CURRICULUM B.Tech- INFORMATION TECHNOLOGY

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 1		**THEORY**							
1	11USL101	Communication skills - I	3	0	1	3	40	60	100
2	11USM101	Engineering Mathematics -I	3	1	0	4	40	60	100
3	11USC102	Chemistry for Computing Science	3	0	0	3	40	60	100
4	11USP102	Physics for Computing Science	3	0	0	3	40	60	100
5	11UCK101	Fundamentals of computing	3	0	0	3	40	60	100
6	11UDK101	Fundamentals of IT	3	0	0	3	40	60	100
7	11UDK102	History of Information Technology	1	0	0	1	100	-	100
		PRACTICAL							
1	11USH111	Physical Sciences lab I	0	0	3	1	Refer Sem II and #		
2	11UCK103	Computing Practices lab	0	0	3	2	40	60	100
3	11UAK108	Engineering Graphics lab	1	0	3	2	40	60	100
		TOTAL	**20**	**1**	**10**	**25**	**420**	**480**	**900**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 2		**THEORY**							
1	11USL201	Communication skills – II	3	0	1	3	40	60	100
2	11USM201	Engineering Mathematics - II	3	1	0	4	40	60	100
3	11USC201	Environmental Science and Engineering	3	0	0	3	40	60	100
4	11USP202	Science of Engineering Materials	3	0	0	3	40	60	100
5	11UAK201	Engineering Mechanics	3	1	0	4	40	60	100
6	11UCK201	C Programming and Practices	3	1	0	4	40	60	100
		PRACTICAL							
1	11USH211	Physical Sciences lab II	0	0	3	1	40	60	100
2	11UCK202	C programming lab	0	0	3	2	40	60	100
3	11UAK204	Engineering Practices lab	0	0	3	2	40	60	100
		TOTAL	**18**	**3**	**10**	**26**	**360**	**540**	**900**

NOTE: CA – Continuous Assessment FE- Final Exam# Continuous Assessment marks are awarded for performance in both semesters 1 and 2 with 80 marks for final examination to be scheduled by the examination board at the end of semester 2 covering the entire syllabus

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 3		**THEORY**							
1	11USM301	Engineering Mathematics – III	3	1	0	4	40	60	100
2	11UEK341	Basics of Electrical and Electronics Engineering	3	0	0	3	40	60	100
3	11UDK301	Data Structures	3	1	0	4	40	60	100
4	11UDK302	Object Oriented Programming	3	0	0	3	40	60	100
5	11UDK303	Digital Electronics	3	0	0	3	40	60	100
6	11UDK304	Fundamentals of Program Design	3	1	0	4	40	60	100
		PRACTICAL							
1	11UDK305	Object Oriented Programming Lab	0	0	3	2	40	60	100
2	11UDK306	Digital Lab	0	0	3	2	40	60	100
3	11UDK307	Data Structures Lab	0	0	3	2	40	60	100
		TOTAL	**18**	**3**	**9**	**27**	**360**	**540**	**900**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 4		**THEORY**							
1	11USM404	Discrete Mathematics	3	1	0	4	40	60	100
2	11UDK401	Operating System	3	0	0	3	40	60	100
3	11UDK402	Microprocessors and Microcontrollers	3	1	0	4	40	60	100
4	11UDK403	Computer Architecture	3	1	0	4	40	60	100
5	11UDK404	System Software	3	0	0	3	40	60	100
6	11UDK405	Design and Analysis of Algorithm	3	1	0	4	40	60	100
		PRACTICAL							
1	11UDK406	Microprocessors and Microcontrollers Lab	0	0	3	2	40	60	100
2	11UDK407	Operating System & System Software Lab	0	0	3	2	40	60	100
3	11UDK408	Design and Analysis of Algorithms Lab	0	0	3	2	40	60	100
		TOTAL	**18**	**4**	**9**	**28**	**360**	**540**	**900**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 5		**THEORY**							
1	11USM501	Applied Probability and Operations Research	3	1	0	4	40	60	100
2	11UDK501	Principles of Compiler Design	3	1	0	4	40	60	100
3	11UBK531	Principles of Electronic Communication	3	0	0	3	40	60	100
4	11UBK532	Fundamentals of Signal Processing	3	1	0	4	40	60	100
5	11UDK502	Database Management System	3	0	0	3	40	60	100
6	11UDK503	Software Engineering	3	0	0	3	40	60	100
		PRACTICAL							
1	11UDK504	Compiler lab	0	0	3	2	40	60	100
2	11UDK505	DBMS Lab	0	0	3	2	40	60	100
3	11UDK506	Software Engineering Lab	0	0	3	2	40	60	100
		TOTAL	**18**	**3**	**9**	**27**	**360**	**540**	**900**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 6		**THEORY**							
1	11UDK601	Computer Networks and TCP / IP	3	1	0	4	40	60	100
2	11UDK602	Data Warehousing and Mining	3	0	0	3	40	60	100
3	11UDK603	Telecommunication Systems	3	1	0	4	40	60	100
4	11UDK604	Web Technology	3	0	0	3	40	60	100
5	11UDK605	Principles of Management	3	0	0	3	40	60	100
6	11UDK606	Industrial Psychology and Work Ethics	2	0	0	2	40	60	100
		PRACTICAL							
1	11UDK607	Internet Programming Lab	0	0	3	2	40	60	100
2	11UDK608	Network Programming Lab	0	0	3	2	40	60	100
3	11UDK609	Mini Project	0	0	3	2	40	60	100
		TOTAL	**17**	**2**	**9**	**25**	**360**	**540**	**900**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 7		**THEORY**							
1	11UDK701	Cryptography and Network Security	3	0	0	3	40	60	100
2	11UDK702	Component based Technology	3	1	0	4	40	60	100
3	11UDK703	Object Oriented Analysis and Design	3	0	0	3	40	60	100
4		Elective – I	3	0	0	3	40	60	100
5		Elective – II	3	0	0	3	40	60	100
		PRACTICAL							
1	11UDK704	Case Tools Lab	0	0	3	2	40	60	100
2	11UDK705	Component based Technology Lab	0	0	3	2	40	60	100
3	11UDK706	Project – Phase I	0	0	3	4	100	-	100
		TOTAL	**15**	**1**	**9**	**24**	**380**	**420**	**800**

S.NO	CODE	COURSE	HOURS / WEEK			CREDITS	MAXIMUM MARKS		
			LECTURE	TUTORIAL	PRACTICAL		CA	FE	TOTAL
Semster: 8		**THEORY**							
1	11UDK801	Mobile Computing	3	1	0	4	40	60	100
2		Elective – III	3	0	0	3	40	60	100
3		Elective – IV	3	0	0	3	40	60	100
		PRACTICAL							
1	11UDK802	Project Work and Viva Voce				12	40	60	100
		TOTAL	**9**	**1**	**0**	**22**	**160**	**240**	**400**

NOTE: CA – Continuous Assessment FE- Final Exam

LIST OF ELECTIVES

VII Semester:

List of Subjects for Elective – I :

S.No	Subject Code	Subject Name
1.	11UDE711	Client Server Computing
2.	11UDE712	Enterprise Resource Planning
3.	11UDE713	Software Performance Testing
4.	11UDE714	Embedded Systems
5.	11UDE715	Total Quality Management

List of Subjects for Elective – II :

S.No	Subject Code	Subject Name
1.	11UDE721	Soft Computing
2.	11UDE722	Cloud Computing
3.	11UDE723	E – Commerce
4.	11UDE724	C# and .Net Programming
5.	11UDE725	Sociology and Global Issues

LIST OF ELECTIVES

VIII Semester:

List of Subjects for Elective – III :

S.No	Subject Code	Subject Name
1.	11UDE811	High Speed Networks
2.	11UDE812	Open Source System
3.	11UDE813	Semantic Web
4.	11UDE814	Management Information System
5.	11UDE815	Advanced Java Programming

List of Subjects for Elective – IV :

S.No	Subject Code	Subject Name
1.	11UDE821	Wireless Sensor Network
2.	11UDE822	Business Intelligence
3.	11UDE823	Web Services and Service Oriented Architecture
4.	11UDE824	Distributed Computing
5.	11UDE825	Graphics and Multimedia

Special Electives (Industry Based) :

S.No	Subject Code	Subject Name
1.	11UDI831	Internet and Web Technology
2.	11UDI832	Essentials of Information Technology
3.	11UDI833	Developing Web Applications in .NET
4.	11UDI834	Building Enterprise Applications
5.	11UDI835	Introduction to Mainframes
6.	11UDI836	Business Intelligence and its Applications
7.	11UDI837	Learning IT Essentials By Doing
8.	11UDI838	Soft Skills

Preferences: 1. Business Intelligence and its Applications
2. Developing Web Application in .NET

11USL101 COMMUNICATION SKILLS I

L	T	P	C
3	0	1	3

Course Objective:

- *To improve the language proficiency of the students in English with emphasis on LSRW skills.*
- *To equip the students to study academic subjects with greater facility with theoretical and practical components of the English syllabus.*
- *Enable students to develop their listening skills and to improve their pronunciation.*
- *To make students aware of the role of speaking in English and its contribution to their success.*
- *To develop the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.*
- *To equip them with the components of different forms of writing beginning with the lower order ones.*
- *To empower students with the grammatical skills.*

UNIT I - LISTENING SKILLS **9**

Listening for general content - Listening to fill up information - Intensive listening for specific purpose

UNIT II - SPEAKING SKILLS **9**

Introducing oneself in various situations - Describing objects, situation and people Asking questions - Narrating incidents - Just a minute sessions - Day to Day Conversations - Debates

UNIT III - READING SKILLS **9**

Skimming the text - Understanding the gist of an argument - Inferring lexical and contextual meaning - Understanding discourse features - Recognizing coherence/ sequencing of sentences.

UNIT IV - WRITING SKILLS **9**

Paragraph writing - Extended Definition – Transcoding -Formal and informal letter Note making - Editing a passage- itinerary- instructions.

UNIT V - LANGUAGE FOCUS **9**

Articles – Parts of speech – Tenses – Voice - Gerunds and infinitives – concord- modal verbs- definitions-‘ wh’ questions- comparative adjectives- Conditionals - Nominal compounds - Word formation – Prefixes and Suffixes/ one form to another form - Synonyms and Antonyms

Total hours: 45

TEXT BOOKS

1. Department of Humanities and Social Sciences, Anna University ‘English for Engineers and Technologists’, Combined Edition Volume I and II, Chennai: Orient Longman Private Limited, 2006.
2. Murphy, “Murphy’s English Grammar”, Cambridge University Press,2002.

REFERENCES

1. Bhaskaran and Horsburgh, “Strengthen Your English”,Oxford University Press,1994.
2. Francis Soundararaj, “Speaking and Writing for Effective Business Communication”, MacMillan, India Ltd., 2007.
3. Robert J. Dixon, ‘Everyday Dialogues in English’, Prentice-Hall of India Ltd., 2006.
4. John Seely, ‘The Oxford Guide to Writing and Speaking’, Oxford,2005.

11USM101 ENGINEERING MATHEMATICS I

(Common to all branches**)**

L	T	P	C
3	1	0	4

Course Objective:

To provide strong foundation to the students to expose various emerging new areas of applied mathematics and appraise them with their relevance in Engineering and Technological field.

PREREQUISITE:

(i) Matrices – rank of matrix, Linear dependence and linear independence
(ii) Differential Calculus – Differentiation of Implicit functions, parametric functions
(iii) Ordinary Differential equations – Basic terminologies like definition, formation, meaning of solution, variable and separable method, linear differential equations.

UNIT I– LINEAR ALGEBRA (9)

Euclidean n-space – Vector spaces – Subspaces – Linear combinations – Linear dependence and independences – Basis and dimensions – Applications to matrices: Rank of a matrix, Inner product spaces – Example of inner product spaces – Cauchy-Schwarz inequality– Orthonormal bases – Gram Schmidtt process.

UNIT II – MATRICES (9)

Characteristic equation – Eigen values and eigen vectors of a real matrix – Properties – Cayley-Hamilton theorem (excluding proof) – Orthogonal transformation of a symmetric matrix to diagonal form – Quadratic form – Reduction of quadratic form to canonical form by orthogonal transformation

UNIT III – APPLICATIONS OF DIFFERENTIAL CALCULUS (9)

Curvature in Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature – Evolutes – Envelopes.

UNIT IV – FUNCTIONS OF SEVERAL VARIABLES (9)

Partial derivatives – Total derivatives – Differentiation of implicit functions – Jacobians – Taylor's expansion – Maxima and Minima – Method of Lagrangian multipliers.

UNIT V – ORDINARY DIFFERENTIAL EQUATIONS (9)

Higher order linear differential equations with constant coefficients – Method of variation of parameters – Cauchy's and Legendre's linear equations – Simultaneous first order linear equations with constant coefficients – Applications to Engineering problems.

Total Hours: 45+15

TEXT BOOKS:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, Wiley India, 2006.
2. Grewal. B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, Delhi, (2007).

REFERENCES:

1. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company,New Delhi, (2007).
2. Glyn James, "Advanced Engineering Mathematics", 7th Edition, Wiley India, (2007).
3. Jain R.K and Iyengar S.R.K," Advanced Engineering Mathematics",3rdEdition,Narosa Publishing House Pvt. Ltd., (2007).

11USC102 CHEMISTRY FOR COMPUTING SCIENCE

L	T	P	C
3	0	0	3

Course Objective:

To provide strong foundation to the students to expose various emerging new areas of applied chemistry and appraise them with their relevance in Engineering and technological field.

UNIT I - CHEMISTRY IN EVERYDAY LIFE 9

Applications of Chemistry in health and hygiene – Chemicals in medicines – analgesics, antiseptics, antacids, disinfectants –Chemicals in food preservatives – artificial sweetening agents –Water quality parameter and standards -types of hardness –estimation by EDTA method-characteristic of portable water –domestic water treatment –disinfection methods-Chlorination –UV treatment – Ozonation –desalination –reverse osmosis.

UNIT – II - ANALYTICAL TECHNIQUES 9

Laws of absorption- Principles- Instrumentation and applications- UV - Visible spectroscopy- IR spectroscopy- Colorimetry- Estimation of Iron by Colorimetry -Flame photometry- Estimation of Sodium by Flame Photometry- Atomic absorption spectroscopy- Estimation of Nickel by atomic absorption spectroscopy

UNIT III - CHEMISTRY OF NANO MATERIALS 9

Nanomaterials - Synthesis - Chemical Vapour deposition – Solgels – Electro deposition- ballmilling – Properties of nanoparticles and applications- CNT – Fabrication – arc method – Pulsed laser deposition-Structures- properties and applications .

UNIT IV – POLYMERS 9

Introduction – monomers and polymers – Nomenclature of polymers- Classification of polymers- Polymerization-Types- Mechanism of addition polymerization-Plastics-Classification-Compounding of plastics-Preparation, properties and uses of PVC, Teflon Nylon 6,6- Rubber – vulcanization of rubber- Synthetic rubber (Butyl rubber and SBR)- Conducting polymers-Conducting mechanisms.

UNIT V - ELECTROCHEMISTRY AND CORROSION SCIENCE 9

Electrochemical cells - single electrode potential –Measurement of emf - Reference electrode-standard hydrogen electrode-Calomel electrode - glass electrode and measurement of pH- Corrosion

– chemical corrosion- electrochemical corrosion- galvanic corrosion – differential corrosion- Protective coatings –Electroplating of gold - Electroless plating- anodizing-Electrochemical machining of metals and alloys.

Total Hours: 45

TEXT BOOKS:

1. Jain P.C & Monika Jain, "Engineering Chemistry", Dhanpat Rai Publishing Company Ltd, New Delhi,2007.
2. Dr. Dara S.S & Dr. Umare S.S, "Engineering Chemistry", S .Chand & Company Ltd, New Delhi,2011.

REFERENCES:

1. Steven S. Zumdahl and Susan A. Zumdahl "Chemistry" Houghton Mifflin Seventh Edition 2009
2. Dr. Ramachandran T, Dr Venkataraman H, Dr. Magudeswaran P N, "Chemistry for Engineers", Vijay Nicole imprints Private Limited, Chennai,2005.
3. Dr. Sivakumar R. and Dr Sivakumar N, "Engineering Chemistry", Tata McGraw-Hill Publishing Company, New Delhi, 2009.

11USP102 PHYSICS FOR COMPUTING SCIENCE

L	T	P	C
3	0	0	3

Course Objective:

To provide strong foundation to the students to expose various emerging areas of Applied Physics and appraise them with their relevance in Engineering and technological field.

UNIT I: LASER TECHNOLOGY AND FIBER OPTICS 9

Introduction, Principle – Spontaneous emission, Stimulated emission, Population Inversion, Pumping mechanisms - Types of Laser – He-Ne Laser, CO_2 , Semiconductor Laser. Applications – Lasers in Microelectronics, Drilling, Welding, Heat Treatment, Cutting and Holography. Principle, Modes of Propagation, Fabrication Techniques – Rod & Tube method, Crucible-Crucible Technique - Classification based on Materials, Refractive Index Profile and Modes. Splicing, Losses in Optical fiber. Light Sources for fiber Optics. Detectors, Fiber Optical Communication links.

UNIT II: QUANTUM PHYSICS AND MICROSCOPY 9

Development of quantum theory, Dual Nature of Matter and Radiation – de-Broglie wavelength, Uncertainty Principle, Schrodinger equation – Time dependent, Time independent. Particle in a box, Limitation of Optical Microscopy, Electron Microscopy, Transmission Electron Microscope, Scanning Transmission Electron Microscope and Application

UNIT III: ELECTRICAL AND THERMAL PROPERTIES 9

Electrical conductivity – Drude – Lorentz theory of metals (qualitative). Wiedmann-Franz law. Origin of band structure – band theory of solids, distinction between conductors, semiconductor and insulator based on band theory. Factors affecting resistivity of metals – Temperature, alloying, strain and magnetic filed with respective applications. Thermal conduction – Thermal conductivity, Flow of heat through compound media.

UNITIV:SEMICONDUCTINGMATERIALSANDDEVICES 9

Elemental and compound semiconductors, Intrinsic and extrinsic semiconductors – Properties. Carrier concentration in intrinsic semiconductors. Carrier concentration in n-type and p-type semiconductors. Material preparation – Czochralski method and zone refining, doping methods

(diffusion and ion implantation) Hall Effect in extrinsic semiconductors, LED, Solar cells, IC fabrication

UNIT V: NANO MATERIALS AND APPLICATIONS 9

Introduction to nano materials - synthesis – plasma arcing – chemical vapour deposition – solgels – electrodeposition – ball milling - properties of nanoparticles and applications.Carbon nanotubes: fabrication – arc method – pulsed laser deposition –chemical vapour deposition - structure – properties and applications.

Total Hours:45

TEXT BOOKS

1. William D Callister, Jr "Material Science and Engineering" John wiley and Sons, New York, 2007
2. Raghavan, V. "Materials Science and Engineering – A First Course" Prentice Hall of India, New Delhi 2004.

REFERENCES:

1. Jayakumar, S "Materials Science", RK Publishers, Coimbatore 2006.
2. Palanisamy, P.K. "Materials Science" SCITECH Publications, Chennai, 2003
3. Richard Wolfson, "Essential University Physics", Pearson Education ,Volume I & II,2006.

11UCK101 FUNDAMENTALS OF COMPUTING

L	T	P	C
3	0	0	3

Course Objective:

- *To understand the basic building blocks of digital computer*
- *To know the categories of software in day to day life*
- *To study the different number systems and their basic operations*
- *To introduce the problem solving techniques in computers and the essential office packages*

UNIT – I INTRODUCTION TO COMPUTERS 9

Introduction- Characteristics of Computers-Evolution of Computers-Generations of Computers-Classification of Computers- The Computer System- Applications of Computers

UNIT – II COMPUTER HARDWARE 7

Computer Architecture-Primary memory-Secondary Storage-Input Devices-Output Devices

UNIT – III COMPUTER SOFTWARE 8

Introduction-Software: Definition-Relationship between Software and hardware-Software Categories-System Software-Application Software-Software Terminology.

UNIT – IV NUMBER SYSTEMS 10

Number Representation – Decimal, Binary, Octal, Hexadecimal and BCD numbers – Binary Arithmetic – Binary addition – Unsigned and Signed numbers – one's and two's complements of Binary numbers – Arithmetic operations with signed numbers – Number system conversions

UNIT–V PROBLEM SOLVING AND OFFICE APPLICATION SOFTWARE 11

Introduction - Developing a Program-Algorithm – Flowchart - Pseudo code (P-Code) - Program Testing and Debugging - Program Documentation - Programming Paradigms - Characteristics of a Good Program - Introduction to Programming Languages - Application Software Packages - Introduction to Office Packages.

Total Hours: 45+15

TEXT BOOKS

1. ITL Education Solutions Ltd, Research and Development Wing, "Introduction to Computer Science", Fourth Impression, Pearson Education(India), 2009 (Chapters 1,3,4,5,6,7,8,9,10)
2. Peter Norton, "Introduction to Computers", 7th edition, TMH, 2011.

REFERENCES

1. Ashok.N.Kamthane, "Computer Programming", Third Impression, Pearson Education (India), 2008. (Chapters 1, 2, 3)
2. V. Rajaraman, "Fundamentals of Computers", Fourth Edition, Prentice Hall of India Private Limited, 2007 (Chapters 2,6)

11UDK101 FUNDAMENTALS OF INFORMATION TECHNOLOGY

L	T	P	C
3	0	0	3

Course Objective:

- *Recall and explain terminology and concepts related to hardware, software, and networks. This includes:*
- *Describe basic information technology concepts*
- *Define and briefed on multimedia system, Internet and its tools and computer security aspects.*
- *Describe Data Communication and knowledge about Computer Networks concepts.*
- *Awareness of issues related to Business information system.*

UNIT – I IT BASICS AND MULTIMEDIA 9

Information – Definition, present scenario - Role of IT – Multimedia – definition - Building blocks – Applications - Virtual reality.

UNIT – II INTERNET AND TOOLS 9

Internet – Evolution - Internet terms - Getting connected to Internet – Applications - Data over Internet - Internet tools – Web browser - Internet Explorer - Applications of Internet - E-mail - Search engines - Instant messaging.

UNIT – III NETWORKING 9

Computer Security – Definition-Malicious programs - Cryptography - Digital Signature –Firewall - User identification and Authentication – Security awareness and policies.

Data communication and Computer Networks - Transmission media-Modulation – Multiplexing - Switching – Network topologies – communication protocol - Network devices.

UNIT – IV DATABASE FUNDAMENTALS 9

Introduction – Definition – Logical and Physical Data Concepts – DBMS Architecture – Database Models – Normalization – Types of Databases – Basics of Data Mining and Data Warehousing.

UNIT-VBUSINESS INFORMATION SYSTEMS AND EMERGING TRENDS IN IT 9

Business information system – E-commerce – EDI-Mobile communication - Blue tooth – GPS -IR-Smart card – Imminent Technologies - Social impacts of IT.

Total Hours: 45

TEXT BOOKS:

1. ITL Education Solutions Ltd, Reasearch and Development Wing, “Introduction to Information Technology”, Seventh Impression, Pearson Education(India), 2008
2. V. Rajaraman, “Introduction to IT ”, Fourth Edition, Prentice Hall of India Private Limited, 2007

REFERENCES:

1. Brian K.Williams and Stancey C.Sawyer, Using Information Technology – A practical Introduction to Computers and Communications, Tata Mcgraw Hill,2004
2. Dennis P.Curtin, Kim Foley Kunal Sen and Cathleen Morin, “ Information Technology- The breaking wave”, Tata Mcgraw Hill, 27th Reprint, 2010.
3. Behrouz A. Forouzan, “Data Communications and Networking, 4/e , Mcgraw Hill,2009.

11UDK102 HISTORY OF INFORMATION TECHNOLOGY

L	T	P	C
1	0	0	1

Course Objective :

- *To understand the basics of Computer Architecture and to study its evolution.*
- *To study the evolution of Operating System from batch processing to Grid & Cloud systems*
- *To study the evolution of programming languages from BASIC to VB.NET*
- *To understand the evolution of I/O devices*
- *To study the fundamentals of networks and to explore its progress.*

UNIT – I EVOLUTION OF COMPUTER ARCHITECTURE 3

Definition – Computer Architecture – First Generation – Features – Vacuum Tube –Drum memory – Punch Cards – Harvard Architecture – Von Neumann Architecture - ENIAC – Second Generation – Features –Transistors – High – Magnetic core Memory – IBM 7090 – Third Generation – Features – Integrated Circuits – Semiconductor memory – cache memory – IBM's System/360 – Fourth Generation – Features – VLSI – Single Chip processor – Use of PC – 4004 Microprocessor – Intel 8080- Intel386 – Motorola 68000

UNIT – II EVOLUTION OF OPERATING SYSTEMS 3

IBM 701 open shop – History and technical innovations of Batch Processing systems – Multiprogramming Systems – Timesharing – Concurrent Programming – Personal computing – Distributed systems – Grid and Cloud OS

UNIT – III EVOLUTION OF PROGRAMMING LANGUAGES 3

1940-1950: Assembly language programming- ENIAC Coding System – 1950-1960: History of FORTRAN- LISP – ALGOL – COBOL – Importance of BNF notation in the evolution of Programming languages – 1960-1970: History of Simula – SNOBOL-BASIC –PL/I – Logo – 1970-1980: History of PASCAL – C – Smaltalk – Prolog – SQL – 1980-1990: History of C++ - Ada – Perl – TCL – 1990-1999: History of Python – Visual Basic-Ruby - Java – PHP - 2000 – Present : C# - VB.NET – XML – Prominent persons in the history of programming languages

UNIT – IV EVOLUTION OF I/O DEVICES 3

Definition – Input and Output devices – Evolution of Input devices – Punched card reader- Magnetic tape – Keyboard – Pointing Devices – Mouse – Trackball- Touch Pad- Joystick – Graphics table – stylus – light pen – cyber glove – touch screen – Scanner - Game controllers – PowerPad – Digital Camera – Evolution of Output devices – History and Types of Monitors and Printers.

UNIT – V EVOLUTION OF NETWORKING 3

Definition-Data Communication – Types of network – Internet – extranet- intranet – History of computer networks – PSTN – Telstar – Ethernet – ARPANET - ATM – NSFNET – Internet Networking methods – LAN – MAN – WAN – Wireless Networks – Definition – Wireless LAN – History of wireless networks – Radio Communication – AlohaNet - PRNET – WLAN – Cellular Systems

Total Hours: 15

REFERENCES

• Web Resources

11USH111 PHYSICAL SCIENCES LABORATORY I

L	T	P	C
0	0	3	1

Aim

To provide exposure to the students with hands-on experience on scientific equipments.

PHYSICS LABORATORY I

1. a) Particle size determination using diode laser.
   b) Determination of laser parameters – Wavelength and angle of divergence.
   c) Determination of acceptance angle in an optical fiber.
2. Determination of Band gap of a Semi conducting material.
3. Characteristics of LDR
4. Determination of thermal conductivity of a bad conductor – Lee's disc method.
5. Determination of Hysteresis Loss of a Ferro-magnetic material.
6. Determination of Young's modulus of the material – Non uniform bending.

DEMONSTRATION:

7. Optical phenomena using Laser.

CHEMISTRY LABORATORY-I

1.Determination of pH of strong acid by pH metry

2.Conductometric titration of strong acid with strong base.

3.Estimation of HCl and CH_3COOH by Conductometric titration.

4.Potentiometric titration of Ferrous ion using Potassium dichromate.

5.Determination of Electrode Potential of an electrode.

6.Estimation of Iron by Spectrophotometry**.**

Total Hours: 45

11UCK103 COMPUTING PRACTICES LABORATORY

L	T	P	C
0	0	3	2

Course Objective:

- *To enable the students to create technical reports, spread sheets and presentations*

A) WORD PROCESSING

1. Document creation, Text manipulation with Scientific notations.
2. Table creation, Table formatting and Conversion.
3. Mail merge and Letter preparation.
4. Drawing - flow Chart

B) SPREAD SHEET

5. Chart - Line, XY, Bar and Pie.
6. Formula - formula editor.
7. Spread sheet - inclusion of object, Picture and graphics, protecting the document and sheet.
8. Sorting and Import / Export features.

C) PRESENTATION

9. Creating a Demo Presentation (Getting Started)
10. Enhancing the slides (Changing the slide background, Apply Design Templates to a Presentation, Format the text in the slides, Modify the layout of a slide)
11. Inserting Objects into a slide (Inserting Graph, Organizational Chart, Word Art, Clip Art)
12. Using Autoshapes to create a drawing, Group and Ungroup Objects, Emboss Objects)
13. Enhancing (Apply Build Effects, Animation Effects, Transition Effects, Specify a Time period for transition and build effects, Rehearse slide timings)
14. Add Action Items and minutes of the meeting during the slide show
15. Modify the slide setup to match presentation requirements, Preview slides in grey Scale, Print Slides, notes pages, outline and handouts.

