – Architecture, Programming and Applications with the 8085” Penram International Publisher , Fifth Edition,2006 (I and III Unit)
2. Ray.A.K. & Bhurchandi.K.M, “Advanced Microprocessor and Peripherals – Architecture, Programming and Interfacing”, Tata Mc Graw Hill, 2006. (II, III and V Unit)
3. Mohamed Ali Mazidi, Janice Gillispie Mazidi,” The 8051 microcontroller and embedded systems using Assembly and C”, second edition, Pearson education /Prentice hall of India, 2007. (IV Unit)

REFERENCES:

1. Douglas V.Hall, “Microprocessors and Interfacing: Programming and Hardware”, second edition, Tata Mc Graw Hill, 2006.
2. Peter Abel, “IBM PC Assembly language and programming”, fifth edition, Pearson education / Prentice Hall of India Pvt.Ltd, 2007.
3. Yn-cheng Liu,Glenn A.Gibson, “Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design”, second edition, Prentice Hall of India , 2006.

WEB REFERENCES:

1. <http://gradestack.com/Microprocessors-and/Architecture-of-8085/Architecture-Of-The-8085/19310-3912-37489-study-wtw>
2. <http://www.circuitstoday.com/8051-microcontroller>
3. <http://www.elprocus.com/8086-assembly-language-programs-explanation/>


S. J. Srinivasan

BoS Chairman



Course Code: 140IT0407	Course Title: OPERATING SYSTEM CONCEPTS LABORATORY
Core/Elective: Core	Credits (L : T : P : C : M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours:45

Course outcomes

At the end of the course the student will be able to:

- CO1. Write program to implement the various UNIX system call.
- CO2. Implement various CPU scheduling algorithms.
- CO3. Implement the allocation and deallocation of memory

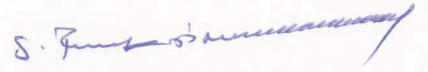
List of experiments:

(Implement the following on LINUX or other UNIX like platform. Use C for high level language implementation)

1. Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, close, stat, opendir, readdir.
2. Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
3. Write C programs to simulate UNIX commands like ls, grep, etc.
4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
6. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
7. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
8. Implement the Producer – Consumer problem using semaphores.
9. Implement some memory management schemes – I
For example free space is maintained as a linked list of nodes with each node having the starting byte address and the ending byte address of a free block. Each memory request consists of the process-id and the amount of storage space required in bytes. Allocated memory space is again maintained as a linked list of nodes with each node having the process-id, starting byte address and the ending byte address of the allocated space.

10. Implement some memory management schemes – II

For example when a process finishes (taken as input) the appropriate node from the allocated list should be deleted and this free disk space should be added to the free space list. [Care should be taken to merge contiguous free blocks into one single block. This results in deleting more than one node from the free space list and changing the start and end address in the appropriate node]. For allocation use first fit, worst fit and best fit.



BoS Chairman



Course Code: 140IT0408	Course Title: DATA COMMUNICATIONS AND NETWORKS LABORATORY
Core/Elective: Core	Credits (L : T : P : C : M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

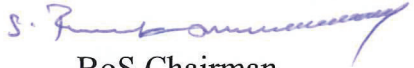

List of experiments:

(Use JAVA for implementation)

1. Study of system administration and network administration.
2. Implementation of stop and wait protocol.
3. Implementation of sliding window protocol.
4. Implementation of UDP.
5. Implementation of TCP.
6. Implementation of shortest path algorithm.
7. Implementation of distance vector algorithm.
8. Implementation of link-state vector algorithm.
9. Simulation of various network topologies using QualNet.

WEB REFERENCES:

1. <https://docs.oracle.com/javase/tutorial/networking/sockets/>
2. <http://cs-study.blogspot.in/2012/10/introduction-to-packet-tracer.html>
3. <http://www.packettracernetwork.com/tutorials/video-tutorials.html>
4. <http://computernetworkingnotes.com/ccna-study-guide/cisco-devices-administration-and-configuration/>


BoS Chairman


Course Code: 140IT0409	Course Title: MICROPROCESSOR AND MICROCONTROLLERS LABORATORY
Core/Elective: Core	Credits (L : T : P : C : M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0302 – Digital Principles And System Design

Course outcomes

At the end of the course the student will be able to:

- CO1. Interpret basic arithmetic operation in 8085 and 8086 microprocessors
- CO2. Analyze the interfacing of peripherals with the microprocessor and microcontrollers
- CO3. Write an ALP in 8085 and 8086 for various applications
- CO4. Critique various control operations in 8051 and implement it.
- CO5. Understand the BIOS/DOS function in MASM

List of experiments:

Microprocessor (8085 & 8086)

1. Simple arithmetic operations: Multi precision addition / subtraction / multiplication / division.
2. Programming with control instructions: Increment / Decrement, Ascending Descending order, Maximum / Minimum of numbers, Rotate instructions, Hex /ASCII / BCD code conversions
3. Interface Experiments: A/D Interfacing, D/A Interfacing, Traffic light controller.
4. Interface Experiments: Simple experiments using 8255, 8254/8253, 8251,8279
5. Programming with 8086-experiments including BIOS/DOS calls: Keyboard control, Display, File Manipulation.
6. Programming practice on MACRO assembler and simulator tools.

Microcontroller

1. Demonstration of basic instructions with 8051 Micro controller execution, including Conditional jumps, looping, Calling subroutines, Stack parameter testing
2. Parallel port programming with 8051 using port 1 facility: Stepper motor and D / A converter.
3. Programming Exercise on RAM direct addressing and Bit addressing
4. Programming practice using simulation tools and C – compiler: Initialize timer and Enable interrupts.
5. Study of Microcontrollers with flash memory.



BoS Chairman



Microwave Concepts – Devices – Waveguides and Cavity Resonators-Microwave Semiconductor Diodes – Microwave Tubes and Antennas – Microwave Transmission Lines - Applications

TEXT BOOK:

1. Wayne Tomasi, “Advanced Electronic Communication Systems”, PHI Learning Private Ltd., 6th Edition, 2010

REFERENCES:

1. John G Proakis and Masoud Salehi, “Communication Systems Engineering”, Pearson Education, Inc, 2nd Edition, 2002.
2. Theodor S Rappaport, “Wireless Communication Principles and Practice”, Prentice Hall of India Pvt. Ltd., 2nd Edition 2007.
3. Gerd Keiser, “Optical Fiber Communication”, McGraw Hill Publication, 4th Edition, 2009.
4. Dennis Roddy, “Satellite Communication”, McGraw Hill International Edition, 3rd Edition, 2001.
5. Liao Samuel Y., Liao, “Microwave Devices and Circuits”, Pearson Education India 3rd Edition.

WEB REFERENCES:

1. <http://accessengineeringlibrary.com/browse/optical-communications-essentials/p2000af139970001001>
2. <http://www.nptel.ac.in/courses/106106097/>
3. <http://www.nptel.ac.in/courses/117102059/>
4. <http://www.radio-electronics.com/info/rf-technology-design/modulation-techniques/modulation-basics-tutorial.php>
5. <http://www.electronicshub.org/modulation-and-different-types-of-modulation/>

S. Pruthi

BoS Chairman

du

Course Code: 140IT0502	Course Title: THEORY OF COMPUTATION
Core/Elective: Core	Credits (L : T : P : C : M) – 3 : 1 : 0 : 4 : 100
Type: Lecture & Tutorial	Total Contact Hours: 60

Prerequisites: The student should have undergone the course(s):

- 140IT0303 Design And Analysis Of Computer Algorithms

Course outcomes

At the end of the course the student will be able to:

- CO1. Construct and classify the machines appropriate to the given problems
- CO2. Find the equivalence of Context-Free Grammars and Pushdown Automata.
- CO3. Construct a Turing Machine for a given problem using various techniques
- CO4. Require the fundamental understanding of unsolvable problems
- CO5. Analyze and recognize the significance of classes (P & NP) for deducing the complexity of specific algorithm

Course content:

UNIT I INTRODUCTION 9+3

Principle of Mathematical Induction – Finite State Automata – Deterministic Finite Automata – Non Deterministic Finite Automata – Equivalence of NFA and DFA– Finite Automata with Epsilon Transitions- Regular Languages and Regular Expressions – Pumping Lemma for Regular Languages.

UNIT II CONTEXT FREE LANGUAGES AND PUSH DOWN AUTOMATA 9+3

Context Free Grammar – Derivation Trees – Ambiguity – PDA definition – Equivalence of PDA and Context Free Language – Pumping Lemma for Context Free Languages.

UNIT III TURING MACHINES 9+3

Definition – Techniques for Turing Machine Construction – Computable Languages and Functions — The Halting Problem – Problems about Turing Machine.

UNIT IV UNSOLVABLE PROBLEMS AND COMPUTABLE FUNCTIONS 9+3

Unsolvable Problems and Computable Functions – Primitive Recursive Functions – Recursive and Recursively Enumerable Languages –Universal Turing Machine, Rice theorem, Post Correspondence Problems-Modified Post Correspondence Problems

UNIT V COMPUTATIONAL COMPLEXITY 9+3

Measuring and Classifying Complexity- Tractable and Intractable Problems- Polynomial Time Reductions – P Problem- NP Problem- NP Completeness- NP Hard.

TEXT BOOKS:

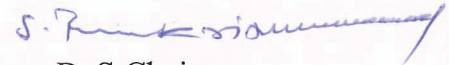
1. John E. Hopcroft and Rajeev Motwani and Jeffrey D. Ullman, "Introduction to Automata Theory, Languages and Computation", third edition, Pearson Education, New Delhi, 2008.
2. John C. Martin, "Introduction to Languages and the Theory of Computation", Third edition, Tata McGraw-Hill Education Pvt. Ltd., New Delhi, 2009.

REFERENCES:

1. Peter Linz, "An Introduction to Formal Language and Automata", fourth edition, Narosa Publishers, New Delhi, 2006.
2. Michael Sipser, "Introduction to the Theory of Computation", second edition, PWS Publications, Boston, 2005.
3. M. Chandrasekaran, and K.L.P. Mishra, "Theory of Computer Science: Automata, Language and Computation", Third Edition, PHI Learning, New Delhi, 2006.

WEB REFERENCES:

1. <http://nptel.ac.in/courses/106104028/>
2. <http://freevidelectures.com/Course/3045/Theory-of-Computation-I/>
3. <http://web.cse.ohio-state.edu/~gurari/theory-bk/theory-bk.html>



BoS Chairman



2. Douglas E.Comer – “Internetworking with TCP/IP”- -Design, Implementation and Internals, Vol. 2 Third edition, Pearson Education Asia, 2008. (Units III, IV & V)

REFERENCES:

1. Behrouz A.Forouzan “TCP/IP protocol suite”, third edition, Tata McGraw Hill, 2008
2. W.Richard Stevens “TCP/IP illustrated” Volume 2 Pearson Education 2003.

WEB REFERENCE:

1. <http://highered.mheducation.com/sites/0073376043/index.html>



BoS Chairman



Course Code: 140IT0504	Course Title: OBJECT ORIENTED ANALYSIS AND DESIGN
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course:

- 140IT0403– Software Engineering Concepts

Course outcomes

At the end of the course the student will be able to:

- CO1. Perform the requirement analysis for a software project and fabricate requirement specifications (SRS).
- CO2. Apply the UML modeling tool for the construction of models with the appropriate notation.
- CO3. Predict the advanced features of a specific model for solving modeling problems.
- CO4. Formulate the patterns and framework in architectural modeling of software design.
- CO5. Construct the User Interface for the given scenario

Course content:

UNIT I ANALYSIS 9

Overview of Analysis – Object Modeling – Dynamic Modeling – Functional Modeling – Adding Operations – Iterating the Analysis.

UNIT II STRUCTURAL MODELING 9

Classes – Relationships – Notes, Stereotypes, Tagged Values, Constraints - Class Diagrams – Advanced Classes – Advanced Relationships – Interfaces, Types, and Roles – Packages – Instances - Object Diagrams.

UNIT III USE CASE AND BASIC BEHAVIORAL MODELING 9

Interactions – Use Cases – Use Case Diagrams - Interaction Diagrams – Activity Diagrams.

UNIT IV ADVANCED BEHAVIORAL MODELING 9

Events and Signals - State Machines – Processes and Threads – Time and Space - State Diagrams.

UNIT V ARCHITECTURAL MODELING 9

Artifacts – Deployment – Collaborations – Patterns and Frameworks - Artifact Diagrams – Deployment Diagrams – Systems and Models.

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson "The Unified Modeling Language User Guide", second edition, Pearson Education, 2008.
2. James Rumbaugh, Michael Blaha, William Premeralani, Frederick Eddy and William Lorenson, "Object-Oriented Modeling and Design", Pearson Education, 2002.

REFERENCES:

1. Grady Booch, "Object Oriented Analysis and Design with Applications", second edition, Addison Wesley, New Delhi, 2006.
2. Martin Fowler, "UML Distilled", third edition, Pearson Education, 2008.

WEB REFERENCES:

1. <http://c2.com/cgi-bin/wiki?CategoryPattern>
2. <http://www.nptel.ac.in/courses/122105022/27>
3. http://www.creativeworld9.com/2011/02/study-videos-of-object-oriented_24.html

S. Prakash
BoS Chairman
du

Course Code: 140IT0505	Course Title: WEB TECHNOLOGY
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Design and demonstrate the web sites using HTML and CSS.
- CO2. Create the Dynamic Websites using DHTML.
- CO3. Apply the knowledge of server side programming using JSP, Servlets
- CO4. Associate style sheet information with XML documents
- CO5. Elucidate a web service using the technologies like WSDL, SOAP.

Course content:

UNIT I WEB ESSENTIALS: CLIENTS, SERVERS, AND COMMUNICATION 9

Basic Internet Protocols - The World Wide Web -HTTP request message-response message- Web Clients - Web Servers - Markup Languages: XHTML Syntax and Semantics - HTML Elements –Lists – Tables – Frames – Forms - Relative URLs -XML - Creating HTML Documents.

UNIT II STYLE SHEETS: CSS 9

Introduction to Cascading Style Sheets – Features - Core Syntax - Style Sheets and HTML - Style Rule Cascading and Inheritance - Text Properties - Box Model Normal Flow Box Layout - Beyond the Normal Flow - Style Properties - Client-Side Programming: The JavaScript Language - JavaScript in Perspective – Syntax - Variables and Data Types – Statements – Operators – Literals – Functions – Objects – Arrays -Built-in Objects - JavaScript Debuggers.

UNIT III HOST OBJECTS: BROWSERS AND THE DOM 9

Introduction to the Document Object Model - DOM Levels - Intrinsic Event Handling- Modifying Element Style - The Document Tree - DOM Event Handling -Accommodating Noncompliant Browsers - Properties of window – Applet Programming - Server-Side Programming: Java Servlets – Architecture Overview – Servlets Generating Dynamic Content - Life Cycle - Parameter Data – Sessions – Cookies - URL Rewriting – Capabilities - Data Storage - Servlets and Concurrency.

