VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)

(Deemed to be University u/s 3 of the UGC Act, 1956)

PALLAVARAM - CHENNAI - INDIA

VELS UNIVERSITY

B.Tech-IT
Information Security and Cloud Technology

Curriculum and Syllabus

(Based on Choice Based Credit System)

Effective from the Academic Year

2015-2016

Department of Computer Science and Engineering

School of Engineering

B.Tech-IT - Information Security and Cloud Technology

CURRICULUM

Total No. of Credits: 195

Category	Code No.	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
SEMESTER 1						
AECC	15GBE201	Technical English	3	0	0	3
Core	15GBE001	Mathematics-I	3	1	0	3
Core	15GBE002	Engineering Physics	3	1	0	3
Core	15GBE003	Fundamentals of Computing	3	1	0	3
Core	15GBE004	Engineering Graphics	2	0	3	4
Core	15GBE005	Engineering Practices Laboratory	0	0	3	2
Core	15GBE006	Engineering Physics Laboratory	0	0	3	2
Core	15GBE007	Computer Practices Laboratory	0	0	3	2
			14	3	12	22
SEMESTER 2						
AECC	15GBE202	Communication Skills	3	0	0	3
Core	15GBE008	Mathematics-II	3	1	0	3
Core	15GBE009	Engineering Chemistry	3	1	0	3
Core	15GBE010	Materials Science	3	0	0	3
Core	15EIT021	Operating Systems-Building Blocks	3	0	0	3
Core	15EIT022	Information Security-I	3	1	0	3
Core	15GBE011	Engineering Chemistry Laboratory	0	0	3	2
AECC	15GBE203	Language Laboratory	0	0	3	2
Core	15EIT023	Information Security-I Lab	0	0	3	2
			18	3	9	24

B.Tech-IT - Information Security and Cloud Technology

CURRICULUM

Category	Code No.	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
SEMESTER 3						
AECC	15GBE204	Environmental Science and Engineering	3	0	0	3
Core	15GBE012	Mathematics-III	3	1	0	3
Core	15EIT031	Designing Enterprise Networks	3	1	0	3
DSE	15EIT__	Discipline Specific Elective I	3	0	0	3
DSE	15EIT__	Discipline Specific Elective II	3	0	0	3
GE	15EIT__	Generic Elective I	3	0	0	3
SEC	15EIT__	Skill Enhancement Elective I	2	0	0	2
Core	15EIT032	Designing Enterprise Networks - Lab	0	0	3	2
Core	15EIT033	Introduction to Linux/Unix Lab	0	0	3	2
			20	2	8	24
SEMESTER 4						
Core	15GBE013	Probability and Queuing Theory	3	1	0	3
Core	15EIT041	Fundamentals of Operating System(Windows 7)	3	1	0	3
Core	15EIT042	Ethical Hacking Basics	3	0	0	3
DSE	15EIT__	Discipline Specific Elective III	3	0	0	3
DSE	15EIT__	Discipline Specific Elective IV	3	0	0	3
GE	15EIT__	Generic Elective II	3	0	0	3
SEC	15EIT__	Skill Enhancement Elective II	2	0	0	2
Core	15EIT043	Fundamentals of Operating System(Windows 7) Lab	0	0	3	2
Core	15EIT044	Ethical Hacking Basics Lab	0	0	3	2
Core	15EIT045	Inplant Training I	0	0	0	2
			20	2	6	26

B.Tech-IT - Information Security and Cloud Technology

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Category	Code No.	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
SEMESTER 5						
Core	15GBE017	Discrete Mathematics	3	1	0	3
Core	15EIT051	Server Operating System	3	1	0	3
Core	15EIT052	Web Technology Fundamentals	3	0	0	3
DSE	15EIT__	Discipline Specific Elective V	3	0	0	3
DSE	15EIT__	Discipline Specific Elective VI	3	0	0	3
GE	15EIT__	Generic Elective III	3	0	0	3
SEC	15EIT__	Skill Enhancement Elective III	2	0	0	2
Core	15EIT053	Server Operating System Lab	0	0	3	2
Core	15EIT054	Web Technology Fundamentals - Lab	0	0	3	2
Core	15EIT055	Inplant Training II	0	0	0	2
			20	2	6	26
SEMESTER 6						
Core	15EIT061	Fundamentals of Virtualization	3	1	0	3
Core	15EIT062	Fundamentals of IT Infrastructure Library	3	0	0	3
Core	15EIT063	Cyber Forensics Basics	3	0	0	3
DSE	15EIT__	Discipline Specific Elective VII	3	0	0	3
DSE	15EIT__	Discipline Specific Elective VIII	3	0	0	3
GE	15EIT__	Generic Elective IV	3	0	0	3
SEC	15EIT__	Skill Enhancement Elective IV	2	0	0	2
Core	15EIT064	Fundamentals of Virtualization Lab	0	0	3	2
Core	15EIT065	Cyber Forensics Basics Lab	0	0	3	2
Core	15EIT066	Inplant Training III	0	0	0	2
			20	1	9	26

B.Tech-IT - Information Security and Cloud Technology

CURRICULUM

Category	Code No.	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
SEMESTER 7						
Core	15EIT071	Fundamentals of Storage Management	3	0	0	3
Core	15EIT072	Network Security Basics	3	0	0	3
Core	15EIT073	Windows Azure Basics	3	0	0	3
DSE	15EIT__	Discipline Specific Elective IX	3	0	0	3
DSE	15EIT__	Discipline Specific Elective X	3	0	0	3
GE	15EIT__	Generic Elective V	3	0	0	3
SEC	15EIT__	Skill Enhancement Elective V	2	0	0	2
Core	15EIT074	Network Security Lab	0	0	3	2
Core	15EIT075	Windows Azure Lab	0	0	3	2
Core	15EIT076	Mini Project & Seminar	0	0	3	2
			20	0	9	26
SEMESTER 8						
DSE	15EIT__	Discipline Specific Elective XI	3	0	0	3
DSE	15EIT__	Discipline Specific Elective XII	3	0	0	3
GE	15EIT__	Generic Elective VI	3	0	0	3
Core	15EIT81	Project Work	0	0	21	12
			9	0	21	21

List of Discipline Specific Electives Courses

15EIT101	Information Security – II
15EIT102	OSI Layer & Security
15EIT103	Data Structure & Algorithm
15EIT104	Introduction to cloud technology
15EIT105	Introduction to Linux/Unix
15EIT106	Cryptography Fundamentals
15EIT107	Fundamentals of Datacenter
15EIT108	Infrastructure Development Lifecycle, Web and Internet security
15EIT109	Virtualization and Cloud Security
15EIT110	Linux Administration
15EIT111	IT Governance, Risk and Information Security Audit
15EIT112	Mail Servers
15EIT113	Private Cloud Architecture
15EIT114	Cloud Web Services
15EIT115	Mobile, Wireless, VOIP and Bluetooth Security
15EIT116	Android Security
15EIT117	Security Threats and Trends
15EIT118	Hacktivism, Cyber warfare and Cyber Terrorism
15EIT119	Introduction to VOIP
15EIT120	OWASP Framework
15EIT121	ISO27001, PCIDSS and HIPAA
15EIT122	Linux Security and Forensics
15EIT123	Advanced Web Technology

List of Generic Electives Courses

15EIT151	Management Theory and Practice
15EIT152	Industrial Organization and Management
15EIT153	Transformational Skills
15EIT154	Transition from campus to corporate
15EIT155	E-Commerce
15EIT156	Business Communication
15EIT157	Effective Speaking and Analytical Skills
15EIT158	Life and Career Skills
15EIT159	Personal Effectiveness Skills

List of Skill Enhancement Elective Courses

15GPD251	Personality Development I
15GPD252	Personality Development II
15GPD253	Personality Development III
15GPD254	Personality Development IV
15NSS255	NSS - I
15NSS256	NSS - II
15NSS257	NSS - III
15NSS258	NSS - IV
15NSS259	NSS - V
15NSS260	NSS - VI

SYLLABUS

CORE COURSES

15GBE201 Technical English 3 0 0 3

Course Objective:

- To develop listening skills for academic and professional purposes.
- To acquire the ability to speak effectively in English in real life situations.
- To inculcate reading habit and to develop effective reading skills.
- To improve their active and passive vocabulary.
- To write letters and reports effectively in formal and business situations.

UNIT I INTRODUCTION TO BASIC GRAMMAR AND VOCABULARY 9

General Vocabulary – Changing words from one form to another, Nouns- Compound nouns, Pronouns - Relative pronouns, Demonstrative pronouns, Adjectives - Comparative adjectives, Verbs- Modal verbs, Linking verbs, Adverbs, Word Links – Connectives, Sequence words, Introducing oneself, Interactive grammar exercises.

UNIT II BASIC SKILL – LISTENING AND INTERPRETATION 9

Listening Skills - Note Making and Note-Taking, Transformation of Sentences – Positive, Comparative, Superlative, Affirmative, Negative, Interrogative and Assertive, Formation of Questions. Information Transfer - Chart – Flow chart, Bar chart, Pie chart. Pair works, SAM sessions.

UNIT III BASIC SKILL-WRITING SKILL AND STRUCTURES 9

Creative thinking and speaking, Tenses – Present Tense – simple present, present continuous, present perfect, present perfect continuous, Past Tense - simple past, past continuous, past perfect, past perfect continuous, Future Tense -simple future, future continuous, future perfect, future perfect continuous, Autobiographical writing, JAM session.

UNIT IV BASIC SKILLS: READING AND WRITING SKILL 9

Reading Skills- Skimming and Scanning, Comprehension Passage Paragraph Writing – Descriptive paragraph, Argumentative paragraph, Persuasive paragraph, Demonstrative paragraph, Compare and contrast, Conversations.

UNIT V BASIC SKILL: SPEAKING SKILL AND VOCABULARY 9

Vocabulary, Prefixes and Suffixes, Cause and Effect relationship, Clauses and Phrases, Super-ordinates and Hyponyms, Expressing Causal Relation, Article, Prepositions, Preposition phrases, Speaking about the future plans, Reading comprehensions, Situational dialogues.

TOTAL: 45h

TEXT BOOKS:

1. Department of English, Anna University, Mindscapes, 'English for Technologists and Engineers', Orient Longman Pvt. Ltd, Chennai: 2012.
2. Department of Humanities and Social Sciences, Anna University, 'English for Engineers and Technologists' Combined Edition (Volumes 1 and 2), Chennai: Orient Longman Pvt. Ltd., 2006.

REFERENCE BOOKS:

1. N. Lakshmana Peruma, lTechnical English-I , Second Edition, Hitech Publishing company PVT. Ltd,2009.
2. Sumant. S, 'Technical English', Second Edition, McGraw-Hill Education (India) Pvt.Ltd., 2008.
3. T.M. Farhathullah, "Communication Skills for Technical Students", Orient Blackswan Private Limited., 2008

15GBE001 Mathematics-I 3 1 0 3

Course Objective: To develop the skills in the areas of Matrices, Three dimensional Analytical Geometry, Differential calculus, Functions of several Variables and Multiple Integrals. To serve as a pre-requisite mathematics course for post graduate courses, specialized studies and research.

UNIT I MATRICES 12

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 II THREE DIMENSIONAL ANALYTICAL GEOMETRY 12

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 III DIFFERENTIAL CALCULUS 12

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

UNIT IV FUNCTIONS OF SEVERAL VARIABLES 12

Partial derivatives – Euler's theorem for homogenous functions – Total derivatives – differentiation of implicit functions – Jacobians – Taylor's expansion – Maxima and Minima – Method of Lagrangian multipliers.

UNIT V MULTIPLE INTEGRALS 12

Double integration – Cartesian and polar coordinates – Change of order of integration – Change of variables between Cartesian and polar coordinates – Triple integration in Cartesian co-ordinates – Area as double integral – Volume as triple integral.

TOTAL: 60 h

TEXT BOOKS:

1. Grewal. B.S, "Higher Engineering Mathematics", 43rd Edition, Khanna Publications, Delhi, 2013.(Unit I & Unit II)
2. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.(Unit III, IV, V).

REFERENCE BOOKS:

1. Glyn James, "Advanced Engineering Mathematics", 7th Edition, Pearson Education, 2007.
2. Jain R.K and Iyengar S.R.K, "Advanced Engineering Mathematics", 3rd Edition, Narosa Publishing House Pvt. Ltd., 2007.
3. Veerarjan, T and Ramachandran, T., "Numerical methods with programming in C", Second Edition, Tata McGraw-Hill Publishing Co. Ltd, 2007.

15GBE002 Engineering Physics 3 1 0 3

Course Objective: To learn the basics of Ultrasonics, Lasers, Fibre optics and applications, Quantum physics and crystal physics etc., and to apply these fundamental principles to solve practical problems related to materials used for engineering applications.

UNIT I ULTRASONICS 12

Introduction – Production – magnetostriction effect – magnetostriction generator – piezoelectric effect – piezoelectric generator – Detection of ultrasonic waves– properties – Cavitations – Velocity measurement – acoustic grating – Industrial applications – drilling, welding, soldering and cleaning –Non Destructive Testing – pulse echo system through transmission and reflection modes – A, B and C scan displays- SONAR – Medical applications – Sonograms.

UNIT II LASERS 12

Introduction – Principle of Spontaneous emission and stimulated emission – Population inversion, pumping - Einstein's A and B coefficients – derivation – Types of lasers – He-Ne, CO_2, Nd-YAG, Semiconductor lasers homojunction and heterojunction (Qualitative) - Industrial Applications – Lasers in welding, heat treatment, cutting – Medical applications – Holography (construction and reconstruction).

UNIT III FIBRE OPTICS AND APPLICATIONS 12

Principle and propagation of light in optical fibres – Numerical aperture and Acceptance angle – Types of optical fibres (material, refractive index, mode) – fibre manufacturing (Double crucible technique) – Splicing, Loss in optical fibre – attenuation, dispersion, bending – Fibre optical communication system (Block diagram) – Light sources – Detectors –PIN Photo diode- Fibre optic sensors – temperature and displacement – Endoscope.

UNIT IV QUANTUM PHYSICS 12

Black body radiation – Planck's radiation law (derivation) – Deduction of Wien's displacement law and Rayleigh – Jeans Law from Planck's theory – Compton effect – Theory and experimental verification – Matter waves – Schrödinger's wave equation – Time independent and time dependent equations – Physical significance of wave function – Particle in a one dimensional box – Electron microscope - Scanning electron microscope – Transmission electron microscope.

UNIT V CRYSTAL PHYSICS 12

Lattice – Unit cell – Bravais lattice – Lattice planes – Miller indices – d spacing in cubic lattice – Calculation of number of atoms per unit cell – Atomic radius – Coordination number – Packing factor for SC, BCC, FCC and HCP structures – NaCl, ZnS, diamond and graphite structures – Polymorphism and allotropy – Crystal defects – point, line and surface defects – Burger vector.

TOTAL: 60 h

TEXT BOOKS:

1. Gaur, R. K. and Gupta, S.C., 'Engineering Physics' Dhanpat Rai Publications, New Delhi 2013.
2. Avadhanulu, M.N. and Kshirsagar, P.G., 'A Text book of Engineering Physics', S.Chand and Company, Ltd., New Delhi, 2013.

REFERENCE BOOKS:

1. Frank J.Faly, "Foundations of Engineering Accoustics", Elsevier Academic press, 2005.
2. Williams T.Silfrast, "Laser Fundamentals", Cambridge University press, 2004.
3. John Gowar, "Optical communication systems", Prentice Hall publications, 1993.
4. Murugesan R and Sivaprasath K, Modern Physics, S. Chand Ltd., 2008.

15GBE003 Fundamentals of Computing 3 1 0 3

Course Objective:

- To understand the concepts of Programming language - C and Html
- To learn the basics of C declarations, operators, expressions and html tags
- To learn on the manipulation of strings, functions and pointers

UNIT I INTRODUCTION TO COMPUTERS 12

Introduction – Characteristics, Classification and Evolution of Computers – Computer Generations: zero, first, second, third, fourth generation – Basic Computer organization – Number Systems: decimal, binary, hexadecimal, octal numbers – Computer Software – Types of Software – Software Development Steps.

UNIT II PROBLEM SOLVING AND OFFICE APPLICATION SOFTWARE 12

Planning the Computer Program – Purpose – Algorithm – Flow Charts – Pseudocode – Application Software Packages: shareware, freeware, open source software, application software for individual use – Introduction to Office Packages: word processing and spreadsheets – Internet basics: Internet evolution-Html tags-Forms-Frames.

UNIT III INTRODUCTION TO C 12

Overview of C: Constants, Variables: local and global, Keywords, Data Types – Compilation and Execution – Input and Output functions – Operators – C Instructions – Control Instructions : Decision control structure, Loop Control structure, Case Control Structure.

UNIT IV FUNCTIONS AND POINTERS 12

Functions: Library functions, User defined functions, call by value, call by reference, recursive functions – Pointers – Arrays: one dimensional array, multi-dimensional array, arrays using pointers, passing arrays to functions – Strings: library string functions – pointers in strings- pointers and function arguments.

UNIT V STRUCTURES AND FILES 12

Structures: Assigning values to structure elements, structure containing pointers – Unions – Storage classes: auto, static, extern, register – Dynamic memory allocation – Files: file Operations, processing a file, Preprocessor directives – use of typedef – Command line arguments- Enumerated data types.

Total: 60 h

TEXT BOOKS:

1. Yashavant Kanetkar, “Let Us C”, BPB Publications, Seventh Edition 2007
2. Balagurusamy, E., “Computing fundamentals and C Programming”, Tata McGraw-Hill Publishing Company Limited, 2010.
3. Thomno A. Powell, “The Complete Reference HTML and XHTML”, fourth edition, Tata McGrawHill,2003.

REFERENCE BOOK:

1. Ashok.N.Kamthane, “Computer Programming”, Pearson Education (India) 2009.

15GBE004 Engineering Graphics 2 0 3 4

Course Objective:

- To develop the graphic skills for communication of concepts, ideas and design of Engineering products.
- To expose them to existing national standards related to technical drawings.
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UNIT I PLANE CURVES AND FREE HAND SKETCHING 12

Curves used in engineering practices: Conics – Construction of ellipse, Parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of squad and circle – Drawing of tangents and normal to the above curves. Free hand sketching: Representation of Three Dimensional objects – General principles of orthographic projection – Need for importance of multiple views and their placement – First angle projection – layout views – Developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACES 12

Projection of points and straight lines located in the first quadrant – Determination of true lengths and true inclinations – Projection of polygonal surface and circular lamina inclined to both reference planes.

UNIT III PROJECTION OF SOLIDS 12

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 IV SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES 12

Sectioning of above solids in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other – Obtaining true shape of section. Development of lateral surfaces of simple and truncated solids – Prisms, pyramids, cylinders and cones – Development of lateral surfaces of solids with cylindrical cutouts, perpendicular to the axis.

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS 12

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones. Perspective projection of prisms, pyramids and cylinders by visual ray method. **Special points applicable to University Examinations on Engineering Graphics:**

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.

Whenever the total number of candidates in a college exceeds 150, the University Examination in that college will be conducted in two sessions (FN and AN on the same day) for 50 percent of student (approx) at a time.

TEXT BOOK:

1. N.D. Bhatt, “Engineering Drawing” Charotar Publishing House, 46th Edition, (2003).

REFERENCE BOOKS:

1. K. V. Natrajan, “A text book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai (2006).
2. M.S. Kumar, “Engineering Graphics”, D.D. Publications, (2007).
3. K. Venugopal & V. Prabhu Raja, “Engineering Graphics”, New Age International (P) Limited (2008).
4. M.B. Shah and B.C. Rana, “Engineering Drawing”, Pearson Education (2005).
5. K. R. Gopalakrishnana, “Engineering Drawing” (Vol.I&II), Subhas Publications (1998).
6. Dhananjay A.Jolhe, “Engineering Drawing with an introduction to AutoCAD” Tata McGraw Hill Publishing Company Limited (2008).
7. Basant Agarwal and Agarwal C.M., “Engineering Drawing”, Tata McGraw Hill Publishing Company Limited, New Delhi, (2008).

15GBE005 Engineering Practices Lab 0 0 3 2

GROUP A – Mechanical And Civil Engineering Practices

MECHANICAL ENGINEERING PRACTICES

Course Objective:

- To study bench fitting drawings for making male and female fittings as per the given dimensions and tolerances.
- To study Arc welding drawings for making common weld joints as per the given dimensions.
- To study sheet metal development drawings for making common metal parts/components as per the given dimensions.

List of Experiments

1. To make square, hexagonal, V joint in bench fitting as per the given dimensions and Tolerances.
2. To make single V, butt, lap and T fillet joint by arc welding with the back hand and fore hand welding techniques as per the given dimensions.
3. To make simple Cubical blocks, Rectangular trays in sheet metal with the jigs as per the given dimensions.

CIVIL ENGINEERING PRACTICES

Course Objective :

1. To study wood working drawings for making common wooden joints as per the given dimensions.
2. To study pipe line drawings for making common water supply in the domestic, plant applications as per the given dimensions.

List of Experiments

1. To make simple T, cross lap, mortise- tenon joints by wooden blocks as per the given dimensions.
2. To make simple water line pipe connections in PVC pipes with single tap, double taps for same and different diameters with valves as per the given dimensions.

GROUP B – Electrical and Electronics Engineering Practices

ELECTRICAL ENGINEERING PRACTICES

Course Objective:

1. To read electrical drawings for making Residential and industrial wiring as per the given provisions.
2. To read electrical circuit drawings for measuring electrical quantities, energy for the given electrical circuit.

List Of Experiments:

1. To measure energy by using single phase energy meter.
2. To measure electrical quantities like voltage, current, power, power factor in RLC Circuit..
3. To make fluorescent lamp, stair case and residential wiring.

ELECTRONICS ENGINEERING PRACTICES

Course Objective:

1. To understand the colour coding of the Resistors.
2. To measure AC Signal parameters by the CRO.
3. To measure ripple factors of HWR, FWR.
4. To solder and de-solder the components in the PCB.

List of Experiments:

1. To measure Peak-peak, rms, period, frequency using CRO.
2. To solder components devices and circuits by using general purpose PCB.

SUGGESTED ACTIVITIES

1. To attempt application oriented mini projects with the skills obtained for all the practices.
2. To make picture charts for all the practices.

MANUALS

1. Engineering practices lab manual – S.Madhavan / S.Achudhan (United Global Publishers).
2. Engineering practices lab manual – V. Ramesh Babu (VRB Publishers).

