

COURSE STRUCTURE

For I - IV Years

AND

DETAILED SYLLABI

of II Year

CSE (Cyber Security) Board Courses

B.Tech. Computer Science and Engineering

(CYBER SECURITY)

A22 Regulation

(Applicable for the Batches admitted from 2022-23)



DEPARTMENT OF CSE - CYBER SECURITY

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY

(An Autonomous Institution approved by UGC and affiliated to JNTUH)

Yamnampet, Ghatkesar, Hyderabad - 501 301

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Department of Computer Science and Engineering - Cyber Security
B.Tech. CSE (Cyber Security) - A22 Regulation

B.Tech. CSE (Cyber Security) - I Year I Semester

SNo.	Course Category	Dept Course	Course Code	Course	L	T	P/D	C	Max. Marks	
									CIE	SEE
1.	BS	S&H	9HC04	Engineering Chemistry	2	1	0	3	40	60
2.	ES	IT	9FC01	Problem Solving using C	3	0	0	3	40	60
3.	BS	S&H	9HC11	Matrix Algebra and Calculus	2	1	0	3	40	60
4.	HS	S&H	9HC01	Essential English Language Skills	2	0	0	2	40	60
5.	HS	S&H	9HC61	Oral Communication Lab – I	0	0	2	1	40	60
6.	BS	S&H	9HC64	Engineering Chemistry Lab	0	0	3	1.5	40	60
7.	ES	IT	9FC61	Problem Solving using C Lab	0	0	3	1.5	40	60
8.	ES	S&H	9BC61	Workshop/Manufacturing Processes Lab	0	1	3	2.5	40	60
9.	HS	S&H	9HC18	Induction Program	-	-	-	-	Satisfactory/Unsatisfactory	
Total :					9	3	11	17.5	320	480

B.Tech. CSE (Cyber Security) - I Year II Semester

SNo.	Course Category	Dept Course	Course Code	Course	L	T	P/D	C	Max. Marks	
									CIE	SEE
1	BS	S&H	9HC07	Engineering Physics	2	1	0	3	40	60
2	ES	CSE	9EC01	Data Structures	3	0	0	3	40	60
3	BS	S&H	9HC12	Advanced Calculus	2	1	0	3	40	60
4	ES	ME	9BC01	Engineering Graphics	1	0	4	3	40	60
5	ES	EEE and ECE	9AC48	Basic Electrical and Electronics Engineering	3	0	0	3	40	60
6	HS	S&H	9HC62	Oral Communication Lab-II	0	0	3	1.5	40	60
7	BS	S&H	9HC66	Engineering Physics Lab	0	0	3	1.5	40	60
8	ES	CSE	9EC61	Data Structures using C Lab	0	0	3	1.5	40	60
Total :					11	2	13	19.5	320	480

B.Tech. CSE (Cyber Security) - II Year I Semester

SNo	Course Category	Dept Course	Course Code	Course	L	T	P/D	C	Max. Marks	
									CIE	SEE
1.	BS	CSE-CS	9J301	Statistical Methods and Number Theory	3	0	0	3	40	60
2.	PC	CSE	9EC02	Object Oriented Programming through Java	2	1	0	3	40	60
3.	BS	IT	9F303	Discrete Mathematics	2	1	0	3	40	60
4.	ES	ECE	9CC56	Computer Organization & Architecture	2	0	0	2	40	60
5.	HS	S&H	9HC03	Universal Human Values	3	0	0	3	40	60
6.	PC	CSE-CS	9JC01	Fundamentals of Computer Networks	2	0	0	2	40	60
7.	BS	S&H	9HC16	Quantitative Aptitude and Logical Reasoning	3	0	0	3	40	60
8.	PC	CSE	9EC62	Object Oriented Programming through Java Lab	0	0	4	2	40	60
9.	ES	EEE	9AC96	Basic Electrical and Electronics Lab	0	0	3	1.5	40	60
10.	ES	ECE and CS	9J361	Computer Organization and Computer Networks Lab	0	0	2	1	40	60
Total					17	2	9	23.5	400	600

B.Tech. CSE (Cyber Security) - II Year II Semester

SNo	Course Category	Dept Course	Course Code	Course	L	T	P/D	C	Max. Marks	
									CIE	SEE
1.	PC	IT	9FC02	Python Programming	2	1	0	3	40	60
2.	PC	CSE-CS	9JC02	Information Security	2	0	0	2	40	60
3.	PC	IT	9FC04	Database Management Systems	3	0	0	3	40	60
4.	PC	CSE	9EC03	Software Engineering	2	0	0	2	40	60
5.	HS	MBA	9ZC01	Business Economics and Financial Analysis	3	0	0	3	40	60
6.	HS	H&S	9HC05	Environmental Science	3	0	0	-	Pass/Fail	
7.	PC	IT	9FC63	Database Management Systems Lab	0	0	3	1.5	40	60
8.	PC	CSE-CS	9J462	Python and Information Security Lab	0	0	3	1.5	40	60
9.	PC	CSE	9EC63	Software Engineering lab	0	0	3	1.5	40	60
10.	HS	H&S	9HC63	Soft Skills Lab	0	1	2	2	40	60
11.	PS	CSE-CS	9J485	Technical Seminar	0	1	0	1	100	--
Total :					15	3	11	20.5	460	540