UNIT IV REPRESENTING WEB DATA: XML 9

XML Documents and Vocabularies - Versions and Declaration - Namespaces - JavaScript and XML: Ajax - DOM based XML processing - Event-oriented Parsing: SAX - Transforming XML Documents - Selecting XML Data: XPath - Template based

Transformations: XSLT - Displaying XML Documents in Browsers - Separating Programming and Presentation: JSP Technology Introduction - JSP and Servlets -Running JSP Applications - Basic JSP - JavaBeans Classes and JSP - Tag Libraries and Files - Support for the Model-View-Controller Paradigm.

UNIT V WEB SERVICES: JAX-RPC, WSDL AND SOAP

9

Web Service Concepts - Writing a Java Web Service - Writing a Java Web Service Client - Describing Web Services: WSDL - Representing Data Types: XML Schema - Communicating Object Data: SOAP Elements - RPC representation - SOAP Encoding of Struct Data and Arrays, SOAP and HTTP, Java Support for SOAP – Databases and Java Servlets.

TEXT BOOK:

1. Jeffrey C.Jackson, "Web Technologies-A Computer Science Perspective", Pearson Education, 2012.

REFERENCES:

1. Deitel, Deitel, Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education, 2009.
2. Robert. W. Sebesta, "Programming the World Wide Web", Fourth Edition, Pearson Education, 2007.
3. Marty Hall and Larry Brown,"Core Web Programming" Second Edition, Volume I and II, Pearson Education, 2001.
4. Bates, "Developing Web Applications", Wiley, 2006.

WEB REFERENCES:

1. www.w3schools.com
2. www.tutorialspoint.com



BoS Chairman



UNIT V**PRESENTATION AND ASP.NET****9**

Windows Forms: Creating a Windows Form Application – Control Class – Standard Control and Components - Forms – Viewing .NET Data – ASP.NET: Introduction – Web Forms – Data Binding - Development – AJAX – Web Services with ASP.NET

TEXT BOOK:

1. Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner, “Professional C# 2005 with .NET 3.0”, Wiley India, 2007.

REFERENCES:

1. Kevin Hoffman, “Visual C# 2005”, Pearson Education, 2006.
2. S. Thamarai Selvi, R. Murugesan, “A Text Book on C#”, Pearson Education, 2003.
3. Andrew Troelson, “Pro C# with .NET 3.0”, Apress, 2007.
4. Jesse Liberty, “Programming C#”, O’Reilly, 2001.

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1. <http://www.xmlfiles.com/xml/>
2. <http://www.xmlmaster.org/en/article/d01/>
3. <https://msdn.microsoft.com/en-us/library/dd566231.aspx>
4. [https://msdn.microsoft.com/en-us/library/8bxxxy49h\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/8bxxxy49h(v=vs.110).aspx)
5. http://www.w3schools.com/xml/xml_services.asp



BoS Chairman



Course Code: 140IT0507	Course Title: CASE TOOLS LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Prerequisites: The student should have undergone the course:

- 140IT0403– Software Engineering Concepts

Course outcomes

At the end of the course the student will be able to:



- CO1. Perform requirements analysis for a software project and fabricate requirement specifications (SRS).
- CO2. Apply the UML modeling tool for the construction of models and expressing the appropriate notation associated with each model.
- CO3. Predict the advanced features to the basic specification model to solve a number of common modeling problems.
- CO4. Design patterns and framework in architectural modeling of software design.
- CO5. Construct the User Interface for designed models.

List of experiments:

1. Online Ticket Reservation System
2. Banking Systems
3. RFID students tracking system
4. Stock Maintenance systems
5. Online grievances system

For the above mentioned applications do the following tasks.

1. To develop a problem statement.
2. Develop an IEEE standard SRS document.
3. Identify Use Cases and develop the Use Case model.
4. Identify the business activities and develop an UML Activity diagram.
5. Identify the conceptual classes and develop a domain model with UML Class diagram.
6. Using the identified scenarios find the interaction between objects and represent them using UML Interaction diagrams.
7. Draw the State Chart diagram.
8. Implement the User Interface layer.


 BoS Chairman


_Course Code: 140IT0508	Course Title: .NET PROGRAMMING LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Prerequisites: The student should have undergone the course:

- 140IT0205– Data Structures And Object Oriented Programming With C++

Course outcomes

At the end of the course the student will be able to:

- CO1. Understand visual studio 2005 development environment, compiling, debugging, linking and executing a program
- CO2. Build a project using concepts like class, methods, events, properties and exception handling
- CO3. Develop a windows application using windows controls and components
- CO4. Be exposed to ASP.NET components and ADO.NET components
- CO5. Create a mini project using windows form and web forms with database connectivity

List of experiments:

1. To create a program to prepare students mark list using Arrays in C#.
2. Demonstrate Object Oriented Programming Concepts like Inheritance in C#.
3. Implement dynamic memory management using pointers in C#.
4. To create a program to demonstrate errors and exception handling in C#.
5. Create a window based application using Forms.
6. Create and manipulate database schema using XML.
7. Implement web service like online exam using ASP.NET
8. Create a database application like online registration using ASP.NET with ADO.NET
9. Create a dynamic web page to demonstrate ASP components
10. Develop a Mini-project using .NET framework

WEB REFERENCES:

1. <https://msdn.microsoft.com/en-us/library/orm-9780596521066-01-01.aspx>
2. <http://www.indiabix.com/technical/dotnet/dot-net-programming-concepts/>
3. <http://www.codeproject.com/Articles/4468/Beginners-Introduction-to-ASP-NET>
4. <http://www.csharp-station.com/Tutorial/AdoDotNet>
5. http://www.w3schools.com/asp/ado_intro.asp
6. <http://www.dotnet-tricks.com/Tutorial/adonetlist>

S. J. ...

BoS Chairman

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Course Code: 140IT0509	Course Title: WEB TECHNOLOGY LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Create static web page using HTML and CSS
- CO2. Generate dynamic web pages using HTML, CSS, JavaScript and DOM.
- CO3. Apply the knowledge of server side scripting language using Servlets
- CO4. Generate well-formed XML document.
- CO5. Create a web service using SOAP and WSDL

List of experiments:

1. Design a web site using various **HTML** elements such as lists, table, form and frames
2. Create a web page with the following using **HTML**
 - To embed an image map in a web page
 - To fix the hot spots
 - Show all the related information when the hot spots are clicked.
3. Create a web page with all types of **Cascading style sheets**.
4. Client Side Scripts for Validating Web Form Controls using **DHTML**
5. Write programs in Java to create **applets** incorporating the following features:
 - Create a color palette with matrix of buttons
 - Set background and foreground of the control text area by selecting a color from color palette.
 - In order to select Foreground or background use check box control as radio buttons
 - To set background images
6. Write programs in Java using **Servlets**:
 - To invoke servlets from HTML forms
 - To invoke servlets from Applets
7. Write programs in Java to create three-tier applications using **JSP and Databases**
 - To implement on-line transactions.
 - To display online reports.
8. Programs using **XML – Schema – XSLT/XSL**
9. Programs using **AJAX**
10. Design and develop **Web Application** (Ex. Online Reservation, Online Shopping, E-Learning, etc.), using the entire above mentioned web technologies.

END OF SEMESTER V


BoS Chairman



SEMESTER VI

Course Code: 140IT0601	Course Title : GRAPHICS AND MULTIMEDIA
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140CO0102 Engineering Mathematics – I
- 140CO0109 Engineering Graphics

Course outcomes

At the end of the course the student will be able to:

- CO1. Implement graphics applications by using C programs.
- CO2. Identify the suitable solutions for 2D and 3D geometrical transformations.
- CO3. Understand the current graphics applications used in the society.
- CO4. Comprehend the multimedia technologies used in the society
- CO5. Design interactive multimedia applications using tools

Course content:

UNIT I 2D PRIMITIVES

9

Output primitives - Points & Lines - Line, Circle and Ellipse drawing algorithms - Other curves - Pixel addressing - Filled area primitives - Attributes of output primitives (Line, Curve, Area fill, Character, bundled) - Antialiasing.

UNIT II 2D TRANSFORMATIONS AND VIEWING

9

Basic transformations (Translation, Rotation, Scaling, Reflection and shear) - Matrix Representations and Homogeneous Coordinates - Composite Transformations - Transformations between Coordinate Systems -Two dimensional viewing - Point, Line, Polygon, Curve, Text and Exterior clipping algorithms.

UNIT III 3D TRANSFORMATIONS AND VIEWING

9

Three dimensional concepts - Three dimensional object representations - Polygons, Curved lines, Spline and Quadric Surfaces - Visualization of data sets - 3D transformations (Translation, Rotation, Scaling, Reflection and shear) - Composite Transformations – Modeling and Coordinate Transformation - 3D Viewing- projections(Parallel, Perspective)- Functions. Color models.

UNIT IV MULTIMEDIA SYSTEMS DESIGN

9

Multimedia basics - Multimedia applications - Multimedia system architecture - Evolving technologies for multimedia - Defining objects for multimedia systems - Multimedia data interface standards - Multimedia databases.

Compression and decompression - Data and file format standards - Multimedia I/O technologies - Digital voice and audio - Video image and animation - Full motion video - Storage and retrieval technologies. Hypermedia-Multimedia authoring and user interface - Hypermedia messaging – Mobile messaging-Hypermedia message component - Creating hypermedia message.

TEXT BOOK:

1. Donald Hearn, M.Pauline Baker, “Computer Graphics – C Version “, second edition, Pearson Education, 2009.
2. Andleigh, P. K and Kiran Thakrar, "Multimedia Systems and Design", PHI, 2003.

REFERENCES:

1. James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes, “Computer Graphics- Principles and practice”, Second Edition in C, Pearson Education, 2007.
2. John Vince, “Mathematics for Computer Graphics”, 2nd Edition, Springer SPI publisher services, 2010.
3. F.S. Hill, “Computer Graphics using OPENGL”, Second edition, Pearson Education, 2007.
4. Klawonn, Frank, “Introduction to Computer Graphics”, 1st Edition, 2008.

WEB REFERENCES:

1. <http://nptel.ac.in/video.php?subjectId=106106090>
2. <https://class.coursera.org/android-001/lecture/71>
3. <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-837-computer-graphics-fall-2012/>



BoS Chairman



Course Code: 140IT0602	Course Title: INFORMATION CODING TECHNIQUES
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0501- Basic Communication Engineering

Course outcomes

At the end of the course the student will be able to:

- CO1. Equip the basic understanding of the fundamental concept of entropy and information
- CO2. Identify an efficient coding technique among different block codes and apply it in the encoder/decoder circuit.
- CO3. Formulate an error model for a real system, to devise an error handling method for it and to quantify its performance
- CO4. Acquaint with the principles and applications of information theory for text and multimedia data compression, transmission, storage and processing.

Course content:

- UNIT I INFORMATION ENTROPY FUNDAMENTALS 9**
Introduction – Uncertainty – Entropy – types – Source coding theorem – Shannon-Fano Coding – Huffman Coding – Prefix coding – Channel coding theorem – Types of channels – Channel capacity theorem - Shannon’s third theorem
- UNIT II BLOCK CODES 9**
Definitions and Principles: Hamming weight, Hamming distance, Minimum distance decoding - Single parity codes, Hamming codes, Repetition codes - Linear block codes, Cyclic codes - Syndrome calculation, Encoder and decoder – CRC
- UNIT III CONVOLUTIONAL CODES 9**
Convolutional codes – code tree, trellis, state diagram - Encoding – Decoding: Sequential search and Viterbi algorithm – Principle of Turbo coding
- UNIT IV TEXT AND AUDIO CODING 9**
Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding – LZW - Coding of speech signal at low bit rates – Sub band coding - Linear Predictive coding – Code Excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders – H.263 Standards
- UNIT V IMAGE AND VIDEO CODING 9**
Image Compression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction to JPEG standards - Video compression – Principles – Introduction to H.261 & MPEG Video standards.

TEXT BOOKS:

1. Khalid Sayood, "Introduction to Data Compression", Elsevier, USA, Fourth Edition 2012.
2. Simon Haykin, "Communication Systems", John Wiley and Sons. Inc, 2009.

REFERENCES:

1. Fred Halsall, "Multimedia Communications, Applications Networks Protocols and Standards", Pearson Education, Asia 2002
2. S Gravano, "Introduction to Error Control Codes", Oxford University Press 2007
3. Amitabha Bhattacharya, "Digital Communication", Tata Mc-Graw Hill, 2006

WEB REFERENCES:

1. <http://nptel.ac.in/courses/117101053/>
2. <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-441-information-theory-spring-2010/lecture-notes/>



BoS Chairman



Course Code: 140IT0603	Course Title: CRYPTOGRAPHY AND NETWORK SECURITY
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 2 : 4 : 100
Type: Lecture/ Practical	Total Contact Hours: 75

Prerequisites: The student should have undergone the course(s):

- 140IT0503- TCP/IP Design And Implementation

Course outcomes

At the end of the course the student will be able to:

- CO1. Cryptanalyze cipher text
- CO2. Describe encryption and decryption process of various cipher mechanism
- CO3. Identify suitable mode of operation based on given criteria
- CO4. Interpret different types of message authentication functions and its strength
- CO5. Generation of a digital certificate (using X.509 Authentication service) and digital signatures
- CO6. Relate security of both web applications and cloud based applications

Course content:

UNIT I SYMMETRIC KEY CRYPTOGRAPHY 9

OSI Security Architecture - Classical Encryption techniques - Block Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation – AES Cipher – Triple DES .

UNIT II PUBLIC KEY CRYPTOGRAPHY 9

Introduction to Number Theory – Public Key Cryptography- RSA – Elliptic Curve Cryptography-ElGamal Cryptosystem- - Key Management- Diffie-Hellman Key Exchange Algorithm.

UNIT III USER-, MESSAGE- AND SERVER- AUTHENTICATION 9

Message Authentication Code – Hash Functions – Security of Hash Functions and MACs – MD5 - Secure Hash Algorithm – HMAC – Digital Signature Standard- Remote User Authentication- Kerberos – X.509 Authentication Service.

UNIT IV EMAIL AND WIRELESS SECURITY 9

Pretty Good Privacy- S/MIME – Domain Keys Identified Mail- IEEE 802.11i Wireless LAN security- Wireless Transport Layer Security- WAP End-to-End Security.

Web Security – Secure Socket Layer- HTTPS- IP Security Overview- IP Security Policy- Internet Key Exchange- Overview of Intrusion Detection System- Overview of Security in Cloud Computing.

Lab Components

1. Implementation of Classical Encryption Techniques
2. Implementation of Simplified DES
3. Implementation of RSA for confidentiality and authentication
4. Implementation of Diffie-Hellman Key Exchange Algorithm
5. Experimental study of IDS.

TEXT BOOK:

1. William Stallings, “Cryptography and Network Security, fifth edition, Prentice Hall, New Delhi,2011.

REFERENCES:

1. Behrouz A Forouzan , “Cryptography and Network Security”, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2007.
2. Atul Kahate, ““Cryptography and Network Security”, Second Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2009
3. Hakima Chaouchi, Maryline Laurent-Maknavicius “Wireless and Mobile Network Security”
john wiley & sons ,2007
4. Ronald L. Krutz, Russell Dean Vines “Cloud Security: A Comprehensive Guide to Secure Cloud Computing” Wiley Publishing Inc 2010.