15GBE006	**Engineering Physics Laboratory**	**0**	**0**	**3**	**2**

List of Experiments

1. Determination of Young's modulus of the material – Non uniform bending.
2. Determination of Band Gap of a semiconductor material.
3. Determination of specific resistance of a given coil of wire – Carey Foster Bridge.
4. Determination of viscosity of liquid – Poiseuille's method.
5. Spectrometer – Dispersive power of a prism.
6. Determination of Young's modulus of the material – Uniform bending.
7. Torsional Pendulum – Determination of Rigidity modulus.
8. Ultrasonic Interferometer – Velocity of ultrasonic waves and compressibility of liquids.
9. Spectrometer – Grating – Wavelength of mercury spectrum.
10. Determination of wavelength of LASER and particle size using Grating.
11. Determine the wavelength of given source using the newton's ring experiment
12. Find the thickness of the given thin wire using air wedge method

15GBE007 Computer Practice Laboratory 0 0 3 2

Course Objective: To create Lab Programs in Word, Spreadsheet, Powerpoint, C Programs and HTML.

List of Experiments

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

1. Chart - Line, XY, Bar and Pie.
2. Formula - formula editor.
3. Spread sheet - inclusion of object, Picture and graphics, protecting the document and sheet.
4. Sorting and Import / Export features.

C) POWERPOINT

1. Any presentation of minimum five slides.

D) SIMPLE C PROGRAMMING *

1. Data types, Expression Evaluation, Condition Statements.
2. Arrays.
3. Structures and Unions.
4. Functions and Pointers.
5. File Operations.

- For programming exercises Flow chart and pseudocode are essential

E) HTML PROGRAMMING*

1. Create a webpage to embed an image in that page using HTML tags
2. HTML program for Table creation.

15GBE202 Communication Skills 3 0 0 3

Course Objective:

1. To develop listening skills for academic and professional purposes.
2. To acquire the ability to speak effectively in English in real life situations.
3. To inculcate reading habit and to develop effective reading skills.
4. To improve their active and passive vocabulary.
5. To write letters and reports effectively in formal and business situations.

UNIT I TECHNICAL VOCABULARY 9

Technical Vocabulary, Punctuation, Numerical Expressions, Expanding Acronyms and Abbreviations, Concord, 'If' clauses, Infinitives. Homonyms, Homographs and Homophones, Telephone conversations, Reading Comprehensions, Making of an advertisement.

UNIT II BASIC SKILL:READING AND SPEAKING SKILLS 9

Reading and interpretation, , Intensive reading,. Writing reviews on books and films, Descriptions, Process description, Summarizing, Instructions, Oral presentations. Debate.

UNIT III BASIC SKILL: TECHNICAL WRITING SKILL 9

Letters – formal, informal, Cover Letter and CV , Synonyms and Antonyms, Indefinite Adjectives, Non-verbal communication, Interactive sessions. Role Plays, Critical reading, Listening and Note taking.

UNIT IV BASIC SKILL: LISTENING AND SPEAKING SKILLS 9

Active and Passive Voice, Impersonal Passive, Essay Writing, Comprehension Passage, Editing, Correction of errors, Direct and Indirect, Conversations , Dialogue writing, Discourse Markers. Group activities.

UNIT V TECHNICAL WRITING AND COMMUNICATION 9

Reports – Types, structure, data collection, content, form, Definitions, extended definition, Recommendations, Memos, Checklists. Group Discussions, Listening and comprehending the conversations.

TOTAL: 45 h

TEXT BOOK:

1. Department of English, Anna University, Mindscapes, 'English for Technologists and Engineers', Orient Longman Pvt. Ltd, Chennai: 2012.
2. Department of Humanities and Social Sciences, Anna University, ''English for Engineers and Technologists'' Combined Edition (Volumes 1 and 2), Chennai: Orient Longman Pvt. Ltd., 2006.
3. M.Ashraf Rizvi, "Effective Technical Communication",Tata mcGraw-Hill Publishing Company Limited, New Delhi.2009.

REFERENCE BOOK:

1. Sumant. S, 'Technical English', Second Edition, McGraw-Hill Education (India) Pvt. Ltd., 2008.
2. Dr. M. Hariprasad," Communicative English "Third Edition, Neelkamal Publications, PVT. LTD.,2007.
3. Sangeeta Sharma , Binod Mishra, 'Communication Skills for Engineers and Scientists, PHI Learning Private Limited., New Delhi, 2009.

15GBE008 Mathematics-II 3 1 0 3

Course Objective:

- To acquire sound knowledge of techniques in solving ordinary differential equations that model engineering problems.
- To learn the concepts of vector calculus needed for problems in all engineering disciplines.
- To develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow the of electric current.
- To understand the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated.

UNIT I ORDINARY DIFFERENTIAL EQUATIONS 12

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.

UNIT II VECTOR CALCULUS 12

Gradient Divergence and Curl – Directional derivative – Irrotational and solenoidal vector fields – Vector integration – Green's theorem in a plane, Gauss divergence theorem and stoke's theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelopipeds.

UNIT III ANALYTIC FUNCTIONS 12

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

UNIT IV COMPLEX INTEGRATION 12

Complex integration – Statement and applications of Cauchy's integral theorem and Cauchy's integral formula – Taylor and Laurent expansions – Singular points – Residues – Residue theorem – Application of residue theorem to evaluate real integrals – Unit circle and semi-circular contour(excluding poles on boundaries).

UNIT V LAPLACE TRANSFORM 12

Laplace transform – 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 transform 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 : 60h

TEXT BOOKS:

1. Grewal. B.S, "Higher Engineering Mathematics", Khanna Publications ,Delhi,43rd Edition, 2013.
2. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi,6th reprint, 2008.

REFERENCE BOOKS:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley India, 9th Edition, 2011.
2. Glyn James, "Advanced Modern Engineering Mathematics",Pearson Education ,3rd Edition, 2012.
3. Jain R.K and Iyengar S.R.K, "Advanced Engineering Mathematics", Narosa Publishing House,4th Edition,2014

15GBE009 Engineering Chemistry 3 1 0 3

B.E. (Common to all branches)

Course Objectives:

The students will have knowledge on the basics of chemistry and application of water technology, principles of electrochemistry, nuclear chemistry, nano chemistry, engineering materials, polymer and composites, corrosion and storage devices etc., and they will apply these fundamental principles to solve practical problems related to materials used for engineering applications.

UNIT I WATER TECHNOLOGY 9

Characteristics – alkalinity – types of alkalinity and determination – hardness – types of estimation by EDTA method (problem) – Domestic water treatment – disinfection methods (Chlorination, ozonation. UV treatment) – Boiler feed water – requirements – disadvantages of using hard water in boilers – internal conditioning (phosphate, calgon and carbonate conditioning methods) – external conditioning – de mineralization process – desalination and reverse osmosis

UNIT II ELECTROCHEMISTRY, NUCLEAR CHEMISTRY AND NANO CHEMISTRY 9

Introduction -Electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – Single electrode potential – Nernst equation (problem) – reference electrodes – Standard Hydrogen electrode – Calomel electrode – Ion selective electrode – glass electrode and measurement of pH

Nuclear energy – fission and fusion reactions and light water nuclear reactor for power generator (block diagram only) – Breeder reactor.

Nanomaterials – introduction to nanochemistry – carbon nanotubes and their applications.

UNIT III ENGINEERING MATERIALS 9

Refractories – classification – acidic, basic and neutral refractories – properties (refractoriness, refractoriness under load, dimensional stability, porosity, thermal spalling) – manufacture of alumina, magnesite and zirconia bricks and their applications. Abrasives – natural and synthetic abrasives – quartz, corundum, emery, garnet, diamond, silicon carbide and boron carbide. Lubricants – mechanism of lubrications – properties – viscosity index – flash and fire points, cloud and pour points – oiliness – solid lubricants – graphite and molybdenum di sulphide.

UNIT IV POLYMERS AND COMPOSITES 9

Polymers – definition – polymerization – types – addition and condensation polymerization –free radical polymerization and mechanism – Plastics, classification – preparation, properties and uses of PVC, Teflon, polycarbonate, polyurethane, nylon-6,6, PET – Rubber – vulcanization of rubber. Synthetic rubbers. Composites – definition, types, polymer matrix composites – FRP only

Conducting polymers, semiconducting polymers, molecular switches—examples, mechanism and applications.

UNIT V CORROSION, CORROSION CONTROL AND STORAGE DEVICES 9

Chemical corrosion – Pilling – Bedworth rule – electrochemical corrosion – different types – galvanic corrosion – differential aeration corrosion – factors influencing corrosion – corrosion control – sacrificial anode and impressed cathodic

current methods – corrosion inhibitors – protective coatings – paints – constituents and functions – metallic coatings – electroplating (Au) and electroless (Ni) plating.

Solar energy conversion – solar cells – wind energy – fuel cells –hydrogen – oxygen fuel cell – Batteries – alkaline batteries – lead – acid batteries – nickel – cadmium batteries and lithium batteries.

TOTAL: 45 HOURS

TEXT BOOKS:

1. B.Sivasankar “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi 2008.
2. B.K.Sharma “Engineering Chemistry” Krishna Prakasan Media (P) Ltd., Meerut 2001.
3. Puri and Sharma “A text book of Physical chemistry “, Chand and Co., New Delhi

REFERENCE BOOKS:

1. Jain P.C. and Monica Jain, “Engineering Chemistry”, Dhanpat Rai Publishing Company (P) Ltd., New Delhi, 2010
2. Dara S.S, Umare S.S, “Engineering Chemistry”, S. Chand & Company Ltd., New Delhi 2010

15GBE010 Materials Science 3 0 0 3

Course Objective: To learn the basics of conducting materials, semiconducting materials, magnetic super conducting materials, Dielectric materials and Modern Engineering Materials etc., and to apply these fundamental principles to solve practical problems related to materials used for engineering applications.

UNIT I CONDUCTING MATERIALS 9

Conductors – classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Drawbacks of classical theory – Quantum theory – Fermi distribution function – Effect of temperature on Fermi function – Density of energy states – carrier concentration in metals.

UNIT II SEMICONDUCTING MATERIALS 9

Intrinsic semiconductor – carrier concentration derivation – Fermi level – Variation of Fermi level with temperature – electrical conductivity – band gap determination – extrinsic semiconductors – carrier concentration derivation in n-type and p-type semiconductor – variation of Fermi level with temperature and impurity concentration – compound semiconductors – Hall effect – Determination of Hall coefficient – Applications.

UNIT III MAGNETIC AND SUPERCONDUCTING MATERIALS 9

Origin of magnetic moment – Bohr magneton – Dia and para magnetism – Ferro magnetism – Domain theory – Hysteresis – soft and hard magnetic materials – antiferromagnetic materials – Ferrites, applications – magnetic recording and readout, storage of magnetic data, tapes, floppy and magnetic disc drives. Superconductivity - properties – Types of superconductors – BCS theory of superconductivity(Qualitative) – High Tc superconductors – Applications of superconductors – SQUID, cryotron, magnetic levitation.

UNIT IV DIELECTRIC MATERIALS 9

Electrical susceptibility – dielectric constant – electronic, ionic, orientational and space charge polarisation – frequency and temperature dependence of polarisation – internal field – Clausius – Mosotti relation (derivation) – dielectric loss – dielectric breakdown – uses of dielectric materials (capacitor and transformer) – ferroelectricity and applications.

UNIT V MODERN ENGINEERING MATERIALS 9

Metallic glasses: preparation, properties and applications. Shape memory alloys (SMA): Characteristics, properties, application, advantages and disadvantages of SMA. Nanomaterials: synthesis – plasma arcing – chemical vapour deposition – sol-gels – electrodeposition – ball milling – properties of nanoparticles and applications, Carbon nanotubes: fabrication.

TOTAL: 45 h

TEXT BOOKS:

1. Rajendran, V, and Marikani A, 'Materials Science' Tata McGraw Hill publications, New Delhi 2011.
2. Vijaya, M. and Rangarajan G, 'Materials Science' Tata McGraw Hill publications, New Delhi 2006.

REFERENCE BOOKS:

1. Charles Kittel 'Introduction to Solid State Physics', John Wiley and sons, 7th edition, Singapore 2008.
2. Kasap S.O, " Principles of Electronic Materials", 3rd edition, Mc GrawHill Higher Education, 2005.
3. Pradeep T, "A text book of Nanoscience and Nano technology, Mc GrawHill Higher Education, 2012.
4. Palanisamy P.K, 'Materials Science', Scitech publications, Chennai, 2007.

15EIT021 Operating Systems-Building Blocks 3 0 0 3

Course Objective: The subject will impart basic knowledge about different aspects of Operating systems like Processing Memory, File system, and I/O operations. Capabilities of computer can only be harnessed to its fullest when we understand its working principle and use them in a manner to yield maximum output.

Unit I INTRODUCTION TO OPERATING SYSTEM **9**

Introduction, Objectives and Functions of OS, Evolution of OS, OS Structures, OS Components, OS Services, System calls, System programs, Virtual Machines.

Unit II PROCESS MANAGEMENT **9**

Processes: Process concept, Process scheduling, Co-operating processes, Operations on processes, Inter process communication, Communication in client-server systems.

Threads: Introduction to Threads, Single and Multi-threaded processes and its benefits, User and Kernel threads, Multithreading models, Threading issues.

CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling Algorithms, Multiple Processor Scheduling, Real-time Scheduling, Algorithm Evaluation, Process Scheduling Models.

Process Synchronization: Mutual Exclusion, Critical – section problem, Synchronization hardware, Semaphores, Classic problems of synchronization, Critical Regions, Monitors, OS Synchronization, Atomic Transactions

Deadlocks: System Model, Deadlock characterization, Methods for handling Deadlocks, Deadlock prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit III STORAGE MANAGEMENT **9**

Memory Management: Logical and physical Address Space, Swapping, Contiguous Memory Allocation, Paging, Segmentation with Paging.

Virtual Management: Demand paging, Process creation, Page Replacement Algorithms, Allocation of Frames, Thrashing, Operating System Examples, Page size and other considerations, Demand segmentation

Unit IV FILE SYSTEM **9**

File-System Interface: File concept, Access Methods, Directory structure, File- system Mounting, File sharing, Protection and consistency semantics

File-System Implementation: File-System structure, File-System Implementations, Directory Implementation, Allocation Methods, Free-space Management, Efficiency and Performance, Recovery

Disk Management: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, Disk Attachment, stable-storage Implementation

Unit V PROTECTION AND SECURITY **9**

Protection: Goals of Protection, Domain of Protection, Access Matrix, Implementation of Acess Matrix, Revocation of Access Rights, Capability- Based Systems, Language – Based Protection

Security: Security Problem, User Authentication, One – Time Password, Program Threats, System Threats, Cryptography, Computer – Security Classifications.

TEXT BOOKS:

1. William Stallings, Operating System, 4th Edition, Pearson Education.

REFERENCE BOOKS:

1. Milan Milonkovic, Operating System Concepts and design, II Edition, McGraw Hill 1992.
2. Tanenbaum, Operation System Concepts, 2nd Edition, Pearson Education.
3. Silberschatz / Galvin / Gagne, Operating System,6th Edition,WSE (WILEY Publication)
4. William Stallings, Operating System, 4th Edition, Pearson Education.
5. H.M.Deitel, Operating systems, 2nd Edition ,Pearson Education
6. Abraham Silberschatz and peter Baer Galvin, Operating System Concepts, 8th Edition, Pearson Education 1989 (Chapter 1,3.1,3.2,3.3,3.4,3.6,4,5,6 (Except 6.8,6.9), 7, 8,9,10,11,13, (Except 13.6) 19 (Except 19.6),20(Except 20.8, 20.9), 22,23)
7. Nutt: Operating Systems, 3/e Pearson Education 2004

15EIT022 Information Security-I 3 1 0 3

Course Objective: Information Security is a very critical aspect in our world, where most of the information is open-source and highly vulnerable to threats and breaches. This subject forms the foundation for Information Security course and begins with making students realize the importance of learning security and the implications of not doing so. Security can be implemented at user level, group level, and server level and so on, depending on the organizational structure. Assessment of Risk within a system and Cyber laws that are formed to enforce security in IT System are dealt in detail.

UNIT I INTRODUCTION TO INFORMATION SECURITY **12**

Introduction: Security Definition, Why Security, Security and its need, Current Trends and Statistics, Basic Terminology, The C I A of Security the Relation: Security functionality and Ease of Use Triangle.

UNIT II USER IDENTITY AND ACCESS MANAGEMENT **12**

User identity and Access Management: Authentication, Account Authorization, Validation, Access Control and Privilege management. Hashing and Cryptography- Encryption and Decryption

UNIT III SYSTEM AND SERVER SECURITY **12**

System Security, Desktop & Server Security, Firewalls, Password cracking Techniques, Key-logger, viruses and worms, Malwares & Spy wares, Windows Registry

UNIT IV INTERNET SECURITY **12**

Internet Security: LAN Security, Email Security, Hacking attacks, preventive measures.

UNIT V RISK ASSESSMENT AND CYBER LAWS **12**

Vulnerability Assessment, Penetration Testing**,** Cyber Laws

TEXT BOOK:

1. Information Systems Security: Security Management, Metrics, Frameworks And Best Practices - Nina Godbole, ISC2 Press, 2010

REFERENCE BOOK:

1. Information Security Management Handbook, Volume 4 - Micki Krause, ISC2 Press, 2007

15GBE011 Engineering Chemistry Laboratory 0 0 3 2

Course Objective:

To make the student to acquire practical skills in the determination of water quality parameters through volumetric analysis and acquaint the students with the determination of molecular weight of a polymer by viscometry.

List of Experiments

1. Determination of the total, permanent and temporary hardness of the given water sample by EDTA method. A standard hard water and EDTA solutions are provided.
2. Determination of the type and amount of alkalinity present in the given water sample. A standard solution of sodium hydroxide of strength 0.1N is given.
3. Estimation of the amount of chloride present in the water sample by Argentometric analysis. A standard solution of strength 0.01N and sodium chloride solutions are provided
4. Determination of degree of polymerization and molecular weight of given polymer solution by Ostwald viscometer method.
5. Estimation of copper in brass by EDTA method.
6. Determination of the amount of strong acid (HCl) present in 1 litre of the given mixture of acid solution by conductometric titration using standard NaOH of normality 0.2N.
7. Determination of the amount of weak acid (CH_3COOH) present in 1 litre of the given mixture of acid solution by conductometric titration using standard NaOH of normality 0.2N.
8. Determination of the amount of strong acid and weak acid (HCl and CH_3COOH) present in 1 litre of the given mixture of acid solution by conductometric titration using standard NaOH of normality 0.2N.
9. Determination of the amount of barium chloride present in 1 litre of the given solution by conductometric titration using standard solution of sodium sulphate of normality 0.2N.
10. Estimatation of the amount of ferrous ion present in the whole of the given solution by potentiometric titration. A standard solution of potassium dichromate of strength 0.1N is provided.
11. Estimation of the amount of Ag^+ ion present in the whole of the given solution by potentiometric titration. A standard solution of sodium chloride of strength 0.1N is provided
12. Determination of the strength of the given hydrochloric acid by pH-metry with 0.2N sodium hydroxide solution.

15GBE203 Language Laboratory 0 0 3 2

Course Objective:

- To gain effective speaking and listening skills in communication.
- To develop the soft skills and interpersonal skills to excel in their job.
- To enhance the performance of students at Placement Interviews, Group Discussions and other recruitment exercises.

List of Experiments

A. ENGLISH LANGUAGE LAB (18 Periods)

I. PC based session (Weightage 40%) 24 periods

1. LISTENING COMPREHENSION: (6)

Listening and typing – Listening and sequencing of sentences – Filling in the blanks - Listening and answering questions.

2. READING COMPREHENSION: (6)

Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.

3. SPEAKING: (6)

Phonetics: Intonation – Ear training - Correct Pronunciation – Sound recognition exercises – Common Errors in English. Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

B. DISCUSSION OF AUDIO-VISUAL MATERIALS (6 PERIODS)

(Samples are available to learn and practice)

1. RESUME / REPORT PREPARATION / LETTER WRITING (1)

Structuring the resume / report - Letter writing / Email Communication - Samples.

2. PRESENTATION SKILLS: (1)

Elements of effective presentation – Structure of presentation – Presentation tools – Voice Modulation – Audience analysis - Body language – Video samples

3. SOFT SKILLS: (2)

Time management – Articulateness – Assertiveness – Psychometrics – Innovation and Creativity - Stress Management & Poise - Video Samples

4. GROUP DISCUSSION: (1)

Why is GD part of selection process ? - Structure of GD – Moderator – led and other GDs - Strategies in GD – Team work - Body Language - Mock GD –Video samples

5. INTERVIEW SKILLS: (1)

Kinds of interviews – Required Key Skills – Corporate culture – Mock interviews- Video samples.

1. Resume / Report Preparation / Letter writing: Students prepare their own resume and report. (2)
2. Presentation Skills: Students make presentations on given topics. (8)
3. Group Discussion: Students participate in group discussions. (6)
4. Interview Skills: Students participate in Mock Interviews (8)

II. Practice Session (Weightage – 60%) 24 periods

TEXT BOOKS:

1. Anderson, P.V, **Technical Communication**, Thomson Wadsworth, Sixth Edition, New Delhi, 2007.
2. Prakash, P, **Verbal and Non-Verbal Reasoning**, Macmillan India Ltd., Second Edition, New Delhi, 2004.

REFERENCE BOOKS:

1. John Seely, **The Oxford Guide to Writing and Speaking**, Oxford University Press, New Delhi, 2004.
2. Evans, D, **Decisionmaker**, Cambridge University Press, 1997.
3. Thorpe, E, and Thorpe, S, **Objective English**, Pearson Education, Second Edition, New Delhi, 2007.
4. Turton, N.D and Heaton, J.B, **Dictionary of Common Errors**, Addison Wesley

15EIT023 Information Security – I Lab 0 0 3 2

Course Objective: Information Security is a very critical aspect in our world, where most of the information is open-source and highly vulnerable to threats and breaches. This subject forms the foundation for Information Security course and begins with making students realize the importance of learning security and the implications of not doing so. Security can be implemented at user level, group level, and server level and so on, depending on the organizational structure. Assessment of Risk within a system and Cyber laws that are formed to enforce security in IT System are dealt in detail.