Note: Summer Industry Internship – I is to be carried out during the summer vacation between 4th and 5th semesters

B.Tech. CSE (Cyber Security) - III Year I Semester

SNo	Course Category	Dept Course	Course	L	T	P/D	C	Max. Marks	
								CIE	SEE
1.	PE		Professional Elective - I	3	0	0	3	40	60
2.	ES	CS	Cyber Security and Cyber laws	2	0	0	2	40	60
3.	PC	CSE-DS	Data Mining	2	0	0	2	40	60
4.	PC	IT	Design and Analysis of Algorithms	2	1	0	3	40	60
5.	PC	CSE	Operating Systems	2	1	0	3	40	60
6.	PC	IT	Web Technologies	2	1	0	3	40	60
7.	PC	CSE-CS	Data Mining and Operating Systems Lab	0	0	3	1.5	40	60
8.	PC	CSE-CS	Cyber Security and Design and Analysis of Algorithms Lab	0	0	3	1.5	40	60
9.	PC	IT	Web Technologies Lab	0	0	2	1	40	60
10.	PS	CS	Summer Industry Internship - I	-	-	-	1	40	60
			Total :	13	3	8	21	400	600

B.Tech. CSE (Cyber Security) - III Year II Semester

Sl. No	Course Category	Dept Course	Course	L	T	P/D	C	Max. Marks	
								CIE	SEE
1.	OE		Open Elective - I	3	0	0	3	40	60
2.	PE		Professional Elective – II	3	0	0	3	40	60
3.	PE		Professional Elective – III	3	0	0	3	40	60
4.	PC	CSE-CS	Vulnerability Assessment & Penetration Testing	2	1	0	3	40	60
5.	PC	CS	Ethical Hacking	3	0	0	3	40	60
6.	PC	IT	Automata Theory and Compiler Design	2	1	0	3	40	60
7.	PC	CS	Vulnerability Assessment & Penetration Testing Lab	0	0	2	1	40	60
8.	PC	CS	Ethical hacking and Compiler Design Lab	0	0	2	1	40	60
9.	ES	CS	Comprehensive Viva Voce	-	-	-	1	100	-
			Total :	16	2	4	21	420	480

Note: Summer Industry Internship – II is to be carried out during the summer vacation between 6th and 7th semesters

B.Tech. CSE (Cyber Security) - IV Year I Semester

Sl. No	Course Category	Dept Course	Course	L	T	P/D	C	Max. Marks	
								CIE	SEE
1.	OE		Open Elective - II	3	0	0	3	40	60
2.	PE		Professional Elective – IV	3	0	0	3	40	60
3.	PE		Professional Elective-V	3	0	0	3	40	60
4.	PC	CSE-CS	Blockchain Technologies	3	0	0	3	40	60
5.	ES	CSE-AI&ML	Introduction to Artificial Intelligence	2	1	0	3	40	60
6.	PC	CSE-CS	Cyber Crime Investigation & Digital Forensics	2	1	0	3	40	60
7.	HS	S&H	Intellectual Property Rights	2	0	0	-	Pass/Fail	
8.	PC	CSE-CS	Blockchain Technology Lab & Artificial Intelligence Lab	0	0	3	1.5	40	60
9.	PC	CSE-CS	Digital Forensics Lab and Professional Elective-IV Lab	0	0	3	1.5	40	60
10.	PS	CSE-CS	Summer Industry Internship -II	-	-	-	1	40	60
Total :				18	2	6	22	360	540

B.Tech. CSE (Cyber Security) - IV Year II Semester

SNo	Course Category	Dept Course	Course	L	T	P/ D	C	Max. Marks	
								CIE	SEE
1	OE		Open Elective- III	3	0	0	3	40	60
2	PC	CSE-CS	Database Security	2	0	0	2	40	60
3	PS	CS	Project	-	-	20	10	40	60
Total :				5	0	20	15	120	180

Note: All End Examinations (Theory and Practical) are of Three hours duration.

