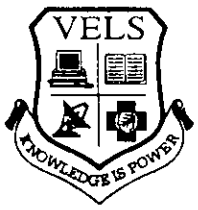

VELS UNIVERSITY

CHENNAI - INDIA

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

Estd. u/s. 3 of the UGC Act,1956

B.Tech. IT
Information Security and Cloud Technology

Syllabus
From the
Academic year 2014-15 onwards

Department of Computer Science And Engineering

VELS UNIVERSITY : SCHOOL OF ENGINEERING

B.Tech IT (Information Security and Cloud Technology)

COURSES OF STUDY AND SCHEME OF ASSESSMENT

(MINIMUM CREDITS TO BE EARNED: 195)

Code No.	Course	Hour / Week			Credits	Maximum Marks		
		Lecture	Tutorial	Practical		CA	SEE	Total
SEMESTER 1								
11	Technical English	3	0	0	3	40	60	100
12	Matrices and Calculus	3	1	0	4	40	60	100
13	Engineering Physics	3	0	0	3	40	60	100
14	Engineering Chemistry	3	0	0	3	40	60	100
15	Fundamentals of Computing	3	0	0	3	40	60	100
16	Basic Civil and Mechanical Engineering	3	1	0	4	40	60	100
17	Computer Aided Drafting	2	0	2	3	40	60	100
P11	Engineering Practices Laboratory	0	0	3	2	40	60	100
P12	Physics and Chemistry Laboratory	0	0	3	Refer Semester 2 and Footnote #			
		20	2	8	25			
SEMESTER 2								
21	Communication Skills	3	0	0	3	40	60	100
22	Differential Equations and Complex Analysis	3	1	0	4	40	60	100
23	Materials Science	3	0	0	3	40	60	100
24	Industrial Chemistry	3	0	0	3	40	60	100
25	Operating Systems – Building Blocks	3	0	0	3	40	60	100
26	Information Security – I	3	0	0	3	40	60	100
P21	Information Security I- Lab	0	0	3	2	40	60	100
P22	Computer Practice Laboratory	0	0	3	2	40	60	100
P23	Physics and Chemistry Laboratory	0	1	3	2	40#	60	100
	Mentor Hour			1				
		18	2	10	25			

CA - Continuous Assessment
SEE - Semester End Examination
- Continuous Assessment marks are awarded for performance in semesters 1 and 2

VELS UNIVERSITY

B.Tech IT (Information Security and Cloud Technology)

Code No.	Course	Hour / Week			Credits	Maximum Marks		
		Lecture	Tutorial	Practical		CA	SEE	Total
SEMESTER 3								
31	Fourier Series and Transforms	3	1	0	4	40	60	100
32	OSI layer & Security	3	0	0	3	40	60	100
33	Information Security – II	3	0	0	3	40	60	100
34	Data Structure and Algorithm	3	1	0	4	40	60	100
35	Designing Enterprise Networks	3	0	0	3	40	60	100
36	Fundamentals of Operating Systems (Windows 7)	3	0	0	3	40	60	100
P31	Designing Enterprise Networks - Lab	0	0	3	2	40	60	100
P32	Network Security – Lab	0	0	3	2	40	60	100
P32	Fundamentals of Operating Systems (Windows 7) – Lab	0	0	3	2	40	60	100
	Mentor Hour			1				
		18	2	10	26			
SEMESTER 4								
41	Probability and Queuing Theory	3	1	0	4	40	60	100
42	Introduction to Cloud Technology	3	0	0	3	40	60	100
43	Introduction to Linux/Unix	3	0	0	3	40	60	100
44	Cryptography Fundamentals	3	0	0	3	40	60	100
45	Basics of Server Operating System (Windows Server 2008)	3	1	0	4	40	60	100
46	Ethical Hacking Basics	3	0	0	3	40	60	100
P41	Introduction to Linux/Unix – Lab	0	0	3	2	40	60	100
P42	Basics of Server Operating System (Windows Server 2008) – Lab	0	0	3	2	40	60	100
P43	Ethical Hacking Basics - Lab	0	0	3	2	40	60	100
		18	2	10	26			

CA - Continuous Assessment
SEE - Semester End Examination

VELS UNIVERSITY : SCHOOL OF ENGINEERING

B.Tech IT (Information Security and Cloud Technology)

Code No.	Course	Hour / Week			Credits	Maximum Marks		
		Lecture	Tutorial	Practical		CA	SEE	Total
SEMESTER 5								
51	Fundamentals of Virtualization	3	0	0	3	40	60	100
52	Fundamentals of Datacenter	3	1	0	4	40	60	100
53	Web Technology Fundamentals	3	0	0	3	40	60	100
54	Network Security Basics	3	0	0	3	40	60	100
55	Virtualization and Cloud Security	3	0	0	3	40	60	100
56	Advanced Ethical Hacking	3	0	0	3	40	60	100
P51	Fundamentals of Virtualization - Lab	0	0	3	2	40	60	100
P52	Web Technology Fundamentals - Lab	0	0	3	2	40	60	100
P53	Advance Ethical Hacking – Lab	0	0	3	2	40	60	100
	Mini Project			2				
		18	1	11	25			
SEMESTER 6								
61	Introduction to Windows Azure	3	0	0	3	40	60	100
62	Linux Administration	3	0	0	3	40	60	100
63	Cyber Forensics Basics	3	1	0	4	40	60	100
64	IT Governance, Risk and Information Security Audit	3	0	0	3	40	60	100
65	Mail Servers	3	0	0	3	40	60	100
66	Elective I	3	0	0	3	40	60	100
P61	Introduction to Windows Azure - Lab	0	0	3	2	40	60	100
P62	Linux Administration - Lab	0	0	3	2	40	60	100
P63	Cyber Forensics Basics – Lab	0	0	3	2	40	60	100
	Seminar			2				
		18	1	11	25			

CA - Continuous Assessment
SEE - Semester End Examination

VELS UNIVERSITY : SCHOOL OF ENGINEERING

B.Tech IT (Information Security and Cloud Technology)

Code No.	Course	Hour / Week			Credits	Maximum Marks		
		Lecture	Tutorial	Practical		CA	SEE	Total
SEMESTER 7								
71	Private Cloud Architecture	3	0	0	3	40	60	100
72	Cloud Web Services	3	0	0	3	40	60	100
73	Advanced Cyber Forensics	3	1	0	4	40	60	100
74	Android Security	3	0	0	3	40	60	100
75	Elective II	3	0	0	3	40	60	100
76	Elective III	3	0	0	3	40	60	100
P71	Private Cloud Architecture – Lab	0	0	3	2	40	60	100
P72	Cloud Web Services - Lab	0	0	3	2	40	60	100
P73	Advanced Cyber Forensic Lab	0	0	3	2	40	60	100
	Project Work Preliminary			2				
		18	1	11	25			
SEMESTER 8								
81	Elective IV*	3	0	0	3	40	60	100
82	Elective V*	3	0	0	3	40	60	100
	Internship/Project	0	0	24	12	40	60	100
		6	0	24	18			

CA - Continuous Assessment
SEE - Semester End Examination
* - Students who have passed all the subjects up to 5thsemester and earned CGPA of 7.5 or above are permitted to earn credits for Electives III and IV in their 6th and 7th semester subject of study and to do the full semester Project Work in external industries.

LIST OF ELECTIVE SUBJECTS

LANGUAGE ELCTIVES (A maximum of one elective)

11E1G17	French
11E1G27	German
11E1G37	Hindi
11E1G47	Japanese

DEPARTMENT ELECTIVES (A minimum of three electives)[#]

Security Threats and Trends
OWASP Framework
Hacktivism, Cyber warfare and Cyber Terrorism
ISO27001, PCIDSS and HIPAA
Linux Security and Forensics
Advanced Web Technology
Fundamentals of IT Infrastructure Library
Introduction to VOIP
E-Commerce
Management Theory and Practice
Industrial Organization and Management
Business Communication

- A candidate may be permitted to take maximum of two electives in lieu of department elective courses from the list of Language electives and elective courses of other departments / branches of BE / BTech degree programmes with specific permission from the concerned Heads of the Departments.

Title of the Paper: Technical English **Subject Code: 11**

Year: I **Semester: 1** **Credits: 3** **Class Hours: 3**

UNIT I **9**

General Vocabulary – changing words from one form to another, Nouns and Pronouns, Compound nouns, Relative pronouns, Word Links – connectives, Sequence words, demonstrative pronouns, Adjectives, Comparative adjectives, Adverbs, Skimming and scanning.