List of Experiments

1. System Security Configuration in Windows 7
2. Password based Authentication process
3. Hashes and message digests calculation using has calculators
4. Service Management of Windows 7 for prevention of attacks
5. Password cracking using Brute force, Dictionary and Rainbow attack
6. Hiding information using Steganography tools
7. Event logger analysis
8. Windows Registry analysis

15GBE204 Environmental Science and Engineering 3 0 0 3

Course Objective:

At the end of this course the student is expected to understand what constitutes the environment, what are precious resources in the environment, how to conserve these resources, what is the role of a human being in maintaining a clean environment and useful environment for the future generations and how to maintain ecological balance and preserve bio-diversity. The role of government and non – governmental organization in environmental managements.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 9

Definition – Scope and importance – Need for public awareness – Concepts of an Ecosystem – Structure and Function of an Ecosystem –Producers, Consumers and Decomposers – Energy Flow in the Ecosystem – Ecological Succession – Food Chains, Food Webs and Ecological Pyramids – Introduction, Types, Characteristic Features, Structure and Function of the (A) Forest Ecosystem (B) Grassland Ecosystem (C) Desert Ecosystem (D) Aquatic Ecosystems (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries) – Introduction to Biodiversity – Definition: Genetic, Species and Ecosystem Diversity – Biogeographical Classification of India – Value of Biodiversity: Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Values – Biodiversity at Global, National and Local Levels – India as a Mega-Diversity Nation – Hot-Spots of Biodiversity – Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts – endangered and Endemic Species of India – Conservation of Biodiversity: In-Situ and Ex-Situ conservation of Biodiversity.

Field Study of Common Plants, Insects and Birds.

Field study of simple ecosystems - pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION 9

Definition – Causes, Effects and Control Measures of (A) Air Pollution (B) Water Pollution (C) Soil Pollution (D) Marine Pollution (E) Noise Pollution (F) Thermal Pollution (G) Nuclear Hazards – Solid Waste Management:- Causes, Effects and Control Measures of municipal solid Wastes – Role of an Individual in Prevention of Pollution – Pollution Case Studies – disaster Management - Floods, Earthquake, Cyclone and Landslides.

Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III NATURAL RESOURCES 9

Forest resources -Use and over – Exploitation – Deforestation – Case studies – Timber extraction –Mining – Dams and their ground water – Floods – Drought – Conflicts over water –Dams – Benefits and Problems – Mineral Resources- Use and Exploitation, Environmental Effects of Extracting and Using Mineral Resources, Case Studies – Food Resources: World Food Problems, Changes caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer- Pesticide Problems, Water Logging, salinity, Case Studies – Energy Resources:- Growing Energy Needs, Renewable and Non Renewable Energy Sources, Use of Alternate Energy Sources, Case Studies – Land Resources - Land as a Resource, Land Degradation, Man Induced Landslides, Soil Erosion and Desertification – Role of an Individual in Conservation of Natural Resources – Equitable use of Resources for Sustainable Lifestyles.

Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 9

From Unsustainable To Sustainable Development – Urban Problems Related to energy – Water conservation, Rain Water Harvesting, Watershed Management – Resettlement and Rehabilitation of People, its Problems and Concerns, Case Studies Role of non – governmental organization - Environmental Ethics- Issues and Possible Solutions – Climate Change, Global Warming, Acid Rain, Ozone Layer Depletion, Nuclear Accidents and Holocaust, Case Studies –Wasteland Reclamation – Consumerism and Waste Products – Environment Production Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and Control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act –enforcement machinery involved in environmental Legislation – Central and state pollution control boards - Public Awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 9

Population Growth, Variation among Nations – Population Explosion Family

Welfare Programme – environment and Human Health – Human Rights –Value Education – HIV /AIDS – Women and Child Welfare – Role of Information Technology in Environment and Human Health – Case Studies.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004).
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw- Hill,NewDelhi, (2006).

REFERENCES BOOKS:

1. R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ., House, Mumbai, 2001.
3. Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press (2005)

15GBE012 Mathematics-III 3 1 0 3

Course Objective:

- To introduce Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems.
- To acquaint the student with Fourier transform techniques used in wide variety of situations.
- To introduce the effective mathematical tools for the solutions of partial differential equations that model several physical processes and to develop Z transform techniques for discrete time systems.

UNIT I FOURIER SERIES 12

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 TRANSFORM 12

Fourierintegral theorem(withoutproof) – Fourier transform pair – Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval's identity.

UNIT III PARTIAL DIFFERENTIAL EQUATIONS 12

Formation of partial differential equations - Solution of standard types of first order partial differential equations and equations reducible to standard types – Lagrange's linear equation - Linear partial differential equations of second and higher order with constant coefficients.

UNIT IV APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS 12

Method of separation of variables - Solutions of one dimensional wave equation – One dimensional heat equation – Steady state solution of two-dimensional heat equation (Insulated edges excluded) – Fourier series solutions in Cartesian coordinates.

UNIT V Z -TRANSFORM AND DIFFERENCE EQUATIONS 12

Z-transform - Elementary properties – Inverse Z-transform – Convolution theorem - Initial and Final value theorems - Formation of difference equations – Solution of difference equations using Z- transform.

TOTAL: 60 h

TEXT BOOKS:

1. Grewal B.S, "Higher Engineering Mathematics', 41st Edition, Khanna Publishers, Delhi, 2011. (Unit I,II)
2. Ramana.B.V. "Higher Engineering Mathematics' Tata Mc-GrawHill Publishing Company Limited, New Delhi,2007 (Unit III,IV,V)

REFERENCE BOOKS:

1. Bali.N.P. and Manish Goyal "A Textbook of Engineering Mathematics', Seventh Edition, Laxmi Publications (P) Ltd.
2. Glyn James, —Advanced Modern Engineering Mathematics‖, Third edition – Pearson education, 2007.
3. Erwin Kreyszig, —Advanced Engineering Mathematics‖, Eighth Edition, Wiley India, 2007.

15EIT031 Designing Enterprise Networks 3 1 0 3

Course Objective:

Cisco IP Routing (ROUTE) is a vendor certification program and is a qualifying examination for Cisco Certified Network Professional CCNP. It tests for knowledge and skills necessary to use advanced IP addressing and routing in implementing scalable and secure Cisco ISR routers connected to LANs and WANs.

The unit will explore the complete process of implementing Cisco IP Routing and by the end of it; the students will have the skills and the knowledge to take up the Cisco IP Routing (ROUTE) certification examination

Unit I NETWORKING FUNDAMENTALS **12**

The TCP/IP and OSI Networking Models, Fundamentals of Ethernet LANs, Fundamentals of WANs, Fundamentals of IPv4 Addressing and Routing, Fundamentals of TCP/IP Transport and Applications,

Unit II ETHERNET LANS AND SWITCHES **12**

Building Ethernet LANs with Switches, Cisco LAN Switches, Configuring Ethernet Switching.

Unit III IP VERSION 4 ADDRESSING AND SUBNETTING **12**

Perspectives on IPv4 Subnetting, Analyzing Classfull IPv4 Networks, Analyzing Subnet Masks, Analyzing Existing Subnets, **Implementing IP Version 4:** Operating Cisco Routers, Configuring IPv4 Addresses and Routes, Implementing Ethernet Virtual LANs, Troubleshooting Ethernet LANs, Spanning Tree Protocol Concepts, Troubleshooting LAN Switching.

Unit IV LAN ROUTING **12**

Configure IPv4 Routing, Configure and Verify Host Connectivity, Advanced IPv4 Addressing Concepts, Describe the boot process of Cisco IOS routers; Operation status of a serial interface; Manage Cisco IOS files; Routing and Routing Protocols; OSPF (multi-area); EIGRP (single AS); Passive Interface

Unit V IPV4 SERVICES AND IP VERSION 6 **12**

Basic IPv4 Access Control Lists, Advanced IPv4 ACLs and Device Security, Network Address Translation, Recognize high availability (FHRP); Describe SNMP v2 and v3, IPV6 addressing

TEXT BOOKS:

1. CCNA Cisco Certified Network Associate: Study Guide (With CD) 7th Edition (Paperback), Wiley India, 2011

REFERENCE BOOKS:

1. CCENT/CCNA ICND1 640-822 Official Cert Guide 3 Edition (Paperback), Pearson, 2013
2. Routing Protocols and Concepts CCNA Exploration Companion Guide (With CD) (Paperback), Pearson, 2008
3. CCNA Exploration Course Booklet : Routing Protocols and Concepts, Version 4.0 (Paperback), Pearson, 2010

15EIT032 Designing Enterprise Networks - Lab 0 0 3 2

Course Objective: The laboratory experiments will reinforce the knowledge students have gained in the respective theory class.

List of Experiments

1. Switch Configuration - Basic Commands
2. Switch Configuration - Switch Port Security
3. Router - Configuration
4. Configuration of IP Address for a Router
5. Setting up of Passwords
6. PPP Encapsulation, PPP PAP Authentication, PPP CHAP Authentication
7. Configuration of Static and Dynamic Routing
8. Configuration of Default Route
9. Implementation of EIGRP
10. Implementation of OSPF
11. VLAN Configuration
12. Switch Troubleshooting
13. Configuration of Access-lists - Standard & Extended ACLs
14. Cisco Discovery Protocol
15. DHCP, DHCP Relay & DHCP Exclusions
16. Configuring Logging to a Remote Syslog Server

15EIT033 Introduction to Linux/Unix – Lab 0 0 3 2

Course Objective: Students will put their theory knowledge into practice and work on the programs given to them in Laboratory classes. This will not only reinforce their knowledge but provide them with real insight into topics, understand the application of these topics in practical world and expose them to practical difficulties that they may face in real scenario and also present them with methods to tackle these issues.

List of Experiments

1. Make a report and a presentation on evolution and development of different versions of Unix
2. Report and execute 25 basic commands of unix.
3. Write a few commands available in /bin and /sbin directory
4. Find the guest directory, Write the permissions of guest directory
5. Create a new Directory test in guest directory
6. Write the permissions of test directory
7. Change the permissions of guest directory to 775
8. Change the permissions of /tmp directory to 700
9. Change the permissions of guest directory to 700
10. Report the functionality and modes of VI Editor.
11. Make and alter files using all 3 methods cat touch and vi editor apply all file operations and document it.
12. Install on vm-ware Ubuntu and fedora and document the process (GUI & CLI)

15GBE013 Probability and Queuing Theory 3 1 0 3

Course Objective: The probabilistic models are employed in countless applications in all areas of science and engineering. Queuing theory provides models for a number of situations that arise in real life. The course aims at providing necessary mathematical support and confidence to tackle real life problems.

UNIT I RANDOM VARIABLES 12

Discrete and continuous random variables – Moments - Moment generating functions and their properties. Binomial, Poisson, Geometric, Negative-binomial, Uniform, Exponential, Gamma and Weibull distributions .

UNIT II TWO DIMENSIONAL RANDOM VARIABLES 12

Joint distributions - Marginal and conditional distributions – Covariance - Correlation and regression - Transformation of random variables - Central limit theorem.

UNIT III MARKOV PROCESSES AND MARKOV CHAINS 12

Classification - Stationary process - Markov process - Markov chains - Transition probabilities - Limiting distributions-Poisson process.

UNIT IV QUEUEING THEORY 12

Markovian queues – Birth and Death Queuing models- Steady state results: Single and multiple server queuing models- Little's Formula - queues with finite waiting rooms- Finite source models.

UNIT V NON-MARKOVIAN QUEUES AND QUEUE NETWORKS 12

M/G/1 queue- Pollaczek- Khintchine formula, series queues- open and closed networks.

TOTAL: 60h

TEXT BOOKS:

1. Ibe O.C., "Fundamentals of Applied Probability and Random Processes", Elsevier,1st Indian Reprint, 2007. (For units 1, 2 and 3).

2. Gross . D.and. Harris C.M, "Fundamentals of Queueing Theory",Wiley Student edition, 2004 (For units 4 and 5).

REFERENCE BOOKS:

1. A.O. Allen, "Probability, "Statistics and Queueing Theory with Computer Applications", Elsevier, 2nd edition, 2005.
2. Sivaramakrishna Das. P and Vijayakumari. C,"Probability & Queueing Theory" , Pearson Eduaction Asia . 6th Edition ,2013.
3. K.S. Trivedi, "Probability and Statistics with Reliability, Queueing and Computer Science Applications", John Wiley and Sons, 2nd edition, 2002.

15EIT041	Fundamentals of Operating Systems (Windows 7)	3	1	0	3

Course Objective: Operating system is the foundation of any technology or application that is being developed. A good understanding of any OS is very much essential for every computer technology aspirant to reap maximum performance out of the machines. File systems, storage mechanisms, security aspects, Protocols functioning and policy implementations are some of the basic concepts learnt in this subject.

UNIT I INTRODUCTION TO OPERATING SYSTEM **12**

Introduction to Operating System, Evolution of operating system, Structure of Operating, OS Operations OS Organizations, Distributed Systems, Open source Operating systems, Process Management, Memory Management, Storage Management, Computing Environment

UNIT II INSTALLING, UPGRADING AND MANAGING WINDOWS – 7 **12**

Gathering hardware devices, preparing to install windows 7, upgrading and migrating to windows 7, Clean and Image based installation, Configuring Application Compatibility, administrating windows features, Disk management, installing and configuring device drivers

UNIT III FILE ACCESS, PRINTERS AND NETWORK CONNECTIVITY WITH WINDOWS – 7 **12**

Introduction to Authentication and Authorization, Managing file access , Shared Folders, File compression, file archiving, managing printers, connecting windows 7 client with server, configuring ipv4 & ipv6 connectivity, Implementing APIPA, Introduction to Name resolution, troubleshooting network issues, Overview of wireless network, configuring wireless network

UNIT IV SECURING, OPTIMIZING AND MAINTAINING WINDOWS 7 CLIENT **12**

Overview of local security management, local security policy settings, EFS and Bitlocker, Application restrictions, UAC, Windows Firewall, Administrating IE8, Windows Defender

UNIT V CONFIGURING MOBILE COMPUTING AND REMOTE ACCESS IN WINDOWS 7 **12**

Configure Mobile computer and device settings, Remote desktop, remote assistance, direct access, branch cache

TEXT BOOK:

1. Milan Milenkovic - Operating Systems – TATA McGRAW HILL, 2009

REFERENCE BOOKS:

1. Operating Systems Fundamentals D. Irtegov, 2005
2. A Short Introduction to Operating Systems (M. Burgess), 2010
3. Operating Systems: Design and Implementation (Second Edition)., Andrew S. Tanenbaum, 2010

15EIT042 **Ethical Hacking Basics** **3 0 0 3**

Course Objective: To enable students to better understand the Ethical Hacking concepts and various phases of Hacking along with the objective of providing an in-depth knowledge on Web Application vulnerabilities and exploitation techniques. To familiarize them with the wide range of attacks in a Networking environment and to enable him/her to prepare a well defined vulnerability reporting procedure along with the remediation techniques.

UNIT I INTRODUCTION TO ETHICAL HACKING **9**

Hacking Methodology, Process of Malicious Hacking. **Footprinting and Scanning:** Footprinting, Scanning. **Enumeration:** Enumeration. **System Hacking and Trojans:** System Hacking, Trojans and Black Box Vs White Box Techniques

UNIT II ATTACKING METHODOLOGY **9**

Denial of Service, Sniffers. **Session Hijacking and Hacking Web Servers:** Session Hijacking, Hacking Web Servers. **Web Application Vulnerabilities and Web Techniques Based Password Cracking:** Web Application

Vulnerabilities, Web Based Password Cracking Technique

UNIT III WEB AND NETWORK HACKING **9**

SQL Injection, Hacking Wireless Networking. **Viruses, Worms and Physical Security:** Viruses and Worms, Physical Security. **Linux Hacking:** Linux Hacking. **Evading IDS and Firewalls:** Evading IDS and Firewalls

UNIT IV REPORT WRITING & MITIGATION **9**

Introduction to Report Writing & Mitigation, requirements for low level reporting & high level reporting of Penetration testing results, Demonstration of vulnerabilities and Mitigation of issues identified including tracking

UNIT V CASE STUDY **9**

Creating and Analyzing spoofed emails, Creating and Analyzing Trojans, Operating system password cracking.

TEXT BOOK:

1. Hacking Exposed 7th Edition, by Stuart McClure, Joel Scambray, George Kurtz – McGraw Hill- 2010

REFERENCE BOOKS:

1. Basic of Hacking and Penetration – Patrick Engerbrestson 2010
2. CertifiedEthicalHacker All-in-One – Matt Walker 2011

15EIT043	Fundamentals of Operating Systems (Windows 7) Lab	0	0	3	2

Course Objective: Students will put the knowledge and aspects learnt in Windows 7 sessions to test , while performing tasks mentioned in the lab.

List of Experiments

1. Installing Windows 7
2. Using Windows Upgrade Advisor or Upgrade Assistance
3. Migrating to Windows 7 using Windows Easy Transfer and User State Migration Tool
4. Creating a Small Office Network or Home Network.
5. Configuring TCP/IP in Windows.
6. Sharing Resources in Windows
7. Creating Users and Groups
8. Performing a Windows Update
9. Capturing image of existing installed operating system and deploy it to another system using imagex.
10. Configuring disk partitions, Virtual HD in Disk Management.

15EIT044	Ethical Hacking Basics - Lab	0	0	3	2

Course Objective: The laboratory sessions are designed to help students reinforce their knowledge they learnt in theory class, apply this knowledge into real time scenarios, record and analyze their findings.

List of Experiments

1. Passive Reconnaissance using —Who is and Online tools
2. Active Reconnaissance using —Sampad and web site details
3. Full Scan, Half Open Scan and Stealth scan using —nmap
4. UDP and Ping Scanning using —Advance Lan Scanner and —Superscan
5. Packet crafting using —Packet creator tools
6. Exploiting NetBIOS vulnerability
7. Password Revelation from browsers and social networking application
8. Creating and Analyzing spoofed emails
9. Creating and Analyzing Trojans
10. OS password cracking

15GBE017 Discrete Mathematics 3 1 0 3

Course Objective: To know the concepts of Mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.

UNIT I LOGIC AND PROOFS 12

Propositional Logic – Propositional equivalences-Predicates and quantifiers-Nested Quantifiers-Rules of inference-introduction to Proofs-Proof Methods and strategy

UNIT II COMBINATORICS 12

Mathematical inductions-Strong induction and well ordering-.The basics of counting-The pigeonhole principle –Permutations and combinations-Recurrence relations-Solving Linear recurrence relations-generating functions-inclusion and exclusion and applications.

UNIT III GRAPHS 12

Graphs and graph models-Graph terminology and special types of graphs-Representing graphs and graph isomorphism - connectivity-Euler and Hamilton paths

UNIT IV ALGEBRAIC STRUCTURES 12

Algebraic systems-Semi groups and monoids-Groups-Subgroups and homomorphisms- Cosets and Lagrange's theorem- Ring & Fields (Definitions and examples)

UNIT V LATTICES AND BOOLEAN ALGEBRA 12

Partial ordering-Posets-Lattices as Posets- Properties of lattices-Lattices as Algebraic systems –Sub lattices –direct product and Homomorphism-Some Special lattices-Boolean Algebra

TOTAL: 60 h

TEXT BOOKS:

1. Kenneth H.Rosen, "Discrete Mathematics and its Applications", Tata McGraw-Hill Publications, New Delhi, 7th edition,2011.
2. Trembly J.P and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 30th Re-print, 2011.
   (For units 4 & 5 , Sections 2-3.8 & 2-3.9,3-1,3-2 & 3-5, 4-1 & 4-2)

REFERENCE BOOKS:

1. Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, 2007.
2. Thomas Koshy, "Discrete Mathematics with Applications", Elsevier Publications, (2006).

15EIT051 Server Operating System 3 1 0 3

Course Objective: Windows Server 2012 R2 Foundation is an operating system that enables core IT resources, such as file and print sharing, remote access, and security. It provides a network foundation from which you can centrally manage settings on your computers that are based on the Windows® operating system, and upon which you can run the most popular business applications. It also provides a familiar Windows user experience that helps you manage users and safeguard business information.

This unit explores the method to install, upgrade, deploy the Windows Server. Also, the learners will have the functional knowledge of configuring core network services and the active directory of Windows Server.

Unit I INSTALLING AND CONFIGURING SERVERS 12

Selecting a Windows Server 2012

Edition, Supporting Server Role, Supporting Server Virtualization, Server Licensing.

Installing Windows Server 2012:

System Requirement, Performing a Clean Installation, Installing Third-Party Drivers, Working with Installation Partitions, Using Server Core, Server Core Defaults, Server Core Capabilities, Using the Minimal Server Interface, Upgrade paths, Preparing to Upgrade Installation, Installing Windows Server Migration Tools.

Configuring Servers:

Completing Post-Installation Tasks and GUI Tools, Converting Between GUI and Server, Configuring NIC Teaming, Using Roles, Features, and Services, Using Roles Manager, Adding Roles and Features, Deploying Roles to VHDs, Configuring Services.

Unit II CONFIGURING LOCAL STORAGE 12

Planning Server Storage, Determining the Number of Servers Needed, Estimating Storage Requirements, Selecting a Storage Technology, Selecting a Physical Disk Technology, Using External Drive Arrays, Planning for Storage Fault Tolerance, Using Disk Mirroring, Using RAID, Using Storages Spaces, Understanding Windows Disk setting, selecting a Partition style, understanding disk and Volume Types, Choosing a Volume Size, Understanding File System, Working with Disks, Adding a New Physical Disk, Creating and Mounting VHDs, Storage Pool, Virtual Disks, Simple Volume, Creating a Striped, Spanned, Mirrored, or RAID-5 Volume, Extending and Shrinking Volumes and Disks.

Unit III CONFIGURING FILE AND SHARE ACCESS 12

Designing a File-Sharing Strategy, Arranging Shares, Controlling Access, Mapping Drives, Creating Folder Shares, Assigning Permissions, Understanding the windows Permission Architecture and Basic, Advanced Permissions, Allowing and Denying Permissions, Inheriting Permissions, Understanding Effective Access, Setting Share Permissions, Understanding NTFS Authorization, Assigning Basic NTFS Permissions, Understanding Resource Ownership, Combining Share and NTFS Permissions.

Unit IV CONFIGURING PRINT, DOCUMENT SERVICES, SERVERS FOR REMOTE MANAGEMENT. 12

Understanding the Windows Print Architecture and Printing, Server Printing Flexibility, sharing a Printer Drivers and Managing Printer Drivers, Using Remote Access Easy Print, Configuring Printer Security, Adding Printer Servers, Deploying Printers with

Group Policy, Adding Server and Workgroup Servers, Calibrating Server Manager Performance, Configuring WinRM and Windows Firewall, Creating Server Groups, Using Remote Server Administration Tools, Using Windows PowerShell Web Access, Installing Windows PowerShell Web Access, Configuring the Windows PowerShell Web Access Gateway, Configuring a Test Installation, Customizing a Gateway Installation, Creating Authorization Rules, Working with Remote Servers.