HARDWARE / SOFTWARE REQUIRED FOR A BATCH OF 30 STUDENTS

HARDWARE

LAN System with 33 nodes (OR) Standalone PCs – 33 Nos.

Printers – 3 Nos.

SOFTWARE

OS – Windows / UNIX Clone

Application Package – Office suite

Links for Reference :

- University of California http://www.universityofcalifornia.edu
- University of Michigan http://www.umich.edu/
- University of Texas http://www.utexas.edu
- IIT Bombay http://www.cse.iitb.ac.in
- IISc Bangalore www.**iisc**.ernet.in
- University of Cambridge http://www.cam.ac.uk/

Total Hours: 45

11UAK108 ENGINEERING GRAPHICS LABORATORY

L	T	P	C
1	0	3	2

Course Objective:

- *To develop in students graphic skill for communication of concepts, ideas and design of engineering products.*

UNIT – I CURVES USED IN ENGINEERING PRACTICES [FREE HAND SKETCHING AND 2D SOFTWARE] 9

Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – Involutes – Drawing of tangents and normal to the above curves.

[Free Hand]

Importance of 2D drafting – Sketching, mirroring, scaling, copying, dimensioning – practice of computer aided drafting using appropriate software packages.

UNIT – II ISOMETRIC TO ORTHOGRAPHIC AND ORTHOGRAPHIC TO ISOMETRIC VIEWS [FREE HAND SKETCHING AND 2D SOFTWARE] 9

General principles of orthographic projection – Need for importance of multiple views and their placement – First angle projection – drawing of multiple views from pictorial views of 3D objects using 2D software.

Principles of Isometric projection - Free Hand Sketching of Isometric Views from Orthographic Views

UNIT – III PROJECTION OF LINES AND PLANE SURFACES [2D SOFTWARE] 9

Projection of straight lines located in the first quadrant and inclined both planes– Concept of true lengths and true inclinations of lines - Projection of polygonal surface and circular lamina inclined to any one reference plane.

UNIT – IV PROJECTION OF SOLIDS [2D SOFTWARE] 9

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.

UNIT – V SECTIONING OF SOLIDS AND DEVELOPMENT OF SURFACES [2D SOFTWARE] 9

Sectioning of solids in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other (Obtaining true shape is not required) Development of lateral surfaces of prisms – pyramids – cylinders - cones and truncated solids.

Total Hours: 45+15

TEXT BOOKS

1. N.D. Bhatt, "Engineering Drawing", Charotar Publishing House, 46th Edition, 2003.
2. Modeling software packages like solid edge, unigraphics and Auto CAD

REFERENCES

1. Dhananjay A.Jolhe, "Engineering Drawing with an introduction to AutoCAD" Tata McGraw Hill Publishing Company Limited, 2008.
2. Basant Agarwal and Agarwal C.M., "Engineering Drawing", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
3. K. R. Gopalakrishnana, "Engineering Drawing" (Vol. I & II), Subhas Publications, 1998.

11USL201 COMMUNICATION SKILLS II

L	T	P	C
3	0	1	3

Course Objectives:

- *To enable the students to understand the meaning and the importance of communication*
- *To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions*
- *To enhance the written communication in business context*
- *To make students confident to express themselves fluently and appropriately in social and professional contexts*
- *To develop an awareness in the students about writing as an exact and formal Skill.*

UNIT I - BASIC COMMUNICATION THEORY 9

Importance of communication -Stages of communication - Modes of communication - Barriers to Communication - Difference between Verbal and Non Verbal communication - Body Language - Psychological and cultural influence on communication

UNIT II - LISTENING AND ANALYSIS 9

Listening to technical and Non technical material - Intensive listening - Note taking - Cloze Listening - Listening and interpreting the missing texts - Listening to lectures and speeches - Listening to discussions and explanations - Telephonic listening

UNIT III - BUSINESS CORRESPONDENCE 9

Report writing - Recommendations - Memoranda – Notice - Minutes of meeting - Letters and Emails (pertaining to business situations) - Resume and Job applications- advertisements- checklists- technical essays.

UNIT IV - ORAL COMMUNICATION 9

Basics of Phonetics - Presentation Skills - Role-plays - Group Discussions - Short Extempore - Debates - Conversation Practices

UNIT V - LANGUAGE FOCUS 9

Introduction to technical writing - spelling - Error detection – cause and effect- structures expressing purposes- prepositions- sequencing of words- Punctuation - Idioms and phrases - American and British Words - One word Substitutes (Technical) - Foreign Phrases.

Total Hours: 45

TEXT BOOK:

1. Asraf M Rizvi, “Effective Technical Communication” Tata McGraw.2005

2. Department of Humanities and Social Sciences, Anna University ‘English for Engineers and Technologists’, Combined Edition Volume I and II, Chennai: Orient Longman Private Limited, 2006.

REFERENCES

1. Boove, Counter R et al “Business Communication Today”, Pearsons Education,2002.
2. Jod O connor, “Better Pronunciation”, Cambridge Paperback, 2008.
3. Meenakshi Raman, “Technical Communication Principle and Practice”, OUP 2007.

11USM201 **ENGINEERING MATHEMATICS II**

(Common to all branches**)**

L	**T**	**P**	**C**
3	**1**	**0**	**4**

Course Objective:

To provide strong foundation to the students to expose various emerging new areas of applied mathematics and appraise them with their relevance in Engineering and Technological field.

PREREQUISITE:

i) Three dimensional analytical geometry – Direction cosines and
Direction ratios,equationof straight line and plane.
ii) Integration – Evaluation of single integrals – Definite integrals and its properties.
iii) Vector algebra – position vector – Dot and Cross product – Properties.
iv) Definition – examples – Modulus and amplitude form – Demovire's theorem – properties of complexvariable.

UNIT I – THREE DIMENSIONAL ANALYTICAL GEOMETRY (9)

Equation of a sphere – Plane section of a sphere – Tangent Plane – Equation of a cone –Right circular cone – Equation of a cylinder – Right circular cylinder.

UNIT II – INTEGRAL CALCULUS (9)

Double integration – Cartesian and polar coordinates – Change of order of Integration – Triple integration in Cartesian co-ordinates – Area as double integral – Volume as triple integral –Beta and Gamma integrals – Properties – Simple problems.

UNIT III –VECTORCALCULUS (9)

Gradient **–** Divergence and Curl **–** Directional derivative **–** Irrotational and Solenoidal vector fields **–** Vector integration: Green's theorem in a plane **–** Gauss divergence theorem **–** stokes' theorem(excluding proofs) **–** Simple applications involving cubes and rectangular parallelepiped**.**

UNIT IV – COMPLEX VARIABLES (9)

Functions of a complex variable **–** Analytic functions **–** Necessary conditions and Sufficient conditions(excluding proofs) **–** Cauchy - Riemann equation **–** Harmonic and orthogonal properties of analytic function **–** Harmonic conjugate **–** Construction of analytic functions **–** Conformal mapping: $w = c+z$, $w = cz$, $w = 1/z$ and Bilinear Transformation.

UNIT V – COMPLEX INTEGRATION (9)

Complex integration – Statement and applications of Cauchy's integral theorem and Cauchy's integral formula – Cauchy's and Jordan's Lemma(statement only) – Classification of singularities – Calculus of residues – Residue theorem – Application of residue theorem to evaluate real integrals along unit circle and semi-circle.

Total hours: 45 + 15

TEXT BOOKS:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, Wiley India, 2006.

2. Grewal. B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, Delhi, (2007).

REFERENCES:

1. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.
2. Glyn James, "Advanced Engineering Mathematics", 3rd Edition, Wiley India, 2007.
3. Jain R.K and Iyengar S.R.K, "Advanced Engineering Mathematics", 3rd Edition, Narosa Publishing House Pvt. Ltd., 2007.
4. George, B Thomas J.R. and Ross L. Finney, "Calculus and Analytical Geometry", 10th Edition, Addison Wesley, 2000.

11USC201 ENVIRONMENTAL SCIENCE AND ENGINEERING

L	T	P	C
3	0	0	3

Course Objective:

To learn the basic and create awareness of environment and ecology. To know about the role of an individual in preserving the natural resources and about the various legislations, acts and NGO's that aims to control pollution

UNIT – I ENVIRONMENT & ECOSYSTEM **9**

Introduction – Components of the environment – People, society and environment – Need for public awareness – Scope and importance – Environmental problems and sustainable development. Ecosystem – Concept – Ecosystem degradation – Structure and functions of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Water cycle – Carbon cycle – Oxygen cycle – Nitrogen cycle – Energy cycle – Food chain – Food web – Ecological pyramid – Types of ecosystem – Forest – Grassland – Desert – Aquatic ecosystem- Case Studies in current scenario.

UNIT – II BIODIVERSITY & NATURAL RESOURCE **9**

Biodiversity – Introduction – Ecosystem, Species & Genetic diversity – Biogeographical classification of India – Value of biodiversity – Hotspots of biodiversity – Threats to biodiversity – Conservation of biodiversity. Resources – Introduction – Renewable & Non-renewable resources – Forest resource – deforestation – timber extraction – Water resources – Flood – Drought – Dam – Conflict over water – Food resource – Changes & effects by modern agricultural practices – Overgrazing – Land resource – landslide – Biomass – Some non-renewable sources – Mineral resources – Alternate energy sources- Case Studies in current scenario.

UNIT – III POLLUTION **9**

Pollution – Classification of pollutants – Cause, Source, Effect and Control measures - Air pollution – Causes, types & sources of air pollutant – Effect of air pollutants – Control of air pollution – Water pollution – Source and effects - Thermal pollution – Radioactive pollution – Marine pollution – Pesticidal pollution – Groundwater pollution – Land pollution – Sources and effects of soil pollutant – Solid waste – Methods of solid waste disposal – Soil degradation – Solid waste management – Recovery and conversion methods – Noise pollution – Sources, effects and control measures – An Introduction to E-Waste Management- Case Studies in current scenario.

UNIT – IV LEGAL ACTS & MAJOR ENVIRONMENTAL CONCERNS 9

Environmental legislations – Acts – Water act – Air act – Environment act – Land act – Wildlife protection act – Forest acts – Functions of CPCB & SPCB. Water conservation – Rainwater harvesting – Reducing water demand – Watershed management. Disaster – Tsunami – Bhopal gas disaster – Minamata tragedy – Polythene – Disaster management – Nuclear accident – Flood, Earthquake, Cyclone and Landslide. Major issues in environment – Climate change, Global warming, Acid rain and Ozone layer depletion- Case Studies in current scenario.

UNIT – V HUMAN POPULATION & ENVIRONMENT 9

Population - Population explosion – Effects of population growth on resources – Urbanization - Family welfare programme – Environment and human health – Climate & health, Infectious & water related diseases, Cancer & environment – Human rights – Equity – Nutrition, health and human rights – HIV/AIDS – Women and child welfare - Role of information technology in protecting the environment – Role of individual in the prevention of pollution – Role of NGO's in protecting the environment- Case Studies in current scenario.

Total Hours: 45

TEXT BOOKS:

1. Anubha Kaushik and C P Kaushik 'Environmental Science and Engineering' Third Edition, New age International(P) Limited, Publisher 2008. New Delhi
2. Aloka Debi, "Environmental Science and Engineering", Universities Press, 2008. (UNIT – 1, 2,3,4,5)

REFERENCE BOOKS:

1. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2006. (UNIT – 4: Major issues in environment)
2. Gilbert M. Masters, 'Introduction to Environmental Engineering and Science', Second Edition, Pearson Education, 2004.
3. Tyler Miller, Jr., 'Environmental Science, Brooks/Cole a part of Cengage Learning,2004.

11USP202 SCIENCE OF ENGINEERING MATERIALS

L	T	P	C
3	0	0	3

Course Objective:

To give an exposure to the Students on materials and their applications in the field of Technology, and also to create awareness towards the impact of the materials.

UNIT I: CRYSTAL STRUCTURE **9**

Definition of a Crystal – Crystal classification - Unit Cell – Bravais Lattice – Miller Indices – Bragg's Law – Determination of Crystal structure by Debye Scherrer method - Crystal imperfections – Point, Line and Surface imperfections - Burger Vector

UNITII COMPOSITIES **9**

Introduction, Features and benefits, structural characteristics, manufacturing techniques, Function of matrix and Reinforcement in composites. Classification of composites based on reinforcement, Types of composite materials. Applications.

UNIT III: DIELECTRIC MATERIALS AND DEVICES **9**

Definition of dielectrics. Electric dipole moment. Electric polarization. Dielectric constant. Electric susceptibility. Polarisation mechanisms – Electronic, Ionic, Orientation and Space charge polarization. Variation of dielectric constant with temperature and frequency. Dielectric breakdown - Dielectric Breakdown mechanisms. Classification of insulators on temperature basis. Capacitance and transducer.

UNITIV:ADVANCEDMATERIALS **9**

Shape Memory Alloy (SMA) – Characteristics, Properties of NiTi alloy, Application, Advantages and Disadvantages of SMA. Superconductivity – Types of superconductors High Tc Superconductors, Comparison with low Tc superconductors. Application of Superconductors, Metallic glasses – Preparation, Properties and Applications

UNIT V: BIOMATERIALS **9**

Definition and classification of biomaterials. Construction materials, Impact of biomaterials. Mechanical Properties – wound healing process. Tissue response to implants. Safety and efficiency testing. Bio-compatibility. Biodegradable ceramics – Biodegradable synthetic polymers. Silicone rubber. Plasma polymerization. Micoorganism in polymeric implants. Bio polymers. Polymer sterilization.

Total Hours: 45

TEXT BOOKS :

1. William D Callister, Jr "Material Science and Engineering" John wiley and Sons, New York, 2007

2. Shaffer, J.P.Saxena, A, Antolorich, S D Sanders Jr. T.H. and Warner S.B., "The Science and Design of Engineering Materials", The McGraw Hill Co. Inc, New York 1999

REFERENCES:

1. Jayakumar, S "Materials Science", RK Publishers, Coimbatore 2006.
2. Raghavan, V. "Materials Science and Engineering – A First Course" Prentice Hall of India, New Delhi 2004.
3. James F Shackelford S, "Introduction to Materials Science for Engineers", Third Edition, Macmillan Publishing Company, Newyork, 1992.

11UAK201 ENGINEERING MECHANICS

L	T	P	C
3	1	0	4

Course Objective:

Upon completion of this subject the students should be able to:

- *Analyze the static equilibrium of systems of forces in two and three dimensions*
- *Determine the forces experienced by components of common engineering structures such as simple frames and beams*
- *Describe and analyze the motion of particles along with the forces and application of impulse – momentum and work – energy principles in simple mechanical systems*

BASICS: Units and Dimensions, Law of Mechanics, Vectorial representation forces and moments , Vector Operations - Addition, subtraction, dot product, cross product

UNIT – I STATICS OF PARTICLES 9+3

Coplanar forces, Resolution and composition of forces - Equilibrium of a particle - Forces in space - Equilibrium of particle in space - Application to simple problems.

UNIT – II STATICS OF RIGID BODIES 9+3

Rigid Bodies:

Moment of a force about a point - resultant of coplanar non concurrent force systems - Free body Diagram - Types of supports and reactions - Equilibrium of rigid bodies in two dimensions - problems in beams and simple frames only.

Friction:

Types of friction - Laws of Coulomb Friction - simple problems - ladder friction - screw and belt friction

UNIT – III PROPERTIES OF SURFACES AND SOLIDS 9+3

Determination of centroid and centre of gravity of composite sections and solid objects. Area moment of inertia - parallel axis and perpendicular axis theorems - polar moment of inertia - problems on composite sections (comprises rectangle, triangle, circle and semi-circle only) - Introduction to mass moment of Inertia - thin rectangular plate.

UNIT – IV KINEMATICS OF PARTICLES 9+3

Rectilinear motion of particles – Displacement – velocity - acceleration and their relationship -

Relative motion - Curvilinear motion - Rectangular, Tangential and Normal components of acceleration - Problems in projectile motion and curved paths.

UNIT – V KINETICS OF PARTICLES **9+3**

Newton's second Law - D Alembert's principle - Dynamic equilibrium - Work Energy equation of particles - Principles of impulse and momentum - application to simple problems

Collision of Elastic bodies – Direct central impact.

Total Hours: 45+15

TEXT BOOKS

1. S.Rajasekaran, G. Sankarasubramanian, "Fundamentals of Engineering Mechanics", Vikas Publishing House pvt. Ltd., New Delhi, 2006.
2. M.S. Palanichamy, S. Nagan, "Engineering Mechanics – Statics and Dynamics", Tata McGraw Hill publishing Company, New Delhi, 2008.

REFERENCES

1. Dr. N. Kottiswaran, "Engineering Mechanics – Statics and Dynamics", Sri Balaji Publication, 2008.
2. Beer F.P and Johnson E.R., "Vector Mechanics for Engineers – Statics and Dynamics", Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2001.
3. R.C. Hibbeler, "Engineering Mechanics", Pearson education Asia Pvt. Ltd, 2007.

11UCK201 C PROGRAMMING AND PRACTICES

L	T	P	C
3	1	0	4

Course Objective:

- *To learn the control structures of C language*
- *To write programs using Functions & Pointers*
- *To use different data types and multi-dimensional arrays in programs*
- *To write programs using structures and files*

UNIT – I GETTING STARTED 9+3

What is a Programming Language – What is a compiler - What is C – Getting started with C – The first C Program – Compilation and Execution – Receiving input – C instructions – Control instructions in C

UNIT – II DECISION, LOOP & CASE CONTROL STRUCTURE 9+3

Decisions – if statement – if..else statement – Use of Logical operators – conditional operators. Loops – while loop – for loop – Odd loop – break statement – continue statement – do .. while loop – Decisions using switch – switch vs if else ladder – goto statement

UNIT – III FUNCTIONS & POINTERS 9+3

What is a function? – Passing values between functions – scope rule of functions – Calling convention - Advanced features of functions – function declaration and prototypes – call by value and call by reference - An Introduction to Pointers – Pointer Notations – Back to function calls – Conclusions – Recursion – Recursion and Stack.

UNIT – IV DATA TYPES & ARRAYS 9+3

Integers(long, short, signed and unsigned) – Chars (Signed and unsigned) – Floats and doubles – Few More issues on data types – storage classes in C – What are arrays – more on arrays – Pointers and Arrays – Two Dimensional Arrays – Array of Pointers – Three Dimensional Array

UNIT – V STRUCTURES & FILES 9+3

Why use structures – array of structure - additional features of structures – Uses of Structures – Data Organization – File operations – Counting Characters, Tabs, Spaces, - A file copy program – File opening modes – String I/O in Files – Text Files and Binary Files – Low level Disk I/O – I/O under windows.

Total Hours: 45+15

TEXT BOOKS

1. Yashavant P. Kanetkar, "Let Us C", BPB Publications, 10th Edition, 2009
2. B. W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Pearson Education, 2003

REFERENCE BOOKS

1. Samuel P. Harbison Ill, Guy L. Steele Jr., "C – A Reference Manual", Pearson Education, 5th edition, 2008.
2. Byron S. Gottfried, "Schaum's outline of theory and problems of programming with C", McGraw – Hill Professional, 1996.

11USH211 PHYSICAL SCIENCES LAB II

L	T	P	C
0	0	3	1

Aim:

To provide exposure to the students with hands-on experience on scientific equipments

CHEMISTRY LABORATORY - II

LIST OF EXPERIMENTS

1. Estimation of hardness of water by EDTA method.
2. Estimation of Calcium ions and Magnesium ions by EDTA method.
3. Estimation of alkalinity of water sample.
4. Determination of Chloride in water by Argentometric method.
5. Determination of Dissolved Oxygen in waste water using Winkler's titrimetry method.
6. Estimation of copper in brass by EDTA.

PHYSICS LABORATORY - II

LIST OF EXPERIMENTS

1. Comparative resistivities of alloy and metal – Meter Bridge.
2. Determination of efficiency of a solar cell.
3. Characteristics of photodiode.
4. Determination of lattice constant X-ray powder photograph.
5. Determination of Rigidity modulus- Torsion Pendulum
6. Determination of Young's modulus of the material – Non uniform bending
7. Determination of Velocity of Ultrasonic waves – Ultrasonic Interferometer

DEMONSTRATION:

7. Ultrasonic Cleaning.

Total Hours:45

11UCK202 **C PROGRAMMING LAB**

L	T	P	C
0	0	3	2

Course Objective:

- *To gain mastery over the C language*

List of Programs / Experiments can be setup by the faculty with the following

1. Programming concepts involving I/O statements.
2. Programming concepts involving conditional statements.
3. Programming concepts involving looping statements.
4. Programming concepts involving functions.
5. Programming concepts involving Arrays (1D, 2D).
6. Programming concepts involving Pointers.
7. Programming concepts involving Structures.
8. Programming concepts involving Files.

Note: The above programs will be tuned to the various fundamental principles in the specific engineering branches

Total Hours: 45

11UAK204 ENGINEERING PRACTICES LABORATORY

L	T	P	C
0	0	3	2

Course Objective:

- *To provide fundamental knowledge and hands on experience to the students on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.*

GROUP A (MECHANICAL & CIVIL)

MECHANICAL ENGINEERING PRACTICE

Sheet Metal: Study of tools, equipments and safety precautions, Different types of joints - knocked up, double grooving joints, Model making –Tray and Funnel.

Welding: Arc welding practice - butt joint, lap joints and tee joints, Demonstration of gas welding.

CIVIL ENGINEERING PRACTICE

Plumbing: Preparation of plumbing line sketches for (i) water supply lines (ii) sewage lines, cutting and threading of PVC pipes**,** Basic pipe connection using valves, taps, couplings, unions, reducers, and elbows in household fitting.

Wood Work: Sawing, planning, making common joints like T joint, dovetail joint, etc. using power tools, Study of joints in door panels and wooden furniture.

Basic Construction Tools: Demonstration of power tools like rotary hammer, demolition hammer, hand drilling machine etc.

GROUP A (ELECTRICAL & ELECTRONICS)

ELECTRICAL ENGINEERING PRACTICE:

Safety aspects of electrical wiring, basic household wiring using switches, fuse, indicator – Lamp, etc, preparation of wiring diagrams, stair case light wiring, fluorescent lamp wiring, measurement of electrical quantities – voltage, current, power and energy, study of iron box, fan with regulator, measurement of resistance to earth of an electrical equipment.

ELECTRONIC ENGINEERING PRACTICE

Study of electronic components and equipments, resistor color coding, soldering simple electronic circuits and checking continuity, assembling electronic components on a small PCB and testing, stucy of telephone, FM radio, low voltage power supplies, emergency lamps, UPS.

Examination pattern: The examination is to be conducted for both groups A & B, allotting 11/2 for each group

Total Hours: 45

11USM301 ENGINEERING MATHEMATICS III

(Common to ECE, EEE, CSE & IT)

L	T	P	C
3	1	0	4

Course Objective:

To provide strong foundation to the students to expose various emerging new areas of applied mathematics and appraise them with their relevance in Engineering and Technological field.

PRE-REQUISITE:

Limit concepts, Integration, Periodic function, Basic terminologies of odd and even functions

UNIT I-FOURIER SERIES (9)

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Complex form of Fourier Series – Parseval's identity – Harmonic Analysis.

UNIT II- FOURIER TRANSFORMS (9)

Fourier integral theorem (without proof) – Fourier transform pair – Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem– Parseval's identity.

UNIT III -PARTIAL DIFFERENTIAL EQUATIONS (9)

Formation of partial differential equations – Lagrange's linear equation – Solutions of standard types of first order partial differential equations - Linear partial differential equations of second and higher order with constant coefficients-Classification of PDE-Method of separation of variables.

UNIT IV -Z -TRANSFORMS AND DIFFERENCE EQUATIONS (9)

Z-transforms - Elementary properties – Inverse Z-transform – Convolution theorem - Formation of difference equations – Solution of difference equations using Z- transforms.

UNIT V- LAPLACE TRANSFORMS (9)

Laplace transforms – Conditions for existence – Transform of elementary functions – Basic properties – Transform of derivatives and integrals – Transform of unit step function and impulse functions – Transform of periodic functions. Definition of Inverse Laplace transforms as contour

integral – Convolution theorem (excluding proof) – Initial and Final value theorems – Solution of linear ODE of second order with constant coefficients using Laplace transformation techniques.

Total Hours: 45 + 15

TEXT BOOKS:

1. Grewal, B.S, 'Higher Engineering Mathematics' 40th Edition, Khanna publishers, Delhi, (2007)

2. Erwin Kreyszig 'Advanced Engineering Mathematics' , Eighth edition - Wiley India (2007).

REFERENCES:

1. Ramana.B.V. 'Higher Engineering Mathematics' Tata Mc-Graw Hill Publishing Company limited, New Delhi (2007).

2. Glyn James, 'Advanced Modern Engineering Mathematics', Third edition- Pearson Education (2007).

3. Bali.N.P and Manish Goyal 'A Textbook of Engineering Mathematics', Seventh Edition, Laxmi Publications (P) Ltd. (2007)

11UEK341 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

L	T	P	C
3	0	0	3

Course Objectives:

- *To provide the basic concepts of DC and AC circuits*
- *To provide the fundamentals of Energy conversion*
- *To study the performance of DC and AC machines*
- *To study the fundamentals of semiconductor devices and communication engineering.*
- *To study the various types of transducers and concepts of Communication Engineering*

UNIT – I FUNDAMENTAL OF DC CIRCUITS 9

Charge, Current – Voltage Resistance – Inductance – Capacitance – Sources – ohm's laws – Series circuit – Parallel Circuit – Kirchoff's Laws – Mesh analysis and Nodal analysis – Superposition – Maximum power transfer theorem.

UNIT – II AC CIRCUITS 9

Fundamental of alternating quantities – Power in AC circuits – Three – phase power – Residential wiring: grounding and safety – Generations and distribution of AC power – Transformers – Construction and Working Principle.

UNIT – III PRINCIPLES OF ELECTRO MECHANICS 9

Electromechanical Energy conversion – DC machines – Construction and Principle of Operation – Classification – EMF Equation – Applications – Three Phase Induction Motor- Construction – Types and Working Principle – Single Phase Induction Motor – Construction – Types and Working Principle – Basic Problems.

UNIT – IV SEMICONDUCTOR DEVICES 9

Semiconductor Basics – PN Junction diode – Zener Diode – Bipolar function Transistor – Working and Characteristics - Rectifiers- Voltage regulators – Filters – UPS – SMPS. (Block Diagram Approach).

UNIT – V TRANSDUCERS AND COMMUNICATION ENGINEERING 9

Electrical Transducers – Classification – Resistive Inductive Capacitive Transducers – Piezo electric and photo electric transducers – Communication Systems: Radio – TV –

Fax – Satellite & Optical Fiber (Block diagram approach only)

Total Hours: 45

TEXT BOOKS

1. Basic Electrical and Electronics Engineering, Ravish.R.Singh, Tata McgrawHill (TMH),2010
2. Basic Electrical, Electronics and Computer Engineering , R.Muthusubramanian, S.Salivahanan and K.A.Muraleedharan, Tata McgrawHill (TMH),2007.

REFERENCE BOOKS

1. Anokh singh, “Principles of Communication Engineering”, S.Chand and company, 2007.
2. B.L.Theraja, “ A Text Book of Electrical Engineering”, S.Chand & Co 2003.

11UDK301 DATA STRUCTURES

L	T	P	C
3	1	0	4

Course objective:

- *To learn the systematic way of solving problems*
- *To understand the different methods of organizing large amounts of data*
- *To learn to program in C*
- *To efficiently implement the different data structures*
- *To efficiently implement solutions for specific problems*

UNIT – I PROBLEMSOLVING 9+3

Algorithm - Problem solving – Top – down Design – Implementation – Verification – Efficiency–Analysis–Sample algorithms.

UNIT – II LISTS, STACKS AND QUEUES 7+3

Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT

UNIT – III TREE 10+3

Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining - Open Addressing – Linear Probing – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap

UNIT–IV SORTINGANDGRAPHS 10+3

Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – Graph - Topological Sort – Shortest-Path Algorithms- Minimum Spanning Tree – Applications of Depth-First Search – Undirected Graphs – Biconnectivity – Introduction to NP-Completeness

UNIT – V ALGORITHM DESIGN TECHNIQUES 9+3

Introduction to algorithm design techniques: Greedy algorithms Divide and conquer - Dynamic programming – backtracking - branch and bound - Randomized algorithms – Introduction to algorithm analysis: asymptotic notations - recurrences – Introduction to NP-complete problems

Total Hours: 45+15

TEXT BOOKS

1. R. G. Dromey, "How to Solve it by Computer", Pearson Education, 2007.
2. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 3rd ed, Pearson Education,Asia,2009.