UNIT II **9**

Listening and note-taking, Tenses – Present Tense – simple present, present continuous, present perfect, present perfect continuous, Past Tense - simple past, past continuous, past perfect, past perfect continuous.

UNIT III **9**

Vocabulary, Prefixes and Suffixes, Cause and Effect relationship, Clauses and Phrases, Modal Verbs, Super-ordinates and Hyponyms, Synonyms, Expressing Causal Relation, Article, Prepositions, Preposition phrases.

UNIT IV **9**

Paragraph Writing – descriptive paragraph, definition paragraph, comparison paragraph, argumentative paragraph, persuasive paragraph, demonstrative paragraph, compare and contrast, Creative thinking and speaking, Speaking about the future plans, Gerund.

UNIT V **9**

Transformation of Sentences – positive, comparative, superlative, affirmative, negative, interrogative and assertive, Chart – flow chart, bar chart, pie chart, Formation of Questions.

TOTAL: 45 h

TEXT BOOKS:

1. 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. Sumant. S, 'Technical English', Second Edition, McGraw-Hill Education (India) Pvt.Ltd., 2008.

Title of the Paper: Matrices and Calculus **Subject Code: 12**

Year: I **Semester: 1** **Credits: 4** **Class Hours: 4**

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", 40 th Edition, Khanna Publications, Delhi, 2007.
2. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.

REFERENCE BOOKS:

1. Glyn James, "Advanced Engineering Mathematics", 7 th 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.

Title of the Paper: Engineering Physics **Subject Code: 13**

Year: I **Semester: 1** **Credits: 3** **Class Hours: 3**

UNIT I ULTRASONICS 9

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 – SONAR – Non Destructive Testing – pulse echo system through transmission and reflection modes – A, B and C scan displays, Medical applications – Sonograms.

UNIT II LASERS 9

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 9

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

UNIT IV QUANTUM PHYSICS 9

Black body radiation – Planck's theory (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 9

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: 45 h

TEXT BOOKS:

1. Gaur, R. K. and Gupta, S.C., 'Engineering Physics' Dhanpat Rai Publications, New Delhi 2003.

2. Avadhanulu, M.N. and Kshirsagar, P.G., 'A Text book of Engineering Physics', S.Chand and Company, Ltd., New Delhi, 2005.

REFERENCE BOOKS:

1. Serway and Jewett, 'Physics for Scientists and Engineers with Modern Physics', 6th Edition, Thomson Brooks/Cole, Indian reprint 2007.
2. Rajendran, V and Marikani A, 'Engineering Physics' Tata McGraw Hill Publications Ltd, III Edition, New Delhi, 2004.
3. Palanisamy, P.K., 'Engineering Physics' Scitech publications, Chennai, 2007.
4. Jayakumar. S, 'Engineering Physics', R.K. Publishers, Coimbatore, 2003.
5. Chitra Shadrach and Sivakumar Vadivelu, 'Engineering Physics', Pearson Education, New Delhi, 2007.

Title of the Paper: Engineering Chemistry Subject Code: 14

Year: I **Semester: 1** **Credits: 3** **Class Hours: 3**

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 POLYMERS AND COMPOSITES **9**

Polymers – definition – polymerization – types – Conducting polymers, semiconducting polymers, molecular switches—examples, mechanism and applications-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.

UNIT III FUELS AND COMBUSTION **9**

Calorific value – classification – Coal – proximate and ultimate analysis metallurgical coke – manufacture by Otto-Hoffmann method – Petroleum processing and fractions – cracking – catalytic cracking and methods – knocking – octane number and cetane number – synthetic petrol – Fischer Tropsch and Bergius processes – Gaseous fuels and water gas – producer gas – CNG and LPG – Flue gas analysis – Orsat apparatus – Theoretical air combustion, Gcv and Lcv values of a fuel-problems based on this.

UNIT IV NON CONVENTIONAL ENERGY SOURCES AND STORAGE DEVICES 9

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

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

TOTAL: 45 h

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.

REFERENCE BOOKS:

1. P.C.Jain and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi 2002.
2. S.S.Dara “A text book of Engineering Chemistry” S.Chand and Co.Ltd, New Delhi 2006.
3. Puri and Sharma “ A text book of Physical chemistry “, Vishal Publisher, 2006

Title of the Paper: Fundamentals of Computing Subject Code: 15

Year: I Semester: 1 Credits: 3 Class Hours: 3

UNIT I INTRODUCTION TO COMPUTERS 9

Introduction – Characteristics, Classification and Evolution of Computers – Computer Generations – Basic Computer organization – Number Systems – Computer Software – Types of Software – Software Development Steps.

UNIT II PROBLEM SOLVING AND OFFICE APPLICATION SOFTWARE 9

Planning the Computer Program – Purpose – Algorithm – Flow Charts – Pseudocode – Application Software Packages – Introduction to Office Packages – Internet basics: Internet evolution, Internet applications.

UNIT III INTRODUCTION TO C 9

Overview of C: Constants, Variables, 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 **9**

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 – Strings: library string functions – pointers in strings.

UNIT V STRUCTURES AND FILES **9**

Structures – Unions – Storage classes – Dynamic memory allocation – Files: file Operations, Preprocessor directives – use of typedef – Command line arguments.

TOTAL: 45 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.

REFERENCE BOOKS:

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

Title of the Paper: Basic Civil and Mechanical Engineering Subject code: 16

Year: I Semester : 1 Credits : 4 Class Hours : 4

UNIT I SURVEYING AND CIVIL ENGINEERING MATERIALS

Surveying: Objects – types – classification – principles – measurements of distances – angles – leveling – determination of areas – illustrative examples.

Civil Engineering Materials: Bricks – stones – sand – cement – concrete – steel sections.

UNIT II BUILDING COMPONENTS AND STRUCTURES

Foundations: Types, Bearing capacity – Requirement of good foundations.

Superstructure: Brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering – Mechanics – Internal and external forces – stress – strain – elasticity – Types of Bridges and Dams – Basics of Interior Design and Landscaping.

B – MECHANICAL ENGINEERING

UNIT III POWER PLANT ENGINEERING

Introduction, Classification of Power Plants – Working principle of steam, Gas, Diesel, Hydro-electric and Nuclear Power plants – Merits and Demerits – Pumps and turbines – working principle of Reciprocating pumps (single acting and double acting) – Centrifugal Pump.

UNIT IV I C ENGINES

Internal combustion engines as automobile power plant – Working principle of Petrol and Diesel Engines – Four stroke and two stroke cycles – Comparison of four stroke and two stroke engines – Boiler as a power plant.

UNIT V REFRIGERATION AND AIR CONDITIONING SYSTEM

Terminology of Refrigeration and Air Conditioning. Principle of vapour compression and absorption system – Layout of typical domestic refrigerator – Window and Split type room Air conditioner.

References:

1. Shanmugam G and Palanichamy M S, "Basic Civil and Mechanical Engineering",Tata McGraw Hill Publishing Co., New Delhi, (1996).
2. Ramamrutham. S, "Basic Civil Engineering", Dhanpat Rai Publishing Co. (P) Ltd. (1999).
3. Seetharaman S. "Basic Civil Engineering", Anuradha Agencies, (2005).
4. Venugopal K and Prahu Raja V, "Basic Mechanical Engineering", Anuradha Publishers, Kumbakonam, (2000).
5. Shantha Kumar S R J., "Basic Mechanical Engineering", Hi-tech Publications, Mayiladuthurai, (2000)..

Title of the Paper: Computer Aided Drafting — Subject Code: 17

Year: I **Semester: 1** **Credits: 3** **Class Hours: 4**

AIM

To develop the graphic skills in students and gain knowledge of CAD packages.

OBJECTIVES

To develop the student's graphic skill for communication of concepts, ideas and design of engineering products and expose them to existing CAD Packages related to technical drawings.

List of Exercises using software capable of Drafting

1. Importance of graphics in engineering applications – BIS conventions and specifications – Size and layout of drawing sheets – Lettering and dimensioning. Study of capabilities of CAD Packages for drafting – Coordinate systems. (THEORY)
2. Creation of simple figures like polygon and general multi-line figures.
3. Construction of ellipse, Parabola, hyperbola and polygon.
4. Projection of points and straight lines located in the first quadrant – Determination of true lengths and true inclinations.
5. Projection of polygonal surface and circular lamina inclined to one reference planes.
6. Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.

7. Sectioning of simple solids like prisms, pyramids, cylinder and cone in vertical position by cutting planes inclined to one reference plane and perpendicular to the other.
8. Principles of isometric projection – isometric projections of simple solids like prisms, pyramids, cylinder and cone.
9. Basic electric circuit with active and passive elements.
10. Rectifier circuit with diodes, filters and regulators.
11. Generation of flow chart.