Unit V: CREATING AND CONFIGURING VIRTUAL MACHINE SETTINGS AND STORAGE 12

Virtualization Architectures, Hyper-V Implementations and Licensing, Hyper-V Hardware Limitations and Server, Installing Hyper-V, Using Hyper-V Manager, Creating a VM, Installing an Operating System, Configuring Guest Integration Services, Allocating Memory, Using Dynamic Memory, working with Virtual Disks, Understanding Virtual Disk Formats, Creating Virtual Disks, Creating a New Virtual Disk, Adding Virtual Disks to Virtual Machines, Creating Differencing Disks, Configuring Pass-Through Disks, Modifying Virtual Disks, Creating Snapshots, Connecting to a SAN, Connecting Virtual Machines to a SAN.

TEXT BOOKS:

1. Windows Server 2012: A Handbook for Professionals by Aditya Raj**,** 2015(Unit I,II,III)

2. MCSA 70-410 Cert Guide R2: Installing and Configuring Windows Server 2012 (Certification Guide) Hardcover – Import, 12 Sep 2014 by Don Poulton (Author), David Camardella (Author) (Unit IV, V)

REFERENCE BOOKS:

1. Installing and Configuring Widows Server 2012 by Craig Zacker, 2014

2. Mastering Windows Server 2012 R2 by Mark Minasi, Kevin Greene, Christian Booth, Robert Butler, 2014

15EIT052 Web Technology Fundamentals 3 0 0 3

Course Objective: Web Technology has revolutionized mankind and entirely changed the way we look at things. Banking, Education, Retailing, Manufacturing and Research are some of the things that have undergone major transformations due to influence from web development. By adding more features, increasing the scope and reach of industries, making it available to users irrespective of their geography, web has captivated the human minds. Learning web technology is one of the top priorities for every computer enthusiast in order to better understand its working and scope

UNIT I WORKING WITH HTML, WORKING WITH CSS (CASCADING STYLE SHEET) 9

Introduction of HTML, Basic tags: line, break, paragraph, List in HTML, Images, Links, Text, Markup Character, Special Character, Tables, Frames, Forms, Introduction of Cascading Style Sheet, Creating Style Rules, Fonts, Text Formatting, Padding, Margin and Borders, Color and Backgrounds, Tables, Element Positioning, Defining Pages for Printing.

UNIT II WORKING WITH DHTML 9

Need of DHTML, How DHTML works, DHTML and DOM, Event handlers: Click, on MouseOver, onFocus, onLoad, Browser detection, Object detection, String arrays, Rollovers, Menus.

UNIT III WORKING WITH JAVASCRIPT 9

Introduction to java script, Advantages of javascript, Javascript syntax, Execution of javascript, Data, Data Types, Data Operators, Composite data types, Arrays, Decision Making in javascript, Windows methods. Functions in javascript, Events in javascript. Javascript with user interaction.

UNIT IV INTRODUCTION TO PHP 9

PHP in web development, Components of PHP, Installation of PHP, PHP and HTML text, Coding building Units, Expressions, Operator concepts, Conditional, Looping, Functions, Object oriented programming in PHP, Arrays in PHP

UNIT V PHP WITH MYSQL 9

SQL in php, Database basics, MYSQL database, managing database, Advance SQL, Working with Forms. Cookies, php and HTTP authentication, Sessions, Session security, validation and Error handling, Pattern matching.

TEXT BOOK:

1. HTML, XHTML & CSS Bible, Brian Pfaffenberger, Steven M.Schafer, Charles White, Bill Karow- Wiley Publishing Inc, 2010

REFERENCE BOOKS:

1. Beginning Java Script with DOM scripting and Ajax By Christian Heilmann- Apress Publisher, 2010
2. Learning PHP & My SQL, Michele Davis, Jon Philips- O'Reilly Publisher, 2009
3. PHP Cook book By: David Sklar, Adam Trachtenberg- O'Reilly Publisher, 2008

15EIT053 Server Operating System Lab 0 0 3 2

List of Experiments

1. Installation windows Server 2012.
2. Configuration for Windows Server.
3. Configuration Local Storage for Windows Server.
4. Configuration File and Share Access for Windows Server.
5. Configuration Print and Document Services for Windows Server.
6. Configuration windows server for Remote Management.
7. Creating Virtual Machine in Windows Server.
8. Configuration and Setting Virtual Machine.

15EIT054 Web Technology Fundamentals Lab 0 0 3 2

Course Objective: Objectives of this lab is to provide ample scope for students to try their hands at implementing concepts that they have learnt in the respective theory class.

List of Experiments

1. Create a program which contains 2 frames (horizontal). 1st frame should contain links to 54 different websites. 2nd frame should contain a login form.
2. Create a inline frame which contains your image.
3. Write a CSS code to give different border styles and different background styles in Q6.
4. Create an external CSS which contains 5 attributes of text and color.
5. Write a program in HTML to detect the web browser user is currently using.

15EIT061 Fundamentals of Virtualization 3 1 0 3

Course Objective: Virtualization is the most effective way to reduce IT expenses while boosting efficiency and agility in organizations. The goal of this course is to enable students understand the need and circumstances in which virtualization is implemented through deploying one of the many Virtualization software available today. Understanding VSphere components, installation of its user interface, configuring and managing Vmware components and WINDOW SERVER 2008 HYPER V will help students perform well during the real-time applications of virtualization

Unit I: BASICS OF VIRTUALIZATION 12

Understanding Virtualization, Need of Virtualization and Virtualization Technologies: Server Virtualization, Storage Virtualization, I/O Virtualization, Network Virtualization, Client Virtualization, Application virtualization, Desktop virtualization, Understanding Virtualization Uses: Studying Server Consolidation, Development and Test Environments , Helping with Disaster Recovery

Unit II: DEPLOYING AND MANAGING AN ENTERPRISE DESKTOP VIRTUALIZATION ENVIRONMENT 12

configure the BIOS to support hardware virtualization; Install and configure Windows Virtual PC: installing Windows Virtual PC on various platforms (32-bit, 64-bit), creating and managing virtual hard disks, configuring virtual machine resources including network resources, preparing host machines; create, deploy, and maintain images

Unit III: DEPLOYING AND MANAGING A PRESENTATION VIRTUALIZATION ENVIRONMENT 12

Prepare and manage remote applications: configuring application sharing, package applications for deployment by using RemoteApp, installing and configuring the RD Session Host Role Service on the server. Access published applications: configuring Remote Desktop Web Access, configuring role-based application provisioning, configuring Remote Desktop client connections. Configure client settings to access virtualized desktops: configuring client settings,

Unit IV: UNDERSTANDING VIRTUALIZATION SOFTWARE 12

List of virtualization Software available . Vmware- introduction to Vsphere, ESXi, VCenter Server and Vsphere client. Creating Virtual Machine..

Unit V: INTRODUCTION TO HYPER-V ROLE. **12**

Create Virtual Machines. Create Hyper-v virtual networking, Use virtual Machine Snapshots. Monitor the performance of a Hyper-v server, Citrix XENDesktop fundamentals

TEXT BOOKS:

1. Virtualization: a beginner's guide - Danielle Ruest, Nelson Ruest , McGraw-Hill Prof Med, 2010 (Unit II,III)
2. Windows Server 2008 Hyper-V: Insiders Guide to Microsoft's Hypervisor By John Kelbley, Mike Sterling, Allen Stewart, Sybex; 1 edition (April 20, 2009)(Unit I,IV,V)

REFERENCE BOOKS:

1. Virtualization for Dummies - Bernard Golden, For Dummies; 1 edition (December 5, 2007)
2. Mastering Microsoft Virtualization - Tim Cerling, Jeffrey Buller, Jeffrey L. Buller, Sybex; 1 edition (December 21, 2009)

15EIT062 Fundamentals of IT Infrastructure Library 3 0 0 3

Course Objective: ITIL-compatible tools offer better integration, interaction and compatibility with your global partners, and in addition, sticking to strict ITIL standards from a single vendor can help process integrations go seamlessly and ensure all parties are speaking the same technical language.

It is always an advantage to understand what types of ITIL tools your global partners are working with and how they rate them. ITIL frameworks provide a homogenous IT environment and eases interactions with other global companies using similar preapproved tools. Managing staff, providing services to customers and creating efficiencies for less money can be daunting tasks for any IT organization.

UNIT I ITIL OVERVIEW AND SERVICE STRATEGY **9**

ITIL History, Components of the ITIL Library, IT Service Management, Organizing for IT Service Management, Technology and Architecture, Service Strategy: Service Strategy Lifecycle Stage, Service Portfolio Management, the Demand Management Process, the IT Financial Management Process

UNIT II SERVICE DESIGN **9**

Service Design Lifecycle Stage, The Service Catalog Management Process, The Service Level Management Process, The Availability Management Process, The Capacity Management Process, The Information Security, Management Process, The IT Service Continuity, Management Process, The Supplier Management Process

UNIT III SERVICE TRANSITION **9**

Service Transition Lifecycle Stage, the Change Management Process, the Release and Deployment, Management Process, the Service Asset and Configuration, Management Process, Knowledge Management

UNIT IV SERVICE OPERATION **9**

Service Operation Functions : Service Operation Lifecycle Stage, The Service Desk Function, The Technical Management Function, The Application Management Function, The IT Operations Management Function Service Operation Processes :The Event Management Process, The Incident Management Process, The Request Fulfillment Process, The Access Management Process, The Problem Management Process ,

UNIT V CONTINUAL SERVICE IMPROVEMENT **9**

Continual Service Improvement principles - CSI and organizational change, Ownership, Role definitions , External and internal drivers , Service Level Management , The Deming Cycle, Service measurement ,Knowledge Management, Benchmarks , Governance ,Frameworks, models, standards and quality systems Continual Service Improvement processes : 7step improvement process, Service reporting, Service management, return on in investment for CSI, business questions for CSI, Service level management

TEXT BOOKS:

1. Introduction to ITIL, Jan van Bon Stationery Office Books, The Stationery Office, 2010 (Unit I,II)
2. HP operation Manual from HP, 2010 (Unit III)
3. A Guide to Service Desk Concepts Donna Knapp From Cengage Learning, 2010 (Unit IV)

4. The Shortcut Guide to Virtualization and Service Automation, Greg Shield Real-time Publishers, 2008 (Unit V)

REFERENCE BOOKS:

1. Service automation and dynamic provisioning techniques in IP/MPLS environments - Christian Jacquenet, Gilles Bourdon, Mohamed Boucadair John Wiley and Sons, 2008
2. It Service Desk: What You Need To Know For It Operations Management Michael, Johnson Tebbo, 2010
3. Help Desk, Service Desk Best Practice Handbook: Building, Running and Managing Effective Support - Ready to Use Supporting Documents Bringing ITIL Theory Into Practice Gerard Blokdijk, Ivanka Menken Emereo Pvt Ltd, 2009
4. ITIL V3 Foundation Complete Certification Kit - Study Guide Book and Online, By Tim Malone, Michael Wedemeyer, Gerard Blokdijk Lulu.com, 2008
5. The Shortcut Guide to Improving IT Service Support Through ITIL, Rebecca Herold Realtimepublishers.com, 2009
6. The official introduction to the ITIL service lifecycle By OGC - Office of Government Commerce The Stationery Office, 2010

15EIT063 Cyber Forensics Basics 3 0 0 3

Course Objective:

Students are taught about different forms of cyber crime and its implications and duties of professionals employed at different levels towards analyzing and controlling cyber crime. Methods to recover data from storage devices are covered in following chapters. Different forensic techniques and cyber laws are also dealt in detail.

UNIT I COMPUTER FORENSICS **9**

Introduction to Computer Forensics, Forms of Cyber Crime, First Responder Procedure- Non-technical staff, Technical Staff, Forensics Expert and Computer Investigation procedure

UNIT II STORAGE DEVICES & A RECOVERY METHODS **9**

Storage Devices- Magnetic Medium, Non-magnetic medium and Optical Medium. Working of Storage devices-Platter, Head assembly, spindle motor.Data Recovery types: Data Acquisition, Data deletion and data recovery method and techniques.

UNIT III FORENSICS TECHNIQUES **9**

Windows forensic, Linux Forensics, Mobile Forensics, Steganography, Application Password cracking-Brute force, Dictionary attack, Rainbow attack. Email Tacking – Header option of SMTP, POP3, IMAP

UNIT IV CYBER LAW **9**

Corporate espionage, Evidence handling procedure, Chain of custody, Main features of Indian IT Act 2008 (Amendment)

Unit V FORENSIC ANALYSIS OF WEB SERVER **9**

Developing , administering and managing a remotely hosted web site, Use of HTML browsers on ports other than 80, Control Panel – Forensics traces left on web site admin machine, traces left on hosting servers. Anti-Forensics Techniques – Methods used to thwart subsequent forensics analysis, Forensics traces left, Approaches that may be used to reduce the effectiveness of these methods. Internet and Web attack forensics

TEXT BOOK:

1. Guide to Computer Forensics and Investigations – 3rd Edition –B. Nelson, et al, - Cengage, 2010 BBS

REFERENCE BOOK:

1. Hacking Exposed Computer Forensics – Aaron Philipp, David Cowen, Chris Davis, Pub: McGraw Hill-2011

15EIT064 Fundamentals of Virtualization Lab 0 0 3 2

Course Objective: Students will practice on the aspects they have learnt in the theory class which will reinforce the knowledge of theory concepts.

List of Experiments

1. Installing Vmware ESXi server.
2. Installing Vmware vCenter with all the prerequisites.
3. Creating Virtual Machines using vCenter server.
4. Modifying Virtual Machine settings.
5. Clone a VM.
6. Installation for VMware Workstation any version.
7. Installation of VSphere client
8. Create Hyper-v virtual networking.
9. Editing VM and configuration of Network.
10. Installation of Windows Server 2008/2012 or Red Hat Linux on VMware Workstation.

15EIT065 Cyber Forensics Basics Lab 0 0 3 2

Course Objective: The objective of the course is to make the students apply the theoretical aspects into a practical scenario and create programs, record and analyze their observations.

List of Experiments

1. Physical Collection of electronic evidence using forensic standards
2. Dismantling and re-building PCs in order to access the storage media safely
3. Boot sequence and Power On Self Test mode analysis
4. Examination of File systems of Windows, Linux and Mac
5. Analysing Word processing and Graphic file format
6. Network data sniffing and analysing
7. Password and encryption techniques
8. Internet forensic and Malware analysis
9. Data recovery techniques for hard drive
10. Data recovery techniques for Pen drive and CD

15EIT071 Fundamentals of Storage Management 3 0 0 3

Course Objective: The most vital part of a computer system today is data which may be in the form of banking data, a company's inventory database or a multimedia presentation. This data needs to be safeguarded or managed in such a way that it can be accessed readily or speedily restored in the event of a hardware failure

Unit-I: INTRODUCTION TO INFORMATION STORAGE AND MANAGEMENT 9

Information Storage: Data – Types of Data –Information - Storage , Evolution of Storage Technology and Architecture, DataCenter Infrastructure - Core elements- Key Requirements for DataCenter Elements -Managing Storage Infrastructure, Key Challenges in Managing Information, Information Lifecycle - Information Lifecycle Management - ILM Implementation -ILM Benefits ,Summary

Unit-II: STORAGE SYSTEM ENVIRONMENT 9

Components of a Storage System Environment – Host –Connectivity – Storage, Disk Drive Components –Platter – Spindle - Read/Write Head - Actuator Arm Assembly - Controller - Physical Disk Structure - Zoned Bit Recording - Logical Block Addressing , Disk Drive Performance -1 Disk Service Time , Fundamental Laws Governing Disk Performance , Logical Components of the Host - Operating System - Device Driver -Volume Manager - File System – Application , Application Requirements and Disk Performance, Summary

Unit-III: BACKUP AND RECOVERY 9

Backup Purpose -Disaster Recovery - Operational Backup –Archival, Backup Considerations, Backup Granularity, Recovery Considerations, Backup Methods , Backup Process, Backup and Restore Operations, Backup Topologies - Serverless Backup , Backup Technologies -Backup to Tape - Physical Tape Library - Backup to Disk - Virtual Tape Library

Unit-IV: LOCAL REPLICATION 9

Source and Target -Uses of Local Replicas, Data Consistency - Consistency of a Replicated File System - Consistency of a Replicated Database , Local Replication Technologies - Host-Based Local Replication - Storage Array-Based Replication , Res tore and Restart Considerations - Tracking Changes to Source and Target , Creating Multiple Replicas, Management Interface

Unit V MANAGING THE STORAGE INFRASTRUCTURE 9

Monitoring the Storage Infrastructure -Parameters Monitored - Components Monitored - Monitoring Examples - Alerts, Storage Management Activities - Availability management - Capacity management - Performance management - Security Management - Reporting- Storage Management Examples, Storage Infrastructure Management Challenges.

TEXT BOOK:

1. Information Storage and Management: Storing, Managing, and Protecting Digital Information, EMC Education Services, Wiley; 1 edition (April 6, 2009)

REFERENCE BOOKS:

1. Storage Networks: The Complete Reference, Robert Spalding, Tata McGraw Hill Publication, 2003

15EIT072 **Network Security Basics** **3 0 0 3**

Course Objective: The power of computers can be witnessed when multiple computers are connected to form a network and start sharing information amongst them. But when this happens, the entire network becomes an open source and exposed to threats due to many users who log into these networks and their environments. Therefore it becomes important to learn about Network Security, in order to safeguard our networks from hackers and damages. Learning network concepts therefore becomes significant and no study of computers is complete without them.

UNIT I INTRODUCTION TO NETWORK SECURITY **9**

Perimeter Security - Overview of Network Security, Access Control, Device Security, Security features on Switches, Firewall, Types of firewall, Attack vector and Mitigation techniques; Access Management - Securing Management Access, Multifactor Authentication, Layer 2 Access Control, Wireless LAN (WLAN) Security and Network Admission Control (NAC).

UNIT II THREATS, VULNERABILITIES AND ATTACKS **9**

Threat; Vulnerabilities – vulnerability assessment and vulnerability scanning; Attacks – Application Attack, Network Attack and Mitigating & Deterring Attacks; Network Security – Security through network devices, Security through Network Technologies and Security through Network Design Elements; Administering a Secure Network – Network Administrative Principles and Securing Network Application.

UNIT III NETWORK SECURITY MANAGEMENT **9**

Secure Socket Layer (SSL) – Introduction to SSL, Open SSL basics, Problems with SSL, Cryptography, Message Digits Algorithms, Digital Signature and Public Key Infrastructure (PKI); Data Privacy – IPsec VPN, Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GET VPN), Secure Sockets Layer VPN (SSL VPN) and Multiprotocol Label Switching VPN (MPLS VPN).

UNIT IV NETWORK SECURITY CONTROLS **9**

Network Intrusion Prevention – Overview of Intrusion Prevention System (IPS), Network Security Tools**,** Intrusion Detection System (IDS), Deploying IPS and IPS High Availability; Host Intrusion Prevention; Anomaly Detection and Mitigation.

UNIT V NETWORK MANAGEMENT **9**

Security Monitoring and correlation; Security Management - Security and Policy Management and Security Framework and Regulatory Compliance; Best Practices Framework, Case Studies. Network Traffic Monitoring and Analysis.

TEXT BOOK:

1. Security + Guide to Network Security Fundamentals – Fourth Edition by Mark Ciampa, Course Technology, Cengage Learning -2012

REFERENCE BOOKS:

1. CCIE Professional Development Series Network Security Technologies and Solutions by Yusuf Bhaiji - CCIE No. 9305, CISCO Press, 2008
2. Network Security with OpenSSL By Pravir Chandra, Matt Messier, John Viega, O'Reilly – 2002

15EIT073 Windows Azure Basics 3 0 0 3

Course Objective:

Windows Azure is a cloud computing platform and infrastructure, for building, deploying and managing applications and services through a global network of Microsoft-managed data centers.

Unit I INTRODUCTION 9

Introduction to MS. Azure, Virtual Machines: Creating Virtual Machines, Difference Between Basic and Standard VMs, Logging in to a VM and Working, Attaching an empty Hard Disk to VM, Hosting a Website in VM , Configuring End Points, Scaling up and Down, Creating a custom Image from VM, Creating a VM from a custom Image, Shut down VM without Getting Billed, VM Pricing

Unit II MANAGING INFRASTRUCTURE IN AZURE 9

Managing Infrastructure in Azure: Azure Virtual Networks, Highly Available Azure Virtual Machines ,Virtual Machine Configuration Management, Customizing Azure Virtual Machine Networking. Load Balancing: Creating Cloud Services, Adding Virtual Machines to a Cluster, Configuring Load Balancer.

Unit III WINDOWS AZURE 9

Azure Storage: What is a Storage Account, Advantages, Tables, blobs, queues and drives, Azure Appfabric: Connectivity and Access control Automation: Introduction Windows Power Shell ,Creation of Runbooks, Uploading a Shell Script, Authoring a Shell Script, ,

Unit IV SQL AZURE 9

SQL Azure: Creating a SQL Server, Creating a SQL DB, Creating Tables, Adding Data to the Tables, View Connection Strings, Security Configurations, Migrating on premise DB to SQL Azure.

.Unit V WEBSITES 9

Websites: Creating a Website, Setting deployment credentials, Choosing a platform, Setting up Default page for website, Scaling ,Auto Scaling by Time, Auto Scaling by Metric, Difference between Free, Shared, Basic and Standard websites, Creating a website using Visual studio

TEXT BOOK:

1. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010

REFERENCE BOOKS:

1. Cloud Computing: Principles and Paradigms, Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley, 2011
2. Windows Azure Step By step by Roberto Brunetti, 2011

15EIT074	Network Security Lab	0	0	3	2

List of Experiments

1. Firewall Configuration
2. VPN Configuration
3. IDS Configuration
4. Router Security
5. Traffic Monitoring using WireShark

15EIT075	Windows Azure Lab	0	0	3	2

Course Objective: The objective of the course is to make the students apply the theoretical aspects into a practical scenario and create programs, record and analyze their observations.

List of Experiments

1. Create and document the process of creating a windows azure account
2. Create a virtual machine from the gallery of windows server 2008 R2
3. Create a virtual machine using the option ―quick Create‖
4. Create a custom VM and Capture the image
5. Create a vm from a captured image
6. Add a VMs to a cluster and deploy load balancer on the same
7. Create and publish / host a webpage in windows azure
8. Create a website using Visual studio
9. Create a SQL server DB , Create tables and add data to the table
10. Test basic SQL commands on the table created in the previous step.
11. Migrate an on premise DB to Azure
12. Create a storage account in Azure

SYLLABUS

DISCIPLINE SPECIFIC ELECTIVES

COURSES

Discipline Specific Electives

15EIT101 Information Security - II 3 0 0 3

Course Objective: The objective of the course is to teach students aspects of General Security as applied to computers and making them understand the security policies and procedures. Network Infrastructure security is another critical aspect that is dealt with in this course, which will cover aspects like Media-Based Security, Monitoring and Diagnosing.