T – Tutorial L - Theory P/D – Practical/Drawing

C - Credits Int. - Internal Exam Ext. - External Exam

Course code Definitions

BS- Basic Science Courses

ES- Engineering Science Courses

HS- Humanities and Social Sciences including Management course

PC- CS Professional core courses

PE - CS Professional Elective courses

OE- CS Open Elective courses

CIE: Continuous Internal Evaluation

Professional Electives

Professional Elective Streams	PE– I (3-1)	PE – II (3-2)	PE – III (4-1)	PE – IV (4-1)	PE – V (4-2)
Network Security	Semantic Web & Social Networks/ Cloud Computing	Advanced Computer Networks/ Linux Programming	Web and Database Security	Mobile Application Development	Cloud Security/ Mobile Adhoc and Sensor Networks
Software Engineering	Software Architecture and Design Patterns	Software Project Management	Software Requirements and Estimation	Agile Software Development/ Software Automation and Testing	Advanced Software Engineering
Data Science	Introduction to Data Science	Information Retrieval Systems/ Machine Learning	Business Intelligence	Big Data Analytics	Predictive Analytics
Advanced Technologies	Computer Graphic	Image Processing	Computer Vision	Network Programming / Scripting Languages	Introduction to Internet of Things

Open Electives

Open Elective Streams	OE – I (3-2)	OE – II (4-1)	OE – III (4-2)
Entrepreneurship Stream	Basics of Entrepreneurship	Advanced Entrepreneurship	Product and Services
Finance Stream	Banking Operations, Insurance and Risk Management	Entrepreneurship Project Management and Structured Finance	Financial Institutions, Markets and Services
Mechanical	Smart Materials	Principles of Operations Research	Principals of Manufacturing Processes
Electrical	Control System Engineering	Fundamentals of Measurements and Instrumentation	Fundamentals of Renewable Energy Sources
Electronics	Embedded Systems	Introduction To VLSI Design	Electronics Circuit Design and Analysis
Innovation and Design Thinking	Design Literacy and Design Thinking	Co-Creation and Product Design	Entrepreneurship & Business Design

Credit Analysis

SNo.	Cat.		AICTE Credits	SNIST, B.Tech. (CSE)-CS Credits
1.	Humanities and social sciences including Management courses	HSSM	12*	12.5
2.	Basic Sciences including Mathematics courses	BSM	24*	24
3.	Engineering Science courses including workshop, drawing, basic electrical/electronics, mechanical engineering course as well as various computer courses offered for non-IT branches	ES	29*	28
4.	Professional Core Courses	PCC	49*	58.5
5.	Professional Elective courses (five courses) relevant to chosen specialization/branch	PEC	18*	15
6.	Open Electives (3 courses) offered by any other engineering departments/MBA department**	OE	12*	9
7.	Project work, seminar and internship in industry or elsewhere	PSI	15*	13
8.	Mandatory courses (Environmental Sciences, Induction training, Indian constitution, Essence of Indian Traditional Knowledge)	MC	NC	NC
		Total	159*	160

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M				M	M					

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Engineering Chemistry

Code: 9HC04

Prerequisite:

L T P/D C
2 1 0 3

Course Objectives:

1. To understand microscopic chemistry in terms of atomic and molecular orbitals
2. To learn the preparation and applications of commercial polymers and lubricant materials
3. To learn the industrial problems caused by water and municipal water treatment
4. To acquire knowledge about different types of batteries and their working mechanism
5. To develop the concepts and types of corrosion, control methods and protective coatings
6. To learn the chemical reactions that are used in the synthesis of drug molecules

Course Outcomes

After completion of the course, the student will be able to:

1. Understand and analyse microscopic chemistry in terms of atomic orbitals, molecular orbitals and intermolecular forces.
2. Identify and differentiate polymers, thermoplastic, thermosetting plastics and various lubricants.
3. Recognize and select the domestic and industrial problems caused by hard water and also learn about the municipal water treatment using various methods.
4. Understand and interpret the important fundamental concepts of electrochemistry and solve the problems related to batteries.
5. Differentiate the types of corrosion and methods used to prevent the corrosion, surface coating techniques
6. Learn and implement synthesis of drug molecules and learn fundamentals of analytical techniques like electronic, vibrational and rotational spectroscopy.

UNIT - I

Atomic and molecular structure (6L)

Molecular orbitals of diatomic molecules and plots of the multicentre orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomics (F_2 , Cl_2CO , NO). Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band structure of solids and the role of doping on band structures.

UNIT - II

Plastics and Lubricants (8L)

Plastics: Polymerization-Addition and Condensation polymerization, Plastics – Thermosetting and Thermoplastics, preparation, properties and **engineering applications of plastics:** PVC, Teflon, Bakelite. Fibers: Nylon 6,6 and Dacron.

Rubbers – natural and artificial rubber, vulcanization of natural rubber, Buna-S, Buna-N and their **engineering applications**. Fabricated Reinforcing Polymers- **engineering applications**

Lubricants: Definition, classification and function of lubricants, Types of lubrication and mechanisms – Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants – Viscosity, flash and fire point, cloud and pour point and acid value.**Engineering applications.**

UNIT - III

Water Technology (8L)

- (a) **Introduction:** - Hardness of water – types of hardness (temporary and permanent), calculation of hardness- Numerical problems. Estimation of hardness of water by EDTA Method.
- (b) **Water for Industrial purpose:** Food, sugar, textile, paper and pharma industries, water for steam making characteristics of boiler feed water, boiler troubles- scale and sludge & Carry over (priming & foaming), boiler corrosion, caustic embrittlement.
- (c) **Water Treatment:** Internal conditioning- phosphate, carbonate & calgon conditioning. External Treatment: Ion-exchange process. Desalination-reverse osmosis. Municipal water treatment-sedimentation, coagulation, filtration, disinfection-chlorination, ozonization. **Engineering applications: Methodology and working of mineral water plant for drinking purpose.**

UNIT - IV

Electrochemistry (8L)

Conductance – conductors (metallic and electrolytic), types of conductance – specific, equivalent and molar conductance – effect of dilution on conductance.