TEXT BOOKS:

1. Dhananjay A.Jolhe, "Engineering Drawing with an introduction to AutoCAD" Tata McGraw Hill Publishing Company Limited 2008.
2. K. Venugopal & V. Prabhu Raja, "Engineering Graphics", New Age International (P) Limited 2008.

REFERENCE BOOKS:

1. N.D. Bhatt, "Engineering Drawing" Charotar Publishing House, 46th Edition, 2003.
2. M.S. Kumar, "Engineering Graphics", D.D. Publications, 2007.
3. M.B. Shah and B.C. Rana, "Engineering Drawing", Pearson Education 2005.
4. S. Gowri and T. Jeyapoovan, "Engineering Graphics", 6th Edition, Vikas Publishing house Pvt Ltd 2011.

Title of the Paper: Engineering Practices Lab — Subject Code: P11

Year: I **Semester: 1** **Credits: 2** **Class Hours: 3**

GROUP A – MECHANICAL AND CIVIL ENGINEERING PRACTICES

MECHANICAL ENGINEERING PRACTICES

GENERAL OBJECTIVES:

1. To study bench fitting drawings for making male and female fittings as per the given dimensions and Tolerances.
2. To study Arc welding drawings for making common weld joints as per the given dimensions.
3. 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

GENERAL OBJECTIVES:

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

GENERAL OBJECTIVES:

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

GENERAL OBJECTIVES:

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).

Title of the Paper: Physics and Chemistry Laboratory — Subject Code: P12

Year: I **Semester: 1 and 2** **Credits: 2** **Class Hours : 3**

Physics Laboratory

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.

Chemistry Laboratory

List of Experiments

1. Estimation of hardness of water by EDTA
2. Estimation of alkalinity of water sample
3. Determination of molecular weight and degree of polymerization using viscometer
4. Conductometric titration of Strong acid and Strong base
5. Conductometric titration of mixture of acid
6. Conductometric precipitation titration using $BaCl_2$ Vs Na_2SO_4
7. Estimation of ferrous ion by Potentiometric titration
8. pH-metry – Determination of strength of HCl by NaOH
9. Estimation of chloride ion by Argentometric method

Title of the Paper: Communication Skills **Subject Code: 21**

Year: I **Semester: 2** **Credits: 3** **Class Hours: 3**

AIM:

To encourage students to actively involve in participative learning of English and to help them acquire Communication Skills.

OBJECTIVES:

1. To help students develop listening skills for academic and professional purposes.
2. To help students 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 help students improve their active and passive vocabulary.
5. To familiarize students with different rhetorical functions of scientific English.
6. To enable students write letters and reports effectively in formal and business situations.

UNIT I **9**

Technical Vocabulary, Punctuation, Numerical Expressions, Word Form - verb, noun and adjectives, Expanding Acronyms and Initialisms, Prepositional Phrases, 'If' clauses, Infinitives.

UNIT II **9**

Degrees of Comparison, Concord, Homonyms and Homophones, Synonyms and Antonyms, Indefinite Adjectives, Future Tense, Direct and Indirect.

UNIT III **9**

Active and Passive Voice, Impersonal Passive, Essay Writing, Comprehension Passage, Editing, Correction of errors, Reading and interpretation, Intensive reading, Critical reading.

UNIT IV **9**

Reports – types, structure, data collection, content, form, Definitions, extended definition, Recommendations, Checklists.

UNIT V **9**

Letters – formal, informal, Cover Letter and CV, Memos, Descriptions, Process description, Summary Writing, Instructions, Non-verbal communication.

TOTAL: 45 h

TEXT BOOKS:

1. 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 BOOK:

1. Sumant. S, 'Technical English', Second Edition, McGraw-Hill Education (India) Pvt. Ltd., 2008.

Title of the Paper: Differential Equations and Complex Analysis Subject Code: 22

Year: I Semester: 2 Credits: 4 Class Hours: 4

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: 60 h

TEXT BOOKS:

1. Grewal. B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, Delhi, 2007.
2. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.

REFERENCE BOOKS:

1. Glyn James, "Advanced Engineering Mathematics", 7th Edition, Pearson Education, 2007.
2. Erwin Kreyszig, "Advanced Engineering Mathematics", 7th Edition, Wiley India, 2007.
3. Jain R.K and Iyengar S.R.K, "Advanced Engineering Mathematics", 3rd Edition, Narosa Publishing House Pvt. Ltd., 2007.

Title of the Paper: Materials Science — Subject Code: 23

Year: I **Semester: 2** **Credits: 3** **Class Hours: 3**

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 of NiTi alloy, 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 – arc method – pulsed laser deposition – chemical vapour deposition.

TOTAL: 45 h

TEXT BOOKS:

1. Rajendran, V, and Marikani A, 'Materials Science' Tata McGraw Hill publications, New Delhi 2004.
2. Vijaya, M. and Rangarajan G, 'Materials Science' Tata McGraw Hill publications, New Delhi 2004.

REFERENCE BOOKS:

1. Jayakumar, S. 'Materials Science', R.K. Publishers, Coimbatore, 2008.
2. Palanisamy P.K, 'Materials Science', Scitech publications, Chennai, 2007.
3. Charles P. Poole and Frank J.Owen, 'Introduction to Nanotechnology', Wiley India 2007.
4. Charles Kittel 'Introduction to Solid State Physics', John Wiley and sons, 7th edition, Singapore 2007.

Title of the Paper: Industrial Chemistry — Subject Code: 24

Year: I **Semester: 2** **Credits: 3** **Class Hours: 3**

UNIT I ELECTROCHEMISTRY 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 – electrochemical series – significance – potentiometer titrations (redox – Fe^{2+} vs dichromate and precipitation – Ag^{+} vs Cl^{-} titrations) and conductometric titrations (acid-base – HCl vs NaOH) titrations.

UNIT II PHOTOCHEMISTRY AND THERMODYANAMICS 9

Photochemical reactions – laws of photochemistry – Grotthus – Draper Law – Stark-Einstein Law – quantum efficiency – photochemical decomposition of HI and HBr – quantum yield determination –Jablonsky diagram– chemiluminescence– fluorescence - Second Law of Thermodyanamics - concept of Free Energy-Entropy-Maxwell relations-Gibbs-Helmholtz equation, Vant-Hoff Isotherm, vant Hoff Isochore and Clausius-Clepeyron equation.

UNIT III CORROSION AND CORROSION CONTROL AND ROLE OF ADSORPTION 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. Adsorption – types – adsorption of gases on solids – role of adsorbents in catalysis, ion – exchange adsorption and pollution abatement.

UNIT IV PHASE RULE AND ALLOYS 9

Statement and explanation of terms involved – one component system – water system – condensed phase rule – construction of phase diagram by thermal analysis – simple eutectic systems (lead-silver system only) – alloys – importance, ferrous alloys – nichrome and stainless steel – heat treatment of steel, non-ferrous alloys – brass and bronze.

UNIT V ANALYTICAL TECHNIQUES 9

Beer–Lambert's law (problem) – UV – visible spectroscopy and IR spectroscopy – principles – instrumentation (block diagram only) – estimation of iron by colorimetry – flame photometry – principle – instrumentation (block diagram only) – estimation of sodium by flame photometry – atomic absorption spectroscopy – principles – instrumentation (block diagram only) – estimation of nickel by atomic absorption spectroscopy.

TOTAL: 45 h

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.

REFERENCE BOOKS:

1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi, 2002.
2. S.S.Dara "A text book of Engineering Chemistry" S.Chand and Co.Ltd, New Delhi 2006.
3. Puri and Sharma " A text book of Physical chemistry", Vishal Publisher, 2006

Title of the Paper: Operating Systems – Building Blocks Subject Code: 25

Year: I Semester: 2 Credits: 3 Class Hours: 3

UNIT I BASICS OF OPERATING SYSTEMS

Processes – Inter-process Communication – Race Conditions - Critical Sections – Mutual Exclusion - Busy Waiting - Sleep And Wakeup - Semaphores - Event Counters - Monitors - Message Passing. Process Scheduling – Round Robin Scheduling - Priority scheduling -multiple queues - Shortest Job First – Guaranteed scheduling - Two- level scheduling.