UNIT I GENERAL SECURITY CONCEPTS 9

Information Security, Access Control and Authentication. **Identifying TCP/IP Security and Attacks**: Identifying TCP/IP Security, Attacks and Malicious Codes. **Basics of Cryptography**: Understanding Cryptography,
Understanding Public Key Infrastructure.

UNIT II UNDERSTANDING SECURITY POLICIES AND PROCEDURES 9

Security Policies and Procedures. **Managing Security**: Understanding Security Management, Computer Forensics.

UNIT III NETWORK INFRASTRUCTURE SECURITY AND CONNECTIVITY 9

Understanding Infrastructure Security, Device-Based Security, Media-Based Security, Monitoring and Diagnosing.

UNIT IV MONITORING NETWORK AND INTRUSION DETECTION 9

Monitoring Network and Intrusion Detection: Monitoring Network, Intrusion Detection, Wireless Security andInstant Messaging.

UNIT V MAINTAINING A SECURE NETWORK AND SYSTEM HARDENING 9

OS and Network Hardening, Application Hardening. **Securing the Network Environments:** Physical and Network Security, Policies, Standards and Guidelines.

TEXT BOOKS:

1. Information security: Principles and Practice - Mark Stamp, 2nd Edition, Pub: John Wiley & Sons, Inc., 2011

REFERENCE BOOKS:

1. Information Security Risk Analysis - Thomas R. Peltier, Third Edition, Pub: Auerbach , 2012
2. Operating System Concepts, 8th Edition by Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Pub: John Wiley & sons, Inc., 2009.

15EIT102 **OSI Layer & Security** **3 0 0 3**

Course Objective: The present day OSI Model is the outcome of an independent project that began in the late 1970's and was administered by International Organization for Standardization (ISO) and its goal was to define standard rules for the architecture of networking system. Having seven layers, each with its distinctive purpose where each layer serves the layer above it and is in turn served by the one below.

UNIT I OPEN SYSTEMS INTERCONNECTION (OSI) MODEL **9**

Introduction to the 7 layers of the OSI model, concept of the OSI model, the Application Layer, the Presentation Layer, the Session Layer, the Transport Layer, the Network Layer, the Data Link Layer &the Physical layer

UNIT II SECURITY PROTOCOLS - APPLICATION LAYER **9**

Introduction to Protocol concepts, Border Gateway Protocol (BGP), Dynamic Host Configuration Protocol (DHCP), Domain Name System (DNS), File Transfer Protocol (FTP),Hyper Text Transfer Protocol (HTTP), Lightweight Directory Access Protocol (LDAP), Media Gateway Control Protocol (MGCP), Network News Transfer Protocol (NNTP), Network Time Protocol (NTP), Post Office Protocol (POP), Internet Message Access Protocol (IMAP), Routing Information Protocol (RIP), Remote Procedure Call (RPC), Real Time Streaming Protocol (RTSP), Session Initiation Protocol (SIP), Simple Mail Transport Protocol (SMTP), Simple Network Management Protocol (SNMP), Socket Secure (SOCKS), Secure Shell (SSH), Remote Terminal Control Protocol (Telnet), Transport Layer Security/Secure Sockets Layer (TLS/SSL), extensible Messaging & Presence Protocol (XMPP), Wireless Application Protocol (WAP) & Internet Relay Chat (IRC)

UNIT III TRANSPORT LAYER **9**

Introduction to Transport Layer, TCP/IP, User Datagram Protocol (UDP), Real-time Transport Protocol (RTP), Datagram Congestion Control Protocol (DCCP), Stream Control Transmission Protocol (SCTP), Resource reservation Protocol (RSVP)&Explicit Congestion Notification (ECN)

UNIT IV NETWORK LAYER **9**

Introduction to Network Layer**,** Internet Protocol Version 4 (IP4), Internet Protocol Version 6 (IP6), Internet Protocol Security (IPSEC), Internet Control Message Protocol (ICMP) & Internet Group Management Protocol (IGMP)

UNIT V DATA LINK LAYER **9**

Introduction to Data Link Layer, the Address Resolution Protocol (ARP), the Open Shortest Path First (OSPF), the Neighbor Discovery Protocol (NDP),the Tunneling Protocol (Tunnels) &the Point to Point Protocol (PPP), Case Studies.

TEXT BOOKS:

1. Internet security protocols: protecting IP traffic by Uyless D. Black, Pub: Prentice Hall PTR; 1st edition (July 24, 2000) (Unit I,II,III)
2. TCP/IP Distributed System –Vivek Acharya, Pub: Firewall Media / Laxmi Publications-2006 (Unit IV,V)

REFERENCE BOOKS:

1. Security Protocols by Pavel Ocenasek, 2010

15EIT103 Data Structures and Algorithms 3 0 0 3

Course Objective: Understanding data structures and algorithms is very critical for problem solving and the benefits of approaching a problem from different ways will help understand the issue better, not only for an IT professional but as applied to other streams as well.

UNIT I INTRODUCTION **9**

Simple Linear Data Structure Array, Representation of Linear Arrays in Memory, Traversing Linear Array, Inserting and Deleting, Searching: Linear and Binary, Sorting: Bubble, Selection, Insertion, Quick, Merge, Heap. Polynomial Addition, Representation of Multidimensional Array in memory, Representation of Sparse Matrices and its Transpose Algorithm

UNIT II STACK AND QUEUE **9**

Stack, Queue and Recursion, Stacks: Array Representation, Linked Representation, Arithmetic Expression, Polish Notation, Recursion, Towers of Hanoi, Queues: Array Representation, Circular Queues, Linked Representation, D-Queues, Priority Queues.

UNIT III LINKED LIST **9**

Linear Linked List, Singly Linked List: Representation in Memory, Traversing, Searching, Memory Allocation, Insertion into a linked list, Deletion from a linked list, Header Linked List, Polynomial Addition, Circular Linked List, Operations on Doubly Linked List : traversing, Searching, Deleting, Inserting.

UNIT IV TREES **9**

Non-Linear Data Structure Graphs Binary Tress, Representation of binary Trees in Memory, Traversing binary trees, Traversal algorithm using stacks, Header nodes, Threads, Binary search trees, Searching, Inserting and Deleting in a binary search trees, AVL search tree, Insertion and Deletion in an AVL search Tree, m-way search tree, Searching Insertion and Deletion in an m-way search tree, Searching, Insertion and Deletion in a B- tree.

UNIT V GRAPHS **9**

Non-Linear Data Structure Graphs, Graph theory terminology, Sequential Representation of Graphs, Adjancy Matrix, Path Matrix, Warshall's algorithm, Shortest Paths, Linked Representation of a Graph, Operations on Graph, Traversing on Graphs, Posets, Topological Sorting.

TEXT BOOKS:

1. Adam drozdek,‖ Data Structures and Algorithms in Java‖ ,Thomson Publications, 2nd Edition. (Unit I,II)
2. Sartaj Sahni, 'Data Structures, Algorithms, and Applications in Java", McGraw-Hill, 2nd Edition. (Unit III)
3. Aaron M.Tanenbaum, Moshe J.Augenstein, —Data Structures using C‖, Prentice Hall InternationalInc., Englewood Cliffs, NJ, 1986 (Unit IV,V)

REFERENCE BOOKS:

1. Ellis Horowitz and Sartaj Sahni, — An introduction to Data Structures‖, Computer Science Press,Rockville, MA, 1984
2. Mark Allen Weiss, —Data Structures and Algorithm Analysis in C++‖, Benjamin/CummingsPublishing Company Inc., Redwood City, CA, 1991.
3. Jean Paul Tremblay and Paul G Sorenson, —An introduction to Data Structures with Applications‖,McGraw-Hill, Singapore, 1984
4. Michael Waite and Robert Lafore, —Data Structures and Algorithms in Java‖ , Techmedia, NewDelhi, 1998.

15EIT104 Introduction to Cloud Technology 3 0 0 3

Course Objective: In Science, Cloud Computing is a synonym for distributed computing over a network and exhibits the ability to run a program on many connected computers at the same time. Cloud Technologies are being used by all of us in our daily lives, when we are using the internet, a mobile app or online shopping. It is significantly used in 'Big data' applications that have taken a huge leap. This is an introductory course where students will learn the fundamental concepts like working of cloud system and form the necessary foundation for studying distributed systems concepts like Virtualization. It is also the objective of this course to understand both the hardware and software requirements required to develop a cloud solution and effective methods to install and administer cloud solution centrally.

Unit I: INTRODUCTION **9**

Introduction to Cloud Computing, History and Evolution of Cloud Computing, Types of clouds, Private Public and hybrid clouds, Cloud Computing architecture, Cloud computing infrastructure, Merits of Cloud computing, , Cloud computing delivery models and services (IaaS, PaaS, SaaS), obstacles for cloud technology, Cloud vulnerabilities, Cloud challenges, Practical applications of cloud computing.

Unit II: CLOUD COMPUTING COMPANIES AND MIGRATING TO CLOUD **9**

Web-based business services, Delivering Business Processes from the Cloud: Business process examples, Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud, Efficient Steps for migrating to cloud., Risks: Measuring and assessment of risks, Company concerns Risk Mitigation methodology for Cloud computing, Case Studies

Unit III: CLOUD COST MANAGEMENT AND SELECTION OF CLOUD PROVIDER **9**

Assessing the Cloud: software Evaluation, System Testing, Seasonal or peak loading, Cost cutting and cost-benefit analysis, Selecting the right scalable application. Considerations for selecting cloud solution. Understanding Best Practices used in selection of Cloud service and providers, Clouding the Standards and Best Practices Issue: Interoperability, Portability, Integration, Security, Standards Organizations and Groups associated with Cloud Computing, Commercial and Business Consideration

Unit IV: GOVERNANCE IN THE CLOUD **9**

Industry Standards Organizations and Groups associated with Cloud Computing, Need for IT governance in cloud computing, Cloud Governance Solution: Access Controls, Financial Controls, Key Management and Encryption, Logging and Auditing, API integration. Legal Issues: Data Privacy and Security Issues, Cloud Contracting models, Jurisdictional Issues Raised by Virtualization and Data Location, Legal issues in Commercial and Business Considerations

Unit V: TEN CLOUD DO AN DO NOTS **9**

Don't be reactive,do consider the cloud a financial issue, don't go alone, do think about your architecture, don't neglect governance, don't forget about business purpose, do make security the centerpiece of your strategy, don't apply the cloud to everything, don't forget about Service Management, do start with a pilot project.

TEXT BOOK:

1. Cloud Computing: Principles and Paradigms, Rajkumar Buyya, James Broberg, Andrzej M. Goscinski,, John Wiley and Sons Publications, 2011

REFERENCE BOOKS:

1. Brief Guide to Cloud Computing, Christopher Barnett, Constable & Robinson Limited, 2010

2. Handbook on Cloud Computing, Borivoje Furht, Armando Escalante, Springer, 2010

15EIT105 Introduction to Linux/Unix 3 0 0 3

Course Objective: The unit provides an overview of the Linux Operating System, geared toward new users. This course also provides the guidelines for the learners to take up vendor certifications

UNIT I INTRODUCTION **9**

Introduction to Multi user System, History of UNIX, Features & Benefits, Versions of UNIX, Features of UNIX File System,, Commonly Used Commands like who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln, chmod, cp, grep, sed, awk ,tr, yacc etc. getting Started (Login/Logout)

Vi Editor: Introduction to Text Processing, Command & edit Mode, Invoking vi, deleting & inserting Line, Deleting & Replacing Character, Searching for Strings, Yanking, Running Shell Command Macros, Set Window, Set Auto Indent, Set No.

UNIT II EXPLORING LINUX FLAVORS **9**

Introduction to various Linux flavors. , Debian and rpm packages, Vendors providing DEBIAN & RPM distribution & Features. Ubuntu. History, Versions, Installation, Features, Ubuntu one. Fedora: History, Versions, Installation, Features.

UNIT III GENERAL OVERVIEW OF THE SYSTEM **9**

System Structure, User Perspective, Operating System Services Assumption about Hardware, The Kernel and Buffer Cache Architecture of UNIX Operating System, System Concepts, Buffer Headers, Structure of the Buffer Pool, Scenarios for Retrieval of the Buffer, Reading and Writing Disk Units, Advantages and Disadvantages of Buffer Cache.

UNIT IV INTERNAL REPRESENTATION OF FILES **9**

System Calls for the File System, INODES, Structure of Regular File, Directories, Conversions of a Path, name to an INODE, Super Unit, INODE Assignment to a New File, Allocation of Disk Units. Open, Read, Write, File and Record Close, File Creation, Creation of Special Files, Change Directory and Change Root, Change Owner and Change Mode, STAT and FSTAT, PIPES, Mounting and Unmounting Files System, Link, Unlink.

UNIT V STRUCTURES OF PROCESSES AND PROCESS CONTROL **9**

Process States and Transitions Layout of System Memory, The Context of a Process, Manipulation of the Process Address Space, Sleep Process Creation/Termination, The User ID of a Process, Changing the Size of a Process. The Shell. Case Study of Various LINUX Versions.

TEXT BOOKS:

1. The Design of Unix Operating System, Maurice J. Bach, Pearson Education, 2010 (Unit I,II)
2. Advance UNIX, a Programmer‘s Guide, S. Prata, BPB Publications, and New Delhi, 2011 (Unit III,IV)
3. Unix Concepts and Applications, Sumitabh Das, 2010 (Unit V)

REFERENCE BOOKS:

1. The UNIX Programming Environment, B.W. Kernighan & R. Pike, Prentice Hall of India. 2009
2. Guide to UNIX Using LINUX, Jack Dent Tony Gaddis, Vikas/ Thomson Pub. House Pvt. Ltd. 2010

15EIT106 Cryptography Fundamentals 3 0 0 3

Course Objective: Security is ubiquitous. With the advent of e-commerce and electronic transactions, the need for development of secured systems has grown tremendously. Cryptography is the study of building ciphers to ensure the confidentiality and integrity of information. Along with it is the activity of analyzing the strength of a cipher by subjecting it to several forms attack.

UNIT I INTRODUCTION TO CRYPTOGRAPHY **9**

The Confidentiality, Integrity & Availability (CIA) Triad, Cryptographic concepts, methodologies &practices, Symmetric& Asymmetric cryptography, public& private keys, Cryptographic algorithms and uses, Construction& use of Digital signatures

UNIT II TYPES OF ALGORITHMS **9**

The basic functionality of hash/crypto algorithms (DES, RSA, SHA, MD5, HMAC, DSA) and effects on key length concepts in Elliptical Curve Cryptography & Quantum Cryptography

UNIT III KEY MANAGEMENT **9**

The basic functions involved in key management including creation, distribution, verification, revocation and destruction, storage, recovery and life span and how these functions affect cryptographic integrity

UNIT IV APPLICATION OF CRYPTOGRAPHY **9**

Major key distribution methods and algorithms including Kerberos, ISAKMP etc., Vulnerabilities to cryptographic functions, the Use and functions of Certifying Authorities (CAs).

UNIT V CRYPTOGRAPHIC FUNCTIONS **9**

Public Key Infrastructure (PKI) and System architecture requirements for implementing cryptographic functions, Case studies.

TEXT BOOK:

1. Cryptography: An Introduction by V. V. I Ashchenko, Pub: American Mathematical Society - 2002

REFERENCE BOOKS:

1. Cryptanalytic attacks on RSA – by Song Y. Yan 2005
2. Official $(ISC)^2$ Guide to the CISSP CBK, Second Edition - Harold F. Tipton 2005
3. Cryptography demystified –by John E. Hershey 2000

15EIT107 Fundamentals of Datacenter 3 0 0 3

Course Objective: A datacenter is a physical facility that is used to store computer systems and related components and usually consists of security devices, backup power supplies, data communication connections and huge air-conditioners and fire-suppression units to prevent any catastrophe that might damage the data. With the exponential growth in data that has occurred in the past decade and which is only expected to grow at an alarming rate, the need for datacenter to store these data for further analytics and processing, has become an immediate necessity. This course will impart knowledge in students about storage system, storage networking technologies and Business Continuity aspects. Business continuity and disaster recovery are two important aspects that are very critical for smooth operations of an organization's Infrastructure. The course also aims at imparting knowledge in students about BC planning lifecycle, BC technology solutions and backup / restore operations.

Unit I: Overview of Datacenters 9

Datacenters Defined, Datacenter Goals, Datacenter Facilities, Roles of Datacenter in the Enterprise, Roles of Datacenter in the Service Provider Environment, , Application Architecture Models. The Client/Server Model and Its Evolution, The n-Tier Model, Multitier Architecture Application Environment, Datacenter Architecture.

Unit II: Datacenter Requirements 9

Datacenter Prerequisites, Required Physical Area for Equipment and Unoccupied Space, Required Power to Run All the Devices, Required Cooling and HVAC, Required Weight, Required Network Bandwidth, Budget Constraints, Selecting a Geographic Location, Safe from Natural Hazards, Safe from Man-Made Disasters, Availability of Local Technical Talent, Abundant and Inexpensive Utilities Such as Power and Water, Selecting an Existing Building (Retrofitting), tier standard

Unit III: Datacenter Design 9

Characteristics of an Outstanding Design, Guidelines for Planning a Datacenter, Datacenter Structures, No-Raised or Raised Floor, Aisles, Ramp, Compulsory Local Building Codes, Raised Floor Design and Deployment, Plenum, Floor Tiles, Equipment Weight and Tile Strength, Electrical Wireways, Cable Trays, Design and Plan against Vandalism,

Unit IV: Introduction to Server Farms 9

Types of server farms and data centre, internet server farm, intranet server farm, extranet server farm , internet Datacenter, corporate Datacenter, software defined Datacenter, Datacenter topologies, Aggregation Layer, Access Layer, Front-End Segment, Application Segment, Back-End Segment, Storage Layer, Datacenter Transport Layer, Datacenter Services, IP Infrastructure Services, Application Services, Security Services, Storage Services.

Unit V: Business Continuity and Disaster Recovery fundamentals 9

Business continuance infrastructure services, the need for redundancy,, Information availability , BC terminology , BC planning life cycle , BC technology solutions , backup and recovery considerations , backup technologies , Uses of local replicas , Local replication technologies , Restore and restart considerations , Modes of remote replications , remote replication technologies

TEXT BOOKS:

1. IP Storage Networking by : Gary Oreinstein, Addison Wesley Professional, 2006 (Unit I,II,III)
2. Information Storage and Management, G. Somasundaram – Alok Srivastava, Wiley; 1 edition (April 6, 2009) (Unit IV,V)

REFERENCE BOOK:

1. Administering Data-Centers, Kailash Jayswal, Wiley; 1 edition (November 28, 2005)

15EIT108 Infrastructure Development Lifecycle, Web and Internet security 3 0 0 3

Course Objective: The intent of this unit is to provide a perspective on the integration of security with application development lifecycle and best practices followed on project management. This unit provides an overview of secure development lifecycle and how to apply the same for web applications.

UNIT I Secure Development Lifecycle **9**

Benefits management practices (feasibility studies, business cases etc.), Project Governance practices (steering committee, project oversight board etc,), Project Management practices, tools and control frameworks, Risk Management practices applied to projects, Project Success criteria and risks. Configuration, Change and Release management in relation to development and maintenance of systems and infrastructure. Control objectives and techniques that ensure the completeness, accuracy, validity and authorization of transactions and data with IT systems applications.

UNIT II Application Security **9**

Enterprise architecture related to data, applications and technology (distributed applications, web-based applications, web services, m-applications etc.). Requirements analysis and management practices (requirements verification, traceability and gap analysis). Acquisition and contract management processes (evaluation of vendors, preparation of contracts, vendor management, escrow etc.). Systems development methodologies and tools and strengths and weaknesses (agile development practices, prototyping, rapid application development (RAD), object oriented design techniques etc.). Quality assurance methods. Management of testing processes (test strategies, test plans, test environments, entry and exit criteria etc.). Business application systems and controls. Controls for OWASP Top 10 threats for web-based applications.

UNIT III Web Security **9**

Web 2.0 and vulnerabilities. AJAX, Flash and interactive technology vulnerabilities and controls. Common web security vulnerabilities, attack vectors and technical controls. Web application vulnerability assessment and testing using tools and techniques. Advanced Persistent Threats (APTs) and technical controls for mitigation. Basic level of application code review.

UNIT IV Web Attacks & Trends **9**

Introduction to Web Attacks & Trends, URL Interpretation attacks, Input Validation attacks, SQL Injection attacks, Impersonation attacks & Buffer Overflow attacks, their effects and the technical & managerial controls to be put in place to address such attacks

UNIT V Internet Security: Authentication **9**

Working with Authentication Mechanism & Network Access; Using Policy, Guidelines for Writing the Policy. Applying Network Address Translation: Network Address Translation. User Client and Session Authentication: Authenticating Users, Authenticating Clients and Sessions

REFERENCE BOOKS:

1. Hack Notes Web Security Pocket – Mike Shema 2010
2. Testing Web Security: Assessing the Security of Web Sites and Applications by Steven Splaine 2011
3. Foundations of Security – Neil Dawwani, Christoph Kern and Anita Kesavan, Apress (February 15, 2007)
4. Hacking Exposed Web Application –Joel Scambray, Mike Shema, Caleb Sima, and 2nd Edition. 2010

15EIT109 Virtualization and Cloud Security 3 0 0 3

Course Objective: Server virtualization is today's most rapidly-evolving and widely-deployed technologies. Highly beneficial to organizations in terms of cost and ease of deployment and management of virtualized servers, deploying desktop, application and network virtualization is in demand.

Unit I: Introduction to Virtualization & Cloud **9**

Virtualization and Cloud computing concepts - Private cloud Vs Public cloud, IAAS, PAAS & SAAS concepts, Virtualization security concerns – hypervisor and host/Platform Security, Security communications between - Guest instances, hosts and Guests

Unit II: Cloud Security **9**

Cloud Security vulnerabilities and mitigating controls, Cloud Trust Protocol, Cloud Controls Matrix, Complete Certificate of Cloud Security Knowledge (CCSK)

Unit III: Cloud Trust Protocol & Transparency **9**

Introduction to Cloud Trust Protocol & Transparency, Cloud Trust Protocol and Transparency, Transparency as a Service, Concepts, Security, Privacy & Compliance aspects of cloud

Unit IV: Cloud Controls Matrix &Top Cloud Threats **9**

Introduction to Cloud Controls Matrix & Top Cloud Threats, Cloud Controls Matrix, Trusted Cloud Initiative architecture and reference model, Requirements of Security as a Service (Secaas) model, Top Security threats to the cloud model.