REFERENCES

1. Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, "Data Structures using C", Pearson Education Asia, 2004
2. Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", Thomson Brooks / COLE, 1998.
3. Aho, J. E. Hopcroft and J. D. Ullman, "Data Structures and Algorithms", Pearson education Asia, 1983.

11UDK302 OBJECT ORIENTED PROGRAMMING L T P C

3 0 0 3

Course Objective:

- *Object-oriented programming (OOP) is a programming paradigm that uses "objects" – data structures consisting of data fields and methods together with their interactions – to design applications and computer programs.*
- *Programming techniques may include features such as data abstraction, encapsulation, messaging, modularity, polymorphism, and inheritance.*
- *Many modern programming languages now support OOP.*
- *An object can also offer simple-to-use, standardized methods for performing particular operations on its data, while concealing the specifics of how those tasks are accomplished*

UNIT – I INTRODUCTION TO OOP 9

Different paradigms for problem solving - need for OOP paradigm - classes and instances - Fundamental characteristics of OOP (Alan key) - Differences between OOP and Procedure Oriented Programming - C++ Basics: Structure of a C++ program - Data types - Declaration of variables - C++ Classes And Data Abstraction: Class definition - Class objects - Class scope - this pointer - Friends to a class - Static class members - Constant member functions

UNIT – II CONSTRUCTORS AND DESTRUCTORS 9

Constructors and Destructors - Data abstraction - ADT and information hiding - Dynamic memory allocation and de-allocation operators - new and delete - Dynamic creation and destruction of objects - Preprocessor directives - name spaces.

POLYMORPHISM

Polymorphism: Function overloading - Operator overloading - generic programming -necessity of templates - Function templates and class templates.

UNIT – III INHERITANCE AND VIRTUAL FUNCTIONS 9

Inheritance: Defining a class hierarchy - Different forms of inheritance - Defining the Base and Derived classes - Access to the base class members - Base and Derived class construction – Destructors - Virtual base class. Virtual Functions and Run Time Polymorphism: Overriding, Static and Dynamic bindings - Base and Derived class virtual functions - Dynamic binding through virtual functions - Virtual function call mechanism, Pure virtual functions - Abstract classes.

UNIT – IV C++I/OSTREAMS 9

C++ I/O: I/O using C functions - C++ Stream classes hierarchy - Stream I/O - File streams and String streams - File Operations - Overloading <<>> operators - Error handling during file operations - Formatted I/O.

UNIT – VEXCEPTION HANDLING 9

Exception Handling: Benefits of exception handling - Throwing an exception - The try block - Catching an exception - Exception objects - Exception specifications - Stack unwinding - Re-throwing an exception - Catching all exceptions.

Total Hours: 45

TEXT BOOKS:

1. C++: A Beginner's Guide, Second Edition, Herbert Schildt, TMH, 2010
2. Herbert Schildt, C++, The Complete Reference, 4th Edition, TMH, 2003
3. R.Lafore, Object Oriented Programming using C++, BPB Publications, 2004

REFERENCE BOOKS:

1. T. Budd, An Introduction to OOP, 3rd Edition, Pearson Education, 2008.
2. B.Stroutstrup, Programming Principles and Practice Using C++, Addison- Wesley, Pearson Education, 2008
3. T.Gaddis, Starting out with C++ : From Control Structures Through Objects, 7th Edition, Addision Weslery Press, 2011

11UDK303 DIGITAL ELECTRONICS

L	T	P	C
3	0	0	3

Course Objective:

- *To introduce students with principles of Digital Systems*
- *To study property and realization of the various logic gates*
- *To make the student able to design Combinational and Sequential Systems*
- *To understand the principles lying behind digital systems and logic gates*
- *To design Different logic systems such as Memory elements*

UNIT – I INTRODUCTION 9

Digital & Analogue Quantities – Logic Operations & Functions – Number systems, Codes & Operations – NOT, AND, OR Gates – NAND & NOR Gates – X-OR & X-NOR Gates – Realization of Logic Gates Using Discrete Components – Fixed-Function Logic: IC Gates – Programmable Logic

UNIT – IIBOOLEAN ALGEBRA & LOGIC SIMPLIFICATION 9

Boolean Operations & Expressions – Boolean Algebra Laws & Rules – DeMorgan's Theorems – Boolean Analysis of Logic Circuits – Logic Simplifications - Standard form of Boolean Expressions: SOP & POS – Boolean Expressions & Truth Tables – The Karnaugh Map: K-Map

UNIT – IIICOMBINATIONAL LOGIC & THEIR FUNCTIONS 9

Combinational Logic Circuits & Implementation – Universality of NAND & NOR Gates – Combinational Logic Implementation Using The Universal Gates – Pulse wave forms – Adders & Comparators – Decoders, Encoders & Code Converters – Multiplexers & Demultiplexers

UNIT – IVSEQUENTIAL LOGIC & THEIR FUNCTIONS 9

Latches – Flip-Flops and related Devices – Timer – Counters – Shift Registers

UNIT – V COMPUTER DIGITAL SYSTEMS 9

Memory and Storage – Microprocessors – Buses – Input/output – Interrupts – Direct Memory Access (DMA) – Fundamentals of VHDL.

Total Hours: 45

TEXT BOOKS

1. M. Morris Mano, "Digital Design", Pearson Education, Fourth Edition, 2008.
2. R. J. Tocci, "Digital Systems: Principles and Applications", Pearson Education, Tenth Edition. 2009.

REFERENCE BOOKS

1. Thomas L. Floyed, "Digital Fundamentals", Prentice Hall, 10th Edition, 2009
2. Jems Palmer & David Perlman, "Introduction to Digital Systems, Magraw Hills, 5th Edition, 2005
3. Alan B. Morcovitz, " Introduction to Logic Design", TMH, 2nd Edition, 2005

11UDK304 FUNDAMENTALS OF PROGRAM DESIGN

L	T	P	C
3	1	0	4

Course Objective:

- *To understand and implement the fundamental concepts in a program*
- *To be able to design efficient programs performing a wide range of operations*
- *To design programs involving multi-dimensional arrays*
- *To get an in-depth knowledge of file operations and find mechanisms for their manipulation*

UNIT – 1 INTRODUCTION 9+3

Problem Solving – top down and bottom up design – Implementation – Verification – Analysis – Sample Algorithms.

UNIT – II STRUCTURED DESIGN 9+3

Flags and switches – Priming heads and loop control – page control – headings – footers – parameter records – nested loops – requirements of structured design – goals of structured designs – history of structured design – interactive programs – loop control – editing the input.

UNIT – III ARRAYS 9+3

Declaring arrays – loading arrays – writing arrays – accessing arrays – parallel arrays – searching arrays – sorting – sort utilities – language sorts – coded sorts – bubble sort – insertion sort – multi-dimensional arrays.

UNIT – IV CONTROL BREAKS 9+3

Logical operators – Nested IF efficiency – CASE structure – Types of edit checks – Error reports – two level breaks – three level breaks.

UNIT – VFILE PROCESSING & PROGRAM DESIGN 9+3

File Introduction – sequential and non-sequential files – types of access – Design of Simple programs with code optimization (LOC, Efficiency, Local and Global Variables, recurrence and non – recurrence functions)

Total Hours: 45+15

TEXT BOOKS

1. R.G. Dromey, “How to solve it by Computer”, Prentice Hall of India, 2002.
2. Elizabeth A. Dickson, “Computer Program Design”, McGraw-Hill, International edition, 2002.

REFERENCE BOOKS

1. D.E.Knuth, “The art of computer programming”, Vol. I to III, Addison Wesley, Reading Massachusetts, USA, 1968.
2. Robert L.Kruse, C.L.Tondo and Brence Leung, “Data Structures and Program Design in C”, Pearson Education, 2nd edition, 2001.
3. Shi Kuo Chang, “Data Structures and Algorithms”, World Scientific Publishing Co. Pvt. Ltd, 2003.

11UDK305 OBJECT ORIENTEDPROGRAMMING LAB

L	T	P	C
0	0	3	2

1. Write a c++ program to implement the static member variable and static member function.

2. Write a c++ program to add two complex numbers using friend function and implementing the overloading of constructors

3a) Function with Default Argument

b) Class with Friend Function

4. Implement complex number class with necessary operator overloading.

5. Implement class with dynamic memory allocation.

6. Overload the new and delete operators to provide custom dynamic allocation of memory.

7. Develop a template of linked list class and its methods

8. Develop a template for standard sorting algorithms such as bubble sort, merge sort.

9. Develop with suitable Hierarchy classes and to implement dynamic polymorphism.

10. Implementation of various types of inheritance

11. Implementation of virtual function

12. Implementation of random access in files

13. Implementation of Exception Handling using try, throw and catch - keywords.

Total Hours: 45

List of Equipments and components for A Batch of 30 students (1 per batch)

1. SOFTWARE REQUIRED – **TURBOC version 3 or GCC version 3.3.4**.

2. OPERATING SYSTEM – **WINDOWS 2000 / XP / NT OR LINUX**

3. COMPUTERS REQUIRED – **30 Nos**. (Minimum Requirement : Pentium III or Pentium IV with 256 RAM and 40 GB hard disk)

11UDK306 **DIGITAL LAB**

L	T	P	C
0	0	3	2

LIST OF EXPERIMENTS

1. Verification of Boolean theorems using digital logic gates.
2. Study of Half Adder and Full Adder
3. Design and implementation of combinational circuits using basic gates for arbitrary functions.
4. Design and implementation of 4 – bit binary adder/ subtractor using basic gates.
5. Design and implementation of parity generator/ checker using basic gates.
6. Design and implementation od sequential logic: Latches and Flip-Flop.
7. Design and implementation of magnitude comparator.
8. Design and implementation of application using multiplexers/ demultiplexers.
9. Design and implementation of shift registers, cascaded counters, counter decoding
10. Design and implementation of synchronous and asynchronous counters
11. Study of combinational circuits using Hardware Description Language (VHDL/ Verilog HDL software required)

Total Hours: 45

11UDK307 DATA STRUCTURES LAB

L	T	P	C
0	0	3	2

Aim:

To develop programming skills in design and implementation of data structures and their applications.

1. Implement singly and doubly linked lists.
2. Represent a polynomial as a linked list and write functions for polynomial addition.
3. Implement stack and use it to convert infix to postfix expression
4. Implement array-based circular queue and use it to simulate a producer consumer problem.
5. Implement an expression tree. Produce its pre-order, in-order, and post-order traversals.
6. Implement binary search tree.
7. Implement priority queue using heaps
8. Implement hashing techniques.
9. Implement Dijkstra's algorithm using priority queues
10. Implement a backtracking algorithm for Knapsack problem

Total Hours: 45

List of Equipments and components for A Batch of 30 students (1 per batch)

1. SOFTWARE REQUIRED – **TURBOC version 3 or GCC version 3.3.4**.
2. OPERATING SYSTEM – **WINDOWS 2000 / XP / NT OR LINUX**
3. COMPUTERS REQUIRED – **30 Nos**. (Minimum Requirement : Pentium III or Pentium IV with 256 RAM and 40 GB hard disk)

11USM404 **DISCRETE MATHEMATICS**

Course Objective:

L	T	P	C
3	1	0	4

To provide strong foundation to the students to expose various emerging new areas of applied mathematics and appraise them with their relevance in Engineering and Technological field.

PREREQUISITE:

Basic concepts – Notations – Subset – Algebra of sets – The power set – Ordered pairs and Cartesian product – Propositions – Logical connectives – Compound propositions – Conditional and biconditional – Truth tables **–** Binary operations **–** special types of binary operations.

UNIT-I PROPOSITIONAL CALCULUS 9+3

Tautologies and contradictions – Contrapositive – Logical equivalences and implications –Normal forms – Principal conjunctive and disjunctive normal forms – Rules of inference –Predicates – Statement function – Variables – Free and bound variables – Quantifiers –Universe of discourse – Logical equivalences and implications for quantified statements – Theory of inference – The rules of universal specification and generalization.

UNIT-II RECURRENCE RELATION 9+3

Recurrence – Introduction – Recurrence relation models – Solution of recurrence relation by substitution – Method of characteristic roots – Solution of non-homogeneous linear finite order recurrence relations – Divide and conquer recurrence relation – Master's theorem.

UNIT-III RELATIONS AND FUNCTIONS 9+3

Relations – Representation of a relation – operations on relations – Equivalence relations – Patition and Equivalence classes – Partial ordering – Functions– Representation of functions –Type of functions – Composition of functions – Inverse functions –Characteristic function of a set – Permutation functions – Hashing function – Primitive recursive function.

UNIT-IV LATTICES AND BOOLEAN ALGEBRA 9+3

Poset **–** Hasse diagram – Lattices and their properties – Sublattices – Lattice Homomorphism **–** Some special lattices – Boolean algebra –Properties of Boolean algebra – Dual and Principal of Duality – Subalgebra – Boolean Homomorphism – Karnaugh map.

UNIT-V GROUP THEORY 9+3

Algebraic systems – Semigroups – Monoids – Sub semigroups and Submonoids – Groups – Order of a group – Group Homomorphism – Cosets – Normal subgroups – Coding theory–Encoders and decoders – Group codes – Hamming distance – Procedure for generating group codes –Error correction in group codes – Step by step procedure for Decoding group codes.

Total Hours: 45+15

TEXT BOOKS:

1. Kenneth H.Rosen, "Discrete Mathematics and its Applications", Sixth Edition, Tata McGraw – Hill Pub. Co. Ltd., New Delhi, 2006.
2. Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, 2002.

REFERENCES:

1. Bernard Kolman, Robert C. Busby, Sharan Cutler Ross, "Discrete Mathematical Structures", Fourth Indian reprint, Pearson Education Pvt Ltd., New Delhi, 2003.
2. Trembly J.P and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 2003
3. T. Veerarajan, "Discrete mathematics with Graph theory and Combinatorics", Tata McGraw – Hill Pub. Co. Ltd., New Delhi, 2008.

11UDK401 OPERATING SYSTEM

L	T	P	C
3	0	0	3

Course Objective:

- *To learn a lot of practical information about how programming languages, operating systems, and architectures interact and how to use each effectively.*
- *To become familiar with the inner workings of mainstream operating systems like DOS, Windows, and Linux*
- *To learn the major components of most operating systems.*
- *To get an in-depth knowledge of three major OS subsystems: process management, memory management, file systems, and operating system support.*

UNIT-I INTRODUCTION 9

Views- Goals - Types of System - OS Structure - Components - Services - System Structure Layered Approach - Virtual Machines - System Design and Implementation. Process Management - Process - Process Scheduling - Cooperating Process - Threads - Inter-process Communication - CPU Schedulers - Scheduling Criteria - Scheduling Algorithms

UNIT-II PROCESS SYNCHRONIZATION 9

Process synchronization - The critical- section problem - Peterson's Solution - Synchronization Hardware – Semaphores- Classic problems of Synchronization - Monitors - Synchronization examples - Atomic transactions - Case studies UNIX, Linux and Windows

UNIT-III MEMORY MANAGEMENT 9

Address Binding - Dynamic Loading and Linking - Overlays - Logical and Physical Address Space - Contiguous Allocation - Internal & External Fragmentation - Non-Contiguous Allocation - Paging and Segmentation Schemes - Implementation - Hardware-Protection - Sharing - Fragmentation

UNIT-IVVIRTUALMEMORY 9

Demand Paging - Page Replacement - Page Replacement Algorithms – Thrashing- File System - File Concepts -. Access Methods - Directory Structures - Protection Consistency Semantics - File System Structures - Allocation Methods - Free Space Management

UNIT-V I/O SYSTEM **9**

Overview - I/O Hardware - Application I/O Interface - Kernel I/O Subsystem - Transforming Requests to Hardware Operations – Performance - Mass-Storage Structure: Disk scheduling – Disk management – Swap-space management – RAID - Protection - Goals - Domain - Access matrix - The Security Problem - Authentication - Threats - Threat Monitoring - Encryption - Case Study: Introduction to Server OS, Desktop OS, Network OS and Mobile OS.

Total Hours : 45

TEXT BOOKS:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, "Operating System Concepts" 7th Edition, John Wiley, 2005
2. D.M.Dhamdhere, "Operating systems- A Concept based Approach" 2nd Edition, Tata Mc – Graw Hill, 2010.

REFERENCES:

1. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Pearson Education/PHI 2001.
2. Gary Nutt, "Operating Systems", Third Edition, Pearson Education, 2004.
3. Harvey M. Deital, "Operating Systems", Third Edition, Pearson Education, 2004.

11UDK402 MICROPROCESSORS AND MICROCONTROLLERS

L	T	P	C
3	1	0	4

Course Objective:

- *To study the architecture and Instruction set of 8085 and 8086*
- *To develop assembly language programs in 8085 and 8086.*
- *To design and understand multiprocessor configurations*
- *To study different peripheral devices and their interfacing to 8085/8086.*
- *To study the architecture and programming of 8051 microcontroller.*

UNIT-I 8085 MICROPROCESSOR 10 +3

Introduction to 8085 – Microprocessor architecture – Instruction set – Addressing Modes - Programming the 8085 – Pin Details. Programming techniques – Looping, Counting and Indexing– Stack and sub routine - Code conversion - Programming tutorial – Applications.

UNIT-II INTERFACING WITH 8085 10 +3

Memory interfacing and I/O interfacing with 8085 – interfacing with 8085 – Programmable timer – keyboard and display controller – Programmable peripheral interface – USART – Interrupt Controller – DMA controller – Mini Project – with applications like stepper motor – traffic light interface.

UNIT-III 8086 MICROPROCESSOR 9+3

Intel 8086 microprocessor – Architecture – Instruction set and assembler directives – Addressing odes – Assembly language programming – Procedures – Macros – Interrupts and interrupt service routines - 8086 signals and timing – Minimum and Maximum mode of operation – Addressing memory and I/O – Multiprocessor configurations – System design using 8086

UNIT-IV BUS ARCHITECTURE 8+3

UART - Board level Interconnect: ISA, PCI – PCI-X - Disk interconnect: SCSCASE STUI – ATA - Serial port buses: RS-232 – Fire wire – USB – case studies – 8089 – Design of Microcontroller – ADC And DFAC interfacing – Case Study : Introduction to Intel processor family, AMD Processor family.

UNIT-VMICROCONTROLLERS **8+3**

Architecture of 8051 – Signals – Operational features – Memory and I/O addressing- Addressing modes – Interrupts – Instruction set – 8051 applications – length measurement system application - Signal conditioning application.

Total Hours: 45+15

TEXT BOOKS

1. Ramesh S.Gaonkar, "Microprocessor - Architecture, Programming and Applications with the 8085", Penram International publishing private limited, Fifth Edition, 2006.
2. Yn-cheng Liu,Glenn A.Gibson, "Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design", second edition, Prentice Hall of India , 2006 .
3. Kenneth J.Ayala, 'The 8051 microcontroller Architecture, Programming and applications' , Delmer Cengage Learning, Third edition, 2004.

REFERENCE BOOKS

1. Douglas V.Hall, "Microprocessors and Interfacing: Programming and Hardware", TMH, 2nd Edition, 2006.
2. Yu-cheng Liu, Glenn A.Gibson, "Microcomputer systems: The 8086 / 8088 Family Architecture, Programming and Design", PHI 2003
3. Mohamed Ali Mazidi, Janice Gillispie Mazidi, "The 8051 Microcontroller and Embedded Systems", Pearson education, 2004

11UDK403 COMPUTER ARCHITECTURE

L	T	P	C
3	1	0	4

Course Objective:

- *Get an in-depth knowledge of the hardware part of the computer.*
- *Analyze the manner in which the basic arithmetic and logical operations are carried out by a computer*
- *Relationship between hardware design and instruction set architecture*
- *Understand processor design concepts in modern computer architecture.*
- *Enable to design and build a mini computer*

UNIT – I BASIC STRUCTURE OF COMPUTERS 9+3

Functional units – Basic operational concepts – Bus structures – Performance and metrics – Instructions and instruction sequencing – Hardware – Software Interface – Instruction set architecture – Addressing modes – RISC – CISC. ALU design – Fixed point and floating point operations

UNIT – IIBASIC PROCESSING UNIT 9+3

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control – Nano programming.

UNIT – IIIPIPELINING 9+3

Basic concepts – Data hazards – Instruction hazards – Influence on instruction sets – Data path and control considerations – Performance considerations – Exception handling.

UNIT - IV MEMORY SYSTEM 9+3

Basic concepts – Semiconductor RAM – ROM – Speed – Size and cost – Cache memories – Improving cache performance – Virtual memory – Memory management requirements – Associative memories – Secondary storage devices.

UNIT - V I/O ORGANIZATION 9+3

Accessing I/O devices – Programmed Input/Output -Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB), I/O devices and processors – Case Study : Introduction to SAN and NAS.

Total Hours: 45 + 15

TEXT BOOK

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”,Fifth Edition, Tata McGraw Hill, 2004.

REFERENCES

1. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Third Edition, Elsevier, 2005.
1. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Eighth Edition, Pearson Education, 2009.
2. John P. Hayes, “Computer Architecture and Organization”, Third Edition, Tata McGraw Hill, 1998.
3. V.P. Heuring, H.F. Jordan, “Computer Systems Design and Architecture”, Second Edition, Pearson Education, 2004.

11UDK404 **SYSTEM SOFTWARE**

L	T	P	C
3	0	0	3

Course Objective:

- *To understand the relationship between system software and machine architecture.*
- *To know the design and implementation of assemblers*
- *To know the design and implementation of linkers and loaders.*
- *To have an understanding of macro processors.*
- *To have an understanding of compilers.*
- *To have an understanding of system software tools.*

UNIT- I INTRODUCTION **7**

System software and machine architecture – The Simplified Instructional Computer (SIC) - Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming

UNIT-II ASSEMBLERS **10**

Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures - Machine dependent assembler features - Instruction formats and addressing modes – Program relocation - Machine independent assembler features - Literals – Symbol-defining statements – Expressions - One pass assemblers and Multi pass assemblers - Implementation example - MASM assembler.

UNIT-III LOADERS AND LINKERS **10**

Basic loader functions - Design of an Absolute Loader – A Simple Bootstrap Loader - Machine dependent loader features - Relocation – Program Linking – Algorithm and Data Structures for Linking Loader - Machine-independent loader features - Automatic Library Search – Loader Options - Loader design options - Linkage Editors – Dynamic Linking – Bootstrap Loaders - Implementation example - MSDOS linker.

UNIT-IV MACROPROCESSORS **10**

Basic macro processor functions - Macro Definition and Expansion – Macro Processor Algorithm and data structures - Machine-independent macro processor features - Concatenation of Macro Parameters – Generation of Unique Labels – Conditional Macro Expansion – Keyword Macro

Parameters-Macro within Macro-Implementation example - MASM Macro Processor – ANSI C Macro language.

UNIT-V SYSTEM SOFTWARE TOOLS 8

Text editors - Overview of the Editing Process - User Interface – Editor Structure. - Interactive debugging systems - Debugging functions and capabilities – Relationship with other parts of the system – User-Interface Criteria.

Total Hours: 45

TEXT BOOKS

1. Leland L. Beck, D.Manjula, "System Software – An Introduction to Systems Programming", 7th Edition, Pearson Education Asia, 2011

REFERENCE BOOKS

1. D. M. Dhamdhere, "Systems Programming and Operating Systems", Second Revised Edition, Tata McGraw-Hill, 1999.
2. John J. Donovan "Systems Programming", Tata McGraw-Hill Edition, 1972.

11UDK405 DESIGN AND ANALYSIS OF ALGORITHMS L T P C

Course Objective: **3 1 0 4**

- *To introduce basic concepts of algorithms*
- *To understand mathematical aspects in analyzing algorithms*
- *To understand the concepts of various algorithm techniques and to formulate methods of designing and analyzing them*

UNIT – I FUNDAMENTALS OF ALGORITHM ANALYSIS 10+2

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 Recursive and Non-recursive algorithms – Analysis of parallel algorithms.

UNIT – IIANALYSIS OF SORTING ALGORITHMS 10+2

Brute Force – Selection Sort and Bubble Sort - Divide and conquer – Merge sort – Quick Sort - Decrease and Conquer – Insertion Sort–Transform and Conquer-Heaps and Heap sort.

UNIT – IIIGREEDY TECHNIQUE 10+2

Prim's algorithm - Kruskal's algorithm - Dijikstra's algorithm - Huffman Trees - Knapsack Problem.

UNIT – IVDYNAMIC PROGRAMMING 10+2

Warshall's and Floyd's Algorithms - Optimal Binary search trees - Knapsack Problem - Multistage graphs.

UNIT – VBACKTRACKING & BRANCH AND BOUND 10+2

Backtracking- n-Queens problem - Hamiltonian Circuit Problem - Subset Sum problem - Branch and Bound – knapsack problem - Travelling Salesman Problem - Introduction to NP Hard and NP-Complete problems.

Total Hours: 45 + 15

TEXT BOOK:

1. Anany Levitin, ”Introduction to the Design and Analysis of Algorithms”, Third Edition Pearson Education, New Delhi, 2007
2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, “Fundamentals of Computer Algorithms”, second edition, Galgotia Publications, New Delhi, 2003.

REFERENCES:

1. Sara Baase and Allen Van Gelder, “Computer Algorithms - Introduction to Design and Analysis”, Pearson Education Asia, 2003.
2. A.V.Aho, J.E. Hopcroft and J.D.Ullman, “The Design and Analysis of Computer Algorithms”, Pearson Education Asia, 2003.

11UDK406 MICROPROCESSORSAND MICROCONTROLLERS LAB

L	T	P	C
0	0	3	2

A. Study Experiments

1. To study 8085 based microprocessor system
2. To study 8086 based microprocessor system
3. To study 8051 microcontroller

B. Programming based Experiments

1. To develop and run a program for finding out the largest/smallest number from a given set of numbers.
2. To develop and run a program for arranging in ascending/descending order of a set of numbers
3. To perform multiplication/division of given numbers
4. To perform conversion of temperature from 0_F to 0_C and vice-versa
5. To perform computation of square root of a given number
6. To demonstrate basic instructions with 8051 Micro controller execution, including:
    - Conditional jumps, looping
    - Calling subroutines.
    - Stack parameter testing
7. To perform Parallel port programming with 8051 using port 1 facility:

C. Interfacing based Experiments

1. To obtain interfacing of RAM chip to 8085/8086 based system
2. To obtain interfacing of keyboard controller
3. To obtain interfacing of Timer to generate square wave
4. To obtain interfacing of PPI
5. To obtain interfacing of UART/USART

Total Hours: 45

11UDK407 OPERATING SYSTEM AND SYSTEM SOFTWARE LAB

L	T	P	C
0	0	3	2

List of Experiments:

1. Inter Process Communication (IPC) using Message Queues.
2. Implementations of wait and signal using counting semaphores.
3. Atomic Counter update problem.
4. Deadlock detection (for processes passing messages)
5. Process Scheduling: FCFS
6. Process Scheduling: Least Frequently Used.
7. Producer-Consumer problem with limited buffers.
8. Dining-Philosopher Problem.
9. Two Process Mutual Exclusion
10. Implement pass 1and pass 2 of a two pass assembler
11. Implement a macro processor
12. Implement an absolute loader
13. Implement a relocating loader
14. Implement pass 1 and pass 2 of a direct linking loader

Hardware and Software required for a batch of 30 students.

SOFTWARE:

Linux:

Ubuntu / OpenSUSE / Fedora / Red Hat / Debian / Mint OS

Linux could be loaded in individual PCs.

(OR)

A single server could be loaded with Linux and connected from the individual PCs.