UNIT II MEMORY MANAGEMENT

Multi programming. Multiprogramming and memory usage - Swapping - multiprogramming with fixed and variable partitions - Memory management with bit maps, linked lists, Buddy system - allocation of swap space. Virtual memory - paging and page tables, associative memory - inverted page tables. Page replacement algorithms

UNIT III FILE SYSTEMS AND I/O FILES

Directories - File system implementation - security and protection mechanisms - Principles of I/O hardware - I/O devices - device controllers – DMA - Principles of I/O software - interrupt handlers - device drivers - Disk scheduling - clocks and terminals. I/O Buffering - RAID- Disk Cache

UNIT IV DEADLOCK

Conditions for deadlock. Deadlock detection and recovery - Deadlock avoidance - resource trajectories - safe and unsafe states - bankers' algorithm - Deadlock prevention - Two phase locking – non-resource deadlocks - starvation

UNIT V CASE STUDY

UNIX / LINUX operating system, Windows Server, Windows 8

TEXT BOOKS:

1. William Stallings, "Operating systems", Pearson Education, Fifth edition
2. D.M.Dhamdhere, "Operating Systems", 2nd Edition, Tata McGraw-Hill

REFERENCE BOOKS:

1. Garry Nutt, "Operating Systems – A Modern perspective ", Third Edition, Pearson Education
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall
3. Bach, M.J., "Design of UNIX Operating System", Prentice Hall
4. Charles Crowley, "Operating systems – A Design Oriented Approach", Tata McGrawhill, 1997
5. Michel Palmer "Guide o Operating Systems", Vikas Thomson Learning Publishing, NewDelhi

Title of the Paper: Information Security - I — Subject Code: 26

Year: I **Semester: 2** **Credits: 3** **Class Hours: 3**

UNIT I INTRODUCTION TO INFORMATION SECURITY

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

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

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

UNIT IV INTERNET SECURITY

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

UNIT V RISK ASSESSMENT AND CYBER LAWS

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

Title of the Paper: Information Security I- Lab Subject Code: P21

Year: I **Semester: 2** **Credits: 2** **Class Hours: 3**

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
9. Securing LAN using firewall
10. DoS attacks and its prevention

Title of the Paper: Computer Practice Laboratory Subject Code: P22

Year: I **Semester: 2** **Credits: 2** **Class Hours: 3**

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

Title of the Paper: Fourier Series and Transforms Subject code: 31

Year : II **Semester :3** **Credits : 4** **Class Hours : 4**

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**

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

UNIT III PARTIAL DIFFERENTIAL EQUATIONS **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

TEXTBOOKS:

1. Grewal B.S, 'Higher Engineering Mathematics', 41st Edition, Khanna Publishers, Delhi, 2011.
2. Ramana.B.V. 'Higher Engineering Mathematics' Tata Mc-GrawHill Publishing Company Limited, New Delhi,2007

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.

Title of the Paper: OSI Layer & Security Subject code: 32

Year : II Semester :3 Credits : 3 Class Hours : 3

UNIT I OPEN SYSTEMS INTERCONNECTION (OSI) MODEL

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

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

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

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

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)
2. TCP/IP Distributed System –Vivek Acharya, Pub: Firewall Media / Laxmi Publications-2006

REFERENCE BOOKS:

1. Security Protocols by Pavel Ocenasek, 2010

Title of the Paper: Information Security - II Subject code: 33

Year : II **Semester :3** **Credits : 3** **Class Hours : 3**

UNIT I GENERAL SECURITY CONCEPTS

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

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

UNIT III NETWORK INFRASTRUCTURE SECURITY AND CONNECTIVITY

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

UNIT IV MONITORING NETWORK AND INTRUSION DETECTION

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

UNIT V MAINTAINING A SECURE NETWORK AND SYSTEM HARDENING

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.

Title of the Paper: Data Structures and Algorithms Subject code: 34

Year : II **Semester :3** **Credits : 4** **Class Hours : 3**

UNIT I

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, 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

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

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

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.
2. Sartaj Sahni, 'Data Structures, Algorithms, and Applications in Java", McGraw-Hill
3. Aaron M.Tanenbaum, Moshe J.Augenstein, "Data Structures using C", Prentice Hall InternationalInc., Englewood Cliffs, NJ, 1986

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.

Title of the Paper: Designing Enterprise Networks Subject code: 35

Year : II **Semester :3** **Credits : 3** **Class Hours : 3**

UNIT I NETWORKING FUNDAMENTALS **12 Hours**

Basics of Network & Networking, Advantages of Networking, Types of Networks, Network Terms- Host, Workstations, Server, Client, Node, Types of Network Architecture- Peer-to-Peer & Client/Server, Workgroup Vs. Domain. Network Topologies, Types of Topologies, Logical and physical topologies, selecting the Right Topology, Types of Transmission Media, Communication Modes, Wiring Standards and Cabling- straight through cable, crossover cable, rollover cable, media connectors (Fibre optic, Coaxial, and TP etc.) Introduction of OSI model, Seven layers of OSI model, Functions of the seven layers, Introduction of TCP/IP Model, TCP, UDP, IP, ICMP, ARP/RARP, Comparison between OSI model & TCP/IP model. Overview of Ethernet Addresses

UNIT II BASICS OF NETWORK DEVICES 12 Hours

Network Devices- NIC- functions of NIC, installing NIC, Hub, Switch, Bridge, Router, Gateways, And Other Networking Devices, Repeater, CSU/DSU, and modem, Data Link Layer: Ethernet, Ethernet standards, Ethernet Components, Point-to-Point Protocol (PPP),PPP standards, Address Resolution Protocol, Message format, transactions, Wireless Networking: Wireless Technology, Benefits of Wireless Technology, Types of Wireless Networks: Ad-hoc mode, Infrastructure mode, Wireless network Components: Wireless Access Points, Wireless NICs, wireless LAN standards: IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, wireless LAN modulation techniques, wireless security Protocols: WEP,WPA, 802.1X, Installing a wireless LAN

UNIT III BASICS OF NETWORK, TRANSPORT AND APPLICATION LAYERS 12 Hours

Network Layer: Internet Protocol (IP), IP standards, versions, functions, IPv4 addressing, IPv4 address Classes, IPv4 address types, Subnet Mask, Default Gateway, Public & Private IP Address, methods of assigning IP address, IPv6 address, types, assignment, Data encapsulation, The IPv4 Datagram Format, The IPv6 Datagram Format, Internet Control Message Protocol (ICMP), ICMPv4, ICMPv6, Internet Group Management Protocol (IGMP),Introduction to Routing and Switching concepts, Transport Layer: Transmission Control Protocol(TCP), User Datagram Protocol (UDP), Overview of Ports & Sockets, Application Layer: DHCP, DNS, HTTP/HTTPS, FTP, TFTP, SFTP, Telnet, Email: SMTP, POP3/IMAP, NTP

UNIT IV WAN TECHNOLOGY 12 Hours

What Is a WAN?, WAN Switching, WAN Switching techniques Circuit Switching, Packet Switching etc., Connecting to the Internet : PSTN, ISDN, DSL, CATV, Satellite-Based Services, Last Mile Fiber, Cellular Technologies, Connecting LANs : Leased Lines, SONET/SDH, Packet Switching, Remote Access: Dial-up Remote Access, Virtual Private Networking, SSL VPN, Remote Terminal Emulation, Network security: Authentication and Authorization, Tunneling and Encryption Protocols, IPSec, SSL and TLS, Firewall, Other Security Appliances, Security Threats

UNIT V NETWORK OPERATING SYSTEMS AND TROUBLESHOOTING NETWORK 12 Hours

Network Operating Systems: Microsoft Operating Systems, Novell NetWare, UNIX and Linux Operating Systems, Macintosh Networking, Trouble Shooting Networks: Command-Line interface Tools, Network and Internet Troubleshooting, Basic Network Troubleshooting : Troubleshooting Model, identify the affected area, probable cause, implement a solution, test the result, recognize the potential effects of the solution, document the solution, Using Network Utilities: ping, traceroute, tracert, ipconfig, arp, nslookup, netstat, nbtstat, Hardware trouble shooting tools, system monitoring tools

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

Title of the Paper: Fundamentals of Operating Systems (Windows 7) Subject code: 36

Year : II **Semester :3** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO OPERATING SYSTEM

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

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

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

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

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

Title of the Paper: Designing Enterprise Networks - Lab **Subject Code: P31**

Year: II **Semester: 3** **Credits: 2** **Class Hours: 3**

The Experiments include:

1. Implementation of TCP/IP protocol.
2. Troubleshooting Scenarios Network
3. Router - Configuration
4. Configuration of IP Address for a Router
5. Setting up of Passwords

Title of the Paper: Network Security – Lab **Subject Code: P32**

Year: II **Semester: 3** **Credits: 2** **Class Hours: 3**

The Experiments include:

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

Title of the Paper: Fundamentals of Operating Systems (Windows 7) – Lab

Subject Code: P33

Year: II **Semester: 3** **Credits: 2** **Class Hours: 3**

The experiments will include:

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. Capturing image of existing installed operating system and deploy it to another system using imagex.
5. Configuring disk partitions, Virtual HD in Disk Management.