Free energy and emf, cell potentials, electrode potential (oxidation and reduction). Types of electrodes - redox electrode (quinhydrode electrode), metal – metal insoluble salt electrode and Ion selective electrode. Cell notation and cell reaction –Nernst equation and applications.**Engineering Applications.**

Batteries : Types of batteries

- (a) Primary batteries – Lechalanche cell (dry cell), Lithium cell
- (b) Secondary batteries(Accumulators) – Lead acid battery, Lithium-ion battery
- (c) Fuel cells- $H_2 - O_2$ fuel cell and $MeOH-O_2$ fuel cell-advantages and applications.

Engineering applications – future water powered car, Hydrogen production and storage.

UNIT - V

Corrosion and Surface treatment (8L)

Corrosion – basic concepts –types of corrosion, chemical, electrochemical corrosion (absorption of O_2 and evolution of H_2) -factors affecting the rate of corrosion.

Cathodic protection – sacrificial anodic protection and impressed current cathodic protection method.

Surface treatment

Mechanical surface treatment and coatings, casehardening and surface coating, thermal spraying, vapour deposition, Ion implantation, Diffusion coating.

Methods of metallic coatings-hot dipping (tinning and galvanizing), metal cladding (Al cladding), electroplating (copper plating) and electroless plating (nickel plating), electroforming, ceramic, organic and diamond coating

UNIT-VI

Organic reactions and drug molecules (5L)

Introduction: reactions involving substitution (S_N1 , S_N2) addition to double bond($C=C$), elimination (E^1 and E^2), oxidation (using $KMnO_4$, CrO_3), reduction (Hydrogenation by Ni/H_2 , Pd/C)

Drugs: Definition, classification structure and applications of commonly used drug molecules- paracetamol, aspirin, ibuprofen and diphenhydramine (Benadryl)

Principles of spectroscopy and selection rules: Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy of diatomic molecules-

Applications.

TEXT BOOKS:

1. Engineering Chemistry: PK Jain & MK Jain, Dhanapathrai Publications (2018)
2. Engineering Chemistry: by Thirumala Chary Laxminarayana & Shashikala, Pearson Publications (2020)

REFERENCE BOOKS:

1. Textbook of Engineering Chemistry: Jaya Shree Anireddy, Wiley Publications (2019)
2. Engineering Chemistry: by &B.Rama Devi, PrsantaRath & Ch. VenkataRamana Reddy, Cengage Publications (2018)
3. Engineering Chemistry: Shashi Chawla, Dhanapathrai Publications (2019)
4. Textbook of Engineering Chemistry: SS Dara, SS Umare S. Chand Publications (2004)

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	H	L		M							M

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Problem Solving using C

Code: 9FC01
Prerequisite: Nil

L T P/D C
3 0 0 3

Course Objectives: After completion of this course student will learn:

- To acquire problem solving skills
- To be able to develop flowcharts
- To understand structured programming concepts
- To be able to write programs in C Language

Course Outcomes:

After completion of this course student will learn

1. To formulate simple algorithms for arithmetic, logical problems and to translate the algorithms to programs(in C language)
2. To test and execute the programs and correct syntax and logical errors, to implement conditional branching, iteration and recursion
3. To use arrays to formulate algorithms and programs and apply programming to solve matrix addition and multiplication problems and searching
4. To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
5. To use pointers to formulate algorithms and programs.
6. To apply files to do various file manipulation functions.

UNIT I

Problem solving Techniques – Algorithms, pseudo code, flowcharts with examples

Introduction to Computer Programming Languages – Machine Languages, Symbolic Languages, High-Level Languages,

Introduction to C language – Characteristics of C language, Structure of a C Program.Syntax and semantics.

Data Types, Variables – declarations and initialization, formatting input and output.

UNIT – II

C Tokens: Identifiers, Keywords, Constants, variables and operators

Expressions – Arithmetic expressions, Precedence and Associativity, evaluating expressions,

Decision control structures – if, Two-way selection – if else, nested if, dangling else, Multi-way selection – else if ladder and switch.

Repetitive control structures – Pre-test and post-test loops – initialization and updation, while, do while and for loop and nested loops.

Unconditional statements: break, continue and goto statements with examples.

UNIT III

Arrays – Definition and declaration, initialization, accessing elements of in arrays, storing values in arrays,

1-D arrays, 2-D arrays, character arrays and multidimensional arrays.

Function and arrays: passing individual elements to arrays, passing 1-D array, 2-D array to function.