System Software:

List of Equipments and components for A Batch of 30 students (1 per batch)

1. **SOFTWARE REQUIRED** – TURBOC version 3 or GCC version 3.3.4.
2. **OPERATING SYSTEM** – WINDOWS 2000 / XP / NT OR LINUX
3. **COMPUTERS REQUIRED** – 30 Nos. (Minimum Requirement : Pentium III or Pentium IV with 256 RAM and 40 GB hard disk)

Total Hours: 45

11UDK408 DESIGN AND ANALYSIS OF ALGORITHMS LAB

L	T	P	C
0	0	3	2

List of Experiments:

1. Implementation of Sorting Algorithms
2. Implementation of Binary Search Algorithm
3. Implementation of Minimum Spanning Tree Algorithm
4. Implementation of Knapsack Algorithm
5. Implementation of Multistage Graphs
6. Implementation of All pair shortest Path Algorithm
7. Implementation of Eight Queens Problem
8. Implementation of Graph Coloring
9. Implementation of Traveling Salesman Problem
10. Implementation of Dijkstra's Algorithm

1. **SOFTWARE REQUIRED** – TURBOC version 3 or GCC version 3.3.4.
2. **OPERATING SYSTEM** – WINDOWS 2000 / XP / NT OR LINUX
3. **COMPUTERS REQUIRED** – 30 Nos. (Minimum Requirement : Pentium III or Pentium IV with 256 RAM and 40 GB hard disk)

Total Hours: 45

11USM501 APPLIED PROBABILITY AND OPERATIONS RESEARCH

L	T	P	C
3	1	0	4

Course Objective

- *To provide strong foundation to the students to expose various emerging new areas of applied mathematics and appraise them with their relevance in Engineering and Technological field.*

UNIT I - PROBABILITY AND RANDOM VARIABLE 9+3

Axioms of probability - Conditional probability - Total probability - Bayes theorem

Random variable – One dimensional random variable – Discrete and Continuous Random variable - Probability mass function - Probability density functions – Properties - Moments - Moment generating functions and their properties.

UNIT II - STANDARD DISTRIBUTIONS 9+3

Binomial, Poisson, Geometric, Negative Binomial, Uniform, Exponential, Gamma, Weibull and Normal distributions and their properties – Mean and variance – Moment generating function - Simple problems

UNIT III – LINEAR PROGRAMMING 9+3

Linear programming – Formulation – Graphical solution – Simplex method– Revised Simplex method - Big M Method – Two phase method.

UNIT IV – TRANSPORTATION AND ASSIGNMENT MODELS 9+3

Mathematical formulation of Transportation problem – Methods for finding initial basic feasible solution – NWC Rule, LCM and Vogel's approximation – MODI Method for finding optimum solution – Assignment problem – Hungarian Algorithm.

UNIT V –NETWORK MODELS 9+3

PERT-CPM: Uncertainty of PERT, Early Start, Early Finish, Late Start Late Finish and Float, Crashing of activity in CPM, Resource Leveling.

Total hours: 45+15

TEXT BOOKS :

1. Kanti Swarup, P.K.Gupta, Man Mohan, "Operations research", Ninth edition, S.Chand, Delhi, 2001.
2. Johnson, R. A., "Miller & Freund's Probability and Statistics for Engineers", Sixth Edition, Pearson Education, Delhi, 2000. (Chapters 7, 8, 9, 12)

REFERENCES:

1. H.A.Taha, "Operations Research", Prentice Hall of India, Eighth Edition, 2006.
2. Hira and Gupta "Introduction to Operations Research", S.Chand and Co.2002
3. Walpole, R. E., Myers, R. H. Myers R. S. L. and Ye. K, "Probability and Statistics for Engineers and Scientists", Seventh Edition, Pearsons Education, Delhi , 2002.
4. Gupta, S.C, and Kapur, J.N., "Fundamentals of Mathematical Statistics", Sultan Chand, Ninth Edition , New Delhi ,1996.

11UDK501 PRINCIPLES OF COMPILER DESIGN

L	T	P	C
3	1	0	4

Course Objective

- *To understand the functions of the various phases of a complier*
- *To learn the overview of the design of lexical analyzer and parser*
- *To study the design of the other phases in detail.*
- *To learn the use of compiler construction tools.*

UNIT-I INTRODUCTION TO COMPILERS 9+3

Compilers, Analysis of the Source Program, The Phases of a Compiler, Cousins of the Compiler, The Grouping of Phases, Compiler-Construction Tools, Translators- Compilation and Interpretation, Design of LEX, A simple one-pass compiler.

UNIT-II LEXICAL ANALYSIS 9+3

Need and 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.

UNIT-III SYNTAX ANALYSIS 9+3

Need and role of the parser- Context Free Grammars-Top Down parsing – Recursive Descent Parser - Predictive Parser - LL(1) Parser -Shift Reduce Parser - LR Parser – LR (0) item - Construction of SLR Parsing table -Introduction to LALR Parser, YACC- Design of a syntax analyzer for a sample language.

UNIT-IV SYNTAX DIRECTED TRANSLATION AND TYPE CHECKING 9+3

Syntax-Directed Definitions, Construction of Syntax Trees, Bottom-Up Evaluation of Attributed Definitions, L-Attributed Definitions, Top Down Translation, Bottom-Up Evaluation of Inherited Attributes, Forms of intermediate code -Translation of Assignment, Boolean Expression and Control statements - Back patching type systems - Specification of a simple type checker - equivalence of type expressions – type conversions.

UNIT-V RUN-TIME ENVIRONMENT AND ERROR HANDLING 9+3

Source language issues-Storage organization-Storage allocation-Strategies-Access to non local-parameter passing- Symbol tables-Dynamic storage allocation-Error handling and recovery in different phases. Principal sources of Optimization- Peep hole optimization – DAG - Optimization

of basic blocks- Loops in flow graph-Global data flow analysis - Efficient data flow algorithms - Issues in design of a code generator-a simple code generator algorithm.

Total Hours : 45+15

TEXT BOOKS

1. Alfred V.Aho, Ravi Sethi and Jeffrey D.Ullman, "Compilers – Principles, Techniques and Tools", second edition, Pearson Education, New Delhi, 2008.

2. Raghavan V, “Principles of Compiler Design”, Tata Mc-Graw Hill Education Pvt. Ltd., New Delhi, 2009

REFERENCE BOOKS

1. Dhamdhere D M, "Compiler Construction Principles and Practice", second edition, Macmillan India Ltd., New Delhi, 2001.

2. Jean Paul Tremblay, Paul G Serenson, "The Theory and Practice of Compiler Writing", McGraw Hill, New Delhi, 2001.

3. Dick Grone, Henri E Bal, Ceriel J H Jacobs and Koen G Langendoen, “Modern Compiler Design”, John Wiley, New Delhi, 2000.

4. David Galles,”Modern Compiler Design”, Pearson EducationAsia,2007.

5. Kenneth C. Loudes, ”Compiler Construction: Principles and Practice”, Thompson Learning,2003.

11UBK531 PRINCIPLES OF ELECTRONIC COMMUNICATION

L	T	P	C
3	0	0	3

Course Objectives:

- *To understand the principles of communication technology.*
- *To build up the major objectives of modern transmission and reception.*
- *To discourse data communication systems.*

UNIT-I FUNDAMENTALS OF ANALOG COMMUNICATION 9

Basic scheme of Modern communication system-Need for Modulation – Types. Basics of Amplitude Modulation (Definition, AM waveforms, Equation, Frequency spectrum and Bandwidth, Modulation index and power distribution)Angle modulation – Frequency Modulation, Equation of an FM wave, Effect of Noise in FM noise, Pre-Emphasis and De-Emphasis, Comparison of AM and FM signals. Phase modulation – Definition and equation of an PM wave.

UNIT-II DIGITAL COMMUNICATION 9

Introduction – Information capacity, bits, bit rate, baud and M-ARY encoding-ASK- FSK , FSK transmitter, Receiver- Phase Shift Keying – binary phase shift keying. QPSK-QAM (Principle, transmitter and Receiver block diagram only). Bandwidth efficiency, carrier recovery and clock recovery.

UNIT-III DIGITAL TRANSMISSION 9

Introduction, Pulse modulation, PCM – PCM sampling, sampling rate, signal toquantization noise rate, companding (analog and digital) – Vocoders. Delta modulation PCM- adaptive delta modulation PCM and differential PCM – Intersymbol interference and eye patterns.

UNIT-IV INTRODUCTION TO DATA COMMUNICATION AND NETWORKING 9

Introduction – Network architecture, protocol and Standards- Layered network architecture- OSI-data communication circuits and Networks. Data communication codes-Baudot,ASCII and EBCDIC only-Error detection-Error correction-DTE,DCE-UART (Principle and Transmitter and receiver block diagram only)- Serial interface-RS-232 only –Parallel Interface- Data communication modems.

UNIT-V SATELLITE AND OPTICALCOMMUNICATION 9

Satellite Communication Systems-Keplers Law, orbits,Geosynchronous satellites-Antenna look angles and Satellite system link models only. Multiple accessing –TDMA-FDMA-CDMA (

Principle and Block diagram only).Optical Communication Systems-Introduction- Advantages-Disadvantages- Block diagram-light propagation-configuration-classification-Losses-Optical sources-LED and Heterojunction LEDs- Light Detectors-PIN-APD and LASER only.

Total Hours : 45

TEXT BOOKS:

1. Wayne Tomasi, “Advanced Electronic Communication Systems”, 6/e, Pearson Education, 2007.

2. NIIT, “Basics of Electronic Communications,” PHI, 2007.

REFERENCES:

1. H.Taub,D L Schilling ,G Saha ,”Principles of Communication”3/e,2007.

2. B.P.Lathi,”Modern Analog And Digital Communication systems”, 3/e, Oxford University Press, 2007

3. Blake, “Electronic Communication Systems”, Thomson Delmar Publications, 2002.

4. Martin S.Roden, “Analog and Digital Communication System”, 3rd Edition, PHI, 2002.

11UBK532 FUNDAMENTALS OF SIGNAL PROCESSING

Course Objectives:

- *To understand the concept of signals.*
- *To understand how D to A and A to D converters operate on a signal.*
- *To understand the definitions and design of fourier transform,filters etc.*

L	T	P	C
3	1	0	4

UNIT-I DISCRETE TIME SIGNALS AND SYSTEMS 9+3

Sequence and sequence representation – sampling process – discrete time systems – time domail characterization of LTI discrete time systems – classification of LTI systems – correlation of signals – random signals.

UNIT-II FAST FOURIER TRANSFORMS 9+3

Introduction of DFT - efficient computation of DFT – its properties - FFT algorithms – Radix – 2 FFT algorithms – Radix – 4 FFT algorithms – Decimation in Time – Decimation in frequency algorithms – Use of FFT algorithms in linear filtering and correleation.

UNIT-III IIR FILTER DESIGN 9+3

Structure of IIR – system design of discrete time IIR filter from continuous time filter – IIR filter design by impulse invariance – bilinear transformation – approximate derivatives – design of IIR filter in the frequency domain.

UINT-IV FIR FILTER DESIGN 9+3

Symmetric and anti-symmetric FIR filters – linear phase filter – Windowing technique – rectangular – Kaiser windows – frequency sampling techniques – structure for FIR system.

UNIT-V EFFECTS OF FINITE REGISTER LENGTH 9+3

Effects of number representation of Quantization – Quantization in sampling – analog signals – finite register length effects in realization of IIR digital filters – finite register length effects in realization of FIR digital filters – Effects of finite register length in DFT computations – applications of DSP.

Total Hours: 45+15

TEXT BOOKS:

1. John G. Proakis and Dimitris K Manolakis, "Digital Signal Processing Pricniples, Algorithms and Applications", 4th edition, Prentice Hall, New Delhi, 2006.

2. Sanjit K Mitra, " Digital Signal Processing" – A Computer Base Approach", Third Edition, Tata Mc Graw Hill Publishing Co Pvt Ltd, New Delhi 2008.

3. Oppenheim A.V, Schaffer R.W, " Discrete – time signal processing", 2nd Edition, Prentice Hall, New Delhi 2002.

REFERENCE BOOKS:

1. Somanathan Nair, " Digital Signal Processing", PHI Learning, New Delhi 2005.

2. Sanjit K Mitra, " Digital Signal Processing – A Computer Based Approach", second edition, Tata McGraw Hill, New Delhi 2001.

3. Johny R Johnson, " Introduction to Signal Processing", second edition, PHI / Pearson Education, New Delhi 2003.

11UDK502 DATABASE MANAGEMENT SYSTEMS

L	T	P	C
3	0	0	3

Course Objective

- *To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.*
- *To make a study of SQL and relational database design*
- *To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.*
- *To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.*
- *To have an introductory knowledge about the Storage and Query processing techniques*

UNIT-I INTRODUCTION 9

Evolution of DBMS-Types of DBMS-Purpose of Database System -– Views of data – Data Models – Database Languages — Database System Architecture – Database users and Administrator – Entity–Relationship model – E-R Diagrams -- Introduction to relational databases

UNIT-II RELATIONAL MODEL 9

The relational Model – The catalog- Types– Keys - Relational Algebra – Domain Relational Calculus – Tuple Relational Calculus - Fundamental operations –Additional Operations- SQL fundamentals - Integrity – Triggers - Security –Advanced SQL features –Embedded SQL– Dynamic SQL- Missing Information–Views – Introduction to Distributed Databases and Client/Server Databases

UNIT-III DATABASE DESIGN 9

Functional Dependencies – Non-loss Decomposition – Functional Dependencies –First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form- Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form

UNIT-IV TRANSACTIONS **9**

Transaction Concepts - Transaction Recovery – ACID Properties – System Recovery– Media Recovery – Two Phase Commit - Save Points – SQL Facilities for recovery –Concurrency – Need for Concurrency – Locking Protocols – Two Phase Locking –Intent Locking – Deadlock-Serializability – Recovery Isolation Levels – SQL Facilities for Concurrency

UNIT-V IMPLEMENTATION TECHNIQUES **9**

Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing– Query Processing Overview – Catalog Information for Cost Estimation – Selection Operation – Sorting – Join Operation – Database Tuning.

Total Hours : 45

TEXT BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Fifth Edition, Tata McGraw Hill, 2006 (Unit I and Unit-V)

2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2006.(Unit II, III and IV)

REFERENCES:

1. Ramez Elmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, FourthEdition , Pearson / Addision wesley, 2007

2. Raghu Ramakrishnan,Gehrke,“Database Management Systems”, Third Edition, McGraw Hill, 2006

3. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.

11UDK503 SOFTWARE ENGINEERING

L	T	P	C
3	0	0	3

Course Objective

- *To be aware of different life cycle models, Requirement dictation process, Analysis modeling and specification, Architectural and detailed design methods, Implementation and testing strategies, Verification and validation techniques, Project planning and management, Use of CASE tools.*
- *To introduce the methodologies involved in the development and maintenance of software (i.e) over its entire life cycle.*

UNIT-I SOFTWARE PROCESS 9

Introduction-S/W Engineering Paradigm - life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering -computer based system - verification - validation - life cycle process - development process - system engineering hierarchy.

UNIT-II SOFTWARE REQUIREMENTS 9

Functional and non-functional – user system requirement - engineering process - feasibility studies - requirements elicitation- validation and management - software prototyping- prototyping in the software process - rapid prototyping techniques - user interface prototyping - S/W document - Analysis and modeling - data, functional and behavioral models - structured analysis and data dictionary.

UNIT-III DESIGN CONCEPTS AND PRINCIPLES 9

Design process and concepts - modular design - design heuristic - design model and document - Architectural design - software architecture - data design - architectural design - transform and transaction mapping - user interface design - user interface design principles - Real time systems - Real time software design - system design - real time executives - data acquisition system - monitoring and control system - SCM - Need for SCM - Version control - Introduction to SCM process - Software configuration items.

UNIT-IV TESTING **9**

Taxonomy of software testing - levels - test activities - types of s/w test - black box testing - testing boundary conditions - structural testing - test coverage criteria based on data flow mechanisms - regression testing - testing in the large - S/W testing strategies - strategic approach and issues - unit testing - integration testing - validation testing - system testing and debugging.

UNIT-V SOFTWARE PROJECT MANAGEMENT **9**

Measures and measurements - S/W complexity and science measure - size measure - data and logic structure measure - information flow measure - Software cost estimation - function point models - COCOMO model - Delphi method - Defining a Task Network - Scheduling - Earned Value Analysis - Error Tracking - Software changes - program evolution dynamics - software maintenance - Architectural evolution - Taxonomy of CASE tools

Total Hours: 45

TEXT BOOKS

1. Roger S.Pressman, Software engineering- A practitioners Approach, McGraw-Hill International Edition, seventh edition, 2009.
2. Ian Sommerville, “Software engineering”, Seventh Edition, Pearson Education Asia , 2007

REFERENCES

1. Watts S.Humphrey,”A Discipline for Software Engineering”, Pearson Education, 2007
2. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
3. James F Peters and Witold Pedryez, Software Engineering “ An Engineering Approach, john Wiley and Sons, New Delhi, 2000.
4. Ali Behforooz and Frederick J Hudson, software Engineering Fundamentals, Oxford University Press, New Delhi, 1996.

11UDK504 **COMPILER LAB**

L	T	P	C
0	0	3	2

List of Experiments:

1. Study of LEX and YACC
2. Lexical Analysis using LEX.
3. Syntax Analysis using YACC
4. Construction of NFA from a given regular expression.
5. Construction of minimized DFA from a given regular expression.
6. Implementation of Symbol Table.
7. Implementation of Shift Reduce Parsing Algorithm.
8. Implementation of Operator Precedence parsing Algorithm.
9. Construction of LR Parsing Table.
10. Generation of Code for a given Intermediate Code.
11. Implementation of Code Optimization techniques.

Total Hours : 45

11UDK505 **DBMS LAB**

L	T	P	C
0	0	3	2

List of Experiments

1. Data Definition, Manipulation of base tables and views
2. High level programming language extensions (Procedures/functions/cursors).
3. Front end tools
4. Forms
5. Triggers
6. Menu Design
7. Importing/ Exporting Data
8. Reports.
9. Database Design and implementation (Mini Project).

Software to be used

Windows XP/7

MSSQL 2008/DB2/MySQL/Oracle

Visual Studio 2005 (.NET)/Java

Total Hours: 45

11UDK506 SOFTWARE ENGINEERING LAB

L	T	P	C
0	0	3	2

List of Experiments:

1. Study of case tools such as rational rose or equivalent tools
2. Requirements

Implementation of requirements engineering activities such as elicitation, validation,management using case tools.

4. Analysis and design

Implementation of analysis and design using case tools.

5. Study and usage of software project management tools such as cost estimates and Scheduling.
6. Documentation generators - Study and practice of Documentation generators.
7. Data modeling using automated tools.
8. Practice reverse engineering and re-engineering using tools.
9. Exposure towards test plan generators, test case generators, test coverage and software metrics.
10. Meta modeling and software life cycle management.

Total Hours : 45

11UDK601 COMPUTER NETWORKS AND TCP/IP

L	T	P	C
3	1	0	4

Course Objectives:

- *To categorize different types of Computer Networks, transmission media and topologies*
- *To detect and correct errors during communication, and to learn about the various LAN standards*
- *To categorize the various networking devices and understand the implementation of TCP/IP*
- *To learn the duties of various layers and functions*

UNIT-I DATA COMMUNICATIONS 9+3

Components – Direction of Data flow – Networks Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI Model –Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences

UNIT-II DATA LINK LAYER 9+3

Error – Detection and Correction – Parity – LRC – CRC – Hamming Code – Flow Control and Error control - Stop and Wait – Go Back-N ARQ – Selective Repeat ARQ- Sliding Window – HDLC - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5

UNIT-III NETWORK LAYER 9+3

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers- TCP Services – Header – Connection Establishment and Termination- Interactive data flow- Bulk data flow- Timeout and Retransmission – Persist Timer – Keep alive Timer IP Global Software Organization – Routing Table- Routing Algorithms-Fragmentation and Reassembly- Error Processing (ICMP) –Multicast Processing (IGMP)

UNIT-IV TRANSPORT LAYER **9+3**

Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.

UNIT-V APPLICATION LAYER **9+3**

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW

Total Hours : 45+15

TEXT BOOKS

1. Behrouz A. Forouzan, "Data communication and Networking", Fourth Edition, Tata McGraw-Hill Publishing Co. Pvt., Ltd., New Delhi, 2009.
2. Prakash C Gupta, "Data Communications and Computer Networks", PHI Learning Pvt. Ltd., New Delhi, 2009
3. Douglas E. Comer – "Internetworking with TCP/IP Principles, Protocols and Architecture", Vol. 1 & 2, Fourth edition, Pearson Education Asia, 2009

REFERENCE BOOKS

1. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, New Delhi 2000
2. Andrew S. Tanenbaum, "Computer Networks", Fourth Edition PHI Learning, New Delhi, 2003.

11UDK602 DATA WAREHOUSING AND MINING

L	T	P	C
3	0	0	3

Course Objectives:

- *Introducing fundamentals of data warehousing and data mining.*
- *To understand data preprocessing techniques and data mining functionalities and query language.*
- *To understand Association Rules for Transactional databases.*
- *To understand various classification and prediction methods.*
- *To understand data mining in various databases.*

UNIT-I INTRODUCTION TO DATA WAREHOUSING 8

Introduction to Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Data Warehousing to Data Mining.

UNIT-II DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION 8

Introduction to Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Introduction to data mining, On what kind of data, Data mining functionalities, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT-III ASSOCIATION RULES 9

Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.

UNIT-IV CLASSIFICATION AND CLUSTERING 12

Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Rule Based Classification, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorization of methods, Partitioning methods, Outlier Analysis.

UNIT-V RECENT TRENDS 8

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining.

Total Hours : 45

TEXT BOOK:

1. J. Han, M. Kamber, “Data Mining: Concepts and Techniques”, Harcourt India / Morgan Kauffman, 2006.

REFERENCES:

1. Margaret H.Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education 2004.

2. Sam Anahory, Dennis Murry, “Data Warehousing in the real world”, Pearson Education 2003.

3. David Hand, Heikki Manila, Padhraic Symth, “Principles of Data Mining”, PHI 2004.

4. W.H.Inmon, “Building the Data Warehouse”, 3rd Edition, Wiley, 2003.

5. Alex Bezon, Stephen J.Smith, “Data Warehousing, Data Mining & OLAP”, MeGraw- Hill Edition, 2001.

6. Paulraj Ponniah, “Data Warehousing Fundamentals”, Wiley-Interscience Publication,2003.

11UDK603 TELECOMMUNICATION SYSTEMS

	L	T	P	C
Course Objectives	**3**	**1**	**0**	**4**

- *To introduce students to the basics of Telecommunication Systems.*
- *To understand the electronics concepts and their applications in Telecommunications*
- *To study Transmission media and voice communications*
- *To provide an overview on different wireless technologies and Data communications*
- *To offer in depth discussions on Broadband Technologies, Internet and Converged Networks.*

UNIT-I OVERVIEW OF TELECOMMUNICATIONS 9+3

Telecommunication networks, Classification of Data Networks, Telecommunication standards, Electronics for Telecommunication, Communication system parameters, Modulation and Multiplexing schemes.

UNIT-II TRANSMISSION MEDIA AND VOICE COMMUNICATIONS 9+3

Introduction -Copper Cables and Fiber optic Cables –Voice Communications: Public Telephone Network, Line Signalling, Trunk Signalling, Intelligent Network Services, Business Telephone Systems, Network Design parameters.

UNIT-III WIRELESS COMMUNICATIONS AND WAN 9+3

Introduction-Cellular Mobile Telephone Systems, Analog Vs Digital Access, WLAN, Satellite Communications, International Wireless Communication Technologies. Wide Area Networks-Introduction, packet switching networks,X.25, frame relay, SMDS,ISDN,SONET,ATM.

UNIT-IV MOBILE COMMUNICATION SERVICES 9+3

Development of Cellular Networks – structure of Second Generation Digital Mobile Networks, Evolving to 3G packet networks-Mobile Commerce, Enhanced Services and operation systems.

UNIT-V WIRELESS BROADBAND NETWORKS 9+3

802.11 WLAN-Broadband wireless access-Personal area networks-sensor networks.

Total Hours: 45+15

TEXT BOOKS:

1. Anu A.Gokhale , “Introduction to Telecommunications”, 2nd edition, Cengage Learning India private Limited, 2005.

2. Annabel Z.Dodd , " The Essential Guide to Telecommunications", 4th Edition, Pearson education, 2006.

REFERENCE BOOKS:

3. Wayne Tomasi,"Electronic Communication systems" 4th Edition, Pearson Education, 2001.
4. Marion Cole, "Introduction to Telecommunications –Voice, Data and Internet",Pearson Education, 2001.
5. Roger L.Freeman " Telecommunication System Engineering", John Wiley & sons,2004.

11UDK 604 **WEB TECHNOLOGY**

L	T	P	C
3	0	0	3

Course Objectives

This course enables students to understand web page site planning, management and maintenance. The course explains the concept of developing advanced HTML pages with the help of frames, scripting languages, and evolving technology like DHTML. The main objective behind introduction of this course is also to develop web sites which are secure and dynamic in nature and writing scripts which get executed on server as well.

UNIT I INTRODUCTION TO OOPS 6

Objected oriented concepts – object oriented programming (review only) — advanced concept in OOP – relationship – inheritance – abstract classes – polymorphism – Object Oriented design methodology – approach – best practices. UML class diagrams – interface – common base class-Object oriented concepts-object oriented programming-advanced concept in OOPS-relationship-inheritance.

UNIT II NETWORKING CONCEPTS 9

Internetworking – Working with TCP/IP – IP address – sub netting – DNS – VPN – proxy servers – firewalls – Client/Server concepts - World Wide Web – components of web application – MIME types, browsers and web servers – types of web content – URL – HTML – HTTP protocol – Web applications – performance – Application servers – Web security.

User Experience Design – Basic UX terminology – UXD in SDLC – Rapid prototyping in Requirements

UNIT III HTML AND SCRIPTING 10

Client Tier using HTML – Basic HTML tags – Look and feel using CSS – Client side scripting using Java Script and Validations - Document Object Model (DOM) – introduction to Java classes, Objects, Interfaces, Packages, Exception handling and Applets.

UNIT IV ADVANCED JAVA 10

Business tier using POJO (Plain Old Java Objects) – Introduction to Frameworks – Introduction to POJO – Multithreaded Programming – Java I/O – Java Database Connectivity (JDBC)

UNIT V SERVELETS 10

Presentation tier using JSP – Role of Java EE in Enterprise applications – Basics of Servlets - To introduce server side programming with JSP - Standard Tag Library.

Total Hours : 45

REFERENCE BOOKS

1. Douglas E Comer, Internet Book, The: Everything You Need to Know About Computer Networking and How the Internet Works, 4/E, Prentice Hall, 2007
2. Jeffrey C. Jackson, Web Technologies: A Computer Science Perspective, Prentice Hall, 2007
3. http://www.ietf.org/
4. http://www.w3.org/
5. http://www.vpnc.org/vpn-standards.html
6. Herbert Schildt, Java: The Complete Reference, McGraw-Hill Professional, 2006.
7. Michael Nash, Java Frameworks and Components , Cambridge University Press, 2002.
8. Ted Wugofski, XML Black Book 2nd Edition , Certification Insider Press
9. http://java.sun.com/docs/books/tutorial/
10. Developing Web Applications with JavaServer Faces found online at http://java.sun.com/developer/technicalArticles/GUI/JavaServerFaces/
11. Short introduction to log4j found online at http://logging.apache.org/log4j/1.2/manual.html
12. JUnit Cookbook by Kent Beck, Erich Gamma at http://junit.sourceforge.net/
13. http://java.sun.com/
14. http://www.junit.org/
15. Marty Hall and Larry Brown, Core Servlets and JavaServer Pages Vol. 1: Core Technologies 2nd Edition, Sun Microsystems.
16. Bryan Basham, Kathy Sierra, and Bert Bates, Head First Servlets and JSP, SPD O'Reilly, 2005.
17. The Complete reference - JSP

18. Servlet Tutorial can be found online at http://java.sun.com/docs/books/tutorial
19. http://java.sun.com/javaee/javaserverfaces/reference/docs/index.html
20. JSF Tutorial can be found online at
    http://java.sun.com/j2ee/1.4/docs/tutorial/doc/JSFIntro.html
21. Cay S.Horstmann Gary Cornell Core Java Volume-I Fundamentals 8th Edition, 2008.

11UDK605 PRINCIPLES OF MANAGEMENT

L	T	P	C
3	0	0	3

Course Objective

- *To get basic knowledge about management and its functions.*
- *To understand the evolution or historical development of management.*
- *To realize the various environments that affects the management.*
- *To know the social responsibilities of managers.*
- *To understand the international aspects of management.*
- *To know recent trends in management.*

UNIT – I INTRODUCTION TO MANAGEMENT 9

Definition, Concept, Importance and Nature of Management – Science or Art – Management and Administration – Levels of Management – Functions of Management – Managerial Skills – Roles and Characteristics of Managers – Evolution of Management: Early contributions, Taylor and Scientific Management, Fayol's Administrative Management– Approaches to Management – Managerial Environment and Social Responsibility of Managers.

UNIT – II PLANNING AND ORGANISING 9

Nature and Purpose of Planning – Types of plans – Steps in Planning – Strategies, Policies & Planning Premises – Forecasting – Decision Making. Nature and Purpose of Organizing – Formal and Informal Organization – Organizational Process : Job Design – Departmentation – Delegation of Authority – Span of Management.