WEB REFERENCES:

1. <http://williamstallings.com/Cryptography/>
2. Video References @ <http://nptel.ac.in/courses/106105031/>
3. https://en.wikipedia.org/wiki/Digital_Signature_Algorithm
4. [https://en.wikipedia.org/wiki/RSA_\(cryptosystem\)](https://en.wikipedia.org/wiki/RSA_(cryptosystem))



BoS Chairman



Course Code: 140IT0604	Course Title: PRINCIPLES OF COMPILER DESIGN
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0502- Theory of Computation

Course outcomes

At the end of the course the student will be able to:

- CO1. Identify the various phases of Compiler & its construction tools
- CO2. Construct the NFA and DFA for a given regular expression
- CO3. Develop a top-down recursive-descent parser & a bottom-up parser.
- CO4. Translate the given Boolean expression into flow of control statements
- CO5. Improve the given intermediate code

Course content:

UNIT-I INTRODUCTION TO COMPILERS 8

Compilers-Analysis of the Source Program-Phases of Compiler- Cousins of the Compiler- Grouping of Phases- Compiler Construction Tools- A Simple One Pass Compiler

UNIT-II LEXICAL ANALYZER 9

Role of Lexical Analyzer-Lexical Errors, Input Buffering - Specification of Tokens, Recognition of Tokens- A Language for Specifying Lexical Analyzers-Finite Automata- From a Regular Expression to an NFA- Design of a Lexical Analyzer Generator- Optimization of DFA based Pattern Matchers

UNIT-III SYNTAX ANALYZER 10

Need and role of the parser- Context Free Grammars-Top down Parsing: Recursive Descendent Parser, Predictive Parser-Bottom up Parsing: Shift Reduce parser, Operator Precedence parser, LR parser- YACC-Design of a Syntax Analyzer Generator.

UNIT-IV INTERMEDIATE CODE GENERATOR 9

Syntax Directed Definitions- L- Attributed Definitions- S Attributed Definitions-Intermediate Languages- Declaration- Assignment Statements-Boolean Expression - Flow Control statements - Back patching-Procedure Calls.

Principal sources of Optimization –Optimization of Basic Blocks- Loops in Flow Graphs- Global Data Flow Analysis -Issues in Design of a Code Generator- Run Time Storage Management -A Simple Code Generator Algorithm-Peepphole Optimization.

TEXT BOOK:

1. Alfred V.Aho, Monica S.Lam, Ravi Sethi and Jeffrey D.Ullman, "Compilers – Principles, Techniques and Tools", second edition, Pearson Education, New Delhi, 2011.

REFERENCES:

1. Dick Grune, Henri E.bal, Cerial J.h. Jacobs, Keon G. Langendeon Modern Compiler Design, Wiley , New Delhi , 2008
2. Jean Paul Tremblay, Paul G Serenson, "The Theory and Practice of Compiler Writing", McGraw Hill, New Delhi, 2001.
3. Kennath C. Louden, Compiler Construction Principles and Practice, Vikas Publication House, 2004.

WEB REFERENCES:

1. <http://nptel.ac.in/courses/106108113/>
2. http://www.tutorialspoint.com/compiler_design/
3. <http://cseote.weebly.com/principles-of-compiler-design.html>



BoS Chairman



Course Code: 140IT0607	Course Title: GRAPHICS AND MULTIMEDIA LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0: 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

Course outcomes

At the end of the course the student will be able to:

- CO1. Implement graphics applications by using C programs.
- CO2. Understand concept of geometric, mathematical and algorithmic concepts necessary for programming 2D and 3D computer graphics.
- CO3. Convert between color models.
- CO4. Understand the text and image compression algorithm.
- CO5. Design interactive multimedia application using tools.

List of experiments:

1. To implement Bresenham's algorithms for line, circle and ellipse drawing.
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and shearing.
3. To implement Cohen-Sutherland 2D clipping and window-viewport mapping.
4. To perform 3D Transformations such as translation, rotation and scaling.
5. To visualize projections of 3D images and Hidden Surface Elimination.
6. To convert between color models.
7. To implement text compression algorithm.
8. To implement image compression algorithm.
9. To perform animation using animation software.
10. To perform basic operations on image using image editing software.
11. To study about OpenGL, Web GL and Google SketchUp.

WEB REFERENCES:

1. <https://helpx.adobe.com/photoshop/how-to/photoshop-vector-shape-tools.html>
2. <http://www.vimeoinfo.com/video/7930333/flash-animation>

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BoS Chairman

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Course Code: 140IT0608	Course Title: COMPILER DESIGN LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 0 : 0 : 3 : 2 : 100
Type: Practical	Total Contact Hours: 45

List of experiments:

1. Implement a Lexical Analyzer using C
2. Study of Lex & Yacc
3. Implement Lexical Analyzer using lex tool
4. Implement Syntax Analyzer using yacc tool
5. Construction of NFA from Regular Expression
6. Implement Recursive Descent Parser
7. Computation of FIRST and FOLLOW for a given grammar
8. Implement Predictive Parser
9. Implement Shift Reduce Parser
10. Implementation of Symbol Table
11. Implement Code Optimization Technique
12. Generation of Target Code for a Given Intermediate Code

END OF SEMESTER VI



BoS Chairman



SEMESTER VII

Course Code: 140IT0701	Course Title: PRINCIPLES OF MANAGEMENT
Core/Elective: Core	Credits(L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course:

- 140IT0403-Software Engineering Concepts

Course outcomes

At the end of the course the student will be able to:

- CO1. Outline the Managerial Roles in an organization and strategies for international business
- CO2. Understand the Planning and Decision Making Process in a business system
- CO3. Recognize the organization structure and issues in Managing Human Resources
- CO4. Understand the Leadership skills and Organizational culture
- CO5. Explain various Controlling methods in an organization

Course content:

UNIT I OVERVIEW OF MANAGEMENT 9

Organization - Management - Role of Managers - Evolution of Management Thought - Organization and the Environmental Factors - Managing Globally - Strategies for International Business. Case Study: Digital Management Approach of Samsung

UNIT II PLANNING 9

Nature and Purpose of Planning - Planning Process - Types of Plans – Objectives - Managing by Objective (MBO) Strategies - Types of Strategies - Policies - Decision Making - Types of Decision – Decision Making Process - Rational Decision Making Process - Decision Making Under Different Conditions. Case Study: Success of Apple's iPad-2 and Business Strategies of Apple

UNIT III ORGANIZING 9

Nature and Purpose of Organizing - Organization Structure - Formal and Informal Groups Organization - Line and Staff Authority - Departmentation - Span of Control - Centralization and Decentralization - Delegation of Authority - Staffing - Selection and Recruitment - Orientation – Career Development - Career Stages – Training - Performance Appraisal. Case Study: Organization Structure and Decentralizing at IBM in Europe

UNIT IV DIRECTING

9

Creativity and Innovation - Motivation and Satisfaction - Motivation Theories Leadership - Leadership Theories- Communication - Hurdles to Effective Communication - Organization Culture - Elements and Types of Culture - Managing Cultural Diversity. Case Study: Organization Culture and Leadership Of Microsoft

UNIT V CONTROLLING

9

Processes of Controlling - Types of Control - Budgetary and Non-Budgetary Control Techniques – Managing Productivity - Cost Control - Purchase Control - Maintenance Control - Quality Control - Planning Operations. Case Study: Cost of Operating the Information Processing System

TEXT BOOKS:

1. Stephen P. Robbins and Mary Coulter, 'Management', Prentice Hall of India, 8th edition, 2004. (Unit I)
2. Charles W L Hill, Steven L McShane, 'Principles of Management', Mcgraw Hill Education, Special Indian Edition, 2007. (Unit II, III, IV, V)

REFERENCES:

1. Hellriegel, Slocum & Jackson, 'Management - A Competency Based Approach', Thomson South Western, 10th edition, 2007.
2. Harold Koontz, Heinz Wehrich and Mark V Cannice, 'Management - A Global & Entrepreneurial Perspective', Tata Mcgraw Hill, 12th edition, 2007.
3. Andrew J.Dubrin, 'Essentials of Management', Thomson Southwestern, 7th edition, 2007.

WEB REFERENCES:

1. <http://study.com/academy/course/principles-of-management-course.html>
2. <https://www.coursera.org/course/organalysis>

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Course Code: 140IT0702	Course Title: CLOUD ARCHITECTURE AND SERVICES
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0503 -TCP/IP Design And Implementation

Course outcomes

At the end of the course the student will be able to:

- CO1. Assess the technological implications for selecting cloud computing for an organization
- CO2. Identify the architecture and infrastructure of cloud computing
- CO3. Discover enhanced opportunities for collaboration on schedules, group projects and events
- CO4. Examine the need for Virtualization in hardware and application level
- CO5. Identify the core issues in Security and its Standards on cloud computing.

Course content:

UNIT I INTRODUCTION 9

Cloud-Definition, benefits, usage scenarios, History of Cloud Computing - Cloud Architecture - Types of Clouds - Business models around Clouds – Major Players in Cloud Computing - Issues in Clouds - Eucalyptus - Nimbus - Open Nebula, CloudSim.

UNIT II CLOUD BUSINESS SERVICES 9

Types of Cloud Business services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers - Google, Amazon, Microsoft Azure, IBM, Salesforce.

UNIT III COLLABORATING USING CLOUD SERVICES 9

Email Communication over the Cloud – CRM Management _ Project Management – Event Management – Task Management – Calendar _ Schedules _ Word Processing - Presentation – Spreadsheet – Databases – Desktop – Social Networks and Groupware

UNIT IV VIRTUALIZATION FOR CLOUD 9

Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization – System Vm, Process VM, Virtual Machine monitor – Virtual machine properties - Interpretation and binary translation, HLL VM - Hypervisors – Xen, KVM ,VMWare, Virtual Box, Hyper-V.

Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.

Assignment Components

- Students have to develop mini project using the tool like Vcenter Lab Manager 4.0.

TEXT BOOKS:

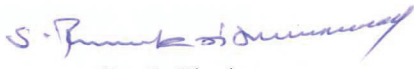

1. John Rittinghouse & James Ransome, Cloud Computing, Implementation, Management and Strategy, CRC Press, 2010.(Unit I,II,V)
2. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Que Publishing, August 2008.(Unit III)
3. James E Smith, Ravi Nair, Virtual Machines, Morgan Kaufmann Publishers, 2006. (Unit IV)

REFERENCES:

1. David E.Y. Sarna Implementing and Developing Cloud Application, CRC press 2011.
2. Lee Badger, Tim Grance, Robert Patt-Corner, Jeff Voas, NIST, Draft cloud computing synopsis and recommendation, May 2011.
3. Anthony T Velte, Toby J Velte, Robert Elsenpeter, Cloud Computing : A Practical Approach, Tata McGraw-Hill 2010.
4. Haley Beard, Best Practices for Managing and Measuring Processes for Ondemand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.

WEB REFERENCES:

1. <https://labs.vmware.com/>
2. <http://cloudbus.org/>
3. <http://azure.microsoft.com/>


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UNIT IV MOBILE TRANSPORT LAYER

8

Traditional TCP- Congestion Control-Slow Start –Fast Retransmit/ Fast Recovery-TCP Improvements: Indirect TCP- Snooping TCP-Mobile TCP-Transmission / Timeout Freezing – Selective Retransmission- Transaction Oriented TCP.

UNIT V SUPPORT FOR MOBILITY

8

Mobile File Systems- Architecture of Mobile Operating System- Mobile Databases-Mobile Middleware-Wireless Application Protocol- Security in Mobile Computing.

Assignment Components

- Students have to develop mini project using the tools like Android/J2ME/.Net.

TEXT BOOK:

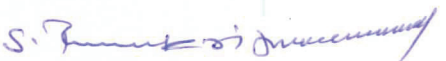

1. Jochen H. Schiller, “Mobile Communications”, second edition, Pearson Education, New Delhi, 2009.

REFERENCES:

1. William Stallings, “Wireless Communications and Networks”, Second edition, Pearson Education, 2009.
2. Raj Kamal, “Mobile Computing”, Second edition, Oxford University Press, New Delhi, 2012.
3. Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal, “Mobile Computing: Technology, Applications and Service Creation”, Second Edition, Tata McGraw Hill, 2010.
4. Frank Adelstein, Sandeep K S Gupta, Golden G Richard, Loren Schwiebert, “Fundamentals of Mobile and Pervasive Computing”, Tata Mc-Graw Hill Education Pvt. Ltd., New Delhi, 2005

WEB REFERENCES:

1. <https://www.iith.ac.in/~tbr/teaching/docs/introduction.pdf>
2. www.cs.uml.edu/~glchen/cs414-564/.../C02-Wireless_Transmission.ppt
3. neerci.ist.utl.pt/neerci_shelf/MERC/.../Mobile_Communications.pdf
4. http://web.cs.wpi.edu/~emmanuel/courses/cs525m/S06/slides/mobile_routing.pdf
5. wiki.icmc.usp.br/images/d/d0/C08-Network_Protocols.pdf
6. https://www.iith.ac.in/~tbr/teaching/docs/transport_protocols.pdf


BoS Chairman


Course Code: 140IT0704	Course Title: DATA MINING AND ANALYTICS
Core/Elective: Core	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0304-DATABASE SYSTEM CONCEPTS.

Course outcomes

At the end of the course the student will be able to:

- CO1. Describe the various application and current research topics in data mining.
- CO2. Use the data preprocessing techniques like transformation, cleaning, integration and reduction to the data sets.
- CO3. Practice with the data mining tool Weka.
- CO4. Compare and contrast the dominant data mining algorithms
- CO5. Understand the big data and methods to visualize big data.

Course content:

UNIT I INTRODUCTION TO DATA MINING 9

Fundamentals of Data Mining- Data Mining Functionalities - Classification of Data Mining Systems – Attribute Types and Measure-Data Preprocessing: Data Cleaning - Data Integration - Data Reduction - Data Transformation and Data Discretization

UNIT II ASSOCIATION AND CLASSIFICATION 9

Mining Frequent Patterns and Associations: Frequent Item set Mining Methods – Pattern Evaluation Methods. Classification: Bayesian Belief Networks-Classification by Back propagation-Support Vector Machines - Classification using Frequent Patterns - Lazy Learners.

UNIT III CLUSTERING 9

Cluster Analysis: Partitioning Methods - Hierarchical Methods - Density-Based Methods - Grid Based Methods – Evaluation-Model Based Clustering Methods - Clustering High Dimensional Data – Clustering Graph and Network Data-Clustering with Constraints.

UNIT IV INTRODUCTION TO BIG DATA 10

Introduction to Big Data: Risks of Big Data - Structure of Big Data - Exploring Big Data - Filtering Big Data - Mixing Big Data with Traditional Data. Big Data Technologies, Processes, and Methods: Evolution of Analytic Scalability- Evolution of Analytic Process - Evolution of Analytic Tools and Methods

Map Reduce – Hadoop Distributed File Systems – Hive. NOSQL Databases - Visual Data Analytic Techniques.

Assignment Components

- Students have to develop mini project using the tools like Pentaho/WEKA.