Applications: Linear search, matrix addition, subtraction, multiplication and transpose

UNIT – IV

Functions – User – defined functions - Function definition, arguments, return value, prototype, arguments and parameters, inter-function communication. Standard functions – Math functions. Scope – local, global.

Parameter passing – Call by value and call by reference.

Recursive functions – Definition, examples, advantages and disadvantages.

Macros – Definition, examples, comparison with functions.

Storage Classes – auto, extern, static and Register

UNIT V

Introduction to Pointers – pointer constants, pointer values, pointer variables, accessing variables through pointers, pointer declaration and definition, declaration versus redirection, initialization of pointer variables, Pointer for inter function communication, pointer to pointers, pointer to function.

Arrays and pointers – Pointer arithmetic and arrays, array of pointers

Strings – Declaration, Initialization, Input and Output functions, strings and pointer, string handling functions.

UNIT VI

Files – Concept of a file, streams, text and binary files, stream file processing, system created streams, Standard library I/O functions, file open and close, formatting I/O functions, character I/O functions, Binary I/O, command line arguments, file status functions ,positioning functions.

Applications: Basic operations on files.

Text Books

- (i) E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill
- (ii) Let Us C by Yashavant Kanetkar

Reference Books

- (i) Programming in C (2nd Edition) by Ashok N Kamthane
- (ii) Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language
Prentice Hall of India

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M										

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Matrix Algebra and Calculus

Code: 9HC11

L T P/D C
2 1 0 3

Prerequisite: Mathematics Knowledge at Pre-University Level

Course Objectives: To make the students to understand and expected to learn

1. Basic operation of matrices and about the linear system and some analytical methods for solution.
2. Concept of Eigen value and Eigen vector and their properties and applications.
3. Quadratic form and its properties.
4. Mean value theorems and their applications to the given functions, series expansions of a function.
5. Various analytical methods to solve first order first degree and also the equations not of first degree ordinary differential equations.
6. Methods to solve higher order ordinary differential equations.

Course Outcomes: After the course completion the students will be able to

1. Check the consistency or inconsistency of a linear system and can solve the problems.
2. Find the Eigen values and Eigen vectors and can solve the problems associated with these concepts.
3. Find the nature, index and signature of the quadratic form.
4. Verify the applicability of mean value theorems and also can express the given standard function in series form using Taylor's and Maclaurin series.
5. Find the solutions of first order first degree differential equations and solve the problems on Newton's law of cooling, Natural growth and decay.
6. Solve higher order ordinary differential equations with constant coefficients using some standard methods.

UNIT-I: System of Linear Equations: Elementary row/column operations -Echelon form, Rank of a matrix, Inverse of a matrix by Gauss Jordan method. Non-Homogenous and Homogenous system of linear equations- consistency or inconsistency of a system, Gauss Elimination method, Rank method and problems. Symmetric, Skew-symmetric and Orthogonal matrices.

UNIT-II: Eigen values and Eigen vectors: Definitions and Properties (without proofs). Evaluation of Eigen values and Eigenvectors for a given matrix. Cayley-Hamilton Theorem (without proof) and its applications in finding higher powers & inverse of a matrix, Diagonalization of a matrix. Hermitian, Skew-Hermitian and Unitary matrices.

UNIT-III Quadratic forms: Quadratic forms, Nature, rank, index and signature of a quadratic form. Reduction of quadratic form to canonical form.

UNIT-IV: Single Variable Calculus: Rolle's Theorem, Lagrange's and Cauchy's mean value theorems (without proof); Taylor's and Maclaurin's series (without proof) and their application for series expansions of standard functions.

UNIT-V: First order ODE: Exact differential equations, equations reduced to exact, Linear and Bernoulli's equations, Newton's law of cooling, Law of natural Growth/Decay.

UNIT-VI: Higher order ODE: Higher order linear differential equations with constant coefficients-Complementary function, Particular Integral, Method of variation of parameters.

Suggested Readings:

1. R K Jain and S R K Iyengar Advanced Engineering Mathematics, Narosa Publications.
2. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers
3. Alan Jeffery, Advanced Engineering Mathematics, Academic Press
4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
5. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level								M	M	H		

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Essential English Language Skills (EELS)

Code: 9HC01

Prerequisite: Nil

L T P/D C
2 0 0 2

Course Objectives: To enable students to:

- Recognize and distinguish between different parts of speech
- Learn the correct usage of articles in sentences
- Write sentences using tenses
- Identify when each punctuation marks is needed and its correct usage
- Recognize the difference between direct and indirect speech and form statements in them
- Understand the appropriate use of active and passive voice in certain context

Course Outcomes: After completion of the course, the student will be able to:

1. Demonstrate competence with suitable accuracy in vocabulary, and language fluency.
2. State the definition of nouns, verbs, adjectives, and adverbs.
3. Identify the differences of each tense and use the tenses accurately.
4. Identify specialized reading strategies for specific types of texts
5. Produce written work that is substantive, organized, and grammatically accurate.