Unit V: Cloud Security Architecture **9**

Security Governance and Risk Management in Cloud; Compliance and Audit issues; Portability and Interoperability issues; Business Continuity Management and Disaster Recovery in the Cloud

TEXT BOOK:

1. Visible Ops Private Cloud – Andi Mann, Kurt Miline and Jeanne Morain, IT Process Institute, Inc.; first edition (April 8, 2011)

REFERENCE BOOKS:

1. Cloud Computing Explained – John Rhoton 2009

15EIT110 Linux Administration 3 0 0 3

Course Objective: The objective of the course is to impart knowledge in students about Linux OS at an administrative level. Beginning with learning fundamental concepts in Linux OS like logging in to Linux systems, Installation of Linux, students will also learn about different Redhat distributions. Mail Server is another significant aspect dealt in this course covering topics like configuration of mail server, encryption of Redhatlinux and so on.

Unit I: FUNDAMENTALS OF LINUX 9

Development of Linux, Linux Distributions. Structure of Linux Operating System,Logging In and General Orientation,The X Window System, KDE, GNOME. Navigating the File Systems, Managing Files, File Permission and Access, Shell Basics, Shell Advanced Features, File Name Generation. Common Unix commands

Unit II: ADMINISTRATION OF LINUX OS 9

Installing Linux, Configuring Disk Devices, Creating and Managing File Systems, File System Backup, Kickstart Installation, Linux Boot Loaders, Linux Kernel Management, Managing User Accounts, Understanding File Listing, Ownership and Permission, Managing Software using RPM, Connecting to Network, Linux Network Services, Setting up a Printer

Unit III: INPUT AND OUTPUT REDIRECTION 9

Input Redirection, Output Redirection, Error Redirection, Filter, Pipes. **Networking in Linux:** Network Connectivity, IP address, Accessing Remote system, Transferring files, and Internet configuration. Process Control: Identifying Process, Managing Process, Background Processing, Putting jobs in Background. Offline File Storage: Storing files to Media Booting process and User

Unit IV: LINUX BASIC NETWORKING AND NAMING SERVICE 9

Introduction to Networking, Networking, Internet Network Services, Dynamic DNS, Electronic Messaging, Apache , NIS and Network File Sharing: NIS, Network File Sharing, SAMBA. Security: Defining System Security Policies, System Authentication Services and Security, Securing Services, Securing Data and Communication

Unit V : THE UNIX FILE SYSTEM 9

Inodes - Structure of a regular file – Directories - Conversion of a path name to an inode -Super block - Inode assignment to a new file - Allocation of disk blocks. System calls for the file System: Open – Read - Write - Lseek – Close - File creation - Creation of special files - Changing directory and root - changing owner and mode – stat and fstat - pipes - Dup - Mounting and Un mounting file systems - Link and Un link.

TEXT BOOKS:

1. Linux Bible By: Christopher Negus- Wiley Publishing, Inc, 2010 (Unit I,II,III)
2. Redhat Linux Networking and System Admin By: Terry Collings and Kurt Wall-M&T Books, 2009 (Unit IV,V)

REFERENCE BOOKS:

1. UNIX and Linux System Administration Handbook (4th Edition), Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley, Prentice Hall; 4th edition (July 24, 2010)
2. Linux Administration A Beginners Guide 6/E, Wale Soyinka, McGraw-Hill Osborne Media; 6 edition (February 21, 2012)

15EIT111	IT Governance, Risk and Information Security Audit	3	0	0	3

Course Objective:

The Unit Primarily covers the importance of IT and IS Governances and the best practices followed by the Role of Steering committee and Chief Information Security Officer. The Unit also deals with the Risk management and the Information Security Management Practices including COBIT.

UNIT I IT GOVERNANCE **9**

Introduction & Concepts. Role of Governance in Information Security. Best Practices for IT Governance Role of IT Strategy Committee. Standard IT Balanced Scorecard. Val-IT framework of ISACA

UNIT II COBIT FRAMEWORK **9**

COBIT framework of ISACA and get certified as COBIT Foundation implementer, Case Studies.

UNIT III RISK MANAGEMENT PROGRAM **9**

Develop a Risk Management Program. Risk Management Process Risk Analysis methods. Risk-IT Framework of ISACA

UNIT IV INFORMATION SECURITY MANAGEMENT **9**

Introduction. Performance Optimization. IT Security roles & responsibilities. Segregation of Duties.

UNIT V INFORMATION SECURITY AUDIT **9**

Role and importance of InfoSec audit, Importance of ISAE 3402 & other auditing standards for IT, IS Auditing Standards, IS Auditing Guidelines, Internal controls & their objectives, Methodology of risks based controls auditing

TEXT BOOK:

1. IT Governance – Peter Weill and Jeanne Ross, Pub: Harvard Business Review Press; 1 edition (June 1, 2004) (Unit I,II,III)

2. Managing Risk and Information Security – Malcolm Harkins, Pub: Apress; 1 edition (December 17, 2012) (Unit IV,V)

REFERENCE BOOKS:

1. Information Security Risk Analysis – Thomas R.Peltier, 3rd Edition

15EIT112 **Mail Servers** **3 0 0 3**

Course Objective:

E-mail has become a very powerful today in business communication and helps people organize their work and schedule very efficiently. Exchange server is at the center of email system and understanding its working becomes very important to harness the full capabilities of e-mail systems. More advanced topics in Exchange server like virtualization, power shell and exchange management helps professionals to maintain exchange server efficiently.

Unit I: PUTTING EXCHANGE SERVER 2013 INTO CONTEXT, INTRODUCING CHANGE IN EXCHANGE SERVER 2013 **9**

Significance of e-mail communication

Importance of Email, Messaging Services, Exchange Server, Many modes of access, The Universal Inbox, Architecture Overview. Controlling Mailbox growth, Personal folders or PST files, Email archiving, Public Folders, Things every Email-administrators should know, Tools.

Exchange Server 2013

Getting to know Exchange Server 2013, Exchange Server Architecture, x64 processor requirement, Windows Server 2008 R2 and Widows Server 2012 Installer, Service Pack and Patching Improvements Server roles, Edge Transport Services, Unified Messaging and Client Connectivity.

The managed store, High-Availability Features Content Storage, Exchange Server Management, Improved Message and Content Control, Built-in Archiving, Message Transport Rules, Message Classifications, Rights Management, Service Message Protection Programming Interfaces, New and Improved Outlook Web App, Mobile Clients and Improved Security.

Unit II: UNDERSTANDING AVAILABILITY, RECOVERY, COMPLIANCE, AND VIRTUALIZATION SERVER EXCHANGE 2013 **9**

Technology to Business Viewpoint

What's in a Name, Backup and Recovery, Disaster Recovery, Management Frameworks, A Closer Look at Availability, Storage Availability , An Overview of Exchange Storage, Direct Attached Storage, Storage Area Networks, Compliance and Governance, The Bottom Line.

Virtualization Overview, Understanding Virtualized Exchange, Understanding Your Exchange Environment Effects of Virtualization, Environmental Impact, Space Impact, Complexity Impact, Additional Considerations, Virtualization Requirements, Hardware Requirements, Software Requirements, Operations, Deciding What to Virtualized, Exchange Roles ,Testing, Possible Virtualization Scenarios, Small Office/Remote or Branch Office , Site Resilience, Mobile Access.

Unit III: INTRODUCING POWER SHELL, EXCHANGE MANAGEMENT SHELL AND GETTING EXCHANGE SERVER RUNNING **9**

Why Use Power Shell, Understanding the Command Syntax, Verbs and Nouns, The -Identity Parameter, Camlet Parameters, Alias, Object-oriented Use of Power Shell, Filtering Output, Formatting Output, Directing Output to Other Camlets, Power Shell v3 , Remote Power Shell, Tips and Tricks, Managing Output, Running Scripts, Running Scheduled Power Shell Scripts, Debugging and Troubleshooting from Power Shell, Auto discover Concepts, What Auto discover Provides , How Auto discover Works.

Hardware, Operating Systems, Configuring Windows, Understanding Server Role and Configuration, Active Directory Requirements, Installing Exchange Server 2013, GUI-based Installation, Command-line Installation, Post-installation Configuration Steps, Final Configuration.

Unit IV: UNDERSTANDING SERVER ROLES, CONFIGURATION, EXCHANGE SERVER 2013 REQUIREMENT AND INSTALLATION 9

Server Roles, exchange server 2013 server roles, mailbox server, client access server, possible role configurations, combined-function server, scaling exchange server 2013 roles.

Selecting the right server hardware, the typical user, CPU recommendations, memory recommendations, network recommendations, disk recommendations, software recommendations, operating recommendations, windows 7/windows 8 management consoles, additional requirement, active directory requirement, installation and preparation permission.

Unit V EXCHANGE 2013 **9**

Preparing for exchange 2013, existing exchange organization, preparing the schema, preparing the active directory forest, preparing additional domains, GUI Setup, Command-Line Setup, Command-Line installation option, Command-Line Server-recovery option, Command-Delegated server installation, installing language packs.

Reference Books:

1. **Mastering Exchange server** 2013 by David Elfassy (Unit II,III)
2. "**Microsoft Exchange Server 2013 Unleashed** " By Rand Morimoto, Michael Noel, Guy Yardeni, Chris Amaris, Andrew Abbate, Technical Edit by Ed Crowley, 2012 edition.(Unit IV,V)

15EIT113 Private Cloud Architecture 3 0 0 3

Course Objective: A cloud solution is an On-demand self service which is accessible from almost anywhere and most importantly from many devices. Some of the resources that can be made available to the users through a cloud solution are compute, memory, and network and disk storage. Private cloud computing definitely has some advantages against the traditional datacenter modeling like quick development and deployment. It is a huge money saver and also offers easier means to comprehensive reports on usage. The objective of this course is to impart knowledge in students about cloud computing as a service and teach them the network fundamentals necessary to understand Private cloud. Amazon Cloud is one Private Cloud solution that is covered in this course.

UNIT I CLOUD COMPUTING AS A SERVICE 9

Cloud Computing, Software-as-a-service: SaaS, Platform-as-a-service: PaaS, Hardware-as-a-service: HaaS, Infrastructure-as-a-service: IaaS, Google Cloud Infrastructure, Google File System, Search engine, Map Reduce, Grid Computing, Amazon Web Services, REST APIs, SOAP API, Query API, User Authentication, Connecting to the Cloud, Open SSH Keys, Tunneling / Port Forwarding, Simple Storage Service – S3,Overview,Buckets,Objects,ACL,Logging,Signed URI,S3 Applications, Elastic Cloud Compute - EC2.

UNIT II NETWORKING BASICS 9

Overview, Keypairs, Network Types, LAN, Gateways and Router, IP Classes and Subnets, CIDR, Utilities, Instances Management, Image Management, Security groups, Amazon Elastic Block Storage - EBS, Ubuntu in the Cloud, Installation, Utilities, File system, Shell.

UNIT III PROGRAMMING AND CONTROL STRUCTURES 9

Programming, Control Structures, Event based Init Daemon, Apache Instances in EC2, Introduction, Installation and Running, Testing server and content, Configuring Apache, Directives, Virtual hosts, Amazon Simple Queue Service, Amazon Simple Notification Service, Amazon Simple DB, Amazon Relational Database Service, Mysql Server

Replication in Cloud, Mysql Database,▪ Batch mode, Mysql Apache Integration, Storage Engines, Replication Basics, Availability and scalability, Caching, Proxy.

UNIT IV BACKUP AND RECOVERY 9

Backup and Recovery, Database Sharding, EC2 Applications, Web application design, Focus on Search Engine, Security, Firewall, Data, Network and Host, AWS EC2 Capacity Planning, Apache Servers, Mysql Servers.

UNIT V AMAZON CLOUD 9

Amazon Cloud Watch, Monitoring Tools, Amazon Cloud Front, Youtube, Amazon Elastic Load Balancing, Cluster Balancing, Amazon Auto Scaling, Apache Scaling, Mysql Scaling, Amazon Virtual Private Cloud, DHCP, DNS, NFS, NIS, Virtualization, Private Cloud for Enterprise, Hybrid Cloud for Enterprise.

TEXT BOOKS:

1. Cloud Computing: Principles and Paradigms, Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley, 2011 (Unit I,II)
2. Visible Ops Private Cloud: From Virtualization to Private Cloud in 4 Practical Steps, Andi Mann, Kurt Milne, Jeanne Morain, IT Process Institute, Inc.; first edition (April 8, 2011) (Unit III,IV,V)

REFERENCE BOOK:

1. Cloud Computing Explained: Implementation Handbook for Enterprises, John Roton, Recursive Press (November 2, 2009)

15EIT114 **Cloud Web Services** **3 0 0 3**

Course Objective:. Cloud Services are servers which store data, security and infrastructure aspects which are required to allow webs services for providing unique value as web-accessible applications. Ideally speaking, cloud web services provide data storage and access, security, scalability and related updates. The objective of this course is to bring knowledge in students about working of a cloud web service and the technology involved. The course also deals in detail, about Amazon Web Service, which is a popular cloud service provider in the world.

UNIT I INTRODUCTION TO CLOUD COMPUTING AND AMAZON WEB SERVICES **9**

Introduction to Cloud Computing, Cloud Service Delivery Models (IAAS, PAAS, SAAS), Cloud Deployment Models (Private, Public, Hybrid And Community), Cloud Computing Security, Case Study

Introduction to Amazon Web Services, Why Amazon? Use Cases, AWS Storage Options, AWS Compute Options, AWS Database Options, AWS Workflow Automation And Orchestration Options, AWS Systems Management And Monitoring Options, AWS Virtual Private Cloud Introduction, Pricing Concepts

UNIT II INTRODUCTION TO EC2 **9**

Introduction To EC2, Instance Types And Uses, Autoscaling Instances, Amazon Machine Images (AMIS), Modifying Existing Images, Creating New Images Off Of Running Instances, Converting An Instance Store AMI To An EBS AMI, Instances Backed By Storage Types, Creating A Web Server Using Ec2, Elastics Block Storage (EBS), Elastic IPS, Route 53 DNS System, Cloudfront SNS Pricing

UNIT III S3, CLOUDWATCH, ELASTIC BEANSTALK AND SECURITY **9**

Introduction To S3, Buckets And Objects, Security, Creating A Web Server Using S3 Endpoints, Introduction To Cloudwatch, Creating Alarm Notifications, Autoscaling Instances, Deploying Scalable Application On AWS, Selecting And Launching An Application Environment, Provisioning Application Resources with Cloud formation

Describe Amazon Dynamo, Understand key aspects of Amazon RDS, Launch an Amazon RDS instance, Identify what is Cloud Formation, Describe Amazon Cloud Watch metrics and alarms, Describe Amazon Identity and Access Management (IAM)

Security In AWS, IAM (Identity And Access Management), Access Control Lists (ACLs)
Securing Data at Rest And In Motion, Security Groups

UNIT IV: AWS STORAGE, ELASTICITY AND AWS NETWORKING **9**

Amazon Storage, S3 Storage Basics, Managing Voluminous Information with EBS, Glacier Storage Service, AWS Networking: Networking Basics, VLAN Basics, Basics of AWS VLANs, AWS Network IP Addressing and Mapping.

UNIT V VIRTUAL PRIVATE CLOUD (VPC) **9**

Load Balancers And Availability Zones, Elastic Network Interfaces (ENI), Setting Up VPC And Internet Gateway, Setting Up a Security Group, Launching And EC2 Instance And Assigning An ENI, Setting Up A VPN, Setting Up A Customer Gateway For VPN, Setting Up Dedicated Hardware For VPC, Scenario 1:VPC With A Public Subnet Only (Standalone Web), Scenario 2: VPC with Public And Private Subnets (3 Tier App), Scenario 3:VPC With Public And Private Subnets And Hardware VPN Access

(Web On The Cloud, Database and App On Prem) Scenario 4: VPC With A Private Subnet Only And Hardware VPN Access. (Extension Of Your Corporate Network), Case Study

TEXT BOOK:

1. Cloud Computing: Principles and Paradigms, Rajkumar Buyya, James Broberg, Andrzej M. Goscinski,, John Wiley and Sons Publications, 2011

REFERENCE BOOKS:

1. Brief Guide to Cloud Computing, Christopher Barnett, Constable & Robinson Limited, 2010
2. Amazon Web Services for Dummies, Bernald Golden, John Wiley & Sons, 2013

15EIT115 Mobile, Wireless, VOIP and Bluetooth Security 3 0 0 3

Course Objective:

Basic understanding of security in wireless world is very important for any IT Security Professional. As organizations are increasingly adapting VoIP for converged messaging, call centres and interactive multimedia collaboration, implementing security principles is vital for maintaining confidentiality and privacy.

Unit I: INTRODUCTION TO MOBILE COMMUNICATION **9**

Mobile & Telecommunication protocols and their vulnerabilities, Gain knowledge of managerial, technical and procedural controls to address Mobile & Telecommunication vulnerabilities

Unit II: WIRELESS SECURITY **9**

Wireless protocols and their vulnerabilities, Gain knowledge of managerial, technical and procedural controls to address Wireless vulnerabilities

Unit III: VOICE OVER INTERNET PROTOCOL (VOIP) SECURITY **9**

VOIP concepts, protocols and vulnerabilities, Gain knowledge of managerial, technical and procedural controls to address VOIP vulnerabilities

Unit IV: MOBILE FORENSICS & DATA EXTRACTION **9**

Mobile forensics process including seizure, data acquisition types like Physical, Logical, Manual, External & Internal memory, storage, analysis using tools & techniques

Unit V: BLUETOOTH SECURITY **9**

Specification, technical features, pairing, security features, vulnerabilities, threats, and countermeasures

REFERENCE BOOKS:

1. Securing wireless LANs: a practical guide for network managers, Gilbert Held,2010
2. Mobile telecommunications protocols for data networks by Anna Hać,2002
3. Computer security handbook, Seymour Bosworth, Michel E. Kabay, 6th Edition

15EIT116 **Android Security** **3 0 0 3**

Course Objective:

With more than half of the world using Android based smartphones, understanding and implementing security features in Android is key in protecting the attributes of information such as confidentiality and integrity. This field has become critical especially because of the extensive use of smart-phones for messaging, accessing e-mails and multimedia content all of which use personal information.

UNIT I FUNDAMENTALS OF ANDROID **9**

Understand Android platform, File system, Virtual Machine Concept, User and Group permission, Google Play, Remote Application Management, Patch Process, SEAndroid, Apps and Native codes. Understand Application layer, Application framework, Android Runtime, Libraries and Linux Kernel.

UNIT II ANDROID ARCHITECTURE AND FUNCTIONS **9**

Understand Calls and Flows, Binder Call, Java Native Interface (JNI), Socket Call, Function call, Dynamic Load Call, Dalvik Virtual Machine, Application structure, Register Architecture, Constant pool structure, Control Flow Structure, Ambiguous primitive types, Null references, Comparison of object references, Storage of primitive types in arrays.

Understand ‗ded' Decompiler, Application retargeting, Type reference, Constant pool conversion, Method code retargeting. Understand Optimization and Decompilation, Source Code Recovery Validation

UNIT III SECURITY IN ANDROID **9**

Understand Android security in data storage, Internal Storage, External Storage, Content Providers, Android Sandboxes Applications, Resource sharing through permission, Creating permission.

Understand Input validation, Handling Users data, web view, Handling credentials, Cryptography, Inter Process Communication.

Understand Binder and Messenger Interfaces, Broadcast Receivers, Dynamic Loading Codes, Secure Virtual machine and security in Native Code.

UNIT IV VULNERABILITIES AND EXPLOITS OF ANDROID-I **9**

Understand Public Exploits, Exploit Execution framework, Google Service Authentication Tokens, Malicious Apps, Device-to-device Infection, Infection via Rouge wireless networks, Mobile Botnets, GSM-based pivot attacks.

Understand Zygote Vulnerabilities, Standard flow, Building a Malicious flow, Patching the Android Security Framework (ASF), Understand Information leakages through Phone Identifiers. Understand Misuse of Interface, Telephony services.

UNIT V VULNERABILITIES AND EXPLOITS OF ANDROID-II **9**

Background recording of audio and video, Sockets, and Accessing the installed application, Understand vulnerabilities of Advertisement and Analytics Libraries, Vulnerabilities of developer toolkits, Android specific vulnerabilities, Leaking information to logs and via IPC, Unprotected Broadcast Receivers, Intent Injection Attack, Delegating Control, Null checks of IPC Input, SDcard use, Java Native Interface use.

TEXT BOOKS:

1. Android Security : Attacks and Defences by by Abhishek Dubey,2013 (Unit I,II)
2. Android Apps Security by Sheran Gunasekera,2012 (Unit III,IV)
3. Application Security for Android Platform by Jeff Six,2011 (Unit V)

15EIT117 Security Threats & Trends 3 0 0 3

Course Objective: Security threats and trends are very important in Information technology. Each year, the Information Security Forum, a nonprofit association that researches and analyzes security and risk management issues, releases its 'Threat horizon' report to provide a forward-looking view of the biggest security threats over a two-year period.

UNIT I VIRUSES & WORMS **9**

Introduction to Viruses &Worms**,** the concept of how Viruses & Worms work, the various types of Viruses &Worms, the infection vectors of Viruses &Worms, managerial, technical & procedural controls to address Viruses & Worms

UNIT II MALWARE & BOTNETS **9**

Introduction to Malware & Botnets, the concept of how Malware, Trojans & Botnets work, the concept of Honeynets and Honeypots, Managerial, technical& procedural controls to address Malware, Trojans & Botnets

UNIT III TROJANS & ROOTKITS **9**

Introduction to Remote Access Trojans & Rootkits, concepts, their working methods , their security implications and the managerial , technical and procedural controls to address RATs

UNIT IV CYBER WARFARE **9**

Introduction to Advanced Persistent Threats &Information Warfare, concepts, their working methods, their security implications and the managerial, technical and procedural controls to address these threats.

Unit V SECURITY PROTOCOLS **9**

Socket Secure, Secure Shell, HTTPS, SSL/ TLS, WAP2, IPSEC, SFTP, RADIUS, VPN

TEXT BOOKS:

1. Information warfare: corporate attack and defense in a digital world, William Hutchinson, Matt Warren, Pub: Butterworth-Heinemann (April 3, 2001) (Unit I,II,III)
2. Information security: protecting the global enterprise, Donald L. Pipkin, Pub: Prentice Hall; 1 edition (May 22, 2000) (Unit IV,V)

REFERENCE BOOKS:

1. Intrusion detection: an introduction to Internet surveillance, Edward G. Amoroso, Pub: ntrusion Net Books; 1 edition (February 15, 1999)

15EIT118 Hacktivism, Cyber Warfare and Cyber Terrorism 3 0 0 3

Course Objective:

Hacktivists and cyber terrorists are a serious threat to information world and the extent of damage possibly caused due to their activities is reaching alarming levels. The reason for this is the availability of better software, tools, techniques and organizational methods. One of the possible methods to stop these attacks is to understand these concepts better and develop programs to protect your personal and organizational information from these attacks.