UNIT – III STAFFING AND DIRECTING 9

Definition, System Approach to Staffing – Selection Process – Techniques – HRD – Performance Appraisal and Career Planning. Leadership: Meaning and Styles – Communication: Types of Communication – Process of Communications – Barriers and Breakdown – Effective Communication – Electronic Media in Communication.

UNIT – IV MOTIVATION AND CONTROLLING 9

Definition of Motivation – Motivation Theories – Motivational Techniques – Job Enrichment. Definition of Controlling – Process of Controlling – Types of Controlling: Preliminary control, Concurrent Control, Feedback Control and Feed Forward or Preventive Control –Control Techniques: Budget as Control- Management Audit – Information Technologies in Controlling.

UNIT – IV EMERGING TRENDS IN MANAGEMENT 9

Production and Productivity –Benchmarking– MBO – Business Process Reengineering (BPR) – CRM – ERP – Globalization – Outsourcing – Supply Chain Management – TQM.

Total Hours : 45

TEXT BOOKS:

1. Harold Koontz, Heinz Weihrich, "Essentials of Management: An International Perspective", 8th Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2009; ISBN-13: 978-0-07-014495-8.

2. Stephen P. Robbins, David A. Decenzo, Mary Coulter, "Fundamentals of Management: Essential Concepts and Applications", 7th Edition, Pearson Education / Prentice Hall, 2011; ISBN-13: 978-0-13-610982-2.

REFERENCE BOOKS:

1. M Govindarajan, and S Natarajan, "Principles of Management", Prentice Hall India (PHI) Learning, New Delhi, 2009; ISBN-978-81-203-2843-3.

2. Tripathy P.C and Reddy P.N, "Principles of Management", 4th Edition, Tata McGraw-Hill, 2008; ISBN-13: 978-0-07-022088-1.

3. J. P. Mahajan, "Management: Theory and Practice", Ane Books Pvt. Ltd, 2011; ISBN-13: 978-9-38-061857-9.

11UDK606 INDUSTRIAL PSYCHOLOGY AND WORK ETHICS

L	T	P	C
2	0	0	2

Course Objective

- *To equip the students with the knowledge of emerging trends in social, political, industrial, ethical and legal aspects affecting business decisions.*

UNIT-I INTRODUCTION 6

Introduction to Industrial Psychology – Definitions & Scope - Major influences on industrial Psychology- Scientific management and human relations schools Hawthorne Experiments. Individual in Workplace Motivation and Job satisfaction , stress management. Organizational culture, Leadership & group dynamics.

UNIT-II ENGINEERING PSYCHOLOGY 6

Work Environment & Engineering Psychology-fatigue. Boredom, accidents and safety.Job Analysis, Recruitment and Selection – Reliability & Validity of recruitment tests. Performance Management : Training & Development.

UNIT-III BUSINESS ENVIRONMENT AND ETHICS 6

Business environment - The concept and significance - constituents of business environment - Business and society, Business & ethics - Social responsibility - Environmental pollution and control.Business and culture- Business and Government - Political system and its influence on business - Indian constitution - Directive Principles of State Policy.Managing Ethics- meaning and types – framework of organizational theories and sources – ethics across culture – factors influencing business ethics – ethical decision making – ethical values and stakeholders- ethics and profit. Corporate Governance – structure of Boards- reforms in Boards – compensation issues – ethical leadership.

UNIT-IV GLOBALISATION AND GOVERNMENT RELATIONSHIPS 6

Globalisation of the economy – trends and issues, Politics and environment, MNCs and Government relationships- Introduction to GATT and WTO. Direct and indirect Tax structure, VAT, MODVAT - Service Tax problems and reforms -Expenditure Tax - Public debts &deficit financing.

UNIT –V LEGAL BUSINESS ENVIRONMENT **6**

Legal environment of business – Monopolies – Company Law, Competition Act 2002.Foreign Exchange Management Act- Securities and exchange board of India Act - Customs and Central Excise Act - Central and State sales Tax - Consumer protection Act Patents Act.

Total Hours: 30

TEXT BOOKS

1. Miner J.B.,"Industrial/Organizational Psychology", New York : McGraw Hill,1992
2. Aamodt, M.G.,"Industrial/Organizational Psychology : An Applied Approach", (5th edition) Wadsworth/Thompson : Belmont, C.A.,2002.
3. A.N Agarwal,"Indian economy", Steiner and Steiner,"Business Ethics", Mc-Graw Hill,2007

REFERENCES

1. Blum & Naylor,"Industrial Psychology. Its Theoretical & Social Foundations", CBS Publication,1982.
2. Aswathappa K.,"Human Resource Management" (fifth edition) New Delhi : Tata McGraw Hill,2008.
3. Surinder P.S Pruthi,"Economic & Managerial Environment In India",The University Of Michigam,1972

11UDK607 INTERNET PROGRAMMING LAB

L	T	P	C
0	0	3	2

LIST OF EXPERIMENTS

1. XML, Style sheet, Parser.
2. Client side scripting.
3. JSP, Servlets.
4. Session Management.
5. Remote Method Invocation.
6. Database Connectivity.

Total Hours : 45

11UDK608 NETWORK PROGRAMMING LAB

L	T	P	C
0	0	3	2

1. Study of system administration and network administration
2. Implementation of UDP
3. Implementation of TCP
4. Implementation of stop and wait protocol
5. Implementation of sliding window protocol
6. Implementation of shortest path algorithm
7. Implementation of distance vector algorithm
8. Implementation of link-state vector algorithm
9. Applications using TCP Sockets like
    a. Echo client and echo server
    b. File transfer
    c. Remote command execution
    d. Chat
    e. Concurrent server
10. Applications using UDP Sockets like
    a. DNS
    b. SNMP

Total Hours: 45

11UDK609 **MINI PROJECT**

L	T	P	C
0	0	3	2

The students who work on a project are expected to work towards the goals and milestones set in Major Project. At the end there would be a demonstration of the solution and possible future work on the same problem. A dissertation outlining the entire problem, including a survey of literature and the various results obtained along with their solutions is expected to be produced.

-(2 to 3 members depending on pbm nature)- Guide allocation

- Continous assessment (Guide mark and Committee assessment)

- Area Identification(major and minor)
- Find out open research issues
- Basic survey on a specific issue.(atleast 5 papers in recent years)
- Implement one base paper
- Presentation (3 nos)

11UDK701 CRYPTOGRAPHY AND NETWORK SECURITY

L	T	P	C
3	0	0	3

Course Objectives:

- *Familiarity with the major algorithms of historical and modern cryptography as documented in open literature.*
- *knowledge of issues involved in choice of algorithm and key size.*
- *ability to analyze performance of various cryptographic and cryptanalytic algorithms.*

UNIT-I INTRODUCTION AND SYMMETRIC CIPHERS 8

OSI Security Architecture- Traditional Stream ciphers- Substitution ciphers-Transposition ciphers-Stream and block ciphers. Modern Symmetric key ciphers - Data Encryption standard - DES analysis – structure -Multiple DES - Advanced data encryption standard – Transformation - Key Expansion – Analysis - Modern block ciphers.

UNIT-II ASYMMETRIC CIPHERS 8

Mathematics to cryptography – Primality testing – factorization – Chinese remainder theorem-Quadratic Congruence- Exponentiation and logarithm – RSA Cryptosystem- Rabin Cryptosystem – Elliptic Cryptosystem

UNIT-III MESSAGE INTEGRITY AND MESSAGE AUTHENTICATION 8

Message integrity and message authentication - Cryptographic hash functions - SHA - MD5 - Digital signature - Key management - private and public distribution.

UNIT-IV NETWORK SECURITY 12

Authentication applications: Kerberos- X.509 authentication Service- Electronic Mail Security – PGP – IKE- ISAKMP - S/MIME – IP Security – Web Security.

UNIT-V SYSTEM LEVEL SECURITY - 9

Intrusion detection – password management- Viruses and related Threats – Virus Counter measures- Firewall Design Principles – Trusted systems – Security in GSM – Security in 3G.

Total Hours: 45

TEXT BOOKS:

1. Behrouz A. Forouzan, “Cryptography and Network Security” Tata McGraw Hill Education Pvt .Ltd, NewDelhi, 2007

2. Atul Kahate, “Cryptography and Network Security” Second Edition, Tata McGraw Hill Education Pvt .Ltd, NewDelhi, 2009

3. William Stallings, “Cryptography and Network Security”, Fourth edition, Prentice hall, Newdelhi, 2009

REFERENCE BOOKS

1. Charlie Kaufman , Radia Perlman, and Mike Speciner, “ Network Security : PRIVATE Communication in a PUBLIC world”, Prentice hall, 2007

2. William Stallings, “Network Security Essentials : Applications and Standards”, Fourth edition, Prentice hall, Newdelhi, 2011

3. Wenbo Mao “Modern cryptography theory and practice” Pearson Education,2004

11UDK702 COMPONENT BASED TECHNOLOGY

L	T	P	C
3	1	0	4

Course Objective

- *Introduces in depth JAVA, CORBA and .NET Components*
- *Deals with Fundamental properties of components, technology and architecture and Middleware*
- *Component Frameworks and Development are covered in depth.*

UNIT-I INTRODUCTION 9+3

Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware

UNIT-II JAVA BASED COMPONENT TECHNOLOGIES 9+3

Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Session Bean-Entity Bean-Message Driven Bean - Arhitecture-Development of an application – RMI and RMI-IIOP

UNIT-III CORBA COMPONENT TECHNOLOGIES 9+3

Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – application server – model driven architecture

UNIT-IV .NET BASED COMPONENT TECHNOLOGIES 9+3

COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components - assemblies – appdomains – contexts – reflection – remoting- Connectors – contexts – CLR contexts and channels

UNIT-V COMPONENT DEVELOPMENT 9+3

Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools

Total Hours : 45 +15

TEXT BOOKS

1. Clemens Szyperski, "Component Software: Beyond Object-Oriented Programming", Pearson Education publishers, 2003
2. Ed Roman, "Mastering Enterprise Java Beans", Third Edition, John Wiley & Sons Inc., 2006
3. Hortsmann, Cornell, "CORE JAVA Vol-II" Sun Press, 2008.

REFERENCES

1. Mowbray, "Inside CORBA", Pearson Education, 2006.

11UDK703 OBJECT ORIENTED ANALYSIS AND DESIGN

L	T	P	C
3	0	0	3

Course Objectives:

- *To understand the fundamental principles of object oriented approaches*
- *To model software requirements and design.*
- *To gain knowledge on strategies for identifying objects and classes of objects, specification of software requirements and design, class hierarchies, software reuse, graphical notations*

UNIT I **8**

Introduction – Modelling as a design technique –UML diagrams- Class modeling –Object Constraint Language – State modeling – Interaction Modeling

UNIT II **9**

Inception – Evolutionary Requirements – Use Cases – Other Requirements – Domain Models – System Sequence Diagrams – Operation Contracts

UNIT III **10**

Requirements to Design – Logical Architecture and UML Package Diagrams – Object Design – Interaction Diagrams – Class Diagrams – Designing Objects with Responsibilities – Object Design Examples – Designing for Visibility

UNIT IV **8**

Mapping designs to code – Test Driven development and refactoring – UML Tools and UML as blueprint

UNIT V **10**

More Patterns – Analysis update – Objects with responsibilities – Applying design patterns – Architectural Analysis – Logical Architecture Refinement – Package Design – Persistence framework with patterns

Total Hours: 45

TEXT BOOKS:

1. Michael Blaha and James Rumbaugh, “Object-oriented modeling and design with UML”, Prentice-Hall of India, 2005. (Unit 1)

2. Craig Larman. “Applying UML and Patterns – An introduction to Object-Oriented Analysis and Design and Iterative Development”, 3rd ed, Pearson Education, 2005.

REFERENCES:

1. Booch, Grady. Object Oriented Analysis and Design. 2nd ed. Pearson Education.2000.

2. Ali Bahrami, “Object Oriented Systems Development”, McGraw-Hill, 1999.

3. Fowler, Martin. UML Distilled. 3rd ed. Pearson Education. 2004.

4. Lunn, Ken. Software development with UML. Palgrave Macmillan. 2003.

5. O’Docherty, Mike. Object-Oriented Analysis & Design. Wiley. 2005.

11UDK704 CASE TOOLS LAB

L	T	P	C
0	0	3	2

1. Study of case tools(Features)

Problem Study- Scope, Objectives, Identification of sub-problems (Decomposition), MVCArchitecture ,Requirements,SRS Preparation

2. Program Analysis and Project Planning. Thorough study of the problem – Identify project scope, Objectives, Infrastructure.

3. Software requirement Analysis Describe the individual Phases / Modules of the project, Identify deliverables.

4. Analysis Modeling using UML-object models(Interaction models)

List out the models(Reframe) use case, Activity,class,interaction,Statecharts. Component model and deployment model

Use work products – Data dictionary, Use diagrams and activity diagrams, build and test lass diagrams, Sequence diagrams and add interface to class diagrams.

5. Software Development and Debugging (coding)Automated code generation from models

6. Software Testing

Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor - Unit testing,Integration Testing

7. Reverse Engg- requirement change

SUGGESTED LIST OF APPLICATIONS

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System(EBooking, E purchase-payment model)
4. Payroll System
5. Expert Systems
6. ATM Systems (Various approaches)
7. Stock Maintenance
8. Real-Time Scheduler
9. Remote Procedure Call Implementation

10. Course Registration System

11.Lift Control System, Passport, vehicle registration(RTO)

Total Hours: 45

11UDK705 COMPONENT BASED TECHNOLOGY LAB

L	T	P	C
0	0	3	2

List of Experiments

1. Development of simple COM components in VB and use them in applications.

   ActiveX DLL

   Active Control

   ActiveX EXE

2. Deploying Java Bean Applications
3. RMI: Deploying RMI for client server applications. [2 Experiments]
4. Creation Of DLL Using VB And Deploy it in Java [2 Experiments]
5. Naming Services In CORBA
6. SIMPLE APPLICATION USING CORBA.
7. Deploying EJB: Stateful Session Bean and Stateless Session Bean
8. STUDY OF J2EE SERVER.

Software to be used:

- JDK 1.6 or later version
- Netbeans IDE
- Oracle J2EE Application server

Total Hours : 45

11UDK706 **PROJECT PHASE – I**

The students who work on a project are expected to work towards the goals and milestones set in Major Project. At the end there would be a demonstration of the solution and possible future work on the same problem. A dissertation outlining the entire problem, including a survey of literature and the various results obtained along with their solutions is expected to be produced.

-(2 to 3 members depending on problem nature)- Guide allocation

- Continuous assessment (Guide mark and Committee assessment)

- Area Identification
- Group formation
- Guide selection
- Find out open research issues
- Basic survey on a specific issue.(at least 5 papers in recent years)
- Perform literature survey
- Selection of base paper
- Modules identification
- Abstract preparation
- Preparation for zeroth review

11UDE711 CLIENT SERVER COMPUTING

L	T	P	C
3	0	0	3

Course Objectives:

- *Introduces the evolution and issues of client-server computing.*
- *Introduces the evolution of the computing environment, standards and open systems, client and server platform specialization, client-server communication in local and wide area networks and major communication protocols are used as a foundation.*

UNIT-I INTRODUCTION TO CLIENT/SERVER COMPUTING 9

Definition of Client server computing-Role of Middleware-Advantages-Evolution-Various Trends In client server computing-Components, Classes and Categories of Client server applications-Various Myths and Obstacles Hidden and Upfront- Open systems and standards-standard setting organizations-factors leading to success in client/server computing.

UNIT-II UNDERSTANDING CLIENT SERVER COMPUTING-THE CLIENT 9

Client Components-Client Operating system-GUI-Various Types-Application Logic-Database Access Tools-Interface Independence-Testing Interfaces-Development Aids

UNIT-III THE SERVER 9

Benchmarks-Categories of Server-Features of Server Machine-Classes of Server Machines –Server environment: NME, NCE, NOS, Loadable Modules-Server Requirements-Server Data management and Access Tools-SQL Data Base Servers.

UNIT-IV CLIENT SERVER AND INTERNET 9

Client server and Internet-Web Client Server-3 tier Client Server Web Style-CGI-States-Middleware in Client Server Environment

UNIT-VAPPLICATIONS 9

Data Warehouse Environment - OLAP and Multidimensional Data-Group Ware-Components of Groupware .

TEXT BOOKS

1. Dawana Travis Dewire, " Client Server Computing", Tata Mc-Graw Hill Education Pvt. Ltd., New Delhi, 2003

2. Robert Orfali, Dan Harkey & Jeri Edwards, “Essential Client/Server Survival Guide”,second edition, John Wiley & Sons, Singapore, 2003.

REFERENCE BOOKS

1. Eric J Johnson, “A complete guide to Client / Server Computing”, first edition, Prentice Hall, New Delhi, 2001
2. Smith & Guengerich, “Client /Server Computing”, Prentice Hall, New Delhi, 2002.
3. James E. Goldman, Phillip T. Rawles, Julie R. Mariga, “Client/Server Information Systems, Business Oriented Approach”, John Wiley & Sons, Singapore, 2000.

Total Hours : 45

11UDE712 ENTERPRISE RESOURCE PLANNING

	L	T	P	C
Course Objectives	**3**	**0**	**0**	**3**

- *To know the basics of ERP*
- *To understand the key implementation issues of ERP*
- *To know the business modules of ERP*
- *To be aware of some popular products in the area of ERP*
- *To appreciate the current and future trends in ERP*

UNIT-1 INTRODUCTION **9**

ERP: An Overview, Enterprise – Benefits of ERP, ERP and Related Technologies, Business Process Reengineering (BPR), Data Warehousing, Data Mining, OLAP, SCM

UNIT-II ERP IMPLEMENTATION **9**

ERP Implementation Lifecycle, Implementation Methodology, Hidden Costs, Organizing the Implementation, Vendors, Consultants and Users, Contracts with Vendors, Consultants and Employees, Project Management and Monitoring

UNIT-III THE BUSINESS MODULES **9**

Business modules in an ERP Package, Finance, Manufacturing, Human Resources, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution

UNIT-IV THE ERP MARKET **9**

ERP Market Place, SAP AG, Peoplesoft, Baan, JD Edwards, Oracle, QAD, SSA

UNIT-V ERP – PRESENT AND FUTURE **9**

Turbo Charge the ERP System, EIA, ERP and e-Commerce, ERP and Internet, Future Directions – Case studies

Total Hours : 45

TEXT BOOK

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill, New Delhi, 2007

REFERENCES

1. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology, USA, 3rd Edition, 2008.

2. Vinod Kumar Garg and Venkitakrishnan N K, “Enterprise Resource Planning – Concepts and Practice”, PHI, New Delhi, Second Edition, 2003.

11UDE713 SOFTWARE PERFORMANCE TESTING

L	T	P	C
3	0	0	3

Course Objective

- *To understand the performance testing process: planning, preparation, execution, and reporting*
- *To relate performance testing to the development process*
- *To understand performance goals and objectives*
- *To understand and select the various types of performance tests*

UNIT-I THE FUNDAMENTALS OF TESTING 9

Why testing is necessary-harm caused by defects in software- root causes- testing and quality assurance- what testing is- general testing principles- fundamental test process and the psychology of testing.

UNIT-II TESTING THROUGHOUT THE SOFTWARE LIFECYCLE 9

Software development models- relationship between development, test activities and work products in the development life cycle, project and product characteristics and context- test levels, objectives, typical objects and targets of testing- functional, non-functional, structural and change-related testing- confirmation and regression testing- maintenance testing-regression testing and impact analysis in maintenance.

UNIT-III INTEGRATION TESTING AND PERFORMANCE TESTING 9

Integration Testing as a Type of Testing, Integration Testing as a Phase of Testing- Scenario Testing- System And Acceptance Testing- Overview- Functional Versus Non-Functional- System Testing & Non-Functional- Acceptance Testing- Performance Testing- Introduction- Factors- Methodology- Tools & Process.

UNIT-IV SOFTWARE TEST AUTOMATION 9

Terms used in Automation - Skills needed for Automation -What to Automate- Scope of Automation - Design and Architecture for Automation - Generic Requirements for Test Tools , Process Model for Automation - Selecting a Test Tool -Automation for Extreme Programming Model- Challenges. Test Metrics And Measurements- Metrics & Measurements- Types-Project-Progress-Productivity- Release.

UNIT-V TOOL SUPPORT FOR TESTING 9

Types of test tool- effective use of tools- potential benefits and risks- introducing a tool into an organization.

Total Hours : 45

TEXT BOOKS

1. Boris Beizer, “Software Testing Techniques”, Dream Tech press, New Delhi, 1990.

2. Limaye L G, “Software Testing – Principles, Techniques and Tools”, Tata Mc- Graw Hill Education Pvt. Ltd., New Delhi, 2009

REFERENCE BOOKS

1.Srinivasa Desikan & Gopalaswamy Ramesh, “Software Testing, Principles and Practices”, Pearson Education, 2007.

2.Brian Marick ,”The Craft of Software Testing” Pearson Education, 2008

11UDE714 EMBEDDED SYSTEMS

L	T	P	C
3	0	0	3

Course Objective

- *To understand concept of Embedded system hardware and firmware design.*
- *Study of development tools and architecture.*
- *An understanding of compilers, assemblers, linkers, operating system and microcontroller.*

UNIT-I INTRODUCTION TO EMBEDDED SYSTEMS 9

Definition and Classification – Overview of Processors and hardware units in an embedded system – Software embedded into the system – Exemplary Embedded Systems – Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits. Characteristics and Quality Attributes of Embedded systems. Embedded Systems – Application and Domain Specific.

UNIT-II DEVICES AND BUSES FOR DEVICES NETWORK 9

I/O Devices - Device I/O Types and Examples – Synchronous - Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices - UART and HDLC - Parallel Port Devices – Sophisticated interfacing features in Devices/Ports-Timer and Counting Devices - '12C', 'USB', 'CAN' and advanced I/O Serial high speed buses-ISA, PCI, PCI-X, cPCI and advanced buses.Hardware Software Co-Design and Program Modelling – Fundamental Issues-Computational Models- Introduction to UML- Hardware Software Trade-offs.

UNIT-III PROGRAMMING CONCEPTS AND EMBEDDED PROGRAMMING IN C, C++ 9

Programming in assembly language (ALP) vs. High Level Language - C Program Elements, Macros and functions -Use of Pointers - NULL Pointers - Use of Function Calls – Multiple function calls in a Cyclic Order in the Main Function Pointers – Function Queues and Interrupt Service Routines Queues Pointers – Concepts of EMBEDDED PROGRAMMING in C++ - Objected Oriented Programming – Embedded Programming in C++, 'C' Program compilers – Cross compiler – Optimization of memory codes.

UNIT-IV REAL TIME OPERATING SYSTEMS – PART – 1 9

Definitions of process, tasks and threads – Clear cut distinction between functions –ISRs and tasks by their characteristics – Operating System Services- Goals –Structures- Kernel - Process Management – Memory Management – Device Management – File System Organisation and Implementation – I/O Subsystems –Interrupt Routines Handling in RTOS, REAL TIME OPERATING SYSTEMS : RTOS Task scheduling models - Handling of task scheduling and latency and deadlines as performance metrics – Co-operative Round Robin Scheduling – Cyclic Scheduling with Time Slicing (Rate Monotonics Co-operative Scheduling) – Preemptive Scheduling Model strategy by a Scheduler – Critical Section Service by a Preemptive Scheduler – Fixed (Static) Real time scheduling of tasks - INTER PROCESS COMMUNICATION AND SYNCHRONISATION – Shared data problem – Use of Semaphore(s) – Priority Inversion Problem and Deadlock Situations – Inter Process Communications using Signals – Semaphore Flag or mutex as Resource key – Message Queues – Mailboxes – Pipes – Virtual (Logical) Sockets – Remote Procedure Calls (RPCs).

UNIT-V REAL TIME OPERATING SYSTEMS – PART - 2 9

Study of Micro C/OS-II or Vx Works or Any other popular RTOS – RTOS System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions –Queue Related Functions – Case Studies of Programming with RTOS – Understanding Case Definition – Multiple Tasks and their functions – Creating a list of tasks – Functions and IPCs – Exemplary Coding Steps.

Total Hours: 45

TEXT BOOKS:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, Second Edition, Tata McGraw-Hill, New Delhi, 2007

2. Shibu K.V., Introduction to Embedded Systems, Third Reprint, Tata McGraw-Hill, New Delhi, 2011.

REFERENCE BOOKS:

1. Steve Heath, Embedded Systems Design, Second Edition, Elesvier India Pvt., Ltd, New Delhi, 2007,

2. David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint , New Delhi, 2000

3. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design – Harcourt India, Morgan Kaufman Publishers, First Indian Reprint, 2001

4. Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware / Software Introduction, John Wiley, 2002.

11UDE715 TOTAL QUALITY MANAGEMENT

L	T	P	C
3	0	0	3

Course Objective

- *To understand the Total Quality Management concepts, principles and the various tools available to achieve Total Quality Management.*
- *To understand both technical and philosophical issues surrounding quality management.*
- *To understand the foundational elements of total quality management.*
- *To analyze the sources and remedies of customer dissatisfaction.*
- *To apply quantitative and qualitative tools and techniques in appropriate ways to investigate and ultimately resolve product or service quality concerns.*
- *To create an awareness about the ISO and QS certification process and its need for the industries.*

UNIT – I INTRODUCTION **9**

Definition of Quality – Dimensions of Quality – Quality Planning – Quality Costs – Introduction to TQM – Historical Review of Quality Management – Principles of TQM – Quality Council – Quality Statements – Deming Philosophy – Barriers to TQM Implementation.

UNIT – II TQM PRINCIPLES **9**

Customer Satisfaction: Customer Perception of Quality, Customer Complaints or Customer Feed Back, Service Quality or Customer Service, Customer Retention – Employee Involvement: Motivation (Maslow's Need Theory, Herzberg's Two Factor Theory), Empowerment, Teams and Team Work, Recognition and Reward, Performance Appraisal.

UNIT – III TQM PRINCIPLES: QUALITY PHILOSOPHIES **9**

Continuous Process Improvement: Juran Trilogy, PDSA Cycle or Deming Wheel, 5S, Kaizen – Supplier Partnership: Partnering, Sourcing, Supplier Selection, Supplier Rating, and Relationship

Development – Performance Measures: Basic Concepts, Strategy, Performance Measures Presentation.

UNIT – IV TQM TOOLS AND TECHNIQUES 9

The Seven Traditional Tools of Quality – New Seven Management Tools – Six Sigma – Benchmarking: Reasons to Benchmark, Benchmarking Process – Quality Function Deployment (QFD): House of Quality, QFD Process and Benefits – Taguchi Quality Loss Function – Total Productive Maintenance (TPM) – FMEA.

UNIT – V QUALITY MANAGEMENT SYSTEMS 9

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, TS 16949, ISO 14000 – Concept, Requirements and Benefits.

Total Hours : 45

TEXT BOOK

1. Dale H.Besterfiled, et al., "Total Quality Management", Revised 3rd Edition, Pearson Education, 2011; ISBN: 978-81-317-3227-4.

2. James R.Evans & William M.Lidsay, "Managing For Quality And Performance Excellence", 8th Edition, South-Western (Thomson Learning), © 2011; ISBN-13:978-03-247-8320-9.

REFERENCE BOOKS

1. Poornima M Charantimath, "Total Quality Management", 2nd Edition, Pearson Education, 2011; ISBN: 978-81-317-3262-5.

2. V.E. Sower, "Essential of Quality with Cases and Experiential Exercises", 1st Edition, Wiley, February 2010, © 2011; ISBN: 978-0-470-50959-3.

3. M. Zeiri, "Total Quality Management for Engineers", Wood Head Publishers, 2010; ISBN-13: 978-18-557-3024-3.

11UDE721 SOFT COMPUTING

L	T	P	C
3	0	0	3

Course Objectives

• To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience

• To become familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inferencing systems

• To provide the mathematical background for carrying out the optimization associated with neural network learning

• To familiarize with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations

• To introduce case studies utilizing the above and illustrate the intelligent behavior of programs based on soft computing

UNIT-I FUZZY SET THEORY 10

Introduction to Neuro – Fuzzy and Soft Computing – Fuzzy Sets – Basic Definition and Terminology – Set-theoretic Operations – Member Function 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 – Input Space Partitioning and Fuzzy Modeling.

UNIT-II OPTIMIZATION 8

Derivative-based Optimization – Descent Methods – The Method of Steepest Descent – Classical Newton's Method – Step Size Determination – Derivative-free Optimization – Genetic Algorithms – Simulated Annealing – Random Search – Downhill Simplex Search.