Unit 1. Vocabulary-1:

- 1.1 Root words
- 1.2 Synonyms and Antonyms
- 1.3 Homonyms, Homophones and Homographs
- 1.4 One word substitutes

Unit 2. Vocabulary-2

- 2.1 Idioms and Phrases
- 2.2 Confusables

Unit 3. Grammar-1

- 3.1 The Parts of Speech
- 3.2 Use of Articles
- 3.3 Omission of Articles

Unit 4. Grammar-2

- 4.1 Tenses
- 4.2 Prepositions
- 4.3 Concord

Unit 5. Reading & Writing

5.1 Techniques of Reading, Reading Comprehension

5.2 Kinds of Sentences

5.3 Punctuation

Unit 6. Writing-2

6.1 Voice – Active voice and Passive Voice

6.2 Speech-Direct & Reported Speech

6.3 Common errors in English

Suggested Reading & References:

1. Word Power Made Easy by Norman Lewis
2. English Grammar In Use: A Self Study Reference And Practice Book Intermediate Learners Book by Raymond Murphy
3. The Logic of English Words by Logophilia Education
4. English Vocabulary In Use Elementary Book With Ans And Cd-Rom by Felicity Odell (Second Edition)
5. Effective Technical Communicatioin by M. Ashraf Rizvi
6. Intermediate grammar usage and composition; M.L.Tickoo, A.E.Subramanian, P.R.Subramanyam; OBS
7. An Interactive Grammar to Modern English by Shivendra K. Verma and HemalathaNagarajan, Frank Bros. & Co.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level								M	M	H		

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Oral Communication Lab – I

Code: 9HC61
Prerequisite: Nil

L T P/D C
0 0 2 1

Course Objectives: To enable students to:

- Comprehend the basic tactics to communicate effectively and set a road map to achieve their communication goals.
- Know the importance of pronunciation in effective communication and work on mitigating the MTI in their spoken English;
- Communicate in proper tense with conviction and also frame and pose questions aptly.
- Describe people, objects and situations, using appropriate vocabulary, phrases and sequencing of ideas.
- Use the right English language expressions in varying real life contexts.
- Develop skill of narration through listening and coordination of ideas.

Course Outcomes: After completion of the course, the student will be able to:

1. Describe people, objects and situations using simple sentences.
2. Use appropriate tenses and expressions in different contexts of conversations.
3. Identify major areas of concern in their oral communication and address them.
4. Create a SMART plan to enhance their communication skills in English

Unit 1: Communication Skills

Communication basics, essential elements of effective communication, barriers to communication, setting SMART communication goals.

Activities:

- Ice-breaking activities
- Personal Communication SWOT Analysis
- Communication Case Studies: The Terrible & The Terrific

Unit 2: Pronunciation Matters

Importance of pronunciation, neutralizing mother tongue interference (MTI).

Activities:

- Odd Word Out
- Minimal Pairs Masti
- Shadow reading

Unit 3: Use apt expressions in diverse situations

Self-introduction, Greetings, apologizing, complimenting, inviting, complaining etc.

Activity:

Role play in different contexts using the appropriate expressions

Unit 4: Mind your Tenses

Describing present and past habits, states, and events.

Talking about actions in progress, relating past to the present, talking about the future.

Framing questions. (confirmation/information questions)

Activities:

- Speaking activity on daily routine, how students spent their recent vacation, speaking about their childhood, speaking about future plans.
- Dumb Charades (Present/Past continuous - Present/ Past perfect)
- Guessing game (10/20 yes or no questions)

Unit 5: Hone your Describing skills

Describing people, objects, and situations

Activities:

- Picture descriptions.
- Guessing games - listening to the descriptions.
- Narrating memorable incidents from life.
- Describe your ideal world
- Once upon a time.....

Unit 6: The Art of Storytelling

Story telling for career success, the basics of story telling

Activities:

- Building stories - chain activity.
- Story prompts activity.
- Narrate the story. (all the hints are given except linking words and tenses)

Suggested Reading & References:

- “An Interactive Grammar of Modern English” by Shivendra K Verma and HemalathaNagarajan, Frank Bros. & Co.
- “Skill Sutras” by JayashreeMohanraj, Prism Books Pvt. Ltd.
- “Better English pronunciation” by J.D. Connor.
- “Effective Communication” John Adair, Pan Macmillan Ltd.
- “Body Language”, by Allan Pease, Sudha Publications.
- “Communicative English”, by Hariprasad M. and Prakasam V, Neel Kamal Publications.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M					M	M		M			

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Engineering Chemistry Lab

Code: 9HC64
Prerequisite: Nil

L T P/D C
0 0 3 1.5

Course Objectives:

- To understand microscopic chemistry in terms of atomic and molecular orbitals
- To learn the preparation and applications of commercial polymers and lubricant materials
- To learn the industrial problems caused by water and municipal water treatment
- To acquire knowledge about different types of batteries and their working mechanism
- To develop the concepts and types of corrosion, control methods and protective coatings
- To learn the chemical reactions that are used in the synthesis of drug molecules