TEXT BOOKS:

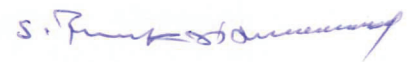

1. Jiawei Han, Micheline Kamber, Jian Pei “Data Mining Concepts and Techniques”, Third Edition, Elsevier, 2012. (Unit I, II, III)
2. Bill Franks, “Taming the big data tidal wave: finding opportunities in huge data streams with advanced analytics”, John Wiley & sons 2012. (Unit IV, V)

REFERENCES:

1. Pete Warden, “Big Data Glossary”, O’Reilly, 2011.
2. G. K. Gupta, “Introduction to Data Mining with Case Studies”, Eastern Economy Edition, Prentice Hall of India, 2006.
3. K.P. Soman, Shyam Diwakar and V. Ajay, “Insight into Data mining Theory and Practice”, Eastern Economy Edition, Prentice Hall of India, 2006.
4. Krzysztof J. Cios, Witold Pedrycz, Roman W. Swiniarski, Lukasz Andrzej Kurgan “Data Mining: A Knowledge Discovery Approach”, Springer Science Business Media, LLC 2012.

WEB REFERENCES:

1. <http://hanj.cs.illinois.edu/bk3/>
2. <http://www.kdnuggets.com/websites/index.html>
3. https://en.wikipedia.org/wiki/Data_mining
4. https://en.wikipedia.org/wiki/Big_data
5. <http://nptel.ac.in/courses/106106093/35>
6. <http://ocw.mit.edu/courses/sloan-school-of-management/15-062-data-mining-spring-2003/lecture-notes/>


BoS Chairman


Course Code: 140IT0707	Course Title: PYTHON PROGRAMMING LABORATORY
Core/Elective: Core	Credits (L:T:P:C:M) – 2 : 0 : 3 : 2 : 100
Type: Lecture / Practical	Total Contact Hours: 75

Prerequisites: The student should have undergone the course(s):

- 140CO0105-C Programming

Course outcomes

At the end of the course the student will be able to:

- CO1. Be fluent in the use of procedural statements such as assignments, conditional statements, loops, calls and sequences. Be able to design, code, and test small Python programs that meet requirement
- CO2. Analyze and code the lists, dictionary and tuples data structures in Python and explain how they can be nested and how exceptions can be used
- CO3. Employ Python sequences and mappings to store and manipulate data and to develop server-side Python scripts for publishing on the Web.
- CO4. Analyze and model requirements and constraints for the purpose of designing and implementing software systems using Python. Evaluate and compare designs of such systems on the basis of specific requirements and constraints

Course content:

UNIT I INTRODUCTION 10

Introduction to Python – Installation – Python Interpreter– Editor setup – Variables, Expressions and Statements – Conditionals – Functions - Strings – Lists Stacks – Queues – Tuples – Sequences – Sets – Dictionaries – Sets.

UNIT II OOPS IN PYTHON 10

Modules – Standard modules – Packages – Input and Output functions – Files – read and write – Exception– Classes – Scopes and Namespaces – Class Objects – Instance Objects – Method Objects – Inheritance – Iterators- Generators – Generator Expressions

UNIT III GUI AND DATABASE PROGRAMMING 10

GUI– Buttons and callbacks–Canvas widgets – Coordinate sequences–More widgets – Packing widgets –Menus and Callables–Binding – MySQLdb–install the MySQLdb – Database Connection –Creating Database Table –INSERT Operation –READ Operation –DELETE Operation –Performing Transactions.

List of experiments:

1. Basic exercise in Python interpreter command line
2. Implement the File Handling operation in python
3. Create a program using List, Tuple, and Dictionary
4. Create a program to demonstrate all OOP'S concepts
5. Define the user defined module and function
6. Demonstrate the concept of Regular expression
7. Design a GUI programming with Tkinter
8. Create an application with ODBC connectivity (DB like MySQL, PostgreSQL, Microsoft SQL Server 2000, Sybase, and Oracle)
9. Develop a web scripting application using IDE's like Eclipse
10. Develop a mini-project using any one the following scientific open source packages but are not limited to one.
a) SCIPY b) JYTHON c) WEB2PY d) PYPY e) Open CV

TEXT BOOKS:

1. Peter Wentworth Jeffrey Elkner, Allen B. Downey, and Chris Meyers, "How to Think Like a Computer Scientist: Learning with Python", 3rd edition, Free Online Version: <http://openbookproject.net/thinkcs/python/english3e/> (Unit I, II)
2. The Python Tutorial available at <http://docs.python.org/3.3/tutorial/> (Unit III)

REFERENCES:

1. A Byte of Python by Swaroop CH available at <http://swaroopch.com/notes/python/>
2. Python Documentation available at <http://www.python.org/doc/>

WEB REFERENCES:

1. <https://docs.python.org/2/howto/webrowsers.html>
2. <https://www.python.org/>
3. <http://webpython.codepoint.net/>
4. <http://www.fullstackpython.com/web-frameworks.html>
5. <http://code.tutsplus.com/articles/python-from-scratch-create-a-dynamic-website--net-22787>



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TEXT BOOKS

1. Liu M L, "Distributed Computing: Principles and Applications", Pearson Education, New Delhi, 2006. (Unit I, III)
2. Kevin Mukhar and Chris Zelenak, "Beginning Java EE 5: From Novice to Professional", Apress, New Delhi, 2008. (Unit II)


REFERENCES

1. Puder A, Romer K and Pilhofer F, "Distributed Systems Architecture: A Middleware Approach", Elsevier, New Delhi, 2008.
2. Sudha Sadasivam G, "Distributed Component Architecture", Wiley, New Delhi, 2008.
3. Guy Eddon and Henry Eddon, "Inside Distributed COM", Microsoft Press, New Delhi, 1998.

WEB REFERENCE:

1. <https://docs.google.com/document/pub?id=1w1MHOztH2gv4KzT4gcbGNRfc9R-kUjyuc9E16eAQXs>

END OF SEMESTER VII


BoS Chairman


ELECTIVES

Course Code/ 140IT9111	Course Title: EMBEDDED SYSTEM PROGRAMMING
Core/Elective: Elective	Credits : (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140CO0105-C Programming
- 140IT0404- Operating Systems Concepts

Course outcomes

At the end of the course the student will be able to:

CO1: Develop an embedded system to run specific applications

CO2: Assess embedded systems in Device drivers for interrupt handling, memory and on-board bus

CO3: Write the programming in assembly language and high level language ‘c’.

CO4: Design RTOS models and address security problems.

CO5: Develop the software tools and modules in IDE and to face various design issues.

Course content:

UNIT I INTRODUCTION TO EMBEDDED SYSTEM DESIGN 9

Embedded Hardware and Software in a system – Embedded System Architecture – Complex system design and processors – Design process in embedded system – Formalization of system design – Classification of embedded system – Networked embedded system – Serial and parallel bus device protocols

UNIT II INTRODUCTION TO EMBEDDED SOFTWARE 9

Device drivers for interrupt handling, memory and on-board bus – Embedded Operating System: Process management, memory management and IO management – Middleware and Application software

UNIT III EMBEDDED PROGRAMMING IN “C” 9

Programming in assembly language programming and high level language “C” – C Program elements – Macros and functions – Data types, Data structure, modifiers, statements, loops and pointers – Queuing of functions on interrupts.

UNIT IV REAL TIME OPERATING SYSTEM

9

OS services – Process management – Timer and Event functions – memory, device, file and IO subsystem management – Interrupt routines – Basic design in RTOS – Task scheduling models – Interrupt latency and response – OS security issues.

UNIT V EMBEDDED SOFTWARE DEVELOPMENT AND TOOLS

9

Introduction – Development process of embedded system – Software tools and modules – Integrated Development Environment (IDE) – Host and Target machines – Linking and locating software – Flash programmer – Programming method of device programmer – Issues in Hardware and Software design and co-design

TEXT BOOKS:

1. Raj Kamal, “Embedded Systems Architecture, Programming and Design”, Tata McGraw-Hill, New Delhi, 2011. (Unit I, III, IV)
2. Tammy Noergaard, “Embedded Systems Architecture”, Elsevier, 2006. (Unit II, V)

REFERENCES:

1. Michael J. Pont, “Embedded C”, Pearson Education, 2007.
2. Todd D Morton, “Embedded Micro Controllers”, Pearson Education, 2003.
3. Sriram V Iyer, “Embedded Real Time System Programming”, Tata McGrawHill, 2010.
4. V.K.K.Prasad, “Programming for Embedded Systems”, Wiley India Edition, 2011



BoS Chairman



UNIT V USER INTERFACE DESIGN PROCESS -STEP 13 TO 14 9

Windows layout-test: prototypes - kinds of tests - retest – Case Study: Information search - visualization - Hypermedia - www - Software tools.

TEXT BOOK:


1. Wilbent. O. Galitz ,“The Essential Guide to User Interface Design”, 2ndedition,John Wiley& Sons, New Delhi, 2009.

REFERENCES:

1. Alan Cooper, “The Essential of User Interface Design”, Wiley – Dream Tech Ltd., New Delhi, 2007.
2. Ben Sheiderman, “Design the User Interface”, Pearson Education, New Delhi ,1998.
3. Alan Dix, Janet Fincay, GreGoryd, Abowd, Russell Bealg, “Human – Computer Interaction”, 3rd Edition, Pearson Education,New Delhi, 2004.
4. Theo Mandel,”Elements of User Interface Design”, John Wiley & Sons, New Delhi.1997

WEB REFERENCES:

1. <https://unity3d.com/learn/tutorials/topics/user-interface-ui>
2. <https://goodui.org/>
3. http://www.tutorialspoint.com/software_engineering/software_user_interface_design.html



BoS Chairman



Course Code: 140IT9113	Course Title: SOFTWARE PROJECT MANAGEMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0403-Software Engineering Concepts.
- 140IT0504-Object Oriented Analysis And Design

Course outcomes:

At the end of the course the student will be able to:

- CO1. Evaluate the selection of appropriate software project approach
- CO2. Analyze and identify the sequence of project scheduling and risk management activities.
- CO3. Create project plans that address the real-world management challenges.
- CO4. Justify the need of software estimation techniques and resource allocation.
- CO5. Require an ability to design and conduct a test process for a software testing project

Course content:

UNIT - I INTRODUCTION 9

Introduction, Need for Software Project Management – Software Project versus Other Projects –Contract Management – Activities - Project Life Cycle Models for Software – Product versus Process Quality Management –Programme Management - Overview of Project Planning

UNIT - II PROJECT EVALUATION 9

Introduction - Strategic Assessment - Technical Assessment - Cost Benefits Analysis - Cash Flow forecasting - Cost Benefit Evaluation Techniques - Risk Evaluation – Selection of appropriate Project Approach

UNIT III ACTIVITY PLANNING 9

Objectives - Project Schedules – Project and Activities - Sequencing and Scheduling Activities - Network Planning Models – Formulating Network Models - Using Dummy Activities - Identifying Critical Path - Identifying Critical Activities – Activity –on -arrow Networks - Risk Analysis and Management: Nature of Risk - Managing Risk - Risk Identification - Risk Analysis - Reducing the Risks - Evaluating the Risks - PERT Technique

UNIT IV SOFTWARE EFFORT ESTIMATION

9

Problems with over and under Estimate - The Basis for Software Estimation - Software Estimation Techniques – Bottom-up & Top-Down approach - Expert Judgments - Estimating by Analogy - Function Point Analysis - Resource Allocation: Nature - Identifying Resource Requirements - Scheduling Resources –Publishing Schedule – Cost Schedules - Monitoring and Control - Managing People - Organization Teams

UNIT V PROJECT MANAGEMENT

9

Project Management in the Testing Phase: Introduction - Test Scheduling - Test Types and Issues - Management Structures for Testing - Metrics for Testing Phase - Project Management in the Maintenance Phase – Introduction – Activities - Management Issues - Configuration Management - Estimating Size, Effort and People Resources – Advantages - Metrics

TEXT BOOKS:

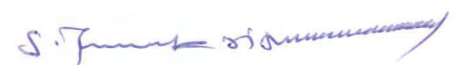
1. Bob huges, Mike cotterell, “Software Project Management”, Tata McGraw Hill, New Delhi, 2010, Fifth Edition. (Unit I, II, III, IV)
2. Gopaldaswamy Ramesh, “Managing Global Software Projects”, Tata McGraw Hill,2006 (Unit V)

REFERENCES:

1. Roger S Pressman, “Software Engineering, A Practitioner’s Approach”, McGraw-Hill Higher Education, 2010,Seventh Edition.
2. Kamna Malik, Praveen Choudary, “Software Quality, a practitioner’s Approach”, Tata McGraw-Hill Education, 2008
3. Walker Royce ,”Software Project Management : a unified framework”, Pearson Education, New Delhi, 2005.
4. Pankaj Jalote ,”Software Project Management in practice”, Pearson Education, New Delhi ,2009

WEB REFERENCES:

1. <http://nptel.ac.in/courses/106101061/29>
2. <http://freevidelectures.com/Course/2318/Software-Engineering/29>
3. <http://www.scribd.com/doc/7150545/Software-Project-Study-Material#scribd>



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UNIT-V MULTIPROCESSOR AND DISTRIBUTED UNIX SYSTEMS 9

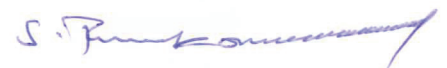
Multiprocessor Systems- Master and Slave Processors-Semaphores-the TUNIS System,
Satellite Processors- The New Castle Connection-Transparent Distributed File Systems

TEXT BOOK:

1. Maurice J Bach, "The Design of the UNIX Operating Systems", Prentice Hall of India/
Pearson Education, New Delhi, 2006.

REFERENCES:

1. Uresh Vahalia, "UNIX Internals: The New Frontiers", Prentice Hall of India/ Pearson
Education, New Delhi, Second Indian Reprint, 2007.
2. Richard Stevens, "UNIX Network Programming"- Volume I- Prentice Hall of India/
Pearson
Education, New Delhi, Second Edition, 2007.
3. S. J. Leffler, M. K. McKusick, M. J. Karels and J. S. Quarterman., "The Design And
Implementation of the 4.3 BSD Unix Operating System", Addison Wesley, 1998.
4. B. Goodheart, J. Cox, "The Magic Garden Explained", Prentice Hall of India, 1986.



BoS Chairman



Course Code: 140IT9115	Course Title: ADVANCED DATABASE TECHNOLOGY
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0205- Data Structures and Object Oriented Programming with C++
- 140IT0304- Database System Concepts

Course outcomes:

At the end of the course the student will be able to:

CO1: Analyze the architecture and uses of Distributed Databases.

CO2: Understand the Object Oriented Database Design and its merits and demerits.

CO3: Evaluate and interpret the web databases and scripting languages.

CO4: Recognize database security issues.

CO5: Identify data mining Concepts and to update the current trends in emerging databases.

Course content:

UNIT I DISTRIBUTED DATABASES

9

Functions and Architecture of DDBMS-Distributed Relational Database Design-Transparencies in DDBMS-Distributed Transaction Management-Distributed Concurrency Control, Deadlock management, Database recovery – The X/Open Distributed Transaction Processing Model – Distributed Query Optimization -Distribution in Oracle.