UNIT- III NEURAL NETWORKS 10

Supervised Learning Neural Networks – Perceptrons - Adaline – Backpropagation Mutilayer Perceptrons – Radial Basis Function Networks – Unsupervised Learning Neural Networks – Competitive Learning Networks – Kohonen Self-Organizing Networks – Learning Vector Quantization – Hebbian Learning.

UNIT-IV NEURO FUZZY MODELING **9**

Adaptive Neuro-Fuzzy Inference Systems – Architecture – Hybrid Learning Algorithm – Learning Methods that Cross-fertilize ANFIS and RBFN – Coactive Neuro Fuzzy Modeling – Framework Neuron Functions for Adaptive Networks – Neuro Fuzzy Spectrum.

UNIT-V APPLICATIONS OF COMPUTATIONAL INTELLIGENCE **8**

Printed Character Recognition – Inverse Kinematics Problems – Automobile Fuel Efficiency Prediction – Soft Computing for Color Recipe Prediction.

Total Hours : 45

TEXT BOOK

1. J.S.R.Jang, C.T.Sun and E.Mizutani, “Neuro-Fuzzy and Soft Computing”, PHI, 2006

REFERENCES

1. Timothy J.Ross, “Fuzzy Logic with Engineering Applications”, Wiley India, 2009

2. Davis E.Goldberg, “Genetic Algorithms: Search, Optimization and Machine Learning”, Addison Wesley, N.Y., 1989.

3. S. Rajasekaran and G.A.V.Pai, “Neural Networks, Fuzzy Logic and Genetic Algorithms”, PHI, 2005.

4. R.Eberhart, P.Simpson and R.Dobbins, “Computational Intelligence - PC Tools”, AP Professional, Boston, 1996.

11UDE722 CLOUD COMPUTING

L	T	P	C
3	0	0	3

Course Objectives

- *The course aims to introduce the different concepts and mechanisms underpinning Cloud computing and its potential impacts on businesses.*
- *The course provide a detailed description of technologies and approaches enabling Cloud computing such as service orientation infrastructures service-orientation, Internet infrastructures, virtualization, time-sharing, distributed computing, multi-tenancy and resource provisioning techniques.*
- *To enable the students to analyze and explain key aspects of building for and/or migrating systems to Cloud such as costs involved, potential benefits, security issues, and standards.*

UNIT-I UNDERSTANDING CLOUD COMPUTING 8

Cloud Computing Basics– Evolution of Cloud Computing – Cloud Architecture – Cloud Storage – Benefits – Applications –Intranets and the Cloud – Movers in the Cloud - Limitations

UNIT-II DEVELOPING CLOUD SERVICES 10

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools

UNIT-III USING CLOUD SERVICES 7

Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT IV COLLABORATING ONLINE 10

Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications - Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing - Collaborating on Databases

UNIT-V CLOUD SECURITY 10

Cloud Information Security Objectives - Cloud Security Services – Design Principles – Secure Cloud Software requirements - Approaches to Cloud Software requirements Engineering – Secure Cloud Software Testing – Cloud Computing Risk Issues

Total Hours: 45

TEXT BOOK

1. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach" , TataMcGraw-Hill, 2009
2. Michael Miller, " Cloud Computing", Pearson Education, New Delhi, 2009
3. Ronald L. Krutz, Russell Dean Vines, " Cloud Security", Wiley India Pvt. Ltd., 2010
4. Rajkumar Buyya, James Broberg, Andrzej Gościński, "Cloud Computing: Principles and Paradigms", John Wiley Inc Publication, 2011

11UDE723 E – COMMERCE

Course Objectives:

L	T	P	C
3	0	0	3

- *Examine current and emerging issues of managing E-commerce.*
- *Evaluate infrastructure planning and frameworks required for E-commerce.*
- *Analyse business models for E-commerce applications.*
- *Distinguish the legal and ethical issues involved in E commerce.*
- *Explain the marketing strategies aligned to E-commerce.*
- *Analyse how E-commerce can be leveraged for business applications.*

UNIT – I INTRODUCTION **9**

Ecommerce -Various Business Models-Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications. Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT – II ELECTRONIC PAYMENTS **9**

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks inElectronic Payment systems. Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT – III ORGANIZATIONAL COMMERCE **9**

Intra Organizational Commerce - work Flow, Automation Customization and internalCommerce, Supply chain Management.

UNIT – IV DIGITAL COMMERCE **9**

Corporate Digital Library - Document Library, digital Document types, corporate DataWarehouses. Advertising and Marketing - Information based marketing, Advertising onInternet, on-line marketing process, market research.

UNIT – V INFORMATION **9**

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering. Digital Video and electronic Commerce,Desktop video processing, Desktop video conferencing.

Total Hours : 45

TEXT BOOKS

1. Ravi Kalakata, Whinston, “Frontiers of Electronic Commerce”, Pearson Education,New Delhi, 2004

2**.** P T Joseph, " E-Commerce – An Indian Perspective" Prentice Hall of India, ThirdEdition, New Delhi, 2008.

REFERENCES

1. Kamlesh K Bajaj, Debjani Nag, " E-Commerce – Cutting Edge of Business", TataMcGraw Hill, New Delhi, 2003

11UDE724 C# AND .NET PROGRAMMING

L	T	P	C
3	0	0	3

Course Objective

- *To introduce the students to the fundamentals of C#, .NET Framework, databases and Web application development with ASP.NET*
- *Students will learn how to build dynamic data-driven Web applications with SQL Server and ASP.NET.*

UNIT-I INTRODUCTION 9

The C# environment – Overview of C# - Literals,Variables and Data Types – Operators and Expressions, Decision Making, Branching and Looping .

UNIT-II METHODS AND ARRAYS 9

Methods in C# – Overloading methods. Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings –Structures, Nested Structures –Enumerations, Initialization, base types and type conversion.

UNIT-III CLASSES AND OBJECTS 9

Classes and Objects – Definition, Creating objects, Constructors and destructors, Nesting, Overloaded constructors, Inheritance and Polymorphism – classical, multilevel, hierarchical inheritances, Subclass, Constructors, Overriding methods, Abstract Classes and Methods, Interfaces and Inheritance – Operator Overloading.

UNIT-IV DELEGATES AND DECLARATION METHODS 9

Delegates – Declaration Methods, Initialization and Invocation, Multicast delegates, I/O operations – Console Input/Output, Formatting, Errors and Exceptions, Type of Errors – Exceptions – Exception for debugging.

UNIT-V APPLICATION DEVELOPMENT ON .NET 9

Building Windows Applications, Accessing Data with ADO.NET. Programming Web Applications with Web Forms, Programming Web Services.

Total Hours: 45

TEXT BOOKS

1. E. Balagurusamy, “Programming in C#”, Tata McGraw-Hill, New Delhi, 2008.

2. J. Liberty, “Programming C#”, 2nd ed., O’Reilly, New Delhi, 2002.

REFERENCES

1. Lippman, C# Primer, 3rd Edition, Pearson Education, Delhi, 2002.

2. Liberty, J. Programming C#, Second Edition, O'Reilly & Associates Inc.,California, 2002.

3. Albahari, B. Prayton, P. and Marill, B. C# Essentials, O'Reilly & Associates Inc., California, 2002.

11UDE725 SOCIOLOGY AND GLOBAL ISSUES

L	T	P	C
3	0	0	3

Course Objectives:

- *To give knowledge to students about scope and development of Sociology as a scientific discipline.*
- *To understand the issue relating to science, technology and society in India both in the historical and globalization contexts.*
- *To make the student understand industry as a social system and the social relations existing in the modern Industry.*
- *Making the students to understand about sociological conception of work, approaches to work and work personality.*
- *Making them to understand perspectives of social problems and identifying causatives, so that they will be in a position to arrive the factual remedies for reducing/ eliminating /preventing from their perspectives.*

UNIT-I FOUNDATIONS OF SOCIOLOGY 9

Origin and Development of Sociology as an Independent Discipline - Nature and Scope - Its Relationship with Other Social Sciences - Uses of Sociology – Basic Concepts. Individual and Society: Theories about the Origin of Human Society – The Role of Heredity and Environment in the Development of Individual.

UNIT-II SCIENCE, TECHNOLOGY AND SOCIETY 9

The study of Science-its importance, Relationship between society and science and vice-versa, Science as a social system, norms of science, relationship between science and technology. Science Education in Contemporary India: Primary level to research level, performance of universities in the development of technology, interrelationship between industry and universities.

UNIT-III RELATED ISSUES **9**

Globalization and Liberalization and their impact on Indian Science and Technology: WTO and issues related to intellectual property rights, MNC and Indian industry, political economy of science and technology at the national and international levels.

UNIT-IV SOCIOLOGY OF INDUSTRY **9**

Internal structure of an Industry – Industrial organization formal and informal organization – Industrial management – line and staff. Importance of communication in industry. Origin and development of scientific management – Human relations approach and its impact on Modern Industry. Industrial collaboration – problems of collaboration – the techniques of delegation – effective industrial management – sharing of power – joint consultation. Social environment in Industry – organizational cli mate – organizational commitment – job satisfaction – leadership – Morale and motivation.

UNIT-V GLOBAL ISSUES **9**

Definition, Nature, Characteristics of Social Problems Social Change, Social Disorganization, Social Deviance.Crime, Alcoholism and Drug Addiction, White-collar Crime, Organized Crime.Physical and Mental Handicap, AIDS, Child Labour, Problems of Women,Problems of the Elderly, Marital Conflict and Family Dissolution, Stress and Stress Management. Untouchability, Illiteracy, Poverty, Unemployment Regionalism, Extremism, Degradation of the Environment.

Total Hours: 45

TEXT BOOKS

1. Ferrante, Joan.,"Sociology: A Global Perspective", Seventh Edition. Thomson,2008.
2. Stanley Eitzen, Maxine Baca Zinn and Kelly Eitzen Smith, "Social Problems",12th Edition, Prentice Hall, 2010.

REFERENCES

1. Stewart, E.W. and Glynn, J.A.," Introduction to Sociology", New York: McGraw-Hill,1985.
2. Barber, Bernard,"Science and the social order", New York, Free Press. 1952.
3. Gisbert, P.S.J.**,"**Fundamental of Industrial Sociology", New York: McGraw Hill, 1969.
4. Jones B. J et.al.,"Social Problems: Issues, Opinions and Solutions", New York: McGraw Hill, Inc., 1988.

11UDK801 MOBILE COMPUTING

L	T	P	C
3	1	0	4

Course Objective

- *Mobile Computing starts from understanding the basics of wired/wireless transmission and reception of voice, data, images and pictures.*
- *It deals with current communication methodologies, their advancements and the future technologies. Communication also deals security issues for transmitting sensitive information.*
- *Many Quality parameters are considered and based on the Quality issues, the suitable technology can be adopted.*
- *The software and hardware needed for mobile computing are also dealt.*

UNIT - I INTRODUCTION 9+3

Introduction – Wireless Transmission - Medium Access Control: Motivation for Specialized MAC- SDMA- FDMA- TDMA- CDMA- Comparison of Access mechanisms; Tele communications systems : GSM, GPRS and their architectures, DECT- TETRA – UMTS- IMT2000; – Satellite Systems: Basics- Routing- Localization- Handover

UNIT – II WIRELESS LAN 9+3

Infrastructure and Ad-Hoc Network – IEEE 802.11: System and protocol architecture – MAC management – 802.11b – 802.11a; Bluetooth: Architecture – Radio layer – Baseband layer – Link manager protocol – L2CAP – Security – SDP – Profiles – IEEE 802.15 – IrDA - ZigBee

UNIT - III MOBILE NETWORK LAYER 9+3

Mobile IP: Goals – Assumptions and Requirement – Entities – IP packet Delivery-

Agent Advertisement and Discovery – Registration – Tunneling and Encapsulation –

Optimization – Reverse Tunneling – IPv6 – IP micro-mobility support - DHCP- Mobile Ad hoc Networks: Routing – DSDV – DSR – Alternative Metrics – Overview ad-hoc routing protocols

UNIT – IV MOBILE TRANSPORT LAYER 9+3

Traditional TCP- Indirect TCP- Snooping TCP- Mobile TCP- Fast retransmit/ Fast

Recovery- Transmission/ Timeout Freezing – Selective Retransmission- Transaction

Oriented TCP; Mobile Operating Systems: Palm OS, Windows CE, Symbion OS, Android OS

UNIT - V WAP AND MOBILE LANGUAGES 9+3

WAP (1.x) Architecture – WAP 2.0 –WML; Mobile Ad-hoc and Sensor Networks: Introduction – MANET - Sensor Networks – Applications; Mobile Application Languages: XML, JAVA, J2ME and JavaCard;

Total Hours: 45+15

TEXT BOOKS

1. Jochen H. Schiller, “Mobile Communications”, second edition, Pearson Education,New Delhi, 2007.

2. Raj Kamal, “Mobile Computing”, Oxford University Press, New Delhi, 2007.

REFERENCES

1. William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education, 2002.

2. Dharma Prakash Agarval, Qing , An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, Singapore, 2005.

3. Jon W. Mark, Weihua Zhuang, “Wireless Communications and Networking”, Prentice Hall, New Delhi, 2007.

5. 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.

11UDE811 HIGH SPEED NETWORKS

L	T	P	C
3	0	0	3

Course Objectives:

- *Discuss about different types of networks that are available in providing high speed for data traffic.*
- *Discusses about congestion and traffic management*
- *Know all possible problems involved during routing of packets.*
- *Know about various services and QoS Factors*

Learning Outcome:

On successful completion of this course,

1. Students will be able to understand the different types of technologies available for high speed in
2. Students will be able to compare the performance of ATM with frame relay and packet switching networks in terms cost, speed, data rate and other factors.
3. Students will be able to realise the importance of congestion and routing during heavy data traffic and ensure that they choose appropriate algorithms and protocols for efficient traffic management.

Students will be ale to know about various services available and also gains knowledge about the various QoS Factors and protocols for the support.

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 LAN's: Fast Ethernet, Gigabit Ethernet, Fiber Channel - Wireless LAN's: applications, requirements - Architecture of 802.11

UNIT – II CONGESTION AND TRAFFIC MANAGEMENT 9

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

UNIT – III TCP AND ATM CONGESTION CONTROL 9

TCP Flow control - TCP Congestion Control - Retransmission - Timer Management -Exponential RTO backoff - KARN's Algorithm - Window management - Performance of TCP over ATM. Traffic and Congestion control in ATM - Requirements - Attributes - Traffic Management Frame work, Traffic Control – ABR traffic Management - ABR rate control, RM cell formats, ABR Capacity allocations - GFR traffic management.

UNIT – IV INTEGRATED AND DIFFERENTIATED SERVICES 9

Integrated Services Architecture - Approach, Components, Services- Queuing Discipline, FQ, PS, BRFQ, GPS, WFQ - Random Early Detection, Differentiated Services.

UNIT – V PROTOCOLS FOR QOS SUPPORT 9

RSVP - Goals & Characteristics, Data Flow, RSVP operations, Protocol Mechanisms - Multiprotocol Label Switching - Operations, Label Stacking, Protocol details - RTP - Protocol Architecture, Data Transfer Protocol, RTCP.

Total Hours: 45

TEXT BOOKS

1. William Stallings, "HIGH SPEED NETWORKS AND INTERNET", Pearson Education, Second Edition, 2010.

REFERENCE BOOKS

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
3. William Stallings, "High-Speed Networks TCP/IP and Design", Prentice-Hall of India Limited
4. Mahbub Hassan; Raj Jain, "High performance TCP/IP networking : concepts, issues, and solutions", Pearson Education, 2005

11UDE812 OPEN SOURCE SYSTEMS

L	T	P	C
3	0	0	3

Course Objectives:

- *To understand the importance of FOSS and Linux packages*
- *To learn different open source non relational databases.*
- *To have an introductory knowledge about the python and perl script*
- *To know the fundamental concepts of Ruby and to work with different open source.*

UNIT I INTRODUCTION 9

Introduction to Software Terminologies- Overview of Free/Open Source Software-- Definition of FOSS & GNU--History of GNU/Linux and the Free Software Movement , Advantages of Free Software and GNU/Linux, FOSS usage , trends and potential—global and Indian-Free Software Licenses(GPL, LGPL, AGPL). Installing software – from source code as well as using binary packages-Understanding build systems -- constructing make files and using make, using autoconf and autogen to automatically generate make files tailored for different development environments.

UNIT II DATABASE MANAGEMENT SYSTEM 9

NoSQL definition-relational Vs non relational database-working with NoSQL-Running MongoDB-Getting A Database Connection-Inserting Data into A Collection-Accessing Data From a Query-CouchDB-Developing with CouchDB-Example application-Deploying CouchDB.

UNIT III PYTHON & PERL 9

Python-Introduction-Data Structure-OOP-Python Connectivity with open source Database; Perl-Introduction- OOP-Perl Connectivity with open source Database.

UNIT IV RUBY 9

Ruby-getting started- Arrays and Hashes- Control Structures- Regular Expressions- Blocks and Iterators- basic input and output-classes- objects- and variables- modules- exceptions, catch, and throw.

UNIT V GRAPHICS AND MULTIMEDIA 9

Record save/ audio/video from screen using: Cam Studio; Create schematic drawings using: XCircuit; protect the computer against viruses using: ClamWin; Create/edit 3d graphics using: Nebula; Edit an image using: GIMP; Download an entire website using: webfetch.

Total Hours: 45+15

TEXT BOOKS

1. Linux in easy steps, Fifth Edition, Mike Mcgrath; TMH Edition; 2010

2. Programming Ruby: The Pragmatic Programmers' Guide; Second Edition; Dave Thomas, with Chad Fowler and Andy Hunt

3. CouchDB: Definitive Guide; J.Chris Anderson; First Edition; O'Reilly series.

4. Wesley J.Chun, Core Python Programming, Prentice Hall, 2007

5. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

ON-LINE MATERIALS

1. http://www.gnu.org/
2. http://nosql-database.org/
3. http://camstudio.org/
4. http://opencircuitdesign.com/xcircuit/
5. http://www.clamwin.com/
6. http://www.gimp.org/

11UDE813 **SEMANTIC WEB**

L	T	P	C
3	0	0	3

Course Objectives

- *To explain the features, rationale and advantages of semantic web technology*
- *To explain the concepts of RDF model and RDF schema*
- *To analyze the requirements and features of Web ontology Language (OWL)*
- *To describe rule based reasoners for RDFS and OWL*
- *To analyze application cases in Data Integration, Data Exchange, Knowledge Management, e-learning and web services*
- *To discuss the methodologies in Ontology Engineering and research issues in semantic web technology*

UNIT-I INTRODUCTION TO THE SEMANTIC WEB 9

Overview and Introduction – Knowledge Representation – Building Models – Exchanging Information – Semantic web technologies – Ontologies and Description Logic

UNIT-II STRUCTURED WEB DOCUMENTS AND RESOURCE DESCRIPTION FRAMEWORK (RDF) 9

Introduction to RDF – Syntax for RDF - Simple ontologies in RDF schema – Encoding of special Data Structures – RDF Formal Semantics – Model Theoretic semantics for RDF – Syntactic Reasoning with Deduction Rules – The Semantic limits of RDF(s) – Programming with RDF, XML

UNIT-III WEB ONTOLOGY LANGUAGE (OWL) 9

OWL syntax and Intuitive semantics - OWL Species – The Forthcoming OWL 2 Standard – OWL Formal Semantics – Description Logic - Model Theoretic Semantics of OWL – Automated Reasoning with OWL – Logic reasoning for the semantic web

UNIT-IV RULES AND QUERIES 9

Ontology and Rules – What is a Rule – Datalog as a First Order Rule Language – Combining Rules with OWL DL – Rule Interchange Format (RIF) – SPARQL – Query Language for RDF – Conjunctive Queries for OWL DL

UNIT-V SEMANTIC WEB APLICATIONS 9

Ontology Engineering – Web Data Exchange – Semantic WIKIS – Semantic Portals – Semantic Meta Data – Semantic Web in Life Sciences- Future Applications – Software Tools – Protégé tool case study.

Total Hours: 45

TEXT BOOKS

3. Foundations of Semantic Web Technologies, Pascal Hitzler, Markus Krotzsch, Sebastian Rudolph, CRC Press, 2010.

REFERENCES

5. The Semantic Web - "A Guide to the future of XML, Web Services and Knowledge Management", Wiley Publications, 2003.

JOURNAL

1. *Journal of Web Semantics*, Elsevier B.V., T. Finin, C. Goble, R. Studer (Eds.), http://www.elsevier.com/wps/find/journaldescription.cws_home/671322/description

11UDE814 MANAGEMENT INFORMATION SYSTEMS

Course Objective

L	T	P	C
3	0	0	3

- *To know the basics of managing the information*
- *To understand the design, development and maintenance of information systems.*
- *To understand basic issues in knowledge management and information systems.*

UNIT - I INFORMATION SYSTEM AND ORGANIZATION 9

Matching the Information System Plan to the Organizational Strategic Plan – Identifying Key Organizational Objective and Processes and Developing an Information System Development – User role in Systems Development Process – Maintainability and Recoverability in System Design.

UNIT - II REPRESENTATION AND ANALYSIS OF SYSTEM STRUCTURE 9

Models for Representing Systems: Mathematical, Graphical and Hierarchical (Organization Chart, Tree Diagram) – Information Flow – Process Flow – Methods and Heuristics – Decomposition and Aggregation – Information Architecture – Application of System Representation to Case Studies.

UNIT - III SYSTEMS, INFORMATION AND DECISION THEORY 9

Information Theory – Information Content and Redundancy – Classification and Compression – Summarizing and Filtering – Inferences and Uncertainty – Identifying Information needed to Support Decision Making – Human Factors – Problem characteristics and Information System Capabilities in Decision Making.

UNIT - IV INFORMATION SYSTEM APPLICATION 9

Transaction Processing Applications – Basic Accounting Application – Applications for Budgeting and Planning – Other use of Information Technology: Automation – Word Processing – Electronic Mail – Evaluation Remote Conferencing and Graphics – System and Selection – Cost Benefit – Centralized versus Decentralized Allocation Mechanism.

UNIT - V DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEMS 9

Systems analysis and design – System development life cycle – Limitation – End User Development – Managing End Users – off– the shelf software packages – Outsourcing – Comparison of different methodologies.

Total Hours : 45

TEXT BOOKS:

1. Laudon K.C, Laudon J.P, Brabston M.E, “Management Information Systems - Managing the digital firm”, Pearon Education, 2009.

REFERENCES:

1. Turban E.F, Potter R.E, “Introduction to Information Technology”; Wiley, 2009.

2. Jeffrey A.Hoffer, Joey F.George, Joseph S. Valachich, “Modern Systems Analysis and Design”, Third Edition, Prentice Hall, 2010.

11UDE815 ADVANCED JAVA PROGRAMMING

L	T	P	C
3	0	0	3

Course Objectives:

- *Provides advanced training in developing software using the Java*
- *Platform, Standard Edition, or Java SE.*
- *Intended for students to get trained in structured and object-oriented Java programming,*
- *Involves API and exception handling.*

UNIT-I JAVA FUNDAMENTALS **9**

Introduction to java-Classes, object, packages, interfaces, Java I/O streaming – filter and pipe streams – Byte Code interpretation -reflection – Dynamic Reflexive Classes – Threading – Java Native Interfaces-Swing.

UNIT-II NETWORK PROGRAMMING IN JAVA **9**

Sockets – secure sockets – custom sockets – UDP datagrams – multicast sockets – URL classes – Reading Data from the server – writing data –configuring the connection – Reading the header – telnet application – Java Messaging services

UNIT-III APPLICATIONS IN DISTRIBUTED ENVIRONMENT **9**

Remote method Invocation – activation models – RMI custom sockets – Object Serialization – RMI – IIOP implementation – CORBA – IDL technology – Naming Services – CORBA programming Models - JAR file creation

UNIT-IV MULTI-TIER APPLICATION DEVELOPMENT **9**

Server side programming – servlets – Java Server Pages - Applet to Applet communication – applet to Servlet communication - JDBC – Using BLOB and CLOB objects – storing Multimedia data into databases – Multimedia streaming applications – Java Media Framework.

UNIT-V ENTERPRISE APPLICATIONS **9**

Server Side Component Architecture – Introduction to J2EE – Session Beans – Entity Beans – Persistent Entity Beans – Transactions.

Total Hours : 45

TEXT BOOKS

1. Hortsmann & Cornell, “CORE JAVA 2 ADVANCED FEATURES, VOL I and VOL II”,Pearson Education, 8th Edition,2001

2. Ed Roman, “Mastering Enterprise Java Beans”, John Wiley & Sons Inc.,3rd Edition 2006

REFERENCES

1. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers,2000

2. Web reference: http://java.sun.com.

3. Patrick Naughton, “COMPLETE REFERENCE: JAVA2”, Tata McGraw-Hill, 7th Edition,2002.

11UDE821 WIRELESS SENSOR NETWORKS

L	T	P	C
3	0	0	3

Course Objectives:

- *To develop a unified understanding of the wireless technology.*
- *To understand and build a distributed sensor network.*
- *To study the various aspects of sensor networks with respect to protocol stack, implementation and application of sensor networks.*

UNIT-I INTRODUCTION **9**

Over view of sensor networks- Constraints and challenges – Advantages of sensor networks- Applications- Collaborative processing – Key definitions in sensor networks – Tracking scenario – Problem formulation – Distributed representation and interference of states – Tracking multipleobjects – sensor models- Performance comparison and metrics.

UNIT-II NETWORKING SENSORS **9**

Key assumption - Medium access control – S-MAC protocol – IEEE 802.15.4 standard and ZigBee - General Issues - Geographic, Energy – Aware Routing - Attribute based routing.

UNIT-III INFRASTRUCTURE ESTABLISHMENT **9**

Topology control – Clustering -Time Synchronization – Localization – Task driven sensing – Role of sensor nodes – Information based tasking - Routing and aggregation.

UNIT-IV SENSOR NETWORK DATABASE **9**

Sensor Database Challenges – Querying the physical environment – Interfaces – In-network aggregation – Data centric storage – Data indices and range queries – Distributed Hierarchical aggregation – Temporal data.

UNIT-V SENSOR NETWOR PLATFORMS AND TOOLS **9**

Sensor Node Hardware – Sensor network programming challenges – Node level software

platforms – Operating system TinyOS – Node level simulators – State centric programming – Applications and future directions.

Total Hours: 45

TEXT BOOK:

1. Feng Zhao, Leonidas Guibas, "Wireless Sensor Networks: An Information Processing Approach", Morgan Kaufmann publishers, Indian Reprint 2005.

REFERENCE BOOK:

1. Kazem Sohraby, Daniel Minoli, Taieb Znati, "Wireless Sensor Networks: Technology, Protocols, and Applications, Wiley 2007.

11UDE822 BUSINESS INTELLIGENCE

L	T	P	C
3	0	0	3

Course Objectives

- *This subject aims at giving the student an understanding of the basics of business intelligence, from both a technical and a person/organization perspective and ways of finding business advantages.*
- *The student will have both a theoretical knowledge of relevant concepts of the area, as well as a more practically oriented view of possible tools and experiences of their use.*

UNIT-I INTRODUCTION **9**

Decision Making, Decision Support Systems: Concepts, Methodologies and Technologies – Modeling and Analysis – Business Intelligence: Definition, History, Framework, and Benefits.

UNIT-II BUSINESS INTELLIGENCE **9**

Essential of BI – Characteristics of BI – Structure and Components of BI (Data Warehouse, Business Analytics and Data Visualization, Data Mining, and BPM) – Data Warehousing – Business Analytics: OLAP – Data Visualization: Spread sheets, GIS, GPS – Real-time BA – ADS – BA and Web.

UNIT-III DATA MINING AND BPM **9**

Data Mining: Techniques, Tools, Text Mining, Web Mining, Neural Networks – Business Performance Management.

UNIT-IV GROUP SUPPORT SYSTEMS **9**

Collaboration – Communication – Group Works: Support, Systems – Knowledge management.

UNIT-V CASE STUDIES AND BI TOOLS **9**

BI TOOLS: Rapid Miner – Eclipse – IBM COGNOS – SQL Server – BIRT.

Total Hours: 45

TEXT BOOKS:

1. Efraim Turban, Jay E. Aronson, Ting-Peng Liang, Ramesh Sharda, "Decision Support Systems & Business Intelligence Intelligent Systems", 8th Edition, Pearson / Prentice Hall, 2011; ISBN-13: 978-81-317-2425-5. (Chapters – 1 to 11).
2. Web Resources for Unit 5.

REFERENCE BOOKS:

1. Carlo Vercellis, "Business Intelligence: Data Mining and Optimization for Decision Making", Wiley, 2009.
2. Rajiv Sabherwal, Irma Becerra-Fernandez, "Business Intelligence: Practices, Technologies and Management", John Wiley and Sons, 2011.
3. George M. Marakas, "Decision support systems in the 21st century", 2nd Edition, PHP Learning,2003.