Title of the Paper: Probability and Queuing Theory **Subject code: 41**

Year : II **Semester : 4** **Credits : 4** **Class Hours : 4**

UNIT I RANDOM VARIABLES 12

Discrete and continuous random variables – Moments - Moment generating functions and their properties. Binomial, Poisson, Geometric, Uniform, Exponential, Gamma, Weibull and normal distributions – Functions of Random Variable.

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. O.C. Ibe, "Fundamentals of Applied Probability and Random Processes", Elsevier, 1st Indian Reprint, 2007 (For units 1, 2 and 3).
2. D. Gross and C.M. Harris, "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. H.A. Taha, "Operations Research", Pearson Education, Asia, 8th edition, 2007.
3. K.S. Trivedi, "Probability and Statistics with Reliability, Queueing and Computer Science Applications", John Wiley and Sons, 2nd edition, 2002.

Title of the Paper: Introduction to Cloud Technology Subject code: 42

Year : II **Semester :4** **Credits : 3** **Class Hours : 4**

UNIT I INTRODUCTION TO CLOUD COMPUTING

Defining cloud computing, Components of a computing cloud, Differentiating types of clouds: public, private, hybrid Delivering services from the cloud: Categorizing service types, Comparing vendor cloud products: Amazon, Google, Microsoft and others Adopting the Cloud

UNIT II KEY DRIVERS OF CLOUD COMPUTING SOLUTIONS

Instantaneous provisioning of computing resources, Handling varied loads with elasticity and seamless scalability, Tapping into an infinite storage capacity, Cost-effective pay-as-you-use billing models Evaluating barriers to cloud computing: Handling sensitive data, Aspects of cloud security, Assessing governance solutions

UNIT III EXPLOITING SOFTWARE AS A SERVICE

Characterizing SaaS: Minimizing the need for local hardware and software, Streamlining administration with centralized installation and updates, Optimizing cost and performance with the ability to scale on demand Comparing service scenarios: Improving collaboration with business productivity tools

UNIT IV CLOUD TECHNOLOGIES

Simplifying business process creation by integrating existing components Inspecting SaaS technologies: Deploying Web applications Implementing Web services: SOAP, REST, Choosing a development platform.

UNIT V PaaS

Delivering Platform as a Service (PaaS) Exploring the technical foundation for PaaS : Specifying the components of PaaS, Analyzing vendor PaaS provisions , Selecting an appropriate implementation

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

Title of the Paper: Introduction to Linux/Unix Subject code: 43

Year : II **Semester :4** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION

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

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

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

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

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
2. Advance UNIX, a Programmer's Guide, S. Prata, BPB Publications, and New Delhi, 2011
3. Unix Concepts and Applications, Sumitabh Das, 2010

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

Title of the Paper: Cryptography Fundamentals Subject code: 44

Year : II **Semester :4** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO CRYPTOGRAPHY

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

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

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

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

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

Title of the Paper: Basics of Server Operating System (Windows Server 2008)

Subject code: 45

Year : II **Semester :4** **Credits : 4** **Class Hours : 4**

UNIT I DEPLOYING, CONFIGURING NETWORK CONNECTIVITY IN WINDOWS SERVER 2008

Hardware requirement, editions of 2008 servers, Installing windows 2008 server, Planning bit locker Deployment, Automate server deployment, Limitation of IPv4, Planning an IPv4 to IPV6 Compatibility, IPv6 tools, DHCPv6, implementing IPv6 connectivity, DNS configuration and Management

UNIT II ACTIVE DIRECTORY, GROUP POLICY, APPLICATION SERVER AND SERVICES

Introduction to AD, Domain and Forest functionality, Functional level, Server Roles, Trust, Planning and managing group policy, GPMC, group policy files, troubleshooting group policies, Application Availability, Implement application accessibility, application deployment, SCCM, IIS

UNIT III TERMINAL SERVICES, SERVER VIRTUALIZATION, FILE AND PRINT SERVERS

Planning and configuring terminal server, terminal service web access, session broker, monitoring terminal services, terminal service gateway, introducing, managing and installing Hyper – V, File Services Server Role, FSRM, configuring quotas, File screen policy, DFSR structure, Offline data access

UNIT IV MANAGEMENT, MONITORING, DELEGATION AND PATCH MANAGEMENT IN 2008 SERVER

Admin tools of windows 2008 server, remote admin technologies, event logs, reliability and performance, delegation: policies-procedures-administrations, implementing and managing WSUS

UNIT V REMOTE & NETWORK ACCESS PROTECTION, CERTIFICATION SERVICES, HIGH AVAILABILITY, BACKUP-RECOVERY

VPN protocols and Authentication, Network policy server, Remote Access Accounting, NAP with DHCP, certificate authority, configuring and monitoring CS, CA health, LUN, VDS, Storage manager for SANs, multipath I/O, DNS round robin and Load Balancing, cluster tools, shadow copies of shared folders, wbadmin tools, remote backup of system, System center data protection manager

TEXT BOOK:

1. Windows Server Administration By Ian McLean and Orin Thomas-Microsoft Press Publisher, 2010

REFERENCE BOOKS:

1. Windows Server 2008: The Definitive Guide, By Jonathan Hassell, O'Reilly Media, March 2008

Title of the Paper: Ethical Hacking Basics Subject code: 46

Year : II **Semester :4** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO ETHICAL HACKING

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

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 Techniques

UNIT III WEB AND NETWORK HACKING

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

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

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. Certified Ethical Hacker All-in-One – Matt Walker 2011

Title of the Paper: Introduction to Linux/Unix – Lab Subject Code: P41

Year: II Semester: 4 Credits: 2 Class Hours: 3

The experiments will include:

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. Report the functionality and modes of VI Editor.
4. Make and alter files using all 3 methods cat touch and vi editor apply all file operations and document it.
5. Install on vm-ware Ubuntu and fedora and document the process (GUI & CLI)

Title of the Paper: Basics of Server Operating System (Windows Server 2008) – Lab Subject Code: P42

Year: II Semester: 4 Credits: 2 Class Hours: 3

1. Installation of Server 2008 with GUI
2. Installation of Server 2008 with Core
3. DHCP Server IPv4 and IPv6
4. DNS Configuration-Primary, Secondary, Forwarder and Zone Transfer
5. DC Installation
6. Raise Functional level Forest and Domain
7. Trusting

8. Roles Transfer
9. Group Policies
10. Group Policies
11. GPO Backup and Restore
12. SCCM and IIS
13. Terminal Server- Configuration
14. TS-managing
15. TS-Session Broker
16. TS-Licensing
17. TS-Monitoring
18. TS-Web Access
19. Hyper-V Conf and Mgmt
20. File Server Resource Manager, Extension Block, Quata
21. DFS Server and DFS Replication
22. Offline Folder
23. Admin Tool MGMT
24. Remote Technologies
25. Event Logs and Performance
26. Delegation
27. WSUS Server
28. VPN Configuration
29. VPN With Radius
30. Network Access Protection with DHCP, VPN, IPSEC, Health Policy
31. Certificate Authority
32. Manage Storage

Title of the Paper: Ethical Hacking Basics - Lab **Subject Code: P43**

Year: II **Semester: 4** **Credits: 2** **Class Hours: 3**

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

Title of the Paper: Fundamentals of Virtualization **Subject code: 51**

Year : III **Semester :5** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION

What is Virtualization?, Why You Need Virtualization ?,Understanding Virtualization Technologies :Server Virtualization, Hardware emulation ,Storage Virtualization ,Network-attached storage ,Storage area networks ,I/O Virtualization ,Network Virtualization, Client Virtualization ,Application virtualization ,Desktop virtualization Understanding Virtualization Use Cases: Studying Server Consolidation, Development and Test Environments ,Quality of Service ,Simple failover High availability, Clustering ,Data mirroring ,Data replication, IT Operational Flexibility ,Load balancing ,Server pooling ,Helping with Disaster Recovery ,Rethinking Virtualization in Business Terms :Rethinking Infrastructure Virtualization ,Rethinking Applications and IT Operations Management ,Rethinking Client Virtualization, Benefits of Virtualization

UNIT II INTRODUCTION TO VMWARE VIRTUALIZATION

Introduce virtualization, virtual machines, and vSphere components, Explain the concepts of server, network, and storage virtualization, Describe where vSphere fits into the cloud architecture, Install and use vSphere user interfaces, Create Virtual Machine VMware vCenter Server: Introduction to vCenter Server architecture and appliance , Virtual Machine Management :Deploy virtual machines using templates and cloning, Modify and manage virtual machines, Create and manage virtual machine snapshots, Perform VMware vSphere® vMotion® and Storage vMotion migrations, Create a vSpherevApp

UNIT III ACCESS AND AUTHENTICATION CONTROL

Control user access through roles and permissions, Configure and manage the ESXi firewall, Configure ESXi lockdown mode, Integrate ESXi with Active Directory, Introduce VMware vShield Zones.