UNIT I INTRODUCTION TO HACKTIVISM, CYBERWARFARE AND CYBERTERRORISM 9

Define Hacktivism, Define Cyberwarfare, Define Cyberterrorism, Impact of hacktivism, cyberwarfare and cyberterrorism to society and business. Types of Information warfare strategies and activities, Economic Impact of Information warfare

UNIT II CURRENT TRENDS IN HACKTIVISM 9

Current trends in hacktivism including wikileaks, anonymous and lulz movements, Political nature of Hacktivism, Players involved in hacktivism and discuss the recent incidents, Countermeasures to protect against such incidents. Defensive strategies for Private Companies, Surviving Offensive Ruinous and Containment

UNIT III NATURE OF CYBERWARFARE 9

5 types of modern warfare including cyberwarfare, Strategic nature of cyberwarfare, Computer Network Attack (CNA) and Computer Network Exploitation (CNE), How to deploy CNA and CNE assets within a strategic context in support of obtaining a kinetic goal, Review historic attacks and learn new cyber warfare models that can be used to analyze a state-sponsored attack.

UNIT IV DEFENSIVE MEASURES 9

Defence in Depth and real life examples of how to apply it to network defense. Why information assurance of computer equipment is critical to defend the network from nefarious attacks. Use Defense tools

UNIT V CURRENT TRENDS 9

Current trends in Cyberwarfare and Cyberterrorism including the players and groups involved, Analyze the resent incidents of Cyberwarfare and Cyberterrorism, Case Studies.

TEXT BOOKS:

1. Cyber security – From Luxury to Necessity by Balaji Srimoolanathan, Pub: Frost & Sullivan, 2011 (Unit I,II)
2. Information Warfare and Security (Addison Wesley, 1998) Dorothy E Denning (Unit III)
3. Cyberterrorism – The Jihadi Cyber terror Threat – By Dorothy E Denning – Naval Postgraduate school, 2009 (Unit IV)
4. Information Warfare – How to survive Cyber attacks – Michael Erbschloe, Osborne/McGraw Hill, 2008 (Unit V)

15EIT119 Introduction to VOIP 3 0 0 3

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Course Objective: VOIP is collectibles of methodologies used for the delivery of Voice communications and multimedia sessions over IP networks, the most popular of which is Internet. The objectives of this course is to familiarize students about fundamentals of VOIP aspects LIKE Gateway, features of CISCO certified Unified Border Element and so on.

UNIT I VOIP FUNDAMENTALS 9

Describe a dial plan, Describe the basic operation and components involved in a VoIP call , Describe VoIP call flows, RTP, RTCP, cRTP, and sRTP,H.323,MGCP,Skinny Call Control Protocol, SIP, Identify the appropriate gateway signaling protocol for a given scenario, Choose the appropriate codec for a given scenario, Describe and Configure VLANs. Implement Cisco Unified Communications Manager Express to support endpoints using CLI , Describe the appropriate software components needed to support endpoints, Configure DHCP, NTP and TFTP, Describe thedifferences between the different types of ephones and ephone-dns, Configure Cisco Unified Communications Manager Express endpoints

UNIT II GATEWAY 9

Describe the function of gateways, Describe DSP functionality, Describe the different types of voice ports and their usage, Describe dial peers and the gateway call routing process, Describe codecs and codec complexity Implement a gateway: Configure analog voice ports, Configure digital voice ports, Configure dial-peers, Configure digit manipulation, Configure calling privileges, Verify dial-plan implementation, Implement fax support on a gateway Implement Cisco

UNIT III UNIFIED BORDER ELEMENT 9

Describe the Cisco Unified Border Element features and functionality, Configure Cisco Unified Border Element to provide address hiding, Configure Cisco Unified Border Element to provide protocol and media interworking, Configure Cisco Unified Border Element to provide call admission control, Verify Cisco Unified Border Element configuration and operation

UNIT IV IMPLEMENTING QOS FOR VOICE AND VIDEO 9

Describe causes of voice and video quality issues, Describe how to resolve voice and video quality issues, Describe QoS requirements for voice and video traffic Describe and configure the DiffServQoS model: Describe the DiffServQoS model, Describe marking based on CoS, DSCP, and IP Precedence, Configure layer 2 to layer 3 QoS mapping, Describe trust boundaries, Configure trust boundary on Cisco switches.

UNIT V QoS OPERATIONS 9

Describe the operations of the QoS classifications and marking mechanisms, Describe Low Latency Queuing, Describe the operations of the QoS WAN Link Efficiency mechanisms, Enable QoS mechanisms on switches using AutoQoS, Configure Low Latency Queuing

TEXT BOOKS:

1. Voice over IPv6: architectures for next generation VoIP networks, Daniel Minoli, John Wiley and Sons 2009 (Unit I,II)
2. Handbook Of Wireless Networks & Mobile Computing , Stojmenovic, John Wiley and sons Publications, 2010 (Unit III,IV,V)

REFERENCE BOOKS:

1. Wireless and mobile data networks, Aftab Ahmad, John Wiley and sons Publications, 2010
2. Ad-hoc, mobile, and wireless networks, Violet R. Syrotiuk, Edgar Chávez - Technology & Engineering Springer, 2009
3. Wireless And Mobile Network Architectures By Yi-Bang Lin, Imrich Chlamtac, Wiley Publications, 2008
4. The wireless mobile Internet: architectures, protocols and services By Abbas Jamalipour Wiley Publications, 2009

15EIT120 **OWASP Framework** **3 0 0 3**

Course Objective: The objective of this unit is to provide students with understanding of web application security, framework, how authentication and authorization work and security logs.

UNIT I INTRODUCTION TO OWASP **9**

Different security framework, web application framework, mission; Injection Prevention- Safe from Interpretation by Browsers, Parameterized Query Functionality for SQL Statements, Safe from Interpretation by XML Processors, Query Functionality for LDAP Statements, Option to Disallow Newline Characters in Text File Logging; Input Validation- Configurable Validation for All Forms of User-Supplied Input, Use Whitelist Validation for File Paths and Names in File Handling Functionality.

UNIT II HTTP MONITORING **9**

Specify an Encoding Format for Every HTTP Response Page, Not Accepting Characters with Illegal Byte Sequences, Detect HTTP Parameter Tampering, Automatically Generate Content Security Policy (CSP) Headers, Automatically Generate Content Security Policy (CSP) Headers, Specify a Default Maximum Payload Size.

UNIT III AUTHENTICATION AND AUTHORIZATION **9**

Enforce Default Deny Policy for Framework Managed Authorization, Provide Indirect Object Reference Functionality, Provide a Function That Hashes and Salts Input with Random Bytes; Session Management- Use Cryptographically Secure Random Numbers for Session IDs, Provide Automatic Anti-CSRF Tokens, Automatically Reset Session IDs After Authentication, Apply HttpOnly Flag to Session ID Cookie by Default, Provide Configurable Inactive and Absolute Session Timeouts.

UNIT IV XML SPECIFIC **9**

Disable the Following Unsafe Features by Default; Cryptography- Transparent Database Encryption, Configurable Cryptographic Algorithms, TLS Protection Cheatsheet for TLS/SSL Implementations; Configuration Security-Encrypt Passwords and Keys Stored in Configuration Files; File Upload-Pluggable Anti Malware Scanning Solutions, Options to Disallow Saving Outside of a Specified Directory, Supports Pluggable Content Validation.

UNIT V SECURITY SPECIFIC LOGS **9**

Security Specific Logs and Log All Attack Points Specified in AppSensor, Automatically Generate X-Frame-Options Header, Arithmetic Utilities that Protect Against Integer and Floating Point Overflow and Underflow, Pluggable Anti-Automation, Return Generic Error Pages by Default, Centralized Security Configuration Options

TEXT BOOKS:

1. OWASP Code Review, By OWASP Foundation,2008

REFERENCE BOOKS:

1. OWASP Testing Guide v3: Back to the OWASP Testing Guide Project: http://www.owasp.org/index.php/OWASP_Testing_Project
2. OWASP Testing Guide, By OWASP Foundation,2007

15EIT121 ISO27001, PCIDSS and HIPAA 3 0 0 3

Course Objective:

The objective of this course is to provide an overview of three international best practices on Information Security namely ISO27001, Payment Card Industry Data Security Standard (PCIDSS) and Health Insurance Portability and Accountability Act (HIPAA) Security Rule.

UNIT I ISO 27001 **9**

Auditing: Principles of auditing, Conducting and Managing an Audit Program. **Auditing Activities:** Scoping and Pre audit Survey, Planning and preparation, Fieldwork, Analysis, Reporting, Closure, **Competence and evaluation of auditors:** Auditor competence, **Information Security Management System Audit Testing:** Information security management system, Management responsibility, Internal ISMS audits, Management review of the ISMS, ISMS improvement.

UNIT II INFORMATION SECURITY AUDIT CHECK LISTING **9**

Security Policy, Organizing information security, Asset management, Human resources security, Physical and environmental security, Communications and operations management, Access control, Information systems acquisition, development and maintenance, Information security incident management, Business continuity management, Compliance

UNIT III PCI DSS **9**

Scope of PCI DSS Requirements, Best Practices for Implementing PCI DSS into Business-as-Usual Processes, PCI DSS Assessment Process, **PCI DSS Requirements**: Build and Maintain a Secure Network and Systems, Protect Cardholder Data, Maintain a Vulnerability Management Program, Implement Strong Access Control Measures , Regularly Monitor and Test Networks

Maintain an Information Security Policy

UNIT IV HIPAA - PURPOSE AND SCOPE **9**

HIPAA Security Rule, Security Rule Goals and Objective, Security Rule Organization, **Administrative Safeguards:**

Security Management Process, Assigned Security Responsibility, Workforce Security, Information Access

Management, Security Awareness and Training, Security Incident Procedures, Contingency Plan, Evaluation, Business Associate Contracts and Other Arrangements.

UNIT V PHYSICAL AND TECHNICAL SAFEGUARDS **9**

Physical Safeguards: Facility Access Controls, Workstation Use, Workstation Security, Device and Media Controls, **Technical Safeguards:** Access Control, Audit Controls, Integrity, Person or Entity Authentication, Transmission Security**, Organizational Requirements:** Business Associate Contracts or Other Arrangements, Requirements for

Group Health Plans.

TEXT BOOK:

1. Information Security Policy Development for Compliance: ISO/IEC 27001, NIST SP 800-53, HIPAA Standard, PCI DSS V2.0, and AUP V5.0, Barry L. Williams,2013

15EIT122 Linux Security and Forensics 3 0 0 3

Course Objective: Students are taught about Security features of Linux, risks therein and the countermeasures.

UNIT I INTRODUCTION TO LINUX SECURITY **9**

Comprehensive Constraints, Elements of Security, Interactive Controls, Process Controls; Local Access Control-Console Access, Privilege Escalation, File Permissions and Attributes, Volatile Data.

UNIT II DATA NETWORKS SECURITY **9**

Network Visibility, Systems Profiling, Network Architecture, Covert Communications and Clandestine Administration;
Voice over IP-VoIP Attack Taxonomy, Network Attacks, System Attacks, Signaling Attacks, Transport Attacks.

UNIT III WIRELESS ATTACKS **9**

Wireless Networks-The State of the Wireless, Wireless Hacking Physics, RF Spectrum Analysis, Exploiting 802.11
The Hacker Way, Wireless Auditing Activities and Procedures, Bluetooth Profiles, Entities on the Bluetooth Protocol Stack.

UNIT IV WEB APPLICATION HACKING **9**

Enumeration, Access and Controls Exploitation, Insufficient Data Validation, Web 2.0 Attacks, Trust Manipulation, Man-in-the-Middle, Web Infrastructure Attacks; Mail Services-SMTP Basics, SMTP Attack Taxonomy, Alteration of Data or Integrity, Denial of Service or Availability.

UNIT V NETFILTER **9**

NetFilter Enhancements, Enhanced Wireless Stack, File System Enhancement, Additional Kernel Resources, The Forensic Workstation, Live Investigation/Acquisition, Post Mortem Analysis, Handling Electronic Evidence.

TEXT BOOK:

1. UNIX and Linux Forensic Analysis DVD Toolkit, Chris Pogue, Cory Altheide, Todd Haverkos,1st Edition

15EIT123 Advanced Web Technology 3 0 0 3

Course Objective: The application of web technology is seen everywhere, websites, web programs, web applications and more. The concept of web has penetrated each and every domain we presently deal with and has revolutionized the world. It has immensely enhanced the outcome of web interfaces and presented us with innumerable career options. This course aims at Introducing HTML 5 as the most commonly used web programming language and its features.

UNIT I INTRODUCTION TO HTML5 **9**
Why HTML5? HTML, XHTML, Styling HTML5 with CSS, When can you use HTML5?

UNIT II FEATURES OF HTML5 **9**
Introduction to canvas, multimedia, storage, working offline, geolocation, input types, placeholder text, microdata.

UNIT III MULTIMEDIA **9**
Video containers, video codec, audio codec, Multimedia accessibility, MIME. Communication API

UNIT IV CANVAS AND STORAGE **9**
Basics of Canvas, Using transforms, capturing images, drawing on the animating the canvas, Web storage, Web SQL database

UNIT V GEOLOCATION **9**
API methods, Messages, workers and sockets. Limitation in current browsers.

TEXT BOOKS:

1. HTML5: Up and Running by Mark Pilgrim, O'Reilly, August 2010 (Unit I,II)
2. Pro Html5 Programming: Powerful App Is For Richer Internet Application Development by Peter Lubbers, Brian Albers, Frank Salim, Ric Smith, Apress, 2010 (Unit III,IV,V)

REFERENCE BOOKS:

1. HTML5 For Web Designers by Jeremy Keith, June 2010
2. HTML5 Cookbook, by Christopher Schmitt, Kyle Simpson, O'Reilly, November 2011
3. Head First HTML5 Programming by Eric Freeman, Elisabeth Robson, O'Reilly, October 2011

SYLLABUS
GENERIC ELECTIVE COURSES

Generic Electives

15EIT151 Management Theory and Practice 3 0 0 3

Course Objective: Systematic way of working is very essential to manage the entire operations of an organization. Though each business is run on terms specific to its domain, basic principles of management like decision making, organization, finance management and Human Resource management remain same and good understanding of best practices is very must essential for both employers and employees to work in unison.

UNIT I INTRODUCTION **9**

Management – definitions, types of managers; managerial roles and functions; Science or Art? - Administration vs. Management, External environment – Managing people and organizations in the context of New Era- Managing for competitive advantage - the Challenges of Management - Corporate Social responsibility- Managerial Ethics. Perspectives on Management: Scientific Management, Human Relations, the Systems Approach, the Contingency Approach, the Mckinsey 7-S Framework.

UNIT II PLANNING **9**

Nature of planning, Steps in planning, types of planning, Levels of planning - The Planning Process. – Planning practices in USA, Japan and China - Decision Making: Problem and Opportunity finding, the nature of Managerial Decision Making, the Rational Model of Decision Making, Challenges to the Rational Model, Improving the Effectiveness of Decision Making Tools and Techniques, Role of Boards and Committees in Decision Making - Decision making practices abroad.

UNIT III ORGANIZING **9**

Nature of organizing, organization levels and span of management – Factors determining span - Organizational design and structure –departmentation, line and staff concepts, staffing – delegation, decentralization and recentralization of authority - responsive organizations –Global organizing.

UNIT IV LEADING **9**

Leading Vs Managing – Trait approach and Contingency approaches to leadership - Dimensions of Leadership - Leadership Behavior and styles – developing leadership skills – transformational leaders - Leadership in Cross-cultural environment - Evaluating Leader- Women and Corporate leadership –Motivational theories- Building Groups into Teams, Intergroup Behavior, conflict and negotiation – Global leading.

UNIT V COMMUNICATION **9**

Importance of Communication, Interpersonal communication Barriers to Effective communication, Communication in Organizations, Using Communication Skills to manage Conflicts. Communicating for understanding and results, creating productive interpersonal relationships, Guidelines to improve written and oral communication-communication practices in India and abroad - Controlling: Basic control process- control as a feedback system –

Feed Forward Control – Requirements for effective control – control techniques – Overall controls and preventive controls – Global controlling.

TEXT BOOKS:

1. Koontz and O'Donnell. *Essentials of Management.* E-McGraw Hill, New Delhi,2008 (Unit I,II,III)
2. Fred Luthan S. *Introduction to Management.* McGraw Hill, New Delhi, 2008 (Unit IV)
3. Peter.F.Drucker. *The Practice of Management.* Allied Publishers, 2008 (Unit V)

REFERENCE BOOKS:

1. Stoner, Freemen and Gilbert. *Management.* Pearson (6th Edition), 1995
2. Griffin. *Management.* South Western Educational Publishing, 2006
3. Peter. F. Drucker. *Management- Tasks and Responsibilities.* Harper Business 1993
4. *Theo Haimann. Professional Management.* Houghton Miller, *1998*
5. Richard L.Draft. *Organization Theory and Design.* Thomson Learning, 2004
6. Peter F.Drucker. *People and Performance*. Harvard Business School Press, 2007

15EIT152 Organization and Management 3 0 0 3

Course Objective: The objective of the course is to enable our students to approach IT concepts at an organizational level and understand organizational principles, processes and structure deeply. Learning management principles from an organizational perspective becomes very critical for an IT Professional as it has an impact on his performance, growth and his contributions to the growth of the company.

UNIT I INTRODUCTION TO ORGANIZATION 9

Introduction, definition of organization, system approach applied to organization, necessity of organization, elements of organization, process of organization, principles of organization, formal and informal organization, organization structure, types of organization structure .

UNIT II FORMS OF BUSINESS ORGANIZATION 9

What is a business organization? Concept of ownership organization, types of ownership. Individual ownership, partnership, joint stock Company, private and public limited company, co-operative organizations, state ownership, public corporation

UNIT III BASIC CONCEPTS OF MANAGEMENT 9

Introduction, definitions of management, characteristics of management, levels of management, management skills - Management theory: Scientific management, contribution of Gilbreth. Gantt, Neoclassical theory, modern management theories - Functions of management: Planning, forecasting, organizing, staffing, directing, motivating, controlling, co-coordinating, communicating, decision making.

UNIT IV PERSONNEL MANAGEMENT 9

Introduction, definition, objectives, characteristics, functions, principles and organization of personnel management - Markets and marketing: Introduction, the market, marketing information, market segmentation, consumer and indusial markets, pricing, sales, physical distribution, consumer behavior and advertisement - Financial management: the basics , financial accounts, inflation, profitability, budgets and controls, cost accounting, valuation of stock, allocation of overheads, standard costing, marginal costing

UNIT V PRODUCTIVITY AND PRODUCTION 9

Measurement of productivity, productivity index productivity improvement procedure – Materials management and purchasing: Objectives, functions, importance of materials management. Stores and storekeeping - Inventory control: Classification, functions, inventory models, inventory costs, EOQ, Materials requirement planning

TEXT BOOKS:

1. Fraidoon Mazda, Engineering Management-, Addison –Wesley,1997 (Unit I,II)
2. Koontz and O'Donnell, Essentials of Management, Mc Graw Hill,2006 (Unit III,IV,V)

REFERENCE BOOKS:

1. Kotlar P, Marketing Management, Prentice Hall India,1998
2. Prasanna Chandra , Finance Management,TMH.5th ed.,
3. Monks J.G Operations Management ,MGH

15EIT153 **Transformational Skills** **3 0 0 3**

Course Objective: Learning results in transformation of individuals. By learning to effectively communicating with others, you are not only sharing your ideas, receiving information from the person on the other side but also rediscovering yourself at every stage. This course takes the students through one such journey where they rediscover themselves and become better individuals. To be sensitive and responsive to the matters of current affair is everyone's duty and responsibility and this course aims at directing students towards the same.