Course Outcomes: After completion of the course, the student will be able to

1. Understand and analyse microscopic chemistry in terms of atomic orbitals, molecular orbitals and intermolecular forces.
2. Identify and differentiate polymers, thermoplastic, thermosetting plastics and various lubricants.
3. Recognize and select the domestic and industrial problems caused by hard water and also learn about the municipal water treatment using various methods.
4. Understand and interpret the important fundamental concepts of electrochemistry and solve the problems related to batteries.
5. Differentiate the types of corrosion and methods used to prevent the corrosion, surface coating techniques
6. Learn and implement synthesis of drug molecules and learn fundamentals of analytical techniques like electronic, vibrational and rotational spectroscopy.

UNIT - I**Atomic and molecular structure (6L)**

Molecular orbitals of diatomic molecules and plots of the multicentre orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomics (F_2 , Cl_2CO , NO). Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band structure of solids and the role of doping on band structures.

UNIT - II**Plastics and Lubricants (8L)**

Plastics: Polymerization-Addition and Condensation polymerization, Plastics – Thermosetting and Thermoplastics, preparation, properties and **engineering applications of plastics:** PVC, Teflon, Bakelite. Fibers: Nylon 6,6 and Dacron.

Rubbers – natural and artificial rubber, vulcanization of natural rubber, Buna-S, Buna-N and their **engineering applications**. Fabricated Reinforcing Polymers- **engineering applications**

Lubricants: Definition, classification and function of lubricants, Types of lubrication and mechanisms – Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants – Viscosity, flash and fire point, cloud and pour point and acid value.**Engineering applications.**

UNIT - III

Water Technology (8L)

- (d) **Introduction:** - Hardness of water – types of hardness (temporary and permanent), calculation of hardness- Numerical problems. Estimation of hardness of water by EDTA Method.
- (e) **Water for Industrial purpose:** Food, sugar, textile, paper and pharma industries, water for steam making characteristics of boiler feed water, boiler troubles- scale and sludge & Carry over (priming & foaming), boiler corrosion, caustic embrittlement.
- (f) **Water Treatment:** Internal conditioning- phosphate, carbonate & calgon conditioning. External Treatment: Ion-exchange process. Desalination-reverse osmosis. Municipal water treatment-sedimentation, coagulation, filtration, disinfection-chlorination, ozonization. **Engineering applications: Methodology and working of mineral water plant for drinking purpose.**

UNIT - IV

Electrochemistry (8L)

Conductance – conductors (metallic and electrolytic), types of conductance – specific, equivalent and molar conductance – effect of dilution on conductance.

Free energy and emf, cell potentials, electrode potential (oxidation and reduction). Types of electrodes - redox electrode (quinhydrode electrode), metal – metal insoluble salt electrode and Ion selective electrode. Cell notation and cell reaction –Nernst equation and applications.**Engineering Applications.**

Batteries : Types of batteries

- (d) Primary batteries – Lechalanche cell (dry cell), Lithium cell
- (e) Secondary batteries(Accumulators) – Lead acid battery, Lithium-ion battery
- (f) Fuel cells- $H_2 - O_2$ fuel cell and $MeOH-O_2$ fuel cell-advantages and applications.

Engineering applications – future water powered car, Hydrogen production and storage.

UNIT - V

Corrosion and Surface treatment (8L)

Corrosion – basic concepts –types of corrosion, chemical, electrochemical corrosion (absorption of O_2 and evolution of H_2) -factors affecting the rate of corrosion.

Cathodic protection – sacrificial anodic protection and impressed current cathodic protection method.

Surface treatment

Mechanical surface treatment and coatings, casehardening and surface coating, thermal spraying, vapour deposition, Ion implantation, Diffusion coating.

Methods of metallic coatings-hot dipping (tinning and galvanizing), metal cladding (Al cladding), electroplating (copper plating) and electroless plating (nickel plating), electroforming, ceramic, organic and diamond coating

UNIT-VI

Organic reactions and drug molecules (5L)

Introduction: reactions involving substitution (S_N1 , S_N2) addition to double bond($C=C$), elimination (E^1 and E^2), oxidation (using $KMnO_4$, CrO_3), reduction (Hydrogenation by Ni/H_2 , Pd/C)

Drugs: Definition, classification structure and applications of commonly used drug molecules- paracetamol, aspirin, ibuprofen and diphenhydramine (Benadryl)

Principles of spectroscopy and selection rules: Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy of diatomic molecules-

Applications.