11UDE823 WEB SERVICES AND SERVICE ORIENTED ARCHITECTURE

L	T	P	C
3	0	0	3

Course Objective

- *To understand the advantages of using XML technology family*
- *To analyze the problems associated with tightly coupled distributed software architecture*
- *To learn the Web services building block, Security and Transaction*

UNIT-I SOFTWARE ARCHITECTURES AND PLATFORMS 9

Software Architecture – Types of IT Architecture – SOA – Evolution – Key components – perspective of SOA – Enterprise-wide SOA – Architecture – Enterprise Applications – Solution Architecture for enterprise application – Software platforms for enterprise Applications – Patterns for SOA – SOA programming models

UNIT-II TECHNOLOGIES 9

Service-oriented Analysis and Design – Design of Activity, Data, Client and business process services – Technologies of SOA – SOAP – WSDL – JAX – WS – XML WS for .NET – Service integration with ESB – Scenario – Business case for SOA – stakeholder objectives – benefits of SPA – Cost Savings

UNIT-III SOA IMPLEMENTATION 9

SOA implementation and Governance – strategy – SOA development – SOA governance – trends in SOA – event-driven architecture – software s a service – SOA technologies – proof-of-concept – process orchestration – SOA best practices

UNIT-IV XML SECURITY 9

Meta data management – XML security – XML signature – XML Encryption – SAML – XACML – XKMS – WS-Security – Security in web service framework - advanced messaging

UNIT-V TRANSACTION 9

Transaction processing – paradigm – protocols and coodination – transaction specifications – SOA in mobile – research issues

Total Hours : 45

REFERENCES

1. Shankar Kambhampaly, “Service –Oriented Architecture for Enterprise Applications”, Wiley India Pvt Ltd, 2008.
2. Eric Newcomer, Greg Lomow, “Understanding SOA with Web Services”, Pearson Education,2005.
3. Mark O’ Neill, et al. , “Web Services Security”, Tata McGraw-Hill Edition, 2003.

11UDE824 DISTRIBUTED COMPUTING

L	T	P	C
3	0	0	3

Course Objectives:

- *A good understanding of the principles and goals of distributed system design, including relevant algorithms.*
- *Familiarity, through case studies, with the characteristics and the design concepts on which current distributed system products and research developments are based.*
- *Ability to apply some of the principles and concepts learnt from the course to the design of a distributed system.*

UNIT - I INTRODUCTION 9

Characterization of Distributed Systems-Introduction-Examples-Resource Sharing and the Web-Challenges. System Models- Architectural and Fundamental. Inter process Communication-External data representation and marshalling- Client-server communication-Group communication

UNIT - II OBJECTS AND REMOTE INVOCATION 9

Distributed Objects and Remote Invocation-Introduction-Communication between distributed objects-Remote procedure calls-Events and notifications-Introduction-OS layer-Protection-Processes and threads-Communication and invocation.

UNIT - III DISTRIBUTED FILE SYSTEMS 9

Distributed File Systems-Introduction-File service architecture-Enhancements and further developments- Name Services-Introduction-Name Services and the Domain Name System-Directory Services

UNIT - IV TIME AND GLOBAL STATES 9

Time and Global States-Introduction-Clocks, events and process states-Synchronizing physical clocks-Logical time and logical clocks- Distributed debugging. Coordination and Agreement

UNIT - V DISTRIBUTED SHARED MEMORY 9

Distributed Shared Memory-Introduction-Design and implementation issues-Sequential consistency and Release consistency

Total Hours : 45

TEXT BOOKS:

1. George Coulouris, Jean Dollimore, Tim Kindberg, , "Distributed Systems: Concepts and Design", 4th Edition, Pearson Education, 2005.

2. A. S. Tanenbaum and M. V. Steen, "Distributed Systems: Principles and Paradigms", Second Edition, Prentice Hall, 2006

REFERENCES:

1. M.L.Liu, “Distributed Computing Principles and Applications”, Pearson AddisonWesley, 2004.

2. Mukesh Singhal, “Advanced Concepts In Operating Systems”, McGrawHill Series in Computer Science, 1994.

3. Nancy A. Lynch, "Distributed Algorithms", The Morgan Kaufmann Series in Data Management System, Morgan Kaufmann Publishers, 2000.

11UDE825 GRAPHICS AND MULTIMEDIA

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3	0	0	3

Course Objective

- *This course provides an introduction to the area of computer graphics.*
- *To provide both theory and practice so that easily conversant with techniques for scientific visualization, interface design, and 2 and 3 dimensional data representation and manipulation.*
- *To learn both the aesthetic and technical aspects of multimedia design and production.*
- *To produce a web-based product for a real business client.*

UNIT – I OUTPUT PRIMITIVES 9

Introduction: Application areas of Computer Graphics, Overview of Graphics systems, Video display devices, Raster-scan systems, Random-scan systems, Graphics monitors and work stations and Input devices. Output Primitives: Points and Lines, Line drawing algorithms, Mid-point circle and Ellipse drawing algorithms, Filled area primitives, Scan line polygon fill algorithm, Boundary-fill and Flood-fill algorithms.

UNIT – II 2D GEOMETRICAL TRANSFORMS 9

Translation, Scaling, Rotation, Reflection and Shearing transforms, Matrix representations and Homogeneous coordinates, Composite transforms, Transformation between coordinate systems.2D viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland-Hodgeman polygon clipping algorithm. Object representation: Polygon surfaces, Quadric surfaces, Spline representation, Hermite curve, Bezier curve and B-Spline Curves, Bezier and B-Spline surfaces, Basic illumination models, Polygon rendering methods.

UNIT – III 3D GEOMETRICAL TRANSFORMS 9

3D Geometric Transformations: Translation Rotation, Scaling, Rotation, Refection and Shearing transformations, Composite transformations.3D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping. Visible surface detection methods: Classification, back-face detection, Depth buffer, scan-line, Depth sorting, BSP-tree methods, area sub-division and octree methods.

UNIT – IV MULTIMEDIA SYSTEMS AND DESIGN 9

Computer Animation: Design of Animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. Multimedia: Multimedia, Multimedia terms, Multimedia building blocks, applications of multimedia. Multimedia system architecture, evolving technologies for multimedia, Multimedia databases. Image: file formats, Image analysis, JPEG, MPEG standards. Video: Video signal representation, different video broadcasting standards, Digital video.

UNIT – V MULTIMEDIA NETWORKS 9

Multimedia storage devices, Multimedia Communications: Introduction, Multimedia information representation, multimedia networks, application and networking terminology. Multimedia applications, Multimedia on web: Multimedia for web, plug-ins and delivery vehicles, VRML, images, sound and animation for web.

Total Hours : 45

TEXT BOOKS

1. Donald Hearn and M.Pauline Baker, "Computer Graphics C version", Pearson Education, 2010.
2. Prabat K Andleigh and Kiran Thakrar, "Multimedia systems and Design", PHI, 2008.

REFERENCE BOOKS

1. Foley, VanDam, Feiner and Hughes, "Computer Graphics Principles & practice", Pearson Education, Third edition, 2009.
2. Donald Hearn and M.Pauline Baker, "Computer Graphics" ,PHI/Pearson Education, Fourth edition,2010.
3. Jerry D Gibson, "Multimedia communications", Academic Press Limited,2009.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Internet and Web Technology"

Designed in collaboration with
Infosys Technologies Limited

Contents

1. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program, we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Internet and Web Technology**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective <<Month/Year>>.

2. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the CS/IS students to Web Technology. The Core Modules of this Elective includes Client/Server concepts, Introduction to Web Technology, Object Oriented concepts, User Experience design, Client tier using HTML, Java Script and XML, Business tier using POJO, Presentation tier using JSP. This program is independent of any organization / product / technology.

2.2 Prerequisites:

1. Knowledge of RDBMS concepts such as Keys, Relational model
2. Knowledge of any databases such as MS-Access or Oracle 9i
3. Implemented basic SQL Queries

2.3 Assumptions:

1. This elective will be applicable to CS / IS students
2. The duration of the course will be One Semester
3. The elective design follows University Curriculum standards
4. There will be a compulsory final Examination
5. The elective will be designed in exclusive collaboration with Infosys
6. The college will leverage existing Lab & IT infrastructure
7. Current capacity planned – 50

3. Learning outcomes

At the end of this elective, student shall be able to:

1. Understand the complexity of the real world objects
2. Learn the best practices for designing Web forms and Usability Reviews
3. Understand the Principles behind the design and construction of Web applications
4. Develop and Deploy an Enterprise Application

4. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Practical /Project hours	Total Credit
One semester	12 – 14 Weeks	40	20	4

5. Course contents (Draft only)

Unit I: (5 Hours)

- Objected oriented concepts – object oriented programming (review only) — advanced concept in OOP – relationship – inheritance – abstract classes – polymorphism – Object Oriented design methodology – approach – best practices. UML class diagrams – interface – common base class

Unit II: (9) Hours

- Internetworking – Working with TCP/IP – IP address – sub netting – DNS – VPN – proxy servers – firewalls – Client/Server concepts - World Wide Web – components of web application – MIME types, browsers and web servers – types of web content – URL – HTML – HTTP protocol – Web applications – performance – Application servers – Web security.
- User Experience Design – Basic UX terminology – UXD in SDLC – Rapid prototyping in Requirements

Unit III: (6 Hours)

- Client Tier using HTML – Basic HTML tags – Look and feel using CSS – Client side scripting using Java Script and Validations - Document Object Model (DOM)

Unit IV: (10 Hours)

- Business tier using POJO (Plain Old Java Objects) – Introduction to Frameworks – Introduction to POJO – Multithreaded Programming – Java I/O – Java Database Connectivity (JDBC)

Unit V: (10 Hours)

- Presentation tier using JSP – Role of Java EE in Enterprise applications – Basics of Servlets - To introduce server side programming with JSP - Standard Tag Library

6. Practical (10 hours)

The assignments for OOC, HTML/JS, JDBC and JSP are to be completed as part of the Hands-On for the subjects.

OOC using Java – 3
HTML/JS – 2
JDBC – 2
JSP – 3

7. Project – Develop & Deploy Web Application (10 hours)

Project Development is the key component of this elective. The objective is to expose students to project development best practices and apply the concepts assimilated during the classroom session. The Project requirements are to be finalized by the faculty members and are to be evaluated as per the project evaluation framework. The Project Development is primarily based on the Client tier using HTML/JS, JDBC and Presentation tier using JSP with back end database such as MS-Access or Oracle 9i.

The project is a Group Activity consisting of 4 members in a team. The project specification hosted on the portal, has to be completed. The project has to be evaluated before the final examination.

8. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)
MSOffice 2003, IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Practical:

Sl. No	Course	S/W on Students Machine	Remarks
1.	OOC (Java)	Text pad 4.4.0	Alternate: Note pad
2.	Client tier (HTML/JS) & Business tier (JDBC)	Eclipse 3.2	Alternate: Text pad 4.4.0
3.	Presentation tier (JSP)	Tomcat server in Eclipse 3.2	JBoss server in Eclipse

An alternate Software requirement can be WAMPP (Windows, Apache, MySQL, Perl / PHP) combination. WAMPP is an open source package, hence free too.

9. Mode of Examination:

The final examination carries 100 Marks. The Institute will conduct all the assessments.

Theory Assessment (50 Marks) and Practical Assessment (50 Marks)

Theory Assessments to be conducted based on CAMP methodology.

Pattern of Practical Question:

One real life business problem has to be given. The students should design the forms using HTML, perform validations using JavaScript and deploy the Web application using Tomcat. Back end can be either MS-Access or Oracle 9i.

10. Faculty Enablement

The Faculty will be enabled on the Industry practices used, case studies used, and assessment Frame work.

11. Courseware & REFERENCE Books:

The courseware (PowerPoint and Lab guide) is available for the Elective. The following reference books can also be used.

1. Douglas E Comer, Internet Book, The: Everything You Need to Know About Computer Networking and How the Internet Works, 4/E, Prentice Hall, 2007
2. Jeffrey C. Jackson, Web Technologies: A Computer Science Perspective, Prentice Hall, 2007
3. http://www.ietf.org/
4. http://www.w3.org/
5. http://www.vpnc.org/vpn-standards.html
6. Herbert Schildt, Java: The Complete Reference, McGraw-Hill Professional, 2006.
7. Michael Nash, Java Frameworks and Components , Cambridge University Press, 2002.
8. Ted Wugofski, XML Black Book 2nd Edition , Certification Insider Press
9. http://java.sun.com/docs/books/tutorial/
10. Developing Web Applications with JavaServer Faces found online at http://java.sun.com/developer/technicalArticles/GUI/JavaServerFaces/
11. Short introduction to log4j found online at http://logging.apache.org/log4j/1.2/manual.html
12. JUnit Cookbook by Kent Beck, Erich Gamma at http://junit.sourceforge.net/
13. http://java.sun.com/
14. http://www.junit.org/
15. Marty Hall and Larry Brown, Core Servlets and JavaServer Pages Vol. 1: Core Technologies 2nd Edition, Sun Microsystems.
16. Bryan Basham, Kathy Sierra, and Bert Bates, Head First Servlets and JSP, SPD O'Reilly, 2005.
17. The Complete reference - JSP
18. Servlet Tutorial can be found online at http://java.sun.com/docs/books/tutorial
19. http://java.sun.com/javaee/javaserverfaces/reference/docs/index.html
20. JSF Tutorial can be found online at http://java.sun.com/j2ee/1.4/docs/tutorial/doc/JSFIntro.html

12. Conclusion:

Introduction of the collaboratively designed elective will significantly help the CS/IS students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Essentials of Information Technology"

Designed in collaboration with
Infosys Technologies Limited

Contents

10. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Essentials of Information Technology**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective June 2009.

11. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the non-CS/IT students to IT Essentials. The Core Modules of this Elective includes Programming, Database amongst other related topics. This program is independent of any organization / product / technology.

2.2 Prerequisites:

No prerequisites are needed for enrolling into the elective.

2.3 Assumptions:

8. This elective will be applicable to Non-CS / IT students
9. The duration of the course will be One Semester
10. The elective design follows University Curriculum standards
11. There will be a compulsory final Examination
12. The elective will be designed in exclusive collaboration with Infosys
13. The college will leverage existing Lab & IT infrastructure
14. Current capacity planned – 50

12. Learning outcomes

At the end of this elective, student shall be able to:

1. Do Problem Solving using Programming and algorithms
2. Design and test simple programs in C language
3. Document artifacts using common quality standards
4. Design simple data store using RDBMS concepts and implement

13. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Practical hours	Total Credit

One semester	12 – 14 Weeks	34	8	3

14. Course contents (Draft only)

Unit I: (6 Hours)

- Introduction to Computer Systems - Basics of computer systems - Various hardware components - Data storage and various Memory units - Central Processing Unit - Execution cycle - Introduce to software and its classifications
- Operating system concepts– Introduction – Memory management - Process management - Interprocess Communication – Deadlocks - File management - Device management

Unit II: (6) Hours

- Problem Solving Techniques - Introduction to problem solving - Computational problem and it's classification - Logic and its types - Introduction to algorithms - Implementation of algorithms using flowchart - Flowcharts implementation through RAPTOR tool - Searching and sorting algorithms - Introduction and classification to Data Structures - Basic Data Structures - Advanced Data Structures

Unit III: (6 Hours)

- Programming Basics - Introduction to Programming Paradigms and Pseudo Code - Basic programming concepts - Program Life Cycle - Control Structures - Introduction and Demonstration of 1-D Array and 2-D Array - Searching and Sorting techniques - Demonstration Concept of memory references in arrays –Strings - Compiler Concepts - Code Optimization techniques

- Structured Programming – Functions – Structures - File Handling - Introduction to Software Development Life Cycle - Industry Coding Standards and Best Practices - Testing and Debugging - Code Review

Unit IV: (8 Hours)

- Project - Project Specification - Preparation of High level design and Detailed design document, Unit Test Plan and Integrated Test Plan - Coding and Unit Testing activities - Integration Testing

Unit V: (8 Hours)

- RDBMS- data processing – the database technology – data models
- ER modeling concept –notations – Extended ER features
- Logical database design - normalization
- SQL – DDL statements – DML statements – DCL statements
- Joins - Sub queries – Views
- Database design Issues

15. Tutorial

- The assignments for Introduction to Computer Systems, Operating System Concepts and Problem Solving techniques have to be completed as a part of Tutorial.

16. Practical

- The assignments for Programming and Testing (P&T) and Relational Database Management System to be completed as part of the hands on for the subject

  Students should implement the following during Practical hours: (illustrative only)

  1. Programs using C Language
  2. Queries using MY-SQL

17. Integrated Project Development

Integrated Project Development is the key component of this elective. The objective is to expose students to project development best practices and apply the concepts assimilated during the classroom session. The Project requirements are to be finalized by the faculty members and are to be evaluated as per the project evaluation framework. The Integrated Project Development is primarily based on the Programming and Testing (P&T) and Relational Database Management Systems (RDBMS) courses.

The project is a Group Activity consisting of 4 members in a team. The project specification hosted on the portal, has to be completed. The project has to be evaluated before the final examination.

18. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)
MSOffice 2003, IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks

4.	Programming Fundamentals	Visual Studio .NET (2003), Turbo C	Alternate: Visual Studio 6
5.	RDBMS	My-SQL	Alternate: Oracle 9i Client

10. Mode of Examination:

The final examination carries 50 Marks. The Institute will conduct all the assessments.

Internal assessments carry 50 Marks which includes Theory Assessment (30 Marks), Practical (8 marks) and Project Work (12 marks) and

Theory Assessments to be conducted based on CAMP methodology

Pattern of Practical Question:

1. Programming – One real life problem has to be given. The students should implement it in C Language.
2. RDBMS –A table structure is given with sample data. Three or four queries have to be asked. Students should implement it using MY SQL.

11. Faculty Enablement

The Faculty will be enabled on the Industry practices used, case studies used, and assessment framework.

12. Courseware & REFERENCE Books:

The courseware (PowerPoint and notes) is available for the Elective. The Foundation Program books for students are available at a cost-price. This has to be dealt with the alliance partner directly and Infosys has no role in this. In addition, following reference books can also be used.

21. Andrew S. Tanenbaum , : Structured Computer Organization , PHI, 4th edition, 1999
22. John L. Hennessy, David Goldberg, David A. Patterson, Computer Architecture : A Quantitative Approach, 2nd Edition Published by Morgan Kaufman Publishers, 1996
23. Silberschatz and Galvin, Operating System Concepts, John Wiley & Sons ,Sixth edition
24. Andrew Tanenbaum, Modern Operating Systems, Pearson Education
25. Milan Milenkovic, "Operating Systems: concepts and design", McGraw-Hill
26. Charles Crowley, "*Operating Systems: A Design-Oriented Approach"*
27. Dromey, R.G., How to solve it by computers, Prentice Hall, 2005
28. Alfred V.Aho, Ullman, Hopcroft, Data Structures and Algorithms, Addison-wesely.
29. Lipschutz, Seymour & G A V Pai, Data Structures, Tata McGraw – Hill
30. Baldwin, Douglas & Scragg, Greg W., Algorithms and Data Structures The Science of Computing, Dreamtech
31. Kernighan., Ritchie, ANSI C Language, Prentice Hall of India, New Delhi, 1992.

32. Yashwant Kanitker, Let Us C, by Yashwant Kanitker, Second Edition
33. Schaum series, Programming in C, Third Edition
34. Programming Pearls , by Jon Bentley, Pearson Education publication
35. Aho, Alfred V,Compiler Principles, Techniques and Tools,Pearson Education
36. Tharp Alan L, File Organization and Processing, John Willey and Sons
37. Henry F Korth, Abraham Silberschatz, “Database system concepts”, Second ed., McGraw-Hill International editions, Computer Science series, 1991
38. Elmasri, Navathe, "Fundamentals of Database Systems", Third ed, Addison Wesley
39. C.J.Date ,"An introduction to Database Systems", Sixth ed, Narosa Publications

13. Conclusion:

Introduction of the collaboratively designed elective will significantly help the non-CS/IT students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Developing Web Applications in .NET"

Designed in collaboration with
Infosys Technologies Limited

Contents

19. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program, we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective Developing Web Applications using .NET. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective <<Month/Year>>.

20. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the CS/IS students to Web Technology and enables them to create applications using .NET platform. The Core Modules of this Elective includes Introduction to .NET framework, Object Oriented concepts using CSharp language, Design and develop of Database using SQL Server, Data Access programming using ADO.NET, Web Application Development using ASP.NET.

2.2 Prerequisites:

4. Knowledge of RDBMS concepts such as Keys, Relational model
5. Knowledge of any databases such as MS-Access ,Oracle
6. Implemented basic SQL Queries
7. Knowledge of HTML, JavaScript
8. Knowledge of Object oriented Programming

2.3 Assumptions:

15. This elective will be applicable to CS / IS students
16. The duration of the course will be One Semester
17. The elective design follows University Curriculum standards
18. There will be a compulsory final Examination
19. The elective will be designed in exclusive collaboration with Infosys
20. The college will leverage existing Lab & IT infrastructure
21. Current capacity planned – 50

21. Learning outcomes

At the end of this elective, student shall be able to:

5. Understand the complexity of the real world objects
6. Learn the best practices for designing Web applications and Usability Reviews
7. Understand the Principles behind the design and construction of Web applications
8. Develop and Deploy an web Application

22. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Practical /Project hours	Total Credit
One semester	12 – 14 Weeks	44	25	4

23. Course contents (Draft only)

Unit I: (4 Hours)

- Introduction to .NET framework: Knowledge of .NET framework, .NET features and .NET development platform. Understanding advantages of .NET framework

Unit II: (12) Hours

- Objected oriented concepts using CSharp Language– object oriented programming (review only) –– advanced concept in OOP – relationship – inheritance – abstract classes – polymorphism – Object Oriented design methodology – approach – best practices. UML class diagrams – interface – common base class

Unit III: (8) Hours

- Design and develop Database using SQL Server 2008 – To introduce features and architecture of MS – SQL Server 2008, Introduction to Database Engine and storage Engine, to enable students to create Tables, temporary tables, and Integrity rules. Ability to code in Batches, Write Stored Procedures/Functions. Ability to handle errors, Transaction in SQL server

Unit IV: (8 Hours)

- Data Access programming using ADO.NET – Understanding of challenges, with respect to data access, associated in building internet applications and concept of common data access programming model, Ability to use ADO.NET components for application development, configuring and executing various objects. Understanding connected and disconnected models for data access.

Unit V: (12 Hours)

- Web Application Development using ASP.NET – Recap on HTML, JavaScript, CSS, Basics of ASP.NET, Page Object and Dynamic Compilation Model, ASP.NET controls, Understand Data Binding and various Data Sources in ASP.NET. Understand the creation of Master Pages and themes. To understand configuration of web applications, IIS configurations, State management in ASP.NET.

24. Practical (25 hours)

The assignments for C#, HTML/JS, SQL Server, ADO.NET and ASP.NET are to be completed as part of the Hands-On for the subjects.

Module Name	No of hrs.
OOC using CSharp	6
SQL Server	6
ADO.NET	5
HTML/JS and ASP.NET	8

25. Project – Develop & Deploy Web Application (10 hours)

Project Development is the key component of this elective. The objective is to expose students to project development best practices and apply the concepts assimilated during the classroom session. The Project requirements are to be finalized by the faculty members and are to be evaluated as per the project evaluation framework. The Project Development is primarily based on the modules learnt in elective. CSharp is used as programming language; Business layer and Presentation tier are created using ASP.NET and ADO.NET with back end database SQL Server 2008.

The project is a Group Activity consisting of 4 members in a team. The project specification hosted on the portal, has to be completed. The project has to be evaluated before the final examination.

26. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
2GB RAM (or higher) RAM, 80 GB (or higher) HD
Windows XP/VISTA with SP2 (or higher),
Visual Studio Team suite 2008
IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Practical:

Sl. No	Course	S/W on Students Machine	Remarks
6.	OOC using CSharp	Visual Studio 2008 Team suite	
7.	SQL Server	SQL Server 2008	
8.	ADO.NET	Visual Studio 2008 Team suite and SQL Server 2008	
9.	ASP.NET	Visual Studio 2008 Team suite and SQL Server 2008	

27. Mode of Examination:

The final examination carries 100 Marks. The Institute will conduct all the assessments.

Theory Assessment (50 Marks) and Practical Assessment (50 Marks)

Theory Assessments to be conducted based on CAMP and SMC methodology.

Pattern of Practical Question:

One real life business problem has to be given. The students should design the application using the modules learnt during the course and deploy the Web application. SQL Server 2008 to be used as back end DB.

10. Faculty Enablement

The Faculty will be enabled on the Industry practices used, case studies used, and assessment Frame work.

11. Courseware & REFERENCE Books:

The courseware (PowerPoint and Lab guide) is available for the Elective. The following reference books can also be used.

40. C# and the .Net Platform by Troelsen,Andrew,, Apress
41. Inside C#, by Archer,Tom , Wrox Publication
42. Microsoft Visual C# 2005 Step by Step by Sharp, John,, Microsoft, 2005
43. Murach's SQLSERVER 2008 for developers by bryan Syverson
44. Mastering Microsoft SQL SERVER 2008 by Michael Lee , Gentry Bieker
45. Rebecca M. Riordan, Microsoft® ADO.NET 2.0 Step by Step, Microsoft Press, 2005
46. David Sceppa, Programming Microsoft® ADO.NET 2.0 Core Reference, Microsoft Press, 2006
47. Murach's Up-grader's guide [used for new concepts in ASP.NET 2.0]
48. Professional ASP.NET 3.5 ,Anderson,Francis,Howrad,Sussman,Watson (Wrox Publications)
49. Beginning ASP.NET 3.5 ,Ullman,Sussman,Kauffman,Hart,Maharry (Wrox Publications)
50. http://msdn2.microsoft.com/en-us/vstudio/default.aspx
51. http://www.c-sharpcorner.com/
52. http://gotdotnet.com/
53. http://www.microsoft.com/net
54. http://www.netfx3.com
55. http://msdn2.microsoft.com/en-us/netframework/default.aspx
56. http://www.gotdotnet.com
57. http://www.asp.net/

12. Conclusion:

Introduction of the collaboratively designed elective will significantly help the CS/IS students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Building Enterprise Applications"
-a practitioners perspective of software engineering

Designed in collaboration with
Infosys Technologies Limited

Contents

28. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program we have been conducting training leveraging IT Industry-Ready program for CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Building Enterprise Applications - a practitioners perspective of software engineering**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective June 2010.

29. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the CS/IT/B.Sc (IT)/M.Sc.(IT)/MBA(IT/IS) students to essentials of building enterprise applications. The Core Modules of this elective includes designing and developing high quality enterprise applications and other task related to it. This course is independent of any organization / product / technology.

2.2 Prerequisites:

Exposure to any object oriented programming language (such as Java) and RDBMS.

2.3 Assumptions:

22. This elective will be applicable to CS/IT/B.Sc (IT)/M.Sc(IT)
23. The duration of the course will be One Semester
24. The elective design follows University Curriculum standards
25. There will be a compulsory final Examination
26. The elective will be designed in exclusive collaboration with Infosys
27. The college will leverage existing Lab & IT infrastructure

30. Learning outcomes

At the end of this elective, student shall be able to:

5. Familiarize with concept of Enterprise Analysis and Business Modeling.
6. Understand requirements validation, planning and estimation.
7. Design and document the application architecture.
8. Understand the importance of application framework and designing other application components.
9. Construct and develop different solution layers.
10. Perform Code review, Code analysis, build process.
11. Understand different testing involved with enterprise application and the process of rolling out an enterprise application.

31. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Tutorial hours	Total Practical hours	Total Credit
One semester	12 – 13 Weeks	3 hours per week	2 hour(s) per month	2.5 hour per week	3

32. Course contents (Draft only)

Unit I: 3 Hrs

Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications

Unit II: 6 Hrs

Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation

Unit III: 12 Hrs

Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design

Unit IV: 9 Hrs

Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage

Unit V: 6 Hrs

Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

33. Tutorial/Optional Assignments

The purpose of 2 hour tutorial per month is to help the students to explore points outside the prescribed material and to enhance their learning. The assignments for elective could include the following.