UNIT II OBJECT ORIENTED DATABASES

9

Weakness of RDBMS – Object Oriented Concepts-Storing Objects in Relational Databases – Next Generation Database Systems – Object Oriented Database Design -Object Oriented Data models: OODBMS Perspectives – Persistence – Issues in OODBMS – Advantages and Disadvantages of OODBMS – Object Oriented DBMS Standards and Systems: Object Management Group – Object Database Standard ODMG

UNIT III WEB DATABASES

9

Web Technology and DBMS –The Web as a Database Application Platform – Scripting Languages– Common Gateway Interface – HTTP Cookies – Extending the Web Server – Java – Microsoft’s Web Solution Platform – Oracle Internet Platform – Semi structured Data and XML – XML and Databases.

UNIT IV DATABASE SECURITY

9

Database Security Issues- Discretionary Access Control- Mandatory Access Control-Statistical -Database Security-Flow Control-Encryption and Public Key Infrastructures Enhanced Data Models for Advanced Applications: Active Database Concepts and Triggers-Temporal Database Concepts-Deductive Databases

UNIT V EMERGINGG DATABASES

9

Mobile Database – Multimedia Databases-Geographic Information Systems – Genome Data Management -Data Mining Concepts: Association Rules-Classification-Clustering- Approaches to other Data Mining Problems-Applications of Data Mining- Commercial Data Mining Tools.

TEXT BOOKS:

1. Thomas M. Connolly, Carolyn E. Begg, “Database Systems - A Practical Approach to Design, Implementation, and Management”, Fourth Edition, Pearson Education, New Delhi, 2006. (Unit – I, II, III)
2. Ramez Elmasri & Shamkant B.Navathe, “Fundamentals of Database Systems”, Fourth Edition, Pearson Education, New Delhi, 2008. (Unit – IV, V)

REFERENCES:

1. M.Tamer Ozsu, Patrick Ualduriel, “Principles of Distributed Database Systems”, Second Edition, Pearson Education, New Delhi, 2003.
2. C.S.R.Prabhu, “Object Oriented Database Systems”, PHI Learning, New Delhi, 2003.
3. Peter Rob and Corlos Coronel, “Database Systems – Design, Implementation and Management”, Fifth Edition, Thompson Learning, Course Technology, New Delhi, 2003.



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UNIT V IMAGE REPRESENTATION AND RECONSTRUCTION

9

Image Representation: Region representation, moment representation, structures, shape features-Image Reconstruction: Transmission, reflection and emission tomography, the Radon transform, back-projection operators, the projection theorem, fan-beam reconstruction, algebraic methods, 3-D tomography.

TEXT BOOK:

1. Anil K. Jain, "Fundamentals of Digital Image Processing", Prentice-Hall India, 2010.

REFERENCES:

1. Rafael C.Gonzalez, Richard E.Woods and Steven L. Eddins, "Digital Image Processing Using MATLAB", Second Edition, Tata McGraw Hill, 2010.
2. William K.Pratt, "Digital Image Processing", Wiley-India Edition, New Delhi, 2010.
3. S.Jayaraman, S. Esakkirajan and T Veerakumar, "Digital Image Processing", Tata McGraw Hill, 2010



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Course Code: 140IT9117	Course Title: NETWORK PROGRAMMING AND MANAGEMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0405- Data Communications and Networks
- 140IT0503-TCP/IP Design and Implementation

Course outcomes:

At the end of the course the student will be able to:

- CO1: Acquire the basics of socket programming using TCP Sockets and UDP sockets.
CO2: Develop client/server application software by using socket programming knowledge.
CO3: Creatively apply processes and tools in the development and evaluation of solutions to problems in network programming.
CO4: Be accustomed with IPv6 addressing and network design.
CO5: Acquainted with SNMP protocol and its uses in managing and monitoring networks.

Course content:

UNIT I TCP SOCKETS

9

Transport Layer-Sockets Introduction: Socket Address Structures – Byte Ordering Functions – Address Conversion Functions – Elementary TCP Sockets: Socket- Connect-Bind- Listen- Accept-Read- Write- Close Functions– Concurrent Server.

UNIT II APPLICATION DEVELOPMENT

9

TCP Client/Server:TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients –Server process Crashes-Server host Crashes- Server Crashes and reboots-Server Shutdown-Data Format – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) –Pselect Function- poll function – TCP echo Client (with Multiplexing)

UNIT III SOCKET OPTIONS, UDP and SCTP SOCKETS

9

Socket options – getsockopt and setsockopt functions – generic socket options – IP socket options – ICMP socket options – TCP socket options SCTP Socket Options– Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – SCTP functions-Domain name system- Name and Address Conversions function.

UNIT IV ADVANCED SOCKETS

9

Ipv4 and Ipv6 interoperability – Advanced I/O Functions- Unix Domain Protocols- Nonblocking I/O-Routing Sockets-Streams

UNIT V SIMPLE NETWORK MANAGEMENT

9

SNMP network management concepts – SNMP management information – standard MIB's – SNMPv1 protocol and Practical issues – introduction to RMON, SNMPv2 and SNMPv3.

TEXT BOOKS:

1. W. Richard Stevens, "UNIX NETWORK PROGRAMMING Vol-I" Third Edition, PHI /Pearson Education, New Delhi,2004. (Unit – I, II, III, IV)
2. William Stallings, "SNMP, SNMPv2, SNMPv3 and RMON 1 and 2", Third Edition, Addison Wesley, New Delhi,1999. (Unit – V)

REFERENCES:

1. D.E. Comer, "Internetworking with TCP/IP Vol- III", (BSD Sockets Version), second Edition, PHI,New Delhi, 2003.
2. Mani Subramaniam, "Network Management: Principles and Practice", Addison Wesley", First Edition, New Delhi,2001

S. Subramaniam

BoS Chairman

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Course Code: 140IT9118	Course Title: DISASTER MANAGEMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

➤ 140CO0204-Environmental Science

Course outcomes:

At the end of the course the student will be able to:

- CO1. Describe the various phases of disaster management cycle.
- CO2. Explicate the economic and social impacts of disasters.
- CO3. Recognize the techniques used in disaster risk reduction
- CO4. Discriminate the interrelationship between disaster and development.
- CO5. Categorize the various types of seismic waves.

Course content:

UNIT I INTRODUCTION TO DISASTERS 6

Concepts, and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)

UNIT II DISASTERS: CLASSIFICATION, CAUSES, IMPACTS (including social, economic, political, environmental, health, psychosocial, etc.) 12

Differential impacts- in terms of caste, class, gender, age, location, disability Global trends in disasters! urban disasters, pandemics, complex emergencies, Climate change.

UNIT III APPROACHES TO DISASTER RISK REDUCTION 10

Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

UNIT IV INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT 8

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge,

Seismic waves – Earthquakes and faults – measures of an earthquake, magnitude and intensity – ground damage – Tsunamis and earthquakes

TEXT BOOKS:

1. Gupta Anil K and Sreeja S. Nair, “Environmental Knowledge for Disaster Risk Management”, NIDM, New Delhi, 2011 (Unit I, II, III)
2. Pardeep Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000 (Unit IV, V)

REFERENCES:

1. Kapur and Anu, “ Disasters in India Studies of grim reality”, Rawat Publishers, Jaipur, 2005
2. Pelting Mark, “The Vulnerability of Cities: Natural Disaster and Social Resilience” Earthscan publishers, London, 2003
3. Blaikie, P, Cannon T, Davis I, Wisner B, “At Risk Natural Hazards, Peoples' vulnerability and Disasters”, Routledge, 1997
4. Carter and Nick, “Disaster Management: A Disaster Manager's Handbook” Asian Development Bank, Manila Philippines. 1991.

WEB REFERENCES:

1. www.nidm.gov.in



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Types-JDBS Packages-Overview of JDBC Process-Database Connection-Statement Object-ResultSet-Transaction Processing-Data types-Exceptions.

UNIT V

JDBC AND EMBEDDED SQL

9

Model Programs: Tables-Indexing-Selecting data-Metadate-Updating Tables-Deleting Data-Joining Tables-Calculating Data-Grouping and Ordering-Sub queries-View.

TEXT BOOK:

1. James Koegh, J2ME – The Complete Reference, Tata McGraw-Hill, 2003.

REFERENCES:

1. Vartan Piroumian, Wireless J2ME Platform Programming, The Sun Microsystems Press, JAVA SERIES.
2. Sing Li, Jonathan Knudsen, Beginning J2ME from Novice to Professional, Third Edition Springer (India) Private Limited publications, 2005.
3. Kim Topley, J2ME – In a Nutshell, O'Reilly publications, 2002.
4. John W. Muchow, Core J2ME Technology& MIDP, First Edition, Prentice Hall PTR.

WEB REFERENCES:

1. <http://docs.oracle.com/javame/config/cldc/ref-impl/midp2.0/jsr118/allclasses-noframe.html>
2. <http://www.javaworld.com/article/2071873/java-me/mobile-java-beginning-j2me-building-midlets.html>
3. <http://www.developer.com/java/j2me/article.php/1561591/MIDP-Programming-with-J2ME.html>

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Course Code: 140IT9120	Course Title: SERVICE ORIENTED ARCHITECTURE
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0504- Object Oriented Analysis and Design
- 140IT0505- Web Technology

Course outcomes:

At the end of the course the student will be able to:

- CO1: Understand the strengths and weaknesses of a service-based architecture.
- CO2: Explain the planning and analysis of service oriented architecture
- CO3: Implement and deploy simple web services using suitable framework.
- CO4: Describes the management of SOA environment.
- CO5: Design business applications as combinations of services.

Course content:

UNIT I SOA FUNDAMENTALS

9

Defining SOA, Business Value of SOA, Evolution of SOA, SOA characteristics, concept of a service in SOA, misperceptions about SOA, Basic SOA architecture, infrastructure services, Enterprise Service Bus (ESB), SOA Enterprise Software models, IBM On Demand operating environment

UNIT II SOA PLANNING AND ANALYSIS

9

Stages of the SOA lifecycle, SOA Delivery Strategies, service-oriented analysis, Capture and assess business and IT issues and drivers, determining non-functional requirements (e.g., technical constraints, business constraints, runtime qualities, non-runtime qualities), business centric SOA and its benefits, Service modeling, Basic modeling building blocks, service models for legacy application integration and enterprise integration, Enterprise solution assets(ESA)

UNIT III SOA DESIGN AND IMPLEMENTATION

9

Service-oriented design process, design activities, determine services and tasks based on business process model, choosing appropriate standards, articulate architecture, mapping business processes to technology, designing service integration environment (e.g., ESB, registry), Tools available for appropriate designing, implementing SOA, security implementation, implementation of integration patterns, services enablement, quality assurance

UNIT IV MANAGING SOA ENVIRONMENT

9

Distributing service management and monitoring concepts, operational management challenges, Service-level agreement considerations, SOA governance (SLA, roles and

responsibilities, policies, critical success factors, and metrics), QoS compliance in SOA governance, role of ESB in SOA governance, impact of changes to services in the SOA lifecycle

UNIT-V BUSINESS PROCESS DESIGN

9

WS-BPEL language basics – WS-Coordination overview - WS-Addressing - WS-Reliable Messaging - WS-Policy – WS-Metadata Exchange - WS-Security

TEXT BOOKS:

1. Thomas Erl, “Service-Oriented Architecture: Concepts, Technology, and Design”, Pearson Education, Second Impression, 2008 (Unit – I, II, III)
2. Norbert Bieberstein, Sanjay Bose, Marc Fiammante, Keith Jones, Rawn Shah, “Service-Oriented Architecture Compass: Business Value, Planning, and Enterprise Roadmap”, IBM Press Publication, 2005. (Unit – IV, V)

REFERENCES:

1. Thomas Erl, “SOA Principles of Service Design “(The Prentice Hall Service-Oriented Computing Series from Thomas Erl), 2005.
2. Newcomer, Lomow, “Understanding SOA with Web Services”, Pearson Education, 2005.
3. Sandy Carter, “The New Language of Business: SOA & Web 2.0”, IBM Press, 2007.



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Principles – Database access – Interacting – Database Search –Database Support in Web Applications- – Using BLOB and CLOB Objects – Storing Multimedia Data into Databases – Multimedia Streaming Applications – Java Media Framework.

UNIT-V BEANS AND ENTERPRISE APPLICATIONS 9

Bean Concepts - Events in Bean Box - Bean Customization - Persistence - Application - Deployment using Swing -Server Side Component Architecture – Introduction to J2EE – Session Beans – Entity Beans – Persistent Entity Beans – Transactions.

TEXT BOOKS:

1. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers, 2004. (Unit I,II, III)
2. Ed Roman, “Mastering Enterprise Java Beans”, Third Edition,John Wiley & Sons Inc., 2005. (Unit IV, V)

REFERENCES:

1. Hortsman & Cornell, “Core Java 2 Advanced Features, VOL II”, Pearson Education, 2008.
2. Web reference: <http://java.sun.com>.
3. Patrick Naughton, “Complete Reference: Java2”, Tata McGraw-Hill, 2003.

WEB REFERENCES:

1. <https://docs.oracle.com/javase/tutorial/>
2. <https://docs.oracle.com/javase/7/docs/technotes/guides/idl/corba.html>
3. <http://docs.oracle.com/javaee/6/tutorial/doc/bncdq.html>
4. <http://www.javatpoint.com/>
5. <http://www.tutorialspoint.com/>



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Course Code: 140IT9122	Course Title: NATURAL LANGUAGE PROCESSING
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0205- Data Structures and Object Oriented Programming with C++
- 140IT0604- Principles of Compiler Design

Course outcomes:

At the end of the course the student will be able to:

CO1: Tag a given text with basic Language processing features

CO2: Design an model for an innovative application using NLP components

CO3: Implement a rule based system to tackle morphology/syntax of a language

CO4: Design a tag set to be used for statistical processing for real-time applications

CO5: Compare and contrast use of different machine translation.

Course content:

UNIT I INTRODUCTION

9

Introduction – Models -and Algorithms - The Turing Test -Regular Expressions Basic Regular Expression Patterns -Finite State Automata -Regular Languages and FSAs – Morphology Inflectional Morphology - Derivational Morphology -Finite-State Morphological Parsing - Combining an FST Lexicon and Rules -Porter Stemmer

UNIT II N-GRAM LANGUAGE MODEL

9

N-grams Models of Svntax - Counting Words - Unsmoothed N-grams – Smoothing-Backoff - Deleted Interpolation – Entropy - English Word Classes - Tagsets for English - Part of Speech Tagging -Rule-Based Part of Speech Tagging - Stochastic Part of Speech Tagging - Transformation-Based Tagging

UNIT III SYNTATIC PARSING

9

Context Free Grammars for English Svntax- Context-Free Rules and Trees - Sentence-Level Constructions –Agreement – Sub Categorization – Parsing – Top-down – Earley Parsing -Feature Structures - Probabilistic Context-Free Grammars

UNIT IV SEMANTIC ANALYSIS

9

Representing Meaning - Meaning Structure of Language - First Order Predicate Calculus - Representing Linguistically Relevant Concepts -Svntax-Driven Semantic Analysis - Semantic Attachments - Svntax-Driven Analyzer - Robust Analysis - Lexemes and Their Senses - Internal Structure - Word Sense Disambiguation -Information Retrieval

UNIT V MACHINE TRANSLATION

9

Discourse -Reference Resolution - Text Coherence -Discourse Structure - Dialog and Conversational Agents - Dialog Acts – Interpretation – Coherence –Conversational Agents - Language Generation – Architecture -Surface Realizations – Discourse Planning – Machine Translation -Transfer Metaphor – Interlingua – Statistical Approaches

TEXT BOOK:

1. D. Jurafsky and J. Martin “Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition”, 2009

REFERENCES:

1. James Allen. “Natural Language Understanding”, Addison Wesley, 2008
2. C. Manning and H. Schutze, “Foundations of Statistical Natural Language Processing”, 2003



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Course Code: 140IT9123	Course Title: SOFT COMPUTING
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0205- Data Structures and Object Oriented Programming with C++
- 140IT0704- Data Mining and Analytics

Course outcomes:

At the end of the course the student will be able to:

- CO1: Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
- CO2: Apply neural networks to pattern classification and regression problems using soft computing approach.
- CO3: Describe neural networks and their roles in building intelligent machines.
- CO4: Explain the neuro-fuzzy model feasibility of applying for a particular problem.
- CO5: Discuss the various features of advanced neuro-fuzzy model

Course content:

UNIT - I FUZZY SET THEORY

9

Fuzzy Sets: Basic Definitions and Terminology - Set-theoretic Operations - MF Formulation and Parameterization-Fuzzy Rules and Fuzzy Reasoning: Extension Principle and Fuzzy Relations-Fuzzy If-Then Rules- Fuzzy Reasoning- Fuzzy Inference Systems: Mamdani Fuzzy Models-Sugeno Fuzzy Models- Tsukamoto Fuzzy Models.