Unit I EFFECTIVE COMMUNICATION **9**

Good communication v/s Effective Communication, Characteristics of Effective Communication, Styles of Communication

Unit II CREATIVE WRITING **9**

Paragraph, Articles, Story Writing. Reading Skills- Newspaper Review & Book Review

Unit III GENERAL AWARENESS **9**

General Knowledge & Current Affairs (Politics, Business, Sports, Science & Technology, & Entertainment)

Unit IV CREATIVITY AND LATERAL THINKING **9**

Creativity and Teamwork, Collage Making

Unit V DOMAIN-SPECIFIC TRAINING **9**

Common interview questions handling, definitions, result analysis

REFERENCE BOOKS:

1. New Aspects Of Personality Development And Communication Skills Neha Publishers & Distributors
2. Effective Communication & Public Speaking by S.K. Mandal,2006
3. Handbook Of Reporting And Communication Skills by V.S Gupta,2003

15EIT154 Transition from campus to corporate 3 0 0 3

Course Objective: The objective of the course is to prepare the students for the BIG day in their life; the day they will enter the corporate world with high hopes of achieving their dream. The foremost step in this direction for students will be to clear the interviews with good score. This course teaches students significant aspects that they need to learn and practice in order to clear their interviews with flying colors. In the corporate world, they are tested for their technical knowledge, skills, application knowledge and their ability to perform under tight deadlines and quality checks. Hence, professionalism, corporate etiquettes and communication become extremely important. This course equips the students will all these and more. It covers topics like analytical skills, group discussion and so on

Unit I BARRIERS TO COMMUNICATION **9**

Improving Communication Skills, Non-verbal communication, Body language, Value of time, Importance of Listening, Emotional Intelligence

Unit II ANALYTICAL SKILLS **9**

Analytical Skills: Introduction and Relevance, Newspaper Article Analysis, Analysis of a Video

Unit III GROUP DISCUSSION **9**

Group Discussion: Introduction, Group Discussion: Do's and Don'ts, Mock Group Discussion

Unit IV INTERVIEW SKILLS- I **9**

Preparation & Resume Building, Types of Interviews, Do's & Don'ts of Interviews,

Unit IV INTERVIEW SKILLS- II 9

Personal Interview: Introduction, Personal Interview: Do's and Don'ts, Mock Personal Interview

REFERENCE BOOKS:

1. Campus to Corporate by Ashutosh Sharma,2012
2. Campus to Corporate: Your Roadmap to Employability by Gangadhar Joshi

15EIT155 **E-Commerce** **3 0 0 3**

Course Objective:

To provide students with an overview of the key concepts, strategies, business models, and technologies behind E-business/E-commerce. The course will address the opportunities and challenges of doing business on the Internet, and the challenges of introducing e-commerce techniques into existing organizations

UNIT I INTRODUCTION TO E-COMMERCE **9**

What is E-commerce? Traditional commerce and E-commerce – E-commerce Business Models and Concepts –– strategic business and Industry value chains – role of E commerce

UNIT II E-COMMERCE INFRASTRUCTURE **9**

Internet and WWW – role of WWW – value chains - Packet switched networks – TCP/IP protocol script – Internet utility program – SGML, HTML and XML – web client and servers – Web client/server architecture – intranet and extranets - JavaScript

UNIT III E-COMMERCE TOOLS AND MARKETING TECHNIQUES **9**

Web server – performance evaluation - web server software feature sets – web server software and tools – web protocol – search engines – intelligent agents –E-Commerce software – web hosting – cost analysis - E-Commerce Payment Systems - E-Commerce Marketing Techniques

UNIT IV SECURITY IN E-COMMERCE **9**

Computer security classification – copy right and Intellectual property – electronic commerce threats – protecting client computers – electronic payment systems – electronic cash – strategies for marketing – sales and promotion – cryptography – authentication - Ethical, Social and Political Issues in E-Commerce

UNIT V INTELLIGENT AGENTS **9**

Definition and capabilities – limitation of agents – security – web based marketing – search engines and Directory registration – online advertisements – Portables and info mechanics – website design issues - Digital Government, Marketplaces, and Communities

TEXT BOOKS:

1. Ravi Kalakota, — Electronic Commercell, Pearson Education,1997 (unit I)
2. Gary P Schneider —Electronic commercell, Thomson learning & James T Peny Cambridge USA, 2001. (Unit II)
3. Manlyn Greenstein and Miklos —Electronic commercell McGraw-Hill, 2002. (Unit III)
4. Efraim Turvan J.Lee, David kug and chung, —Electronic commercell Pearson Education Asia 2001. (Unit IV)
5. Brenda Kienew E commerce Business Prentice Hall, 2001. (Unit V)

REFERENCE BOOKS:

1. Introduction to e-Business Management, Colin Combe, BH Press,2006
2. Introduction To E-Commerce 2/E, Rayport, Tata McGraw Hill,2003
3. Introduction to e-commerce, Zheng Qin,2010

15EIT156 Business Communication 3 0 0 3

Course Objective: Effective communication is the most important aspect in a professional environment like an organization, where information is exchanged in various forms like verbal, written or audio. In order to understand one's responsibilities and deliver output to the management staff, it is required that one has to present his/her work precisely in a manner expected out of them. Business communication is everything to do with knowledge of English language, listening / writing skills, soft skills like speaking, presenting information and so on.

UNIT I INTRODUCTION TO COMMUNICATIVE ENGLISH 9

What is communication? Verbal and non-verbal modes of communication. Function and Role of effective communication. The process of communication - the four skills of listening, speaking, reading and writing. (LSRW)

Active Listening

1. Definition of Active Listening. Difference between listening and hearing.
2. Understanding other viewpoints; suspending judgment; listening for hidden meaning; using verbal and non-verbal signals.
3. Barriers and Filters in listening.
4. The Feedback process.
5. Activities and Tasks: Listening Comprehension, Quizzes, Case Studies.

Speaking

1. Elements of Phonology - diction, pitch, intonation, clarity, articulation.
2. Pronunciation, stress, accent. Activities/exercises based on phonology.
3. Grammar for effective speaking - accuracy focused and fluency focused activities. Fillers, turn taking, pauses, phatic. 4. Appropriate use of register, lexis, style and body language.
5. Case Studies, Role Play - understanding aggressive, assertive and passive behavior.
6. Confidence and Personality building activities - extempore exercises/ just a minute (JAM) exercises, debates, group discussions.

UNIT II READING AND WRITING 9

1. Methods of effective reading and writing - skimming and scanning, gists, topic Sentences, summaries.
2. Reading Comprehension (passages with focus on business, current affairs, travel and tourism, environment.
3. Letter Writing - invitations and regrets, enquiries and replies, making reservations, lodging Complaints.
4. Report Writing - official and business reports.

Grammar in Context –

a. Correct use of tense, adverbs and prepositions
b. phrasal verbs
c. study of affixes - prefixes and suffixes

d. study of synonyms, antonyms, homonyms, hyponyms
e. Word pairs. Accuracy focused exercises in context.
f. Use of Idioms

UNIT III COMMUNICATION IN BUSINESS **9**

Introduction, Communication Process, Essentials of Business Communication, Barriers to Business Communication

UNIT IV COMMUNICATION IN AN ORGANIZATION, BUSINESS CORRESPONDENCE, BUSINESS REPORT WRITING **9**

Types of Communication Meetings, Memo, Circulars and Notices, General Rules for All Business Correspondence, Guidelines for the Basic Cover Letter, Guidelines for Information Interviewing, Networking Letters, Guidelines for Thank You Letters, Guidelines for Job Offer, Acceptance Letters, Guidelines for Letters Declining a Job Offer, Style in Business Correspondence, Cover Letters, Business Report Writing, The purpose of statistical studies, sample of business correspondence

UNIT V EFFECTIVE COMMUNICATION SKILLS **9**

Perspectives of Communication: Visual Perception, Language, Other factors affecting perspectives, prejudices, feelings and environment Elements of Communication: Face-to-Face Communication, Tone of Voice, Body Language.

TEXT BOOK:

1. Corporate Communication: A Guide to Theory and Practice, JoepCornelissen, Edition III, SAGE Publications, 2011

REFERENCE BOOKS:

1. Everyday Grammar, Seely John, Oxford University Press, 2010
2. Remedial English Language, Dr. Malti Agarwal, Krishna Prakashan Media, 2010
3. Develop Your Presentation Skills, Theo Theobald, Kogan Page Limited, 2011
4. Business Communication, (Compilation), Harvard University Press, 2005 (last Publication)
5. Business Communication Today, Courtland L. Bovee, John V. Thill, Barbara E. Schatzman, Edition V, Prentice Hall, 2005 (last Publication)
6. Presentations: Proven Techniques for Creating Presentations That Get Results, Daria Price Bowman, Adams Media, 2001

15EIT157 Effective Speaking and Analytical Skills 3 0 0 3

Course Objective: This course is intended at delivering knowledge to students, about communication skills and leads them in the right direction towards using correct grammar in their communication.

Unit I **9**

Grammar – Adjectives. Letter Writing – Business Communication & Emails. Conjunction - Kinds of Sentences - Simple, Compound & complex sentences

Unit II **9**

Vocabulary - Singular & Plural; Grammar - Interrogation; Sentence formations. Exclamation - Conclusion of Parts of Speech - Why the parts of speech are important - Vocabulary - Genders. Direct and Indirect Speech; Group Discussions

Unit III **9**

Active and Passive Voice; Extempore . Vocabulary - Opposites ; JAM Sessions.

Unit IV **9**

Communication Skills - Introduction, Good Communication v/s Effective Communication. How to become an Effective Communicator, Styles of Communication, The art of being Assertive

Unit V **9**

Listening Skills – Introduction, Hearing or Listening, The qualities of being a good listener; Telephone etiquette

REFERENCE BOOK:

1. Effective Communication & Public Speaking by S.K.Mandal,2006

15EIT158 Life and Career Skills 3 0 0 3

Course Objective: Communication and Soft Skills is gaining importance in today's corporate environment as professionals are interacting with people from different streams and geographical locations. Interpersonal skills are very important in building rapport; sharing ideas working in teams. This course aims at teaching students, the usage of English Grammar in both personal and professional environments and includes topics like Verbs, Comprehension and Grammar.

Unit I INTRODUCTION **9**

Tips to learn a new language - The process of learning a language - Basics of English - The parts of speech – Noun; Topic discussion - Introduce Yourself. Verb - Verb Exercise - Tense - Present, Past, Future; Topic Discussion – A room without Books is like a body without Soul

Unit II VOCABULARY AND VERBS I **9**

Vocabulary – verbs - 15 words with meaning in Hindi - Perfect Tense - Tongue – Twisters to improve the pronunciation; Topic Discussion - IPL Matches

Verbs - Vocabulary 15 words - Grammar - Auxiliary Verbs - Verb - Exercise - Learn & Know – Fruits - Tongue Twisters - Topics Discussion - Hollywood v/s Bollywood, Indian Food v/s Junk Food

Vocabulary and Verbs II

Vocabulary - verbs - 15 words - Adjective - Degrees of comparison - Tongue – Twisters; - Translation - Hindi to English 30 sentences; Topic discussion - If I were the Prime Minister of the country. Vocabulary - Verbs – 15 words - Grammar - Adverbs; Story Telling (Story of your choices)

Unit III COMPREHENSION **9**

Vocabulary - Verbs - 15 words - Grammar - Pronoun; Reading Comprehension – Articles or short stories would be provided. Comprehension continued. This is done to enhance the reading & listening skills. Grammar – Articles; Sentence and paragraph formation keeping articles in mind, Grammar - Preposition; Story writing

Unit IV ACTIVITIES **9**

Introduction to Personality & Attitude, Entrepreneurial Trait; Role and Importance of Entrepreneurship, Career Exploration: Career Planning and Management, Latest Happenings, Self Management

Unit V READING AND WRITING SKILLS ENHANCEMENT **9**

Reading skills: Newspaper Review & movie Review, Listening Skills: Audio-Video Listening, Writing Skills: E-Mail Writing (do's & don'ts, effective techniques), Speaking Skills: Debate (do's & don'ts, effective techniques) , Overview to core Human skills, Health & Safety tips, Resume writing

REFERENCE BOOK:

1. Enhancing Soft Skills by Shroff Publishers & Distributors

2. Effective Communication Skills In English by Neha Publishers & Distributors

15EIT159 Personal Effectiveness Skills 3 0 0 3

Course Objective: Verbal Communication one of the most effective modes, which is simple, straight and quick. It is important to learn to effectively communicate your ideas and thoughts. The objective of this course is to equip students with the fundamental concepts of communication thus enabling them to handle themselves well in a professional level. As individuals we are all in a journey to become better individuals who contribute to the society and to the nation.

Unit I PERSONALITY ENHANCEMENT I **9**

Concept of Personality, Understanding Personality

Unit II PERSONALITY ENHANCEMENT II **9**

Self Assessment & Body Language, Self Grooming and Attitude

Unit III WRITING SKILLS **9**

Business Writing: Letter Writing (Formal and Informal), Application Writing, E-Mail Writing

Unit IV Speaking Skills- Conversations, GDs, Presentations, Debate and Extempore 9

Unit V Listening Skills 9

REFERENCE BOOKS:

1. Enhancing Soft Skills by Shroff Publishers & Distributors
2. Personality Development & Presentation Skills by Neha Publishers & Distributors

SYLLABUS

SKILL ENHANCEMENT ELECTIVE COURSES

Skill Enhancement Elective Courses

15GPD251 Personality Development I 2 0 0 2

UNIT I SOFT SKILLS I

Introduction to Personality Development – Meaning-Features of personality=Dimensions of Personality=Determinants of Personality-Features and Traits- Components of self concept-Barriers-Self analysis

UNIT II SOFT SKILLS II

Importance of Soft Skills – First impression-Work Place requirements-Discipline-Cleanliness-Hygiene-general Appearance--Building Confidence—Concept of Thinking and Usage-Value of Time-Focus & Commitment.

UNIT III SOFT SKILLS IN ACTION

Grooming – Attire – Understanding others- – Stability & Maturity Development – Strength s – Weakness –Opportunities-threats - Merits of SWOT Analysis-Components-how to convert weakness into strengths-Goal settings

UNIT IV SELF AWARENESS AND SELF ESTEEM

Definitions-Components of self awareness-Developing Self awareness-Self esteem-meaning-Steps to improve self esteem

UNIT V SELF MOTIVATION

Motivation –Meaning-Techniques of self motivation-Motivation & goal setting – Motivation and emotion – Motivation at work.

Total 30 Hours.

REFERENCE BOOKS:

1 Personality Development And Soft Skills---Barun K Mitra, Oxford Publication,2012

2 Seven habits of Higly Effective people – Stephen R. covey, 2005

3 Emotion, motivation and Self regulation - Nathan C. Hall , McGill University, Canada Thomas Goetz**,** University of Konstanz, Germany http://www.emeraldgrouppublishing.com/

4 Psychology of Selfesteem – Nathaniel Branden, Nash (1st edition), Jossey-Bass (32nd anniversary edition)

15GPD252 Personality Development II 2 0 0 2

UNIT I SOFT SKILLS III

Basic Etiquette – Email etiquette – Business etiquette – Telephone etiquette – Meeting etiquette – Adjustment of Role & Leadership – Team Management & Development

UNIT II QUANTITATIVE APTITUDE I

Percentage – Profit Loss -Discount – Ratio Proportion – Time & Work – Time, Speed &Distancel. Problems relating to ages-Permutation &Combination-Probability

UNIT III QUANTITATIVE APTITUDE II

Mensuration Clocks and Calendars- Boats-Simple Interest –Compound Interest- Fractions and Decimals – Square roots – Functions.

UNIT IV ANALYTICAL PROBLEMS

Introduction – Linear Sequencing – Seating Arrangements – Distribution/Double Line Up – Selection – Ordering and Sequencing – Binary Logic – Venn Diagrams –Directions.

UNIT V LOGICAL PROBLEMS

Introduction to Logical problems – Cause and Effect – Course of Action – Statement and Assumption – Letter and Symbol series – Analogies.

Total 30 Hours

REFERENCE BOOKS

1 Personality Enrichment--K R Dhanalakshmi And N S Raghunathan, Margham Publications
2 Personality Development --Dr V M Selvaraj Bhavani Publications
3 Quantitative Aptitude – R. S Aggarwal
4 Logical and Analytical Reasoning (English) 30th Edition – A.K Gupta

15GPD253 Personality Development III 2 0 0 2

UNIT I VERBAL APTITUDE I

Phonetics/Neutral Accent/Pronunciation – Speech Mechanism/Mouth & Face Exercise – Vowels & Consonants – Sounds – Syllable and Syllable Stress/ Word Stress – Sentence Stress & Intonation – Articulation Exercise – Rate of Speech / Flow of Speech / Idiomatic Phrases.

UNIT II VERBAL APTITUDE II

Singular/plural-present tense/past tense—genders
Prepositions-conjunctions
Choice of words—simple sentences—compound sentences---summarisingphrases—Synonyms—Antonyms—Analogies—Similar Words

UNIT III SOFT SKILLS IV

Attitude—Meaning-Features of attitude-Formation-Personality Factors-Types of attitude-change in attitude-Developing Positive attitude.

UNIT IV TIME MANAGEMENT

Definition –Meaning-Importance, Value of time as an important resource- comparison of Time and Money-Circle of influence and circle of control—Definiton of URGENT and IMPORTANT—Time Wasters and how to reduce—Procrastination—meaning and impact- 4 Quadrants.

UNIT V TEAM BUILDING

Meaning—Aspects of team building—Process of team building—Types of Teams-Team ethics and Understanding-Team trust and commitment

Total 30 Hours

REFERENCE BOOKS:

1 Managing Soft Skills And Personality--B N GhoshMcgraw Hill Publications
2 Principles and Practices of Management Shejwalkar and Ghanekar McGraw Hill Latest
3 Time management for Busy people – Roberta roesch, TatamcGraw-Hill Edition
4 Personality Development --Dr V M Selvaraj, Bhavani Publications

15GPD254 Personality Development IV 2 0 0 2

UNIT I SOFT SKILLS V

Assertiveness—Meaning—Importance of assertiveness- Characteristics of assertive communication-Merits –forms of assertion—Causes of misunderstanding

UNIT II COMMUNICATION SKILLS

Meaning—Elements of communication—Functions of communication—Principles of communication—Formal and Informal communication—Barriers in Communication—Characteristics of good communication—Feedback—communication systems.

UNIT III PRESENTATION SKILLS I

Meaning—Importance of Presentation—Concept of 5 w's and one H--- understanding the audience—Types of presentations—How to make effective presentation

UNIT IV PRESENTATION SKILLS II

Use of slide, PPT's.and visuals—Rules for slide presentation—precautions ---seminars and conferences-Steps to eliminate Stage fear.

UNIT V CHANGE MANAGEMENT

Definition – Necessity - Resistance towards Change – 10 Principles of Change Management – Leaders approach – Effective Change management.

Total: 30 Hours

REFERENCE BOOKS:

1 Helping employees embrace change - LaClair, J. and Rao, R. Helping Employees Embrace Change, McKinsey Quarterly, 2002, Number 4.
2 Who Moved My Cheese by Spencer Johnson published by vermilion first ediion
3 Effective Communication. Adair, John. London: Pan Macmillan Ltd., 2003.
4 Business Communication Today: Bovee, Courtland L, John V. Thill& Barbara E. Schatzman.Tenth Edition. New Jersey: Prentice Hall, 2010.

15NSS255 **NSS - I** **2 0 0 2**

Unit I **INTRODUCTION AND BASIC CONCEPTS OF NSS** **6**

NSS: History, philosophy, aims, objectives –Emblem: flag, motto, song, badge- NSS functionaries: Organizational structure, roles and responsibilities.

Unit II **NSS PROGRAMS AND ACTIVITIES** **6**

Concept of regular activities- special camping-day camps-Basis of adoption of village/slums, Methodology of conducting survey-Financial pattern of the scheme- other youth program/schemes of GOI- Coordination with different agencies- Maintenance of the dairy

Unit III **UNDERSTANDING YOUTH** **6**

Youth: Definition, profile of youth, categories – youth: Issues, challenges and opportunities - Youth as an agent of social change.

Unit IV **COMMUNITY MOBILIZATION** **6**

Mapping of community stakeholders-Designing the message in the context of the problem and the culture of the community-Identifying methods of mobilization-Youth adult partnership

Unit V **VOLUNTEERISM AND SHRAMDAN** **6**

Indian Tradition of volunteerism-Needs& Importance of volunteerism- Motivation and constraints of volunteerism-Shramdan as a part of volunteerism.

15NSS256 **NSS - II** **2 0 0 2**

Unit I **IMPORTANCE AND ROLE OF YOUTH LEADERSHIP** **7**

Meaning and types of leadership-Qualities of good leaders; traits of leadership- Importance and role of youth leadership

Unit II **LIFE COMPETENCIES** **7**

Definition and importance of life competencies-Communication- Inter personal- Problem solving and decision-making

Unit III **SOCIAL HARMONY AND NATIONAL INTEGRATION** **8**

Indian history and culture-Role of youth in peace-building and conflict resolution- Role of youth in Nation building

Unit IV **YOUTH DEVELOPMENT PROGRAMMES IN INDIA** **8**

National youth policy-Youth development programmes at the National level,state level and voluntary sector-Youth focused and youth-led organization

Conducting surveys on special theme and preparing a report thereof.

15NSS257 **NSS - III** **2 0 0 2**

Unit I **CITIZENSHIP** **6**

Basic features of constitution of India-Fundamental Rights and duties- Human rights- Consumer awareness and the legal rights of consumer- RTI

Unit II **FAMILY AND SOCIETY** **6**

Concept of family-community(PRIs and community-based organization) and society-Growing up in the family-dynamics and impact-Human values-Gender justice

Unit III **HEALTH, HYGIENE & SANITATION** **6**

Health Education Definition, needs and scope-Food and nutrition- Safe drinking water- water born diseases and sanitation(Swachh Bharath Abhiyan)-National Health Programme- Reproductive health

Unit IV **YOUTH HEALTH** **6**

Healthy Lifestyles-HIV AIDS, Drugs and substance abuse- Home nursing- First aid

Unit V **YOUTH AND YOGA** **6**

Yoga: History, philosophy and concept-Myths and misconceptions about yoga- Different yoga traditions and their impact-Yoga as a preventive,promotive and curative method- Yoga as a tool for healthy lifestyle

Preparation of research project report.

15NSS258 **NSS - IV** **2 0 0 2**

Unit I **ENVIRONMENT ISSUES** **7**

Environment: conservation, enrichment and sustainability-Climate change- Waste management- Natural resource management(Rainwater harvesting, energy conservation, wasteland development, soil conservations and afforestation)

Unit II **DISASTER MANAGEMENT** **8**

Introduction to Disaster management-classification of disasters-Role of youth in disaster management

Unit III **PROJECT CYCLE MANAGEMENT** **7**

Project planning-Project implementation- Project monitoring- Project evaluation-Impact Assessment

Unit IV **DOCUMENTATION AND REPORTING** **8**

Collection and analysis of data- Preparation of Documentation/Reports- Dissemination of documents/Reports

Workshops/seminars on personality development and improvement of communication skills.

15NSS259 **NSS - V** **2 0 0 2**

Unit I **VOCATIONAL SKILL DEVELOPMENT** **15**

This unit will aim to enhance the employment potential of the NSS volunteers- alternately to help them to set up small business enterprises. For this purpose, a list of 12-15 vocational skills will be drawn up ,based on local conditions and opportunities - Each volunteer will have the option to select two skill-areas out of this list-one such skill in each semester-The education institution (or the university)will make arrangements for developing these skills in collaboration with established agencies that possess the necessary expertise in the related vocational skills.

Unit II **ENTREPRENEURSHIP DEVELOPMENT** **8**

Definitions & meaning- Qualities of good Entrepreneur- Steps/ways in opening an enterprise- Role of financial and support service Institutions.

Unit III **YOUTH AND CRIME** **7**

Sociological and Psychological Factors influencing youth crime- Peer monitoring in preventing crimes Awareness about Anti-Ragging -Cyber Crime and its prevention- Juvenile justice

15NSS260	**NSS - VI**	**2**	**0**	**0**	**2**

Unit I VOCATIONAL SKILL DEVELOPMENT 15

This unit will aim to enhance the employment potential of the NSS volunteers- alternately to help them to set up small business enterprises. For this purpose, a list of 12-15 vocational skills will be drawn up ,based on local conditions and opportunities-Each volunteer will have the option to select two skill-areas out of this list-one such skill in each semester-The education institution (or the university)will make arrangements for developing these skills in collaboration with established agencies that possess the necessary expertise in the related vocational skills.

Unit II CIVIL/SELF DEFENSE 5

Civil defense services-aims and objectives of civil defense - Needs for Self defense training

Unit III RESOURCE MOBILISATION 3

Writing a project proposal- Establishment of SFUs

Unit IV ADDITIONAL LIFE SKILLS 7

Positive thinking- Self confidence and self esteem- Setting life goals and working to achieve them-Management of stress including time management