UNIT IV INSTALLING VMWARE COMPONENTS

Introduce ESXi installation, Describe boot from SAN requirements, Introduce vCenter Server deployment options, Describe vCenter Server hardware, software, and database requirements, Install vCenter Server (Windows based)

UNIT V IMPLEMENT AND CONFIGURE WINDOW SERVER 2008 HYPER V

Configure Hyper V Virtual Networking, Configure and use Hyper V remote administration, Create and configure Virtual Hard Drives, Use Virtual Machine snapshots, Describe considerations for configuring Hyper-V servers for high availability, Monitor the performance of a Hyper-V server, use existing virtual machines with Hyper-V server, understand issues with migrating existing virtual machines to Hyper-V, Understand system center Virtual Machine Manager (VMM) features and use VMM to manage virtual machines, Manage a VMM Library, Manage VMM checkpoint.

TEXT BOOKS:

1. Virtualization: a beginner's guide - Danielle Ruest, Nelson Ruest , McGraw-Hill Prof Med, 2010

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)

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)

Title of the Paper: Fundamentals of Datacenter Subject code: 52

Year : III **Semester :5** **Credits : 4** **Class Hours : 4**

UNIT I STORAGE SYSTEM

Information storage , Evolution of Storage technology ad Architecture , datacenter Infrastructure, Information life cycle, Components of Storage system environment , Disk Drive components, Logical components of the Host, implementation of RAID, RAID levels , Components of Intelligent Storage system

UNIT II STORAGE NETWORKING TECHNOLOGIES AND VIRTUALIZATION

DAS , SCSI , SCSI command model , Fibre channel overview , SAN , Components of SAN , FC connectivity , FC topologies , NAS , benefits of NAS , NAS implementations , NAS file sharing protocols, NAS I/O operations , iSCSI , FCIP , CAS , Forms of virtualization , Storage virtualization

UNIT III BUSINESS CONTINUITY

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 .

UNIT IV INTRODUCTION TO RIM & GLOBAL OUTSOURCING

What is RIM?, Business Drivers, Components, Benefits, Why Global Outsourcing?, What drives outsourcing?, Types of Outsourcing.

UNIT V RIM TOOLS

Network Management Tools, Server Management Tools, Database Management Tools, Security Management Tools, Web Management Tools, Service Desk Tools, Operations Center: Operations Center Components, Functioning of an Operations Center, The Command Center: Functions, Design.

TEXT BOOKS:

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

REFERENCE BOOK:

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

Title of the Paper: Web Technology Fundamentals Subject code: 53

Year : III **Semester :5** **Credits : 3** **Class Hours : 3**

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

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

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

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

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

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

Title of the Paper: Network Security Basics **Subject code: 54**

Year : III **Semester :5** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO NETWORK SECURITY

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

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

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

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

UNIT V NETWORK MANAGEMENT

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

TEXT BOOKS:

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

Title of the Paper: Virtualization and Cloud Security Subject code: 55

Year : III **Semester :5** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO VIRTUALIZATION & CLOUD

Virtualization and Cloud computing concepts. Private cloud vs Public cloud. IAAS, PAAS & SAAS concepts. Virtualization security concerns, Hypervisor Security, Host/Platform Security, Security communications, Security between Guest instances, Security between Hosts and Guests

UNIT II CLOUD SECURITY

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

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

Introduction to Cloud Controls Matrix & Top Cloud Threats, Cloud Controls Matrix, Trusted Cloud Initiative architecture and reference model.

UNIT V TOP CLOUD THREATS

Requirements of Security as a Service (Secaas) model and Top Security threats to the cloud model, Case Studies.

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

Title of the Paper: Advanced Ethical Hacking Subject code: 56

Year : III **Semester :5** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO ETHICAL HACKING

Ethical Hacking concepts and essential terminology. Different phases involved in an exploit by a Hacker. Overview of Attacks and Identification of Exploit Categories. Legal implications of Hacking. Hacking, Law and Punishment

UNIT II ETHICAL HACKING PHASES

Essential terms like Hacker, Hacking, Cracker, Ethical Hacker, Threat, Vulnerability, Target of Evaluation, Attacks and Exploits. Elements of Security and how Hacking impacts these elements. Steps used by a Malicious Hacker to attack. How reconnaissance is conducted, including Active & Passive reconnaissance

UNIT III SCANNING & ENUMERATION

Scanning as a part of the pre-attack phase. Use of dialers, port scanners, network mapping, sweeping, vulnerability scanners etc. Usage of Open source tools for scanning. Gaining Access phase of the attack including how the attack occurs – over the LAN, Internet, locally or through social engineering. Influencing factors in the attack phase including architecture and configuration of the target system, skill level of the perpetrator and initial level of access obtained

UNIT IV PENETRATION TECHNIQUES

Maintaining access phase where the hacker tries to retain ownership of the system. Techniques & tools used by hackers to maintain access. Covering tracks Phase of the hacking activity including removal of evidence of hacking to avoid forensics & legal action.

UNIT V PENETRATION TOOLS

Techniques, tools and reasons for covering tracks phase including Steganography, tunneling, altering log files, Case Studies.

TEXT BOOK:

1. Hacking Exposed 7th Edition, by Stuart McClure, Joel Scambray, George Kurtz – McGraw Hill, 2009

REFERENCE BOOKS:

1. Basics of Hacking and Penetration – Patrick Engerbrestson, Pub: Syngress, 2011
2. Certified Ethical Hacker All-in-One – Matt Walker, Pub: McGraw Hill 2012

Title of the Paper: Fundamentals of Virtualization - Lab — Subject Code: P51

Year: III **Semester: 5** **Credits: 2** **Class Hours: 3**

The experiments include:

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.

Title of the Paper: Web Technology Fundamentals - Lab — Subject Code: P52

Year: III **Semester: 5** **Credits: 2** **Class Hours: 3**

The experiments include:

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.

Title of the Paper: Advance Ethical Hacking - Lab **Subject Code: P53**
Year: III **Semester: 5** **Credits: 2** **Class Hours: 3**

List of Experiments:

1. Internal Network scanning using Lan Scanner tool
2. External Network scanning using Superscan tool
3. Data Enumeration by Nmap
4. Port and Service Enumeration
5. Privilege escalation attack
6. Internal vulnerability assessment
7. External vulnerability assessment
8. Website vulnerability assessment
9. SQL injection attack
10. Cross Site Scripting attack

Title of the Paper: Introduction to Windows Azure **Subject code: 61**

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I WINDOWS AZURE STORAGE

Cloud Computing, Cloud motivation, Types of clouds, Cloud technology examples, Cloud evolution, Introduction to Azure Platform, Windows azure, The Service Model: Web roles, Worker role. , The virtual machine. Windows azure storage: Tables, blobs, queues and drives, Azure Appfabric: Connectivity and Access control, SQL Azure

UNIT II DIAGNOSTICS IN WINDOWS AZURE

Programming Windows azure, Visual studio templates, Roles communication, Coding blobs, Coding tables, Coding queues, Sending messages between roles, The configuration model, Azure diagnostics, Diagnostics goals, Integration with System. Diagnostics, Diagnostics persistence, Diagnostics API, Management API

UNIT III WINDOWS AZURE PLATFORM

Windows Azure platform AppFabric, Connectivity challenges, Relay bindings, Message buffers, Windows Azure platform AppFabricportal, Introduction to Claim based identity, Windows Azure platform AppFabric Access control, Creating Access rules in the portal

UNIT IV AZURE PORTAL IN SQL

SQL Azure, SQL Azure – DB in the cloud, SQL Azure Portal, Manage Database using SQL Management studio 2010 R2,Migrating a database to the cloud, Considerations for data hosting in the cloud, Introduction to Sync framework, Synchronizing with the cloud

UNIT V WCF IN WINDOWS AZURE

Building WCF Service with Windows Azure, WCF model and windows azure, WS Security in the cloud, Best practices, migrating applications to the Azure Platform, Web Form Security and ASP.NET login controls within Azure, Session management, SSL implementation, Design considerations