UNIT - II REGRESSION AND OPTIMIZATION

9

Least-Squares Methods for System Identification: Basics of Matrix Manipulation and Calculus-Least-Squares Estimator- Geometric Interpretation of LSE- Recursive Least-Squares Estimator-LSE for Nonlinear Models- Derivative-Based Optimization: Descent Methods - The Method of Steepest Descent - Newton's Methods - Step Size Determination - Nonlinear Least-squares Problems- Derivative-Free Optimization: Genetic Algorithms- Simulated Annealing- Random Search- Downhill Simplex Search.

UNIT - III NEURAL NETWORKS

9

Adaptive Networks: Backpropagation for Feedforward Networks-Extended Backpropagation for Recurrent Networks-Hybrid Learning Rule: Combining Steepest Descent and LSE- Supervised Learning Neural Networks: Perceptrons-Adaline-Backpropagation Multilayer Perceptrons-Radial Basis Function Networks-Modular Networks- Unsupervised Learning: Competitive Learning Networks- Kohonen Self-Organizing Networks -Learning Vector Quantization- Hebbian Learning-Principal Component Networks-The Hopfield Network.

UNIT - IV NEURO-FUZZY MODELING

9

Adaptive Neuro-Fuzzy Inference Systems: Architecture- Hybrid Learning Algorithm- Cross-fertilize ANFIS and RBFN- Coactive Neuro-Fuzzy Modeling: Neuron Functions for Adaptive Networks-Neuro-Fuzzy Spectrum- Adaptive Learning Capability.

UNIT - V ADVANCED NEURO-FUZZY MODELING

9

Classification and Regression Trees: Decision Trees - CART Algorithm for Tree Induction- Data Clustering Algorithms: K-Means Clustering - Fuzzy C-Means Clustering - Mountain Clustering Method- Subtractive Clustering -Rulebase Structure Identification: Input Selection- Input Space Partitioning- Rulebase Organization- Focus Set-Based Rule Combination

TEXT BOOK:

1. J.S.R.Jang, C.T.Sun and E.Mizutani, "Neuro-Fuzzy and Soft Computing", PHI, Pearson Education 2009.

REFERENCES:

1. Timothy J.Ross, "Fuzzy Logic with Engineering Application" ,John Wiley & Sons, 2004.
2. Davis E.Goldberg,"Genetic Algorithms:Search, Optimization and Machine Learning"Addison Wesley, N.Y.,2003.
3. Rafik Aziz ogly Aliev, Rashad Rafik Aliev,"Soft Computing and its Applications"World Scientific Publishing Co.Pvt.Ltd,2001

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BoS Chairman

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Course Code: 140IT9124	Course Title: INFORMATION STORAGE AND MANAGEMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0304- Database System Concepts
- 140IT0404- Data Communications and Networks

Course outcomes:

At the end of the course the student will be able to:

- CO1.Understand the suitable storage technologies for different applications
- CO2.Describe the storage networking technologies
- CO3.Identify the importance of Business Continuity and their impact on businesses
- CO4.Understand the backup/recovery process and operation.
- CO5.Explicate the common threats in each domain of information security

Course content:

UNIT I	STORAGE SYSTEM	9
Introduction to Information Storage and Management – Storage System Environment – Data Protection: RAID – Intelligent Storage System – Components		
UNIT II	STORAGE NETWORKING TECHNOLOGIES	9
Direct Attached Storage and introduction to SCSI – Storage Area Networks – Fiber Channel – Network Attached Storage – IP SAN – Content Addressed Storage		
UNIT III	BUSINESS CONTINUITY	9
Introduction to Business Continuity – Backup and Recovery – Local Replication: Host Based-Storage Array Based – Remote Replication – Network Infrastructure		
UNIT IV	STORAGE SECURITY AND MANAGEMENT	9
Securing the Storage Infrastructure – Storage Security Framework – Risk Triad – Storage Security Domains – Security Implementations in Storage Networking: SAN- NAS- IP SAN		
UNIT V	MANAGING THE STORAGE INFRASTRUCTURE	9
Monitoring the Storage Infrastructure – Challenges - Storage Management Activities – Developing an Ideal Solution – Enterprise Management Platforms – Case Studies		

TEXT BOOK:

1. EMC Education Services, "Information Storage and Management: Storing, Managing and Protecting Digital Information", Wiley Publishing, Inc., Indiana, 2009.

REFERENCES:

1. Christopher Poelker and Alex Nikitin, "Storage Area Networks For Dummies", Wiley Publishing, Inc., Indiana, 2009
2. Volker Herminghaus and Albrecht Scriba, "Storage Management in Data Centers: Veritas Storage Foundation", Springer-Verlag Publishers, Berlin Heidelberg 2009
3. Behrouz Forouzan, "Introduction to Data Communication and Networking" Tata Mc- Graw Hill, New York, 1996.

WEB REFERENCES:

1. <http://www.emc.com/en-us/index.html>
2. <http://www.cisco.com/c/en/us/solutions/data-center-virtualization>
3. <http://www-935.ibm.com/services/in/en/it-services/data-center/>
4. <http://computer.howstuffworks.com/cloud-computing/cloud-storage.html>
5. <http://www.bluechip.uk.com/it-infrastructure/storage>



BoS Chairman



UNIT IV**DIGITAL SUBSCRIBER ACCESS****9**

Integrated Services Digital Network (ISDN): Basic Rate Access Architecture- Interface-Channel Protocol - High Data Rate Digital Subscriber Loops - Digital Loop Carrier Systems - Next-Generation Digital Loop Carrier- Fiber in the Loop- Hybrid Fiber Coax Systems- Local Microwave Distribution Service- Digital Satellite Services - Voice Band Modems

UNIT V CELLULAR WIRELESS NETWORKS**9**

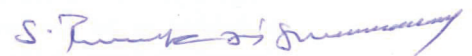
Principles of Cellular Networks-Frequency Reuse- Channel Assignment Strategies- Handoff Strategies- Cordless Systems- Wireless Local Loop- Wireless Application Protocol - BLUE TOOTH: Overview- Radio Specification- Base Band Specification- Link Manager Specification- Logical Link Control and Adaptation Protocol

TEXT BOOKS:

1. Viswanathan.T., "Telecommunication Switching System and Networks", Prentice Hall, New Delhi, 2004. (Unit – II, III, IV)
2. William Stallings, "Wireless Communication and Networks", second edition, Pearson Education, New Delhi, 2004. (Unit – I, V)

REFERENCES:

1. Frenzel, "Communication Electronics – Principles and Applications", Tata Mc-Graw Hill Publishing Co. Ltd., Third Edition, New Delhi, 2009
2. John. C. Bellamy, "Digital Telephony", John Wiley & Sons, Singapore, 2000.
3. Behrouz Forouzan, "Introduction to Data Communication and Networking" Tata Mc- Graw Hill, New York, 1998
4. Marion Cole, "Introduction to Telecommunications Voice, Data & the Internet" Pearson nEducation, New Delhi, 2002.

**BoS Chairman**

Course Code: 140IT9126	Course Title: OPERATIONS RESEARCH
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0405- Data Communications and Networks

Course outcomes:

At the end of the course the student will be able to:

CO1: Use the optimization techniques for use engineering and Business problems

CO2: Understand the characteristics of different artificial variable technique and duality.

CO3: Build and solve Transportation Models and Assignment Models.

CO4: Design new simple models, like CPM/PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.

Course content:

UNIT I: LINEAR PROGRAMMING PROBLEM 9

Basic Terminologies – Formulation of LPP– The Standard and Canonical Form of LPP – Basic Feasible Solutions and Properties – Artificial Variables – Graphical Solution Method– Simplex Algorithm.

UNIT II: ARTIFICIAL VARIABLE TECHNIQUES & DUALITY 9

Big M and Two Phase Methods - Degeneracy and Unbound Solutions - Revised Simplex Method- Duality - Dual Simplex Method.

UNIT III: TRANSPORTATION AND ASSIGNMENT PROBLEM 9

Transportation Problem: Mathematical Model – Finding Initial Basic Feasible Solution – North West Corner Rule, Least Cost Method and Vogel's Approximation Method– Optimum Solution – MODI Method– Solution of Unbalanced Problem. Assignment problem: Mathematical Model – Hungarian Method – Solution Unbalanced Problem.

UNIT IV: INTEGER PROGRAMMING 9

Gomory's All Integer Cutting Plan Algorithm – Fractional Cut Method– All Integer and Mixed Integer Methods – Branch and Bound Method.

UNIT V: PROJECT MANAGEMENT: CPM/ PERT 9

Networks and Basic Components – Network Construction – Critical Path Analysis – PERT Computations – Crashing and Resource Leveling

TEXT BOOK:

1. H. A. Taha, "Operations Research: An Introduction", Ninth Edition, Pearson Education Edition, Asia, New Delhi, 2002.

REFERENCES:

1. J. K. Sharma, "Operations Research Theory and Applications", Macmillan Publishing Company, 2nd Edition, 2006.
2. S.S.Rao, "Optimization: Theory and Applications", Second Edition, John Wiley & Sons Limited, Australia, 1984.
3. Frederick S. Hiller, Gerald J. Lieberman, "Introduction to Operations Research", Tata McGraw Hill (P) Ltd, New Delhi, Eighth Edition, 2010.
4. Winston 'Operation Research', Thomson Learning, 2003.

S. P. Prasad

BoS Chairman

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Course Code: 140IT9127	Course Title: GRAPH THEORY
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0301- Discrete Mathematics and Applications

Course outcomes:

At the end of the course the student will be able to:

CO1: Write precise and accurate mathematical definitions of objects using graph theory.

CO2: Understand basic concepts in graph theory: coloring, directed graphs.

CO3: Find a shortest path spanning tree in a graph or digraph

Course content:

UNIT I INTRODUCTION

9

Introduction – Basic terminology – Representation of graphs –connectivity – Eulerian and Hamiltonian graphs – Planar graphs- Directed graphs-Application of Graphs. Trees: Binary tree – traversals of a binary tree – Expansion trees.

UNIT II CONNECTIVITY

9

Connectivity, Euler tours and Hamilton Cycles: Connectivity: Connectivity – Blocks. Euler tours and Hamilton Cycles: Euler tours - Hamilton Cycles: Euler tours - Hamilton Cycles.

UNIT III COLOURING AND DIRECTED GRAPH

9

Chromatic Number – Chromatic partitioning – Chromatic polynomial – Matching – Covering –Four Color Problem – Directed Graphs – Types of Directed Graphs– Digraphs and Binary Relations – Directed Paths and Connectedness – Euler Graphs – Adjacency Matrix of a Digraph.

UNIT IV SPANNING TREE AND PATHS

9

Spanning tree – Finding all Spanning Trees of a Graph – walks – trails – paths – components – bridge - block - problems.

UNIT V MATRICIES AND ALGORITHM

9

Incidence matrix – Submatrices – Circuit Matrix – Path Matrix – Adjacency Matrix-Simple Problems Prim,s Algorithm, Kruskals Algorithm, Shortest Path Algorithm –Problems.

TEXT BOOKS:

1. Narsingh Deo, "Graph Theory: With Application to Engineering and Computer Science", Prentice Hall of India, 2008.
2. R. Balakrishnan, K. Ranganathan "Text Book of Graph Theory", Second Edition, Springer, 2012

REFERENCES:

1. R.J. Wilson, "Introduction to Graph Theory", Fourth Edition, Pearson Education, 2003
2. Bondy, J.A. and Murthy, U.S.R., Graph Theory with Applications, Macmillan, Springer, 2008
3. Grimaldi R.P., Discrete and Combinatorial Mathematics, Pearson Education Inc., 2006.

S. Praveen Kumar

BoS Chairman

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Course Code: 140IT9128	Course Title: ARTIFICIAL INTELLIGENCE
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0704- Data Mining

Course outcomes:

At the end of the course the student will be able to:

- CO1: Differentiate between various intelligent agents
- CO2: Solve problems involving informed and uninformed search strategies
- CO3: Represent natural language sentences using predicate logic and propositional logic
- CO4: Differentiate supervised learning from unsupervised learning
- CO5: Identify real world applications of AI

Course content:

UNIT I INTRODUCTION 9

Agents and environments - Good behavior – The nature of environments – structure of agents - Problem Solving - problem solving agents – example problems – searching for solutions – uninformed search strategies - avoiding repeated states – searching with partial information.

UNIT II SEARCHING TECHNIQUES 9

Informed search and exploration – Informed search strategies – heuristic function – local search algorithms and optimistic problems – local search in continuous spaces – online search agents and unknown environments - Constraint satisfaction problems (CSP) – Backtracking search and Local search for CSP – Structure of problems - Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning – imperfect real-time decision – games that include an element of chance.

UNIT III KNOWLEDGE REPRESENTATION 9

First order logic – representation revisited – Syntax and semantics for first order logic – Using first order logic – Knowledge engineering in first order logic - Inference in First order logic – propositional versus first order logic – unification and lifting – forward chaining – backward chaining - Resolution - Knowledge representation - Ontological Engineering - Categories and objects – Actions - Simulation and events - Mental events and mental objects

UNIT IV LEARNING 9

Learning from observations - forms of learning - Inductive learning - Learning decision trees - Ensemble learning - Knowledge in learning – Logical formulation of learning – Explanation based learning – Learning using relevant information – Inductive logic programming - Statistical learning methods - Learning with complete data - Learning with hidden variable - EM algorithm - Instance based learning -

Neural networks - Reinforcement learning – Passive reinforcement learning - Active reinforcement learning - Generalization in reinforcement learning.

UNIT V APPLICATIONS

9

Communication – Communication as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction - Probabilistic language processing - Probabilistic language models – Information retrieval – Information Extraction – Machine translation.