- Seminars from the topics related to building enterprise applications such as enterprise architecture, business modeling, application security and code analysis
- Relevant lab exercises to get exposure to various tools such as like WebScarab, Jmeter, and Eclipse to raise enterprise applications

34. Practical/Project work

Students should implement (and learn to use the tools to accomplish this task) the following during Practical hours: (illustrative only)

3. Understand a given business scenario and document the use case diagrams for the given scenario
4. Identify the non functional requirements for the given scenario and document it in the given template
5. Create a logical architecture for the given business scenario documented in use case diagrams
6. Create a data architecture for the given logical architecture
7. Create a subset of design for the given logical architecture
8. Create test cases (subset) as per the given template
9. Code analysis of the given code base (case study)
10. Testing the application of the given code base (case study) – Performance and Penetration testing

35. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)
MSOffice 2003, IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks
10.	Building Enterprise Applications	Eclipse IDE, MySQL, Relevant JAR files.	

9. Mode of Examination:

- The final examination carries 50 Marks. The Institute will conduct all the assessments.

- Internal assessments carry 50 Marks which includes Theory Assessment (30 Marks), Practical / Project Work (20 marks)

Theory assessments to be conducted based on CAMP methodology

10. Faculty enablement

The Faculty will be enabled on the course contents; Industry practices case studies etc. for duration of one week before the commencement of elective. Faculties from various colleges are required to stay in the Infosys Campus for their Enablement.

11. Courseware & reference books:

The courseware including PowerPoint is available for the Elective. In addition, following reference book can also be used:

- Text Book
  - Raising Enterprise Applications – Published by John Wiley, authored by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu
  - Building Java Enterprise Applications – Published by O'Reilly Media, authored by Brett McLaughlin

- Reference Book
  - Software Requirements: Styles & Techniques – published by Addison-Wesley Professional
  - Software Systems Requirements Engineering: In Practice – published by McGraw-Hill/Osborne Media
  - Managing Software Requirements: A Use Case Approach, 2/e – published by Pearson
  - Software Architecture: A Case Based Approach – published by Pearson
  - Designing Enterprise Applications with the J2EE Platform (PDF available at- http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)
  - Software Testing, 2/e – published by Pearson
  - SOFTWARE TESTING Principles and Practices – published by Oxford University Press

12. Actions:

1. The college needs to send the Board of Studies Approval letter on college letter head to Infosys.
2. Identify one department to own the responsibility of course content, assignments, projects, software tools etc. (Preferable CS/IS Department)
3. Identify faculty from CS/IS/MCA department for rollout and faculty training
4. Identify and allocate resources like classrooms, labs, necessary hardware and software for rollout.
5. Complete readiness check before the rollout

13. Contact Details:

The Infosys point of contact can be reached for more info. In addition, the Institute SPoC can also be reached for additional info.

Department owning the responsibility of Course Content:

The HOD'S / Faculty Names and their Email Id, owning the course content of Elective are to be mentioned.

S. No.	Name	E-Mail	Phone Number
1			
2			
3			
4			
5			

Faculties handling the Elective rollout:

The faculty names and their Email Id, handling the Elective rollout are to be mentioned.

S. No.	Name / Dept	E-Mail	Phone Number
1			
2			
3			
4			
5			

14. Conclusion:

Introduction of the collaboratively designed elective will significantly help the students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Introduction to Mainframes"

Designed in collaboration with
Infosys Technologies Limited

Contents

36. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program, we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Introduction to Mainframes**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective <<Month/Year>>.

37. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the CS/IS students to mainframe Technology. The Core Modules of this Elective includes Introduction to Mainframe concepts, Mainframe Operating Systems, Introduction to Job Control Language, COBOL, Overview of DB2. This program is independent of any organization.

2.2 Prerequisites:

9. Knowledge of Computer Organization, Operating Systems, Programming fundamentals.
10. Knowledge of RDBMS and any databases such as MS-Access or Oracle 9i.
11. Implemented basic SQL Queries.

2.3 Assumptions:

28. This elective will be applicable to CS / IS students
29. The duration of the course will be One Semester
30. The elective design follows University Curriculum standards
31. There will be a compulsory final Examination
32. The elective will be designed in exclusive collaboration with Infosys
33. The college will leverage existing Lab & IT infrastructure.
34. Procurement for Hardware/Software for implementing practical
35. Current capacity planned – 50

38. Learning outcomes

At the end of this elective, student shall be able to:

9. Understand the importance of Legacy System.
10. Role of Mainframes in infrastructure of a medium to large IT organization.
11. Understand the different components of Mainframe Technology.
12. Learn the best practices for designing applications using Mainframe Technology.

39. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Practical /Project hours	Total Credit
One semester	12 – 14 Weeks	40	20	4

40. Course contents (Draft only)

Unit I: Evolution of Mainframe hardware (3 Hours)

- Overview of Computer Architecture -Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems

Unit II: Mainframes OS and Terminology (4 Hours)

- Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes

Unit III: z/OS and its features (6 Hours)

- Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) - Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC

Unit IV: Introduction to JCL (7 Hours)

- Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.

Unit V: COBOL Programming 1 (5 Hours)

- Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL
- Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.
- Data division – Data names, level numbers, PIC and VALUE clause, REDEIFNES, RENAMES and USAGE clause
- Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.

Unit VI: COBOL Programming 2 (5 Hours)

- File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations.
- File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.
- Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison.
- Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.

Unit VII: Overview of DB2 (6 Hours)

- Introduction to DB2 – System Service component, Database Service component, Locking Service component, Distributed Data Facility Services component, Stored Procedure component, catalogs and optimizer
- DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types.
- DB2 SQL programming – Types of SQL statements, DCL, DDL, DML, SPUFI utility.
- Embedded SQL programming – Host variable, DECLGEN utility, SQLCA, single/multiple row manipulation, cursors, scrollable cursors.

Unit VIII: Mainframe Application Development guidelines (4 Hours)

- COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).

41. Practical (10 hours)

The assignments for TSO/ISPF, JCL, COBOL and DB2 are to be completed as part of the Hands-On for the subjects.

TSO/ISPF – 2
JCL – 2
COBOL – 3
DB2 – 3

42. Integrated Project Development (10 hours)

Project Development is the key component of this elective. The objective is to expose students to project development best practices and apply the concepts assimilated during the classroom session. The Project requirements are to be finalized by the faculty members and are to be evaluated as per the project evaluation framework. The Project Development is primarily based on the JCL and COBOL concepts with back end database on DB2.

The project is a Group Activity consisting of 4 members in a team. The project specification hosted on the portal, has to be completed. The project has to be evaluated before the final examination.

43. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 1.6 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP
MSOffice 2003, IE 6.0

Software required for Practical:

Sl. No	Topic	S/W on Students Machine	Remarks
11.	ISPF simulators	IBMMAINFRAMES.com IBMMF3270 Emulator Ver3.0 - Full Version	Comes at a cost For details visit: http://mainframesindia.com/
12.	COBOL simulators	Mainframe related PC compilers like PC COBOL - 74, COBOL - 85, COBOL 12, COBOL3, MF COBOL	Comes at a cost For details visit: http://mainframesindia.com/
13.	DB2	DB2 Express Edition	Comes at a cost For details visit: http://www-01.ibm.com/software/data/db2/linux-unix-windows/edition-express.html

44. Mode of Examination:

The final examination carries 100 Marks. The Institute will conduct all the assessments. Theory Assessment (50 Marks) and Practical Assessment (50 Marks).Theory Assessments to be conducted based on CAMP methodology.

Pattern of Practical Question:

Programming based assignment using COBOL and DB2 to be given. The students should design the solutions, test cases and implement.

10. Faculty Enablement

The Faculty will be enabled on the Industry practices used, case studies used, and assessment frame work.

11. Courseware & REFERENCE Books:

58. MVS JCL, Doug Lowe, Mike Murach and Associates
59. Gary DeWard Brown, JCL Programming Bible (with z/OS) fifth edition, Wiley India Dream Tech, 2002.
60. z/OS V1R4.0 MVS JCL Reference found online at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
61. z/OS V1R1.0 MVS JCL Reference found online at http://publibz.boulder.ibm.com/cgibin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
62. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
63. COBOL - Programming Guide, Ver 3, Release 2, IBM Redbook.
64. Nancy Stern & Robert A Stern, "Structured Cobol Programming", John Wiley & Sons, New York, 1973.
65. M.K. Roy and D. Ghosh Dastidar, "Cobol Programming", Tata McGraw Hill, New York, 1973.
66. Newcomer and Lawrence, Programming with Structured COBOL, McGraw Hill Books, New York, 1973.
67. Craig S Mullins, DB2 Developer's Guide, Sams Publishing, 1992.
68. Gabrielle Wiorkowski & David Kull, DB2 Design & Development Guide, Addison Wesley, 1992.
69. C J Date & Colin J White, A Guide to DB2, Addison Wesley.
70. IBM Manual: DB2 Application Programming and SQL guide.
71. IBM Manual: DB2 SQL Reference.
72. DB2 Version 7 Information Center found online at http://publib.boulder.ibm.com/infocenter/db2v7luw/index.jsp

12. Conclusion:

Introduction of the collaboratively designed elective will significantly help the CS/IS students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Proposal for Introduction of New Industry Elective
In Engineering/Management Curriculum

Elective-"Business Intelligence (BI) and its application"

Designed in collaboration with Infosys Technologies Limited

Contents

1. Background

Our college has partnered with **Infosys Technologies Limited** to roll-out Campus Connect Program. Under this program we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective titled "Business Intelligence and its application". The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective Sep 2010.

2. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes engineering/management students to **B**usiness **I**ntelligence domain. The Core Modules of this elective includes introduction to BI terminologies and framework, basics of data integration (**E**xtraction **T**ransformation **L**oading), introduction to multi-dimensional data modeling, basics of enterprise reporting and application of the concepts using open source/Microsoft tools.

2.2 Prerequisites:

Basic knowledge of RDBMS (relational database management system) concepts with hands-on exposure (includes design & implementation of table structures).

2.3 Assumptions:

36. This elective will be applicable to engineering/management students
37. The duration of the course will be one semester
38. The elective design follows university curriculum standards
39. There will be a compulsory final examination
40. The elective will be designed in exclusive collaboration with Infosys
41. Current capacity planned – 30-50

3. Learning outcomes

At the end of this elective, student will be able to:

12. Differentiate between Transaction Processing and Analytical applications and describe the need for Business Intelligence
13. Demonstrate understanding of technology and processes associated with Business Intelligence framework
14. Demonstrate understanding of Data Warehouse implementation methodology and project life cycle
15. Given a business scenario, identify the metrics, indicators and make recommendations to achieve the business goal
16. Design an enterprise dashboard that depicts the key performance indicators which helps in decision making
17. Demonstrate application of concepts in Microsoft BI suite

4. Course Schedule Summary

Here it is illustrated for one semester course:

Elective	Duration of the Course	Number of Weeks	Total Lecture hours*	Total Tutorial hours	Total Credit
Elective	One Semester	12 – 14 Weeks	34	6	3

* Total lecture hours includes classroom delivery and demonstration of concepts using appropriate BI tools

5. Course contents

Elective: 'Business Intelligence and its application'

Chapter-1: Introduction to Business Intelligence, **Duration- 4 hours**

Introduction to OLTP and OLAP, BI Definitions & Concepts, Business Applications of BI, BI Framework, Role of Data Warehousing in BI, BI Infrastructure Components – BI Process, BI Technology, BI Roles & Responsibilities

Chapter-2: Basics of Data Integration (**E**xtraction **T**ransformation **L**oading)**, Duration- 12 hrs**

Concepts of data integration need and advantages of using data integration, introduction to common data integration approaches, introduction to ETL using SSIS, Introduction to data quality, data profiling concepts and applications

Chapter-3: Introduction to Multi-Dimensional Data Modeling**, Duration- 6 hrs**

Introduction to data and dimension modeling, multidimensional data model, ER Modeling vs. multi dimensional modeling, concepts of dimensions, facts, cubes, attribute, hierarchies, star and snowflake schema, introduction to business metrics and KPIs, creating cubes using SSAS

Chapter-4: Basics of Enterprise Reporting**, Duration- 12 hrs**

Introduction to enterprise reporting, concepts of dashboards, balanced scorecards, introduction to SSRS Architecture, enterprise reporting using SSRS

6. Tutorials

Duration- 6 hrs

The assignments for Electives could include the following.

- Seminars from the topics related to Business Intelligence space
- Relevant lab exercises to get exposure to BI concepts & tool

7. Practical Exposure

With intent to get some exposure in the business intelligence space, the colleges can arrange for

- A project that allows the students to apply *Technical, Behavioral, Process* concepts learnt in the elective course by:
    - Executing near real-life project (with large data)
    - Working in teams (project teams will ideally comprise of 4 members)
    - Experiencing expectations from different roles

There will be 2 projects (one at the end of chapter 2 and the second one at the end of chapter 4)

- Project 1: Data in disparate data sources such as Excel, text file, databases etc. will be provided to the students. They will be expected to extract, cleanse, integrate and load it into the data-warehouse.
- Project 2: Design reports according to given business scenarios. The data for the report s is to be pulled from the data-warehouse built in the earlier project.

8. Software Requirements

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks
14.	Business Intelligence (BI) and its application	SQL Server along with Business Intelligence	Version 2008

		Development Studio (BIDS)	

* The college can either have the licensed version of the complete software or can freely download the express edition of the same.

9. Mode of Examination

- The final examination carries 50 Marks. The Institute will conduct all the assessments.

- Internal assessments carry 50 Marks which includes Theory Assessment (30 Marks), Practical (8 marks) and Project Work (12 marks) and

Theory Assessments to be conducted based on CAMP methodology

Pattern of Practical Question:

- Case Study – One real life problem business scenario can be given to students. The students should identify the metrics, indicators and make recommendations to achieve the business goal
- RDBMS –A table structure is given with sample data. Three or four queries have to be asked. Students should implement it using MY SQL.

10. Faculty Enablement

The Elective is being planned to be offered in the 7th semester. The Faculty will be enabled on the course contents; Industry practices case studies etc. for duration of one week before the commencement of elective. Faculties from various colleges are required to stay in the Infosys Campus for their Enablement.

11. Courseware & Reference Books:

The courseware including PowerPoint and notes are available for the Elective. In addition, following reference books can also be used:

1. Business Intelligence by David Loshin
2. Business intelligence for the enterprise by Mike Biere
3. Business intelligence roadmap by Larissa Terpeluk Moss, Shaku Atre
4. Successful Business Intelligence: Secrets to making Killer BI Applications by Cindi Howson
5. Delivering business intelligence with Microsoft SQL server 2008 by Brain, Larson
6. Foundations of SQL Server 2005 Business Intelligence by Lynn Langit
7. Information dashboard design by Stephen Few

12. Actions:

6. The college needs to send the Board of Studies Approval letter on college letter head to Infosys.
7. Identify one department to own the responsibility of course content, assignments, projects, software tools etc. (Preferable CS/IS Department)
8. Identify faculty from CS/IS/MCA department for rollout and faculty training
9. Identify and allocate resources like classrooms, labs, necessary hardware and software for rollout.
10. Complete readiness check before the rollout

13. Contact Details:

The Infosys point of contact can be reached for more info. In addition, the Institute SPoC can also be reached for additional info.

Department owning the responsibility of Course Content:

The HOD'S / Faculty Names and their Email Id, owning the course content of Elective are to be mentioned.

S. No.	Name	E-Mail	Phone Number
1			
2			
3			
4			
5			

Faculties handling the Elective rollout:

The faculty names and their Email Id, handling the Elective rollout are to be mentioned.

S. No.	Name / Dept	E-Mail	Phone Number
1			
2			
3			
4			
5			

14. Conclusion:

Introduction of the collaboratively designed elective will significantly help the engineering/management students to get an exposure to Business Intelligence domain and understand the applicability of concepts using open source/Microsoft tools and leverage the knowledge gained as a competitive edge in their career in business intelligence space.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Learning IT Essentials by Doing"

Designed in collaboration with
Infosys Technologies Limited

Contents

15. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program we have been conducting training leveraging IT Industry-Ready program (using Infosys Foundation Program courseware) for CS as well as non-CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Learning IT Essentials by Doing**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective June 2009.

16. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the non-CS/IT students to IT Essentials. The Core Modules of this Elective includes Programming, Database and Web Technologies amongst other related topics. This program is independent of any organization / product / technology.

2.2 Prerequisites:

No prerequisites are needed for enrolling into the elective.

2.3 Assumptions:

42. This elective will be applicable to Non-CS / IT students
43. The duration of the course will be One Semester / 2 Semesters
44. The elective design follows University Curriculum standards
45. There will be a compulsory final Examination
46. The elective will be designed in exclusive collaboration with Infosys
47. The college will leverage existing Lab & IT infrastructure
48. Current capacity planned – Two batches with 50 students

17. Learning outcomes

At the end of this elective, student shall be able to:

18. Do Problem Solving using Programming and algorithms
19. Describe working of Internet based applications
20. Design and develop demos using Alice tool (http://alice.org).
21. Design and test simple programs in C language
22. Document artifacts using common quality standards
23. Design simple data store using RDBMS concepts and implement
24. Develop a working website with all above learning
25. Describe approach to object oriented analysis and design
26. Describe client-server model of computing

18. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Tutorial hours	Total Practical hours	Total Credit
One semester	12 – 13 Weeks	3 hours per week	1-2 hour(s) per month	3 hours per week	3

19. Course contents (Draft only)

Unit I:

- Fundamentals of Computer architecture-introduction-organization of a small computer
- Central Processing Unit - Execution cycle – Instruction categories – measure of CPU performance Memory – Input/output devices - BUS-addressing modes.
- System Software – Assemblers – Loaders and linkers – Compilers and interpreters
- Operating system – introduction – memory management schemes Process management Scheduling – threads.

Unit II:

- Problem solving with algorithms- Programming styles –
- Coding Standards and Best practices - Introduction to C Programming
- Testing and Debugging. Code reviews
- System Development Methodologies – Software development Models
- User interface Design – introduction – The process – Elements of UI design & reports.

Unit III:

- RDBMS- data processing – the database technology – data models
- ER modeling concept –notations – Extended ER features
- Logical database design - normalization
- SQL – DDL statements – DML statements – DCL statements
- Writing Simple queries – SQL Tuning techniques – Embedded SQL - OLTP

Unit IV:

- Objected oriented concepts – object oriented programming
- UML Class Diagrams– relationship – Inheritance – Abstract classes – polymorphism
- Object Oriented Design methodology - Common Base class
- Alice Tool – Application of OOC using Alice tool.

Unit V:

- Client server computing - Internetworking – Computer Networks –
- Working with TCP/IP – IP address – Sub netting – DNS – VPN – proxy servers World Wide Web – Components of web application - browsers and Web Servers
- URL – HTML – HTTP protocol – Web Applications - Application servers – Web Security.

20. Tutorial

The purpose of 1-2 hour(s) tutorial per month is to help slow learning students bring upto speed all the students. The assignments for CHSSC, Programming Fundamentals, and Relational Data base Management System available (in the **Campus Connect portal)** have to be completed as a part of Tutorial.

21. Practical

Students should implement the following during Practical hours: (illustrative only)

11. Programs using C Language
12. Queries using MY-SQL

    For 1 & 2, The Source: Campus connect portal

13. Using Alice Tool :
    a. Write a method for an Alice object
    b. Condition Construct
    c. Repetition Construct

22. Project

The project is a Group Activity consisting of 4 members in a team. For example, The Telephone Directory Maintenance project, is hosted on the portal, has to be completed. The project has to be evaluated before the final examination. The Total mark of the project is 30 Marks. The Project specification is available in the portal. The Institute is free to introduce new and similar projects for enhancing the learning.

23. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)
MSOffice 2003, IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks
15.	Programming Fundamentals	Visual Studio .NET (2003), Turbo C	Alternate: Visual Studio 6
16.	RDBMS	My-SQL	Alternate: Oracle 9i Client

10. Mode of Examination:

The final examination carries 100 Marks. The assessment process will be based on inputs from Industry. The Institute will conduct all the assessments. The pattern of examination is:

Theory : 70 Marks –Multiple choice questions covering all the above Units.
(Intermediate Quizzes can be part of the assessment too).

Practical: 30 Marks - Problems has to be implemented (e.g using C and MY SQL)

1. Programming – 15 marks
2. RDBMS – 15 marks

Pattern of Practical Question:

3. Programming – One real life problem has to be given. The students should implement it in C Language.
4. RDBMS –A table structure is given with sample data. Three or four queries have to be asked. Students should implement it using MY SQL.

11. Faculty Enablement

The Faculty will be enabled on the Industry practices used, case studies used, and assessment framework.

12. Courseware & REFERENCE Books:

The courseware (powerpoint and notes) is available for the Elective. The Foundation Program books for students are available at a cost-price. This has to be dealt with the alliance partner directly and Infosys has no role in this. In addition, following reference books can also be used.

1. Andrew S. Tanenbaum, Structured Computer Organization, PHI, 3rd ed., 1991
2. Silberschatz and Galvin, Operating System Concepts, 4th ed., Addision-Wesley, 1995
3. Dromey R.G., How to solve it by Computers, PHI, 1994
4. Kernighan, Ritchie, ANSI C language PHI,1992
5. Wilbert O. Galitz, Essential Guide to User Interface Design, John Wiley, 1997
6. Alex Berson, Client server Architecture, Mc Grew Hill International, 1994
7. Rojer Pressman, Software Engineering-A Practitioners approach, McGraw Hill, 5th ed., 2001
8. Alfred V Aho, John E Hopcroft, Jeffrey D Ullman, Design and Analysis of Computer Algorithms, Addison Wesley Publishing Co., 1998
9. Henry F Korth, Abraham Silberschatz, Database System Concept, 2nd ed. McGraw-Hill International editions, 1991
10. Brad J Cox, Andrew J.Novobilski, Object – Oriented Programming – An evolutionary approach, Addison – Wesley, 1991

13.Conclusion:

Introduction of the collaboratively designed elective will significantly help the non-CS/IT students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Hence, we request for approval the introduction of this elective.

14. Actions:

The college needs to send us the Board of Studies Approval at least one month in advance before implementing the Elective.

15. Contact Details:

The Infosys Campus Connect Program contact can be reached for more info. In addition, the Institute SPOC can also be reached for additional info.

Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Soft Skills"

Designed in collaboration with
Infosys Technologies Limited

Contents

24. Background

Our institution is an autonomous institution which has got the authority to introduce industry elective courses. We feel the need to work closely with the industry to design these electives.

Infosys, through its Campus Connect program started in May 2004, has been working closely with the engineering institutions across the country to enhance the quality and quantity of IT resource pool. This is achieved in a structured manner by sharing the courseware, enabling the faculty members and helping the institutions to plan and roll it out to the students. Two major components of the Campus Connect program are the technical (Campus Connect Foundation Program) and the soft-skills (Campus Connect Soft-Skills Program).

Infosys is now working to institutionalize these programs in the engineering colleges. As a first step towards that, Infosys is focusing on autonomous institutions which are willing to work together to co-design the industry elective **Soft Skills**.

The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering.

25. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the engineering and M.C.A students to those soft skills which are crucial to an employee's ability to work "smarter". The Core Modules of this Elective includes Strengthening English, Art of Communication, Working in Teams, and Interview & GD handling skills amongst other related topics. This program is independent of any organization.

2.2 Prerequisites:

No prerequisites are needed for enrolling into the elective.

2.3 Assumptions:

49. This elective will be applicable to all engineering (2nd & 3rd year) and M.C.A students
50. The duration of the course will be 1- 3 Semesters
51. The elective design follows University Curriculum standards
52. There will be a compulsory final Examination
53. The elective will be designed in exclusive collaboration with Infosys
54. The college will leverage existing Lab & IT infrastructure
55. Current capacity planned – Two batches with 50 students

26. Learning outcomes

At the end of this elective, student shall be able to / develop the skills necessary to:

27. Have competent knowledge of grammar with an understanding of its basic rules.
28. Speak and write appropriately applying these rules.

29. Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence.
30. Work together in teams and accomplish objectives in a cordial atmosphere.
31. Face interviews, GDs and presentations.
32. Understand and develop the etiquette necessary to present oneself in a professional setting.

27. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Counseling / Mentoring hours	Total Practical hours	Total Credit
2 semesters	28 – 30 Weeks	2.5 hours per week	1 hr per student per month / as required by student	Included in lecture hours	3

28. Course contents (Draft only)

Unit I: Effective English – Written and Spoken English

- Basic rules of Grammar - Parts of Speech – Tenses - Verbs
- Sentence Construction - Vocabulary – Idioms & Phrases – Synonyms – Antonyms.
- Dialogues and Conversations – Writing
- Exercises to practice and improve these skills.

Unit II: Art of Communication & the Hidden Data Involved

- Verbal Communication - Effective Communication - Active listening –Paraphrasing - Feedback
- Non Verbal Communication - Body Language of self and others
- Importance of feelings in communication - dealing with feelings in communication

Unit III: World of Teams

- Self Enhancement - importance of developing assertive skills- developing self confidence – developing emotional intelligence
- Importance of Team work – Team vs. Group - Attributes of a successful team – Barriers involved
- Working with Groups – Dealing with People- Group Decision Making

Unit IV: Interview, GD & Presentation Skills

- Interview handling Skills – Self preparation checklist – Grooming tips: do's & don'ts – mock interview & feedback
- GD skills – Understanding the objective and skills tested in a GD – General types of GDs – Roles in a GD – Do's & Don'ts – Mock GD & Feedback.
- Presentation Skills – Stages involved in an effective presentation – selection of topic, content, aids – Engaging the audience – Time management – Mock Presentations & Feedback

Unit V: Business Etiquette & Ethics

- Grooming etiquette – Telephone & E-mail etiquette – Dining etiquette – do's & Don'ts in a formal setting – how to impress.
- Ethics – Importance of Ethics and Values – Choices and Dilemmas faced – Discussions from news headlines.

29. Counseling / Mentoring:

The purpose of 1 hour counseling per student per month is to help understand the learning each individual student is gaining and help ensure that all the students benefit from the training. The modules on self enhancement, self esteem / confidence, communication can be supplemented by listening to the students in a non threatening one on one setting. The individual skills of the students can be analysed and the stronger students can be made to help bring up the other students thereby fostering peer learning..

30. Activities:

- Students should implement the learning from the classroom sessions during Practical hours.
- They will have to do 1 Developmental Assignment (DA) corresponding to each module.
- The students can select the DAs from the list available in the Campus connect portal or have the faculty allot topics based on consultation with Infosys.
- 3 of the DAs will have to be done individually and the remaining 2 DAs will have to be done as groups (not more than 4 members per group).
- The DAs can be presented as Presentations (Powerpoint), Role Plays, Written reports (typed) or other agreed upon modes.

31. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)
MSOffice 2003, IE 6.0, IIS 6.0,

Anti-Virus Software

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks
17.	Online Testing	Moodle	Freeware
18.			

10. Mode of Examination: (Illustrative only)

The assessment process will be based on inputs from Industry. The Institute will conduct all the assessments. The pattern of evaluation is:

Testing Methodology:

- Practical and Activity Based
- Pre and Post Test for each module, Classroom tasks, Activities, Quiz, Case Studies.
- 50% of grade will be Internal - based on class performance and attendance. Internal Evaluation will be done after the completion of each Module.
- 50% of grade will be based on performance in the DAs.
- Quality checks – Infosys can also conduct random quality checks of the students on the college campus to provide feedback and support to ensure the training is robust and effective.

11. Faculty Enablement

The Faculty will be enabled on the Industry needs, case studies used, and assessment framework. 20 faculty members from the college will be enabled by Infosys or their Alliance Partners.

12. Courseware & REFERENCE Books:

The courseware (Powerpoint and notes) is available for the Elective. In addition, following reference books can also be used.

1. The Seven Habits of Highly Effective People - Stephen R. Covey.
2. All the books in the "Chicken Soup for the Soul" series.
3. Man's search for meaning – Viktor Frankl
4. The greatest miracle in the world – Og Mandino
5. Goal - Eliyahu Goldratt.
6. Working with Emotional Intelligence - David Goleman.
7. Excel in English – Sundra Samuel, Samuel Publications

8. Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi
9. Essentials of Effective Communication, Ludlow and Panthon; Prentice Hall of India.
10. Effective Presentation Skills (A Fifty-Minute Series Book) by Steve Mandel
11. "Strategic interviewing" by Richaurd Camp, Mary E. Vielhaber and Jack L. Simonetti – Published by Wiley India Pvt. Ltd
12. "Effective Group Discussion: Theory and Practice" by Gloria J. Galanes, Katherine Adams , John K. Brilhart

13.Conclusion:

Introduction of the collaboratively designed elective will significantly help the engineering and MCA students to be industry aligned and better leverage their technical as a competitive edge in their career while working in their own discipline or specialization.

Hence, we request for approval the introduction of this elective.

14. Actions:

The college needs to send us the Board of Studies Approval before implementing the Elective.

15. Contact Details:

The Infosys Campus Connect Program contact can be reached for more info.
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