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

Title of the Paper: Linux Administration Subject code: 62

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION OF LINUX

Linux Ideas and History, Open source information, Linux Origin, Linux Usage basics, Linux Principles, virtual console and graphical environment, X windows, Logging into Linux system, Linux Distributions, Redhat Distributions, Linux installation, Getting help, man, cal, date, browsing file system, pwd, ls, cd, cp, md, absolute and relative path names

UNIT II BASICS OF LINUX

Creating users and groups, managing permission by numeric and symbolic method, changing ownership, default permissions, umask, configuring bash shell, history tricks, gnome terminal, standard i/o pipes, error redirection, tee, tools for extracting-analyzing and manipulating text data, vi & vim

UNIT III SYSTEM PERFORMANCE-SECURITY-SERVICE ACCESS CONTROL-NETWORK RESOURCE ACCESS CONTROL IN REDHAT LINUX

Goals , Security Domains , System Faults , System Faults Analysis Methods , Benefit of maintaining system state , Networking-data storage and processing resource concerns , Log file analysis , Understanding service management , Service configuration resources , Implement Access Control , Selinux Overview , SELinux management , IP and IP routing , Compare IPv4 and IPv6 , Netfilter architecture , iptables , NAT

UNIT IV ORGANIZING NETWORK SYSTEM, NFS, SAMBA, WEB SERVICES IN REDHAT LINUX

Host name resolutions , verification of DNS server operation , BIND DNS configuration , DHCP Overview , DHCP configuration , Describe FTP service , Network File Sharing , Samba Service , client tool with each service , features of Apache HTTP server , configure important Apache parameters , per-directory configuration , CGI use with Apache , Identify key modules , Introduction to proxy web servers

UNIT V MAIL SERVICES, SECURING DATA, ACCOUNT MANAGEMENT WITH REDHAT LINUX

Understanding email Operations , Basic configuration of mail server , configuring proc mail – dovecot , Debug email services , Fundamental of encryption protocols encryptions with redhatlinux , configure encryption services for common networking protocols , basics of authentication , Understanding the Roles of NSS and PAM

TEXT BOOKS:

1. Linux Bible By: Christopher Negus- Wiley Publishing, Inc, 2010
2. Redhat Linux Networking and System Admin By: Terry Collings and Kurt Wall-M&T Books, 2009

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)

Title of the Paper: Cyber Forensics Basics Subject code: 63

Year : III **Semester :6** **Credits : 4** **Class Hours : 4**

UNIT I COMPUTER FORENSICS

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

Storage Devices- Magnetic Medium, Non-magnetic medium and Optical Medium. Working of Storage devices-Platter, Head assembly, spindle motor.

UNIT III DATA RECOVERY METHODS

Data Recovery types: Data Acquisition, Data deletion and data recovery method and techniques.

UNIT IV FORENSICS TECHNIQUES

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 V CYBER LAW

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

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

Title of the Paper: IT Governance, Risk and Information Security Audit Subject code: 64

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I IT GOVERNANCE

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 INFORMATION SYSTEMS STRATEGY

Role of Strategic Planning for IT. Role of Steering committee. Policies and Procedures

UNIT III RISK MANAGEMENT PROGRAM

Develop a Risk Management Program. Risk Management Process

Risk Analysis methods. Risk-IT Framework of ISACA

UNIT IV INFORMATION SECURITY MANAGEMENT

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

UNIT V COBIT FRAMEWORK

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

TEXT BOOK:

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

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

REFERENCE BOOKS:

1. Information Security Risk Analysis – Thomas R.Peltier

Title of the Paper: Mail Servers **Subject code: 65**

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I IBM LOTUS NOTES TRAIL

Domino and DB2 Integration :Configuring Domino to run a DB2 datastore Enabling a DB2 default user name , Installing the DB2 access server, Understanding DB2 integration enhancements, Understanding Domino and DB2 interaction Install and Configure : Configuring client provisioning, Configuring component update for composite applications, Configuring Directory Services, Configuring Directory Services\LDAP services, Configuring Domino services, Configuring Domino Web Access, Configuring Ports, Configuring Server Fast Restart, Configuring User ID Recovery, Creating Internet Site Documents, Creating Policies, Identify the architecture and key components of the Lotus Notes and Lotus Domino environments Implement Same time for Domino we access,(DWA),Registration\Certifiers,Registration\Domains,Registration\Groups,Registration\Organizational,Units,Registration\Organizations,Registration\Servers,Registration\Users,Understanding installation Package Options, Understanding Server Installation Order (platform independent),Understanding the Certification Log.

UNIT II MAIL

Creating Domino (Notes) Named Networks, Creating Mail Topologies, Defining Mail Routing Protocols, Defining supported message formats, Implementing Mail Services\Domino Web Access (DWA),Implementing Mail Services\IMAP, Implementing Mail Services\POP3,Issuing server commands, Planning Mail Topologies Manage and Maintain :Define directory terminology, Examine Lotus Domino server functionality, Manage files and disk space, Monitor server status, Performing Basic Administrative Tasks, Setting administrative preferences, Start Lotus Domino Administrator, Understand Support for new LDAP Attributes, Understanding the Administration Process, Understanding the Domino Administrator UI, Utilizing the Domino Administrator client, View mail routing status, Viewing Person documents and groups, Viewing replication events and topology, Viewing server configuration documents

UNIT III MANAGING SERVERS

Configuring new Domino Domain Monitoring options, Configuring Send to IBM feature, Configuring Web Administration Bookmarks, Implementing new Domino Domain Monitoring probes, Understanding Domino Directory enhancements, Understanding new Domino server console commands, Understanding streaming replication features, Upgrading Domino Servers to version 8,Utilizing new Administration Process (Adminp) features ,

UNIT IV DOMINO ATTRIBUTES

Platform Support : Defining Domino attributes, Defining Domino attributes\Certifier Documents, Defining Domino attributes/Configuration Documents, Defining Domino attributes\Connection Documents, Defining Domino attributes/Group Documents, Defining Domino attributes\Messaging, Defining Domino attributes/Person Documents, Defining Domino attributes\Program Documents, Defining Domino attributes/Replication, Defining Domino attributes\Server Documents, Defining Domino attributes\Server Tasks, Identify Lotus Domino databases

UNIT V MS EXCHANGE

Exchange Server 2007 : Installing and Configuring Microsoft Exchange Servers ,Prepare the infrastructure for Exchange installation, Prepare the servers for Exchange installation, Configure Exchange server roles, Configuring Recipients and Public Folders ,Configure mail-enabled groups, Configure resource mailboxes, Move mailboxes, Implement bulk management of mail-enabled objects, Configuring the Exchange Infrastructure ,Configure connectors, Configure the antivirus and anti-spam system, Configure transport rules and message compliance, Configure policies, Public folders, Client connectivity, Monitoring and Reporting mail queues, Monitor system performance, Client connectivity, Perform message tracking, Create server reports, Usage reports, Configuring Disaster Recovery , Configure backups, Recover messaging data, Server roles, Configure high availability.

TEXT BOOKS:

1. Survival Guide for Lotus Notes and Domino Administrators By Mark Elliott, IBM Press; 1 edition (March 11, 2009)
2. Microsoft Exchange server 2007: a beginner's guide By Nick Cavalancia, McGraw-Hill Osborne Media; 2 edition (August 7, 2007)

REFERENCE BOOKS:

1. Microsoft Exchange Server 2007: The Complete Reference By Luckett, McGraw-Hill Osborne Media; 2 edition (April 7, 2008)
2. Microsoft Exchange Server 2007 Implementation And Administration By Jim Mcbee, Benjamin Craig, Sybex; 11 edition (February 26, 2008)

Title of the Paper: Elective: Introduction to VOIP Subject code: 66

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I VOIP FUNDAMENTALS

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 the differences between the different types of ephones and ephone-dns, Configure Cisco Unified Communications Manager Express endpoints

UNIT II GATEWAY

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

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

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

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
2. Handbook Of Wireless Networks & Mobile Computing, Stojmenovic, John Wiley and sons Publications, 2010

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

Title of the Paper: Elective: OWASP Framework Subject code: 66

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO OWASP

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

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

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

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

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

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

Title of the Paper: Elective: Hacktivism, Cyber Warfare and Cyber Terrorism

Subject code: 66

Year : III **Semester :6** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO HACKTIVISM, CYBERWARFARE AND CYBERTERRORISM

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

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

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

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

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
2. Information Warfare and Security (Addison Wesley, 1998) Dorothy E Denning
3. Cyberterrorism – The Jihadi Cyber terror Threat – By Dorothy E Denning – Naval Postgraduate school, 2009
4. Information Warfare – How to survive Cyber attacks – Michael Erbschloe, Osborne/McGraw Hill, 2008

Title of the Paper: Introduction to Windows Azure - Lab — Subject Code: P61

Year: III **Semester: 6** **Credits: 2** **Class Hours: 3**

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

Title of the Paper: Linux Administration - Lab **Subject Code: P62**
Year: III **Semester: 6** **Credits: 2** **Class Hours: 3**

The Experiments List includes:
1. Configure the following tasks & verify it. (Hint - use grep/cut/tr/sed)

- List the lines containing "/sbin/nologin" from the /etc/passwd file.
- List only lines of output from ps, which lists running processes that contain the string "init".