TEXT BOOK:

1. Stuart Russell, Peter Norvig, “Artificial Intelligence – A Modern Approach”, Prentice Hall of India/ Pearson Education, New Delhi, 2010.

REFERENCES:

- 1.Nils J. Nilsson, “Artificial Intelligence: A new Synthesis”, Harcourt Asia Pvt. Ltd.,2001
- 2.Elaine Rich and Kevin Knight, “Artificial Intelligence”, 2nd Edition, Tata McGraw Hill, 2003.
- 3.George F. Luger, “Artificial Intelligence-Structures And Strategies For Complex Problem Solving”, Pearson Education / PHI, 2002.

S. Prasad

BoS Chairman

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Course Code: 140IT9129	Course Title: HUMAN COMPUTER INTERACTION
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0405- Data Communications and Networks

Course outcomes:

At the end of the course the student will be able to:

- CO1: Evaluate the use of interactive systems
- CO2: Map software engineering principles with HCI system design
- CO3: Outline the methodologies for evaluation of design process
- CO4: Design effective HCI model for communication
- CO5: Develop meaningful model interaction.

Course content:

UNIT I FOUNDATIONS 9

The Human: I/O channels- Memory – Reasoning and problem solving; The Computer: Devices – Memory - Processing and networks; The Interaction: Modes-Frameworks-Styles-Elements-Interactivity-Context; Paradigms for interaction.

UNIT II BASICS AND STANDARDS OF DESIGN PROCESS 9

Interaction Design Basics: Design-User focus- Scenarios-Interaction and prototyping; HCL in software process: Usability Engineering-Interactive design and prototyping; Design Rules: Principles of support usability-Standards-Guidelines-rules and heuristics-HCL pattern.

UNIT III IMPLEMENTATION AND EVALUATION OF DESIGN PROCESS 9

Implementation Support: Elements of Windowing systems-Programming the application-Using Toolkits; Evaluations Technique: Goals-Evaluation through expert analysis and user participation-choosing the evaluation methods; Universal design principles; User support: Requirement of user support-Approaches to user support.

UNIT IV COGNITIVE AND COMMUNICATION MODEL 9

Cognitive models: Goal and task hierarchies-linguistic models-physical and device models-Cognitive architectures; Organization issues-Capturing requirements; Face to face-Conversation-Text based communication-Group working

UNIT V MODEL INTERACTION

9

Task decomposition-knowledge-based analysis-uses of task analysis-dialog design notations-Diagrammatic notations-Textual dialog notations-standard formalisms-Interaction behavior-Status-event analysis-Low intention and sensor-based interaction

TEXT BOOK:

1. Alan Dix, Janet Finlay, Gregory D. Abowd and Russell Beale, "Human-Computer Interaction", Third edition, Pearson Education, 2011.

REFERENCES:

1. Andrew sears, Julie A. Jacko," The Human Computer Interaction Handbook", second edition, Lawrence Erlbaum Association, New York, 2008.
2. Serengul Smith-Atakan," Human Computer Interaction" Thomson Learning, 2006.

S. Pruthi

BoS Chairman

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Course Code: 140IT9130	Course Title: TOTAL QUALITY MANAGEMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- 140IT0701-Principles of Management

Course outcomes:

At the end of the course the student will be able to:

- CO1. Describe the fundamentals of total quality management and significance of modern organizations.
- CO2. Understand the basic principles of Total quality management.
- CO3. Differentiate traditional and modern quality techniques.
- CO4. Define the various performance measures for quality.
- CO5. Explain the various quality standards for an organization.

Course content:

UNIT I INTRODUCTION 9

Introduction - Need for quality - Evolution of quality - Definition of quality - Dimensions of manufacturing and service quality - Basic concepts of TQM - Definition of TQM – TQM Framework - Contributions of Deming, Juran and Crosby – Barriers to TQM.

UNIT II TQM PRINCIPLES 9

Leadership – Strategic quality planning, Quality statements - Customer focus – Customer orientation, Customer satisfaction, Customer complaints, Customer retention - Employee involvement – Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement – PDSA cycle, 5s, Kaizen - Supplier partnership – Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS & TECHNIQUES I 9

The seven traditional tools of quality – New management tools – Six-sigma: Concepts, methodology, applications to manufacturing, service sector including IT – Bench marking – Reason to bench mark, Bench marking process – FMEA – Stages, Types.

UNIT IV TQM TOOLS & TECHNIQUES II 9

Quality circles – Quality Function Deployment (QFD) – Taguchi quality loss function – TPM – Concepts, improvement needs – Cost of Quality – Performance measures.

Need for ISO 9000- ISO 9000-2000 Quality System – Elements, Documentation, Quality auditing- QS 9000 – ISO 14000 – Concepts, Requirements and Benefits – Case studies of TQM implementation in manufacturing and service sectors including IT.

TEXT BOOK:

1. Dale H. Besterfield, et al., “Total Quality Management”, Pearson Education Asia, Third Edition, Indian Reprint, 2011.

REFERENCES:

1. James R. Evans and William M. Lindsay, “The Management and Control of Quality”, 6th Edition, South-Western (Thomson Learning), 2005.
2. Oakland, J.S. “TQM – Text with Cases”, Butterworth – Heinemann Ltd., Oxford, 3rd Edition, 2003.
3. Suganthi, L and Anand Samuel, “Total Quality Management”, Prentice Hall (India) Pvt. Ltd., 2006.
4. Janakiraman, B and Gopal, R.K, “Total Quality Management – Text and Cases”, Prentice Hall (India) Pvt. Ltd, 2011.

S. Prakash

BoS Chairman

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Course Code: 140IT9131	Course Title: CYBER LAW AND INFORMATION ACT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0603- Cryptography and Network Security

Course outcomes:

At the end of the course the student will be able to:

CO1: Introduce the cyber world and cyber law in general

CO2: Explain about the various facets of cyber crimes

CO3: Enhance the understanding of problems arising out of online transactions and provoke them to find solutions

CO4: Clarify the Intellectual Property issues in the cyber space and the growth and development of the law in this regard

Course content:

UNIT I INTRODUCTION CYBER LAW

9

Cyber World and Cyber Law, The internet and online resources, Security of information, Cyber Law and Cyber Crimes, Classification of Cyber Crimes, Internet Crime, Web based Crimes, Computer Virus, Hacking, Cyberstalking, Internet Fraud, E-mail Misuse

UNIT II REGULATION OF CYBER SPACE

9

Introducing cyber law, Scope of Cyber laws – e-commerce - online contracts - IPRs (copyright, trademarks And software patenting) - e-taxation - e-governance and cyber crimes ,Cyber law in India- Information Technology Act, 2000 .

UNIT III E-COMMERCE AND SIGNATURE

9

Electronic data interchange, EDI works, Securing E-commerce, Certifying Authorities, Types of Certificates, Digital Signature Certificate, Standards, Generation of Digital Signature Certificate, Lifetime of Certificate, Public key infrastructure, authentication of electronic records, electronic signature

UNIT IV INFORMATION TECHNOLOGY ACT-2000

9

History of the Act, Essence of the Act , Legal Recognition of Electronic Documents , Legal Recognition of Digital Signatures , E-Governance, Regulation of Certifying Authorities, Offenses and Contraventions- Penalties and Adjudications, Justice Dispensation System for Cybercrimes, Making of Rules and Regulations etc.

UNIT V THE INTELLECTUAL PROPERTY ASPECT IN CYBER LAW

9

The WIPO initiative- rectification- GII initiative, Electronic Copy Right Management System (ECMS) , Copyrights Act on Soft Propriety Works, Patents Act on Soft Propriety Works

TEXT BOOKS:

1. Vakul Sharma, Information Technology Law and Practice, Universal Law publisher and Co, New Delhi ,Third edition, 2011. (Unit III, IV, V)
2. Farooq Ahmed, Cyber Law in India, Pioneer Books, New Delhi, 2001. (Unit I, II)

REFERENCES:

1. Rodney D. Ryder, " Guide to Cyber Laws", Second Edition, Wadhwa and Company, 2007
2. Joha Rao, " Law of Cyber Crimes and Information Technology Law", Wadhwa and Company,2007
3. Vakul Sharma, "Handbook of Cyber laws" Macmillan India Ltd, 2003
4. Justice Yatindra Singh, " Cyber Laws", Universal Law Publishing, New Delhi, 2003



BoS Chairman



Course Code: 140IT9132	Course Title: SYSTEM SOFTWARE
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0305-Computer Organisation
- 140IT0604- Principles of Compiler Design

Course outcomes:

At the end of the course the student will be able to:

- CO1: Explain the basics of system software and machine architecture.
- CO2: Write assembly level programs with various design options
- CO3: Analyze the working of loaders and linkers
- CO4: Explain macro processor design
- CO5: Describe benefits and issues in system software

Course content:

UNIT I INTRODUCTION 9

System software and machine architecture – The Simplified Instructional Computer (SIC) – SIC Machine architecture – SIC /XE machine architecture- SIC programming examples- Traditional CISC machines- RISC machines.

UNIT II ASSEMBLERS 9

Basic Assembler Functions - Machine Dependent Assembler Features - Machine Independent Assembler Features –Assembler Design options-Implementation Examples

UNIT III LOADERS AND LINKERS 9

Basic loader functions - Machine dependent loader features – Machine independent loader features - Loader design options - Linkage Editors — Implementation examples

UNIT IV MACRO PROCESSORS 9

Basic macro processor functions - Machine-independent macro processor features – Macro processor design options- Implementation Example

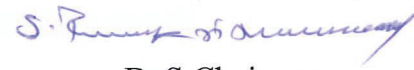

System Software: Text editors - Interactive debugging systems- Software Engineering Issues: System Specifications- Procedural System Design- Object Oriented System Design-System Testing Strategies.

TEXT BOOK:

1. Leland L. Beck, D.Manjula “System Software – An Introduction to Systems Programming”, 3rd Edition, Pearson Education Asia, 2009.

REFERENCES:

1. D. M. Dhamdhare, “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw-Hill, 2000.
2. John J. Donovan “Systems Programming”, Tata McGraw-Hill Edition, 2000.
3. John R. Levine, Linkers & Loaders – Harcourt India Pvt. Ltd., Morgan Kaufmann Publishers, 2000.


BoS Chairman


Course Code: 140IT9133	Course Title: HIGH PERFORMANCE NETWORKS
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites:The student should have undergone the course(s):

- 140IT0405- Data Communications and Networks
- 140IT0602- Information Coding Techniques

Course outcomes:

At the end of the course the student will be able to:

- CO1. Understand the architecture and protocols of major high-speed networking technologies
- CO2. Identify various queuing models and congestion control techniques in a network
- CO3. Outline the concepts of TCP Traffic and Congestion control in ATM
- CO4. Describe the Quality of Service (QOS) in IP Networks and their performances
- CO5. Recite various compression techniques to conserve the network capacity.

Course content:

UNIT - I HIGH SPEED NETWORKS

9

Frame Relay Networks - Asynchronous Transfer Mode: ATM Protocol Architecture, ATM logical Connection, ATM Cell - ATM Service Categories – AAL- High Speed LANs: Ethernet-Fiber Channel - Wireless LANs

UNIT - II QUEUEING AND CONGESTION

9

Queuing Analysis: Queuing Models - Single Server Queues –Multi Server Queue- Congestion Control :Effects of Congestion - Congestion & Control - Traffic Management - Congestion Control in Packet Switching Networks - Frame Relay Congestion Control.

UNIT - III TRAFFIC AND CONGESTION CONTROL

9

TCP Traffic Control: Flow control - Congestion Control - Performance of TCP over ATM- Traffic and Congestion control in ATM: Requirements - Attributes - Traffic Management Frame work-Traffic Control - ABR Traffic Management - GFR Traffic Management.

UNIT – IV QOS IN IP NETWORKS

10

Integrated and Differentiated Services: Integrated Services Architecture - Queuing Discipline- Random Early Detection- Differentiated Services. Protocols for QOS Support: RSVP-Multi Protocol Label Switching-RTP.

UNIT – V COMPRESSION

8

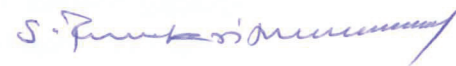
Overview of Information Theory: Information and Entropy-Coding. Lossless Compression: Encoding Techniques-Facsimile Compression-Arithmetic Coding-Lossy Compression: JPEG Image Compression-MPEG Video Compression.

TEXT BOOK:

1. William Stallings, "High Speed Networks And Internet", Pearson Education, Second Edition, 2010.

REFERENCES:

1. Warland & Pravin Varaiya, "High Performance Communication Networks", Jean Harcourt Asia Pvt. Ltd., II Edition, 2001.
2. Irvan Pepelnjk, Jim Guichard and Jeff Apcar, "MPLS and VPN architecture", Cisco Press, Volume 1 and 2, 2003.



BoS Chairman



Database management with microsoft ODBC – Structured query language – MFC ODBC Classes – Sample database applications – Filter and Sort Strings – DAO Concepts – Displaying database records in scrolling view – Threading – VC++ Networking issues – WinSock – WinInet – Building a web client – Internet Information server – ISAPI server extension – Chat application – Playing and multimedia (sound and video) files.

TEXT BOOKS:

1. Charles Petzold, —Windows Programming, fifth edition, Microsoft Press, 2010. (Unit I)
2. David J. Kruglinski, George Shepherd and Scot Wingo, —Programming Visual C++, Microsoft press, 1999. (Unit II, III, IV, V)

REFERENCES:

1. Steve Holtzner, —Visual C++ 6 Programming, Wiley Dreamtech India Pvt. Ltd., 2003.
2. Mueller and John, —Visual C++ from the Ground up, 2nd Edition, Tata McGraw Hill, 1999.
3. Bates and Tompkins, —Practical Visual C++, Prentice Hall of India, 2002



BoS Chairman



Course Code: 140IT9135	Course Title: INTERNET PROGRAMMING
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes:

At the end of the course the student will be able to:

- CO1: Explain the basic network and web concepts.
- CO2: Write programs using socket programming
- CO3: Write programs for client-side and server-side programming
- CO4: Create interactive web-sites and social web applications

Course content:

UNIT I BASIC NETWORK AND WEB CONCEPTS 9

Basic Network Concepts: IP, TCP and UDP - Internet standards – Basic Web Concepts: URIs, HTML, SGML and XML, HTTP, MIME Media Types, CGI, Server-Side Programs.

UNIT II JAVA PROGRAMMING 9

Java basics - I/O streaming - Files - Looking up Internet Address - Socket programming - Client/server programs - E-mail client - SMTP - POP3 programs - Web page retrieval - Protocol handlers - Content handlers - Applets - Image handling - Remote Method Invocation.

UNIT III SCRIPTING LANGUAGES 9

HTML - Forms - Frames - Tables - Web page design - JavaScript introduction - Control structures - Functions - Arrays - Objects - Simple web applications.

UNIT IV DYNAMIC HTML 9

Dynamic HTML - Introduction - Cascading style sheets - Object model and collections - Event model - Filters and transition - Data binding - Data control - ActiveX control - Handling of multimedia data.

UNIT V SERVER SIDE PROGRAMMING 9

Servlets - Deployment of simple servlets - JSP - Web server (Java web server / Tomcat / Web logic) - HTTP GET and POST requests - Session tracking - Cookies - JDBC - Simple web applications - Multi-tier applications.