- Display the list of GIDs from /etc/passwd file.
- Alter all the letters that starts from range "a-f" to "A-F" in /etc/passwd file.

2. Create an alias named eth0:0 using below credentials in RHEL 5 and verify it.

(a) IP ADRESS = 172.16.0.1 (b) 255.255.0.0
(c) Default Gateway = 172.16.0.254 (d) DNS 1 = 4.2.2.1

3. Configure password policy for user john with below arguments in RHEL 5. After configuration verify the policy applied.
- Minimum password age = 4 days
- Maximum password age = 15 days
- Inactive days = 2 days
- Account Expiration date = 6 months from today

4. Configure the following tasks:
- Add user accounts to your system: Joshua, alex, dax, bryan, zak, ed and manager. Assign each user this password: 123@iMs.
- Add the groups to your system: sales with GID: 1000, HR with GID: 1100 and web with GID: 1200.

5. Configure the following activities
    a) Add Joshua and alex to the sales group, dax and bryan to the HR group, zak and ed to the web group and add manager to all of these groups.
    b) Login with each user & verify using id command that they are in the appropriate groups.

Title of the Paper: Cyber Forensics Basics - Lab **Subject Code: P63**
Year: III **Semester: 6** **Credits: 2** **Class Hours: 3**

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

Title of the Paper: Private Cloud Architecture **Subject code: 71**

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I CLOUD COMPUTING AS A SERVICE

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

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

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

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

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
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)

REFERENCE BOOK:

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

Title of the Paper: Cloud Web Services — Subject code: 72

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO CLOUD COMPUTING AND AMAZON WEB SERVICES

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

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

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

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)

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 BOOK:

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

Title of the Paper: Advanced Cyber Forensics Subject code: 73

Year : IV **Semester :7** **Credits : 4** **Class Hours : 4**

UNIT I COMPUTER FORENSICS

Introduction to Computer Forensics, Importance of Computer Forensics, Categories of Computer forensics, Methodology of Computer Forensics, Public and Private Forensics

UNIT II WINDOWS FORENSIC

Forensic Analysis of the Registry – Use of registry viewers, use of Regedit and WinHex, Analysis of Complete and partial MRU stream, Typed URLs, User Assist, Examination of Control Set, Mounted Device, Event Log, Extracting USB related artifacts and examination of protected storages

UNIT III NETWORK FORENSICS

Forensic Analysis of Web Server and web Sites- 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.

UNIT IV WEB FORENSICS

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

UNIT V LINUX FORENSICS

Overview of Linux and Unix Platforms – Linux Kernels, distributions, graphical environment and available options, Installing and Configuring Linux and Linux applications, File System layout, system management and security concepts, Accessing devices, partitions and shell and common command-line utilities.

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/Osborne, 2011

Title of the Paper: Android Security Subject code: 74

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I FUNDAMENTALS OF ANDROID

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

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

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

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

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
2. Android Apps Security by Sheran Gunasekera
3. Application Security for Android Platform by Jeff Six

Title of the Paper: Elective: ISO27001, PCIDSS and HIPPA Subject code: 75

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I : **ISO 27001**

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

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

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

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

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

Title of the Paper: Elective: Linux Security and Forensics Subject code: 75

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO LINUX SECURITY

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

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

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

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

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

Title of the Paper: Elective: Advanced Web Technology Subject code: 76

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

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

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

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

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

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

Text Books:

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

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

Title of the Paper: Elective: Fundamentals of IT Infrastructure Library Subject code: 76

Year : IV **Semester :7** **Credits : 3** **Class Hours : 3**

UNIT I ITIL OVERVIEW AND SERVICE STRATEGY

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

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

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

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

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
2. HP operation Manual from HP, 2010
3. A Guide to Service Desk Concepts Donna Knapp From Cengage Learning, 2010
4. The Shortcut Guide to Virtualization and Service Automation, Greg Shield Real-time Publishers, 2008

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

Title of the Paper: Private Cloud Architecture - Lab **Subject Code: P71**
Year: IV **Semester: 7** **Credits: 2** **Class Hours: 3**

1. Checking the Infrastructure and compliance of Private Cloud
2. Configuring network resources and security
3. Deploying a Service and an Agent
4. Monitoring a Service and an Agent
5. Monitoring of Application Performance
6. Performance Thresholds and Security
7. Incident Notifications, Incident Publishing and Incident Raising
8. Approving a Change Request and Assigning a Release Record
9. Problem Record creation and configuring
10. Monitoring, Protection and Recovery of Data
11. Service Level Tracking and Management
12. Deploying a Hypervisor
13. Configuring Hosts and Host Groups
14. User Roles, Library and Run As Accounts
15. Starting the Private Cloud and Virtual Machine
16. Configuring User Role , Profiles , Virtual Machine Templates, Service Template
17. Creating Custom Monitoring, Service Level Management and Distributed Application
18. Configuring Service Manager – Connectors and Basic Settings
19. Configuring User Roles , Service Level Management, Service Offerings, Incident Request and Settings

Title of the Paper: Cloud Web Services - Lab **Subject Code: P72**
Year: IV **Semester: 7** **Credits: 2** **Class Hours: 3**

1. Create a new instance
2. Creating a key pair to securely connect with the instance
3. Configuring firewall
4. Monitor the instance
5. Creating elastic IP
6. Creating a billing alarm
7. Cloud watch

Title of the Paper: Advanced Cyber Forensic - Lab **Subject Code: P73**
Year: IV **Semester: 7** **Credits: 2** **Class Hours: 3**

List of Experiments

1. Evidence gathering using DOS and Sysinternals Commands

2. Image creation from the seized storage medium
3. Recovering of Deleted Data from the storage medium
4. Windows Registry Analysis
5. Windows Log data analysis
6. Evidence collection using Helix
7. Application Password cracking
8. Hiding and Un-hiding information using Steganography
9. Email Investigation
10. Evidence collection from Mobile devices

Title of the Paper: Elective: Business Communication Subject code: 81

Year : IV **Semester : 8** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO COMMUNICATIVE ENGLISH

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

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

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

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

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

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

Title of the Paper: Elective: E-Commerce Subject code: 81

Year : IV **Semester : 8** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO E-COMMERCE

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

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

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

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

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 Commerce", Pearson Education
2. Gary P Schneider "Electronic commerce", Thomson learning & James T Peny Cambridge USA, 2001.
3. Manlyn Greenstein and Miklos "Electronic commerce" McGraw-Hill, 2002.
4. Efraim Turvan J.Lee, David kug and chung, "Electronic commerce" Pearson Education Asia 2001.
5. Brenda Kienew E commerce Business Prentice Hall, 2001.

REFERENCE BOOKS:

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

Title of the Paper: Elective: Management Theory and Practice Subject code: 81

Year : IV Semester : 8 Credits : 3 Class Hours : 3

UNIT I INTRODUCTION

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

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

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

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

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
2. Fred Luthan S. *Introduction to Management.* McGraw Hill, New Delhi, 2008
3. Peter.F.Drucker. *The Practice of Management.* Allied Publishers, 2008

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

Title of the Paper: Elective: Industrial Organization and Management

Subject code: 81

Year : IV **Semester : 8** **Credits : 3** **Class Hours : 3**

UNIT I INTRODUCTION TO ORGANIZATION

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

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

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

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

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
2. Koontz and O'Donnell, Essentials of Management, Mc Graw Hill

REFERENCE BOOKS

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

Title of the Paper: Elective: Security Threats & Trends Subject code: 82

Year : IV **Semester :8** **Credits : 3** **Class Hours : 3**

UNIT I VIRUSES & WORMS

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

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

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

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 EMERGING THREATS

Case Studies about emerging Viruses, Worms, Malware, Botnets, Trojans, Rootkits.

TEXT BOOKS:

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

REFERENCE BOOKS:

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