TEXT BOOKS:

1. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, " Internet & World Wide Web How to Program", Fifth Edition, Pearson Education Publishers, 2011. (Unit III, IV, V)
2. Elliotte Rusty Harold, "Java Network Programming", Third Edition, O'Reilly Publishers, 2004. (Unit I, II)

REFERENCES:

1. R. Krishnamoorthy & S. Prabhu, "Internet and Java Programming", New Age International Publishers, 2004.
2. Thomno A. Powell, "The Complete Reference HTML and XHTML", Fourth Edition, Tata McGraw Hill, 2003.
3. Naughton, "The Complete Reference - Java2", Tata McGraw-Hill, Eighth Edition, 2012.

S. Prasad

BoS Chairman

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Course Code: 140IT9136	Course Title: SOFTWARE QUALITY AND TESTING TOOLS
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes:

At the end of the course the student will be able to:

CO1: Understand the principles to be followed in the software development life cycle models and Engineering methods

CO2: Devise an ability to design and conduct a software test process for a software testing project and also measure the metrics.

CO3: Identify the needs of software test automation, and define and develop a test tool to support test automation.

CO4: Analyze and assess various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

CO5: Apply software testing methods and modern software testing tools for their testing projects.

Course content:

UNIT I PRINCIPLES OF TESTING 9

Context of Testing Producing Software-Basic Principles of Testing with Examples Software Development Life Cycle Models: Phases of Software Project, Quality Assurance and Quality Control, Testing, Verification and Validation, Process model, Life Cycle Models.

UNIT II TESTING METHODS 9

White Box Testing: Static Testing, Structural Testing, Challenges in White Box Testing Black Box Testing: Requirements based Testing; Equivalence Partitioning State based Testing, Compatibility Testing, User Documentation Testing, and Domain Testing. System Testing: Functional System Testing and Non Functional Testing.

UNIT III TEST MANAGEMENT, CONTROL AND MONITORING 9

Test Planning-Test Management-Test Process- Test Reporting-Test Process- Best Practices. Test Metrics and Measurements: Progress Metrics-Productivity Metrics- Release Metrics

UNIT IV SYSTEM TESTING & TOOL 9

System Test: Process-Commencement-and Planning, Test: Design-Execution-Reporting and Defect Tracking. WinRunner 8.0: Introduction to WinRunner - checkpoints in WinRunner- Data Driven and Batch Testing- Improve Test Automation in WinRunner-GUI Mapping- Web test Option in WinRunner

UNIT V TEST AUTOMATION TOOLS

9

QTP 8.2: Introduction - Edit Test Scripts– Improving Test Automation in QTP-Data Driven and Batch Testing-Web Test Options in QTP. LoadRunner 8.0: Introduction to Performance Testing-VuserScript Creation Using LoadRunner- VuserScript Execution and Results Analysis. TestDirector 8.0: Site Administrator-Understanding TestDirector.

TEXTBOOKS:

1. Srinivasan Desikan and Gopaldaswamy Ramesh, “ Software Testing – Principles and Practices”, Prentice Hall, 2007 (Unit I, II, III)
2. NageshwarRao Pusuluri, “Software Testing Concepts And Tools”, Dreamtech Press, 2008. (Unit IV, V)

REFERENCES:

1. Limaye M G, "Software Testing – Principles, Techniques and Tools", Tata Mc-Graw Hill Education Pvt. Ltd., New Delhi, 2009
2. Mark Fewster, Dorothy Graham., "Software Test Automation: Effective Use of Test Execution Tools", Addison Wesley, New Delhi, 1999.
3. William E Perry, "Effective Methods of Software Testing", John Wiley &sons,Singapore 2009,Third Edition.
4. Ilene Burnstein, “Practical Software Testing: A Process-Oriented Approach”, Springer International Edition, 2003.

S. Praveen Kumar

BoS Chairman

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Course Code: 140IT9137	Course Title: ENGINEERING ECONOMICS AND COST ANALYSIS
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes:

At the end of the course the student will be able to:

CO1: Describe the model and solve engineering economic analysis problems.

CO2: Define and provide examples of the time value of money.

CO3: Solve economic problems involving comparison and selection of alternatives by using variety of analytical techniques including present worth analysis, annual worth analysis,

CO4: Demonstrate the effects of depreciation, income taxes, inflation and price change in engineering economic analysis problems

Course content:

UNIT I INTRODUCTION TO ECONOMICS 8

Introduction to Economics - Law of Supply and Demand, Concept of Engineering Economics – Engineering Efficiency, Economic Efficiency, Scope of Engineering Economics - Elements of Costs, Marginal Cost, Marginal Revenue, Sunk Cost, Opportunity Cost, Break-Even Analysis- P/V Ratio, Elementary Economic Analysis.

UNIT II VALUE ENGINEERING 10

Make or Buy Decision, Value Engineering – Function, Aims, and Value Engineering Procedure-Interest Formulae and their Applications –Time Value of Money, Single Payment Compound Amount Factor, Single Payment Present Worth Factor, Equal Payment Series Sinking Fund Factor, Equal Payment Series Payment-Present Worth Factor- Equal Payment Series Capital Recovery Factor-Uniform Gradient Series Annual Equivalent Factor-Effective Interest Rate- Examples in all the Methods with Problems.

UNIT III CASH FLOW 9

Methods of Comparison of Alternatives – Present Worth Method (Revenue Dominated Cash Flow Diagram)- Future Worth Method (Revenue Dominated Cash Flow Diagram, Cost Dominated Cash Flow Diagram)- Annual Equivalent Method (Revenue Dominated Cash Flow Diagram, Cost Dominated Cash Flow Diagram)- Rate of Return Method, Examples in all the Methods.

UNIT IV REPLACEMENT AND MAINTENANCE ANALYSIS 9

Replacement and Maintenance Analysis – Types of Maintenance, Types of Replacement Problem, Determination of Economic Life of an Asset, Replacement of an Asset with a New Asset – Capital

Recovery with Return and Concept of Challenger and Defender, Simple Probabilistic Model for Items Which Fail Completely.

UNIT V

DEPRECIATION

9

Depreciation- Introduction, Straight Line Method of Depreciation, Declining Balance Method of Depreciation-Sum of the Years Digits Method of Depreciation, Sinking Fund Method of Depreciation/ Annuity Method of Depreciation, Service Output Method of Depreciation- Evaluation of Public Alternatives- Introduction, Examples, Inflation Adjusted Decisions – Procedure to Adjust Inflation, Examples on Comparison of Alternatives and Determination of Economic Life of Asset.

TEXT BOOK:

1. Panneer Selvam, R, “Engineering Economics”, Prentice Hall of India Ltd, NewDelhi, 2012.

REFERENCES:

1. Chan S.Park, “Contemporary Engineering Economics”, Prentice Hall of India, 2005
2. Donald.G. Newman, Jerome.P.Lavelle, “Engineering Economics and analysis” Engg. Press, Texas, 2013
3. Degarmo, E.P., Sullivan, W.G and Canada, J.R, “Engineering Economy”, Macmillan, New York, 1984
4. Grant.E.L., Ireson.W.G., and Leavenworth, R.S, “Principles of Engineering Economy”, Ronald Press, New York,1976.
5. Smith, G.W., “Engineering Economy”, Iowa State Press, Iowa, 1973.

S. Panneer Selvam

BoS Chairman

PS

Course Code: 140IT9138	Course Title: MOBILE APPLICATION DEVELOPMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Course outcomes:

At the end of the course the student will be able to:

- CO1: Analyze and identify different OS, platforms and devices available for mobile application development.
- CO2: Recognize application design and testing.
- CO3: Acquire knowledge about markup languages and style sheet
- CO4: Comprehend the developmental framework of mobile and iphone.
- CO5: Describe communication and hardware access of android devices.

Course content:

- UNIT I INTRODUCTION MOBILE APPLICATION 9**
 Mobile Application Fundamentals-Characteristics-Benefits-History of Mobiles-Mobile Frameworks-Devices-Platform-Operating Systems-Application Framework-Types of Mobile Applications
- UNIT II APPLICATION DESIGN 9**
 Mobile Information Architecture:Click Streams-Wireframes-Prototyping-Mobile Design-Design Elements-Design Tools-Design Principles-Mobile Web Vs Native Applications –Device Testing - Desktop Testing-Usability Testing
- UNIT III WEB STANDARDS 9**
 Overview of Mobile 2.0 –Web Standards-Designing for Multiple Mobile Browsers-Markup Languages-Cascading Style Sheets- Javascript for Mobile Application Development
- UNIT IV APPLICATION DEVELOPMENT IN MOBILE DEVICES 9**
 Native Android, iPhone and Windows applications - Android Vs iPhone SDK Features-Open handset alliance-Development Framework-Android Vs iPhone Development Tools-Creating Applications and Activities-Creating User Interfaces
- UNIT V ADVANCED APP DEVELOPMENT IN MOBILE DEVICES 9**
 Internals - Broadcast Receivers - Adapters-Internet-Data Storage – Retrieval and Sharing Working in the background - Peer to Peer Communication -Introduction to Java FX – Accessing Android Hardware

TEXT BOOKS

1. Brain Fling, "Mobile Design and Development", First Edition , O'Relly Media, 2009.
2. Reto Meier, "Professional Andriod Application Development ", Third Edition , Wiley Publication, 2012.

REFERENCES

1. Vedat Coskun, Kerem Ok, Busra Ozdenizci "Professional NFC Application Development for Android", First Edition , Wiley Publication , 2013.
2. Greg Milette, Adam Stroud , "Professional Android Sensor Programming", First Edition, Wiley Publication, 2012.
3. Greg Nudelman Android Design Patterns: Interaction Design Solutions for Developers, First Edition , Wiley Publication, 2013.

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BoS Chairman

J

Course Code: 140IT9139	Course Title: AGILE SOFTWARE DEVELOPMENT
Core/Elective: Elective	Credits (L:T:P:C:M) – 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):
 ➤ Software Engineering.

Course Outcomes:

At the end of the course the student should be able to:

- CO1: Describe the various concepts and activities involved in the Agile Software Development process
- CO2: Define SCRUM and illustrate the benefits of using SCRUM.
- CO3: Identify various individual roles and explain their responsibilities/activities in SCRUM.
- CO4: Explain and analyze the SCRUM Team Structures along with their responsibilities and performances for effective project management.
- CO5: Present the SCRUM requirements and specifications effectively.

Course Content:

UNIT I INTRODUCTION

9

Agile Development – Agility – Cost of Change – Agile Process – Principles and Human Factors – Extreme Programming (XP): Values - XP Process - Industrial XP – Agile Process Models: Adaptive Software Development (ASD) – Scrum – DSDM – Crystal – Feature Driven Development – LSD – Agile Modeling – Agile Unified Process.

UNIT II SCRUM

9

Advantages of Agile Development: Higher Productivity, Lower Costs, Faster Time to Market- Higher Quality – Introduction to SCRUM – Adapting to SCRUM – Awareness – Desire – Ability – Promotion – Transfer – Integrating all Together

UNIT III SCRUM PRACTICES AND INDIVIDUALS

10

Individual Roles – Scrum Master – Product Owner – Changed Roles: Analysts- Project Managers, Architects- Functional Managers- Programmers- DB Administrators-Testers- User Experience Designers - Technical Practices – Strive for Excellence - Test-driven development – Refactoring – Collective Ownership – Continuous Integration – Pair Programming –Design: Intentional yet Emergent – Guiding the Design

UNIT IV SCRUM TEAMWORK

8

Team Structures – Small Team Productivity – Feature Teams – Component Teams – Guidelines for Good Team Structure – Team Responsibility – Foster Team Learning – Self-Organizing Team – Influencing Evolution: Selecting Environment- Defining Performance- Manage Meaning, Energizing the System.

S. P. [Signature]
BoS Chairman
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UNIT V SCRUM SPECIFICATION

9

Product Backlog – Documents to Discussions – Written Documentation Disadvantages – User Stories -Progressively Refine Requirements – Emergent Requirements – Backlog Iceberg – Refining User Stories – Specify by Example

TEXT BOOKS

1. Roger S. Pressman, "Software engineering- A practitioner's Approach", 7th Edition McGraw-Hill International Edition, 2010. [Unit-I]
2. Mike Cohn, "Succeeding with Agile: Software Development Using Scrum", 1st Edition, Addison-Wesley, 2010. [Unit-II, III, IV, V]

REFERENCES

1. Ken Schwaber, "Agile Project Management with Scrum (Microsoft Professional)", 1st Edition, Microsoft Press, 2004.
2. David J. Anderson; Eli Schragenheim, "Agile Management for Software Engineering: Applying the Theory of Constraints for Business Results", 1st Edition, Prentice Hall, 2003.
3. Kevin C. Desouza, "Agile information systems: conceptualization, construction, and management", 2nd Edition, Butterworth-Heinemann, 2007.

WEB REFERENCES

1. Roger S. Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition. URL:
http://highered.mcgrawhill.com/sites/0073375977/information_center_view0/.
2. Mike Cohn, Succeeding with Agile: Software Development Using Scrum. URL:
<http://www.succeedingwithagile.com/>

S. P. Ramesh
BoS Chairman
SR

Course Code: 140IT9140	Course Title: SOCIAL NETWORK ANALYSIS
Core/Elective: Elective	L : T : P : C : M : 3 : 0 : 0 : 3 : 100
Type: Lecture	Total Contact Hours: 45

Prerequisites: The student should have undergone the course(s):

- Computer Networks
- Data Mining and Analytics

Course Outcomes

At the end of the course students will be able to

- CO1: Explain the key concepts, network structure and algorithms in social networks
- CO2: Define Methodologies for analyzing networks on different fields
- CO3: Demonstrate the recent research in the area.
- CO4: Mine the required data from real word social networks
- CO5: Extract the required data's from search engines

Couse content

UNIT –I ESSENTIALS OF SOCIAL NETWORKS 9

Introduction to Social Networks –Graph Basics- Representation- Types of Graphs- Spatial Graphs- Network Measures: Centrality- Transitivity and Reciprocity- Balance and Status-Similarity. Network Models: Properties of Real World Networks.

UNIT II COMMUNITY ANALYSIS 9

Data Mining Essentials: Data Preprocessing- Data Mining Algorithms-Supervised Learning- Unsupervised Learning. Community Analysis: Community Detection- Evolution - Evaluation

UNIT III RECOMMENDATION AND BEAHVIOR ANALYSIS 9


Recommendations in Social Media: Challenges-Classical Recommendation Algorithms- Recommendation Using Social Context- Evaluating Recommendations. Behavior Analytics: Individual Behavior and Collective Behavior.

UNIT IV MINING SOCIAL WEB 9

Mining Twitter: Exploring Twitter API, Analyzing 140 Characters. Mining Facebook: Exploring Social Graph API, Analyzing Social Graph Connections. Mining LinkedIn: Mining The LinkedIn API, Crash Course on Clustering Data.

UNIV V MINING GOOGLE + AND WEB PAGES 9

Mining Google +: Exploring the Google + API- TF-IDF- Querying Human Language Data with TF-IDF. Mining Web Pages: Scraping, Parsing and Crawling the Web- Discovering the Semantics-Entity Centric Analysis.


BoS Chairman