TEXT BOOKS:

3. Engineering Chemistry: PK Jain & MK Jain, Dhanapathrai Publications (2018)
4. Engineering Chemistry: by Thirumala Chary Laxminarayana & Shashikala, Pearson Publications (2020)

REFERENCE BOOKS:

5. Textbook of Engineering Chemistry: Jaya Shree Anireddy, Wiley Publications (2019)
6. Engineering Chemistry: by &B.Rama Devi, PrsantaRath & Ch. VenkataRamana Reddy, Cengage Publications (2018)
7. Engineering Chemistry: Shashi Chawla, Dhanapathrai Publications (2019)
8. Textbook of Engineering Chemistry: SS Dara, SS Umare S. Chand Publications (2004)

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H											

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)
Problem Solving using C Lab

Code: 9FC61

Prerequisite: A course on Basic Mathematics

L T P/D C
0 0 3 1.5

Course Objectives:

1. To be able to understand the fundamentals of programming in C Language
2. To be able to write, compile and debug programs in C
3. To be able to formulate problems and implement in C.
4. To be able to effectively choose programming components.
5. To solve computing problems in real-world.

Course Outcomes: After completion of this course student will learn

1. Enumerate the algorithms for simple problems
2. Classify the given algorithms to a working and correct program
3. Correct the syntax errors as reported by the compilers
4. Identify and correct logical errors encountered at run time
5. Write iterative as well as recursive programs
6. Represent data in arrays, strings and structures and manipulate them through a program
7. Declare pointers of different types and use them in defining self referential structures.
8. Create, read and write to and from simple text files.

[The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.]

1. Unit I (Cycle 1)

1. Write an algorithm for converting a given Celsius temperature to its equivalent Fahrenheit temperature and draw a flowchart.
2. Write an algorithm to find the largest of three given numbers and draw a flowchart.
3. Write an algorithm and draw a flowchart for finding the roots and nature of roots of a quadratic equation, given its coefficients.
4. Write an algorithm and flowchart for finding the first n Fibonacci numbers, give n.

2. Unit II (Cycle 2)

1. Write an algorithm, flowchart, and C program for:
2. Finding the area and circumference of a circle of given radius.
3. Finding the volume of a sphere of given radius.
4. Finding the lateral surface area of a right circular cone of given base radius and height.
5. Finding selling price of an item, given its cost price and profit percent.
6. Finding the interest on a given principal for a given period of time at a given rate of per year.
7. Write a C program to display all the sizes of data types in C.
8. Write a C program to display a given decimal integer into an equivalent octal number and hexadecimal number using %o and %x in printf function.

3. Unit II (Cycle 3)

1. Write a C program to find the roots and nature of the roots of a quadratic equation, given its coefficients.
2. Write a C program for finding the largest of three given numbers.
3. A salesman gets a commission of 5% on the sales he makes if his sales is below Rs.5000/- and a commission of 8% on the sales that exceeds Rs.5000/- together with Rs.250/-. Write an algorithm or a flowchart and develop C program for computing the commission of the salesman, given his sales.
4. Write a C Program to demonstrate Marcos.

4. Unit II (Cycle 4)

1. Write three C programs to print a multiplication table for a given number using while, do-while, and for loops.
2. Write a C program to compute the sum of:
3. $1+x+x^2+x^3+\dots+x^n$, given x and n.
4. $1! + 2! + 3! + \dots + n!$, given n.
5. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$ to n terms where the n^{th} term becomes less than 0.0001.

5. Unit II (Cycle 5)

1. Write a C program in the menu driven style to perform the operations +, -, *, /, % between two given integers.
2. Write a C program to find the largest and the least of some numbers given by the user.
3. Write a C program to find the sum of the digits of a positive integer.

6. Unit III (Cycle 6)

1. Write a program to store the numbers given by the user in an array, and then to find the mean, deviations of the given values from the mean, and variance.
2. Write a C program to initially store user given numbers in an array, display them and then to insert a given number at a given location and to delete a number at a given location.
3. Write a program to store user given numbers in an array and find the locations of minimum and maximum values in the array and swap them and display the resulting array.

7. Unit III (Cycle 7)

1. Write a C program to implement the operations of matrices – addition, subtraction, multiplication.
2. Write a program to find whether a given matrix is symmetric, lower triangular, upper triangular, diagonal, scalar, or unit matrix.

8. Unit IV (Cycle 8)

1. Write C functions for the following:
 - a) A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
 - b) A function that takes a real number x and a positive integer n as arguments and returns x^n .
 - c) A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.
2. Using recursion write C functions for the following:

- a) Factorial of a non-negative integer n.
- b) Number of combinations of n things taken r at a time.
- c) Greatest Common Divisor of two integers.
- d) Least Common Multiple of two integers.

9. Unit IV (Cycle 9)

- a) Write a menu driven style program to compute the above functions (cycle 6) on the choice of the function given by the user.
- b) Define macros for the following and use them to find sum of the squares of the minimum and maximum of two given numbers.
 - a) Larger of two numbers.
 - b) Smaller of two numbers.
 - c) Sum of the squares of two numbers.
- c) Write a program to generate Pascal's triangle.
- d) Write a program to count the number of letters, words, and lines in a given text.

10. Unit V (Cycle 10)

1. Write a function to swap two numbers.
2. Write a function to compute area and circumference of a circle, having area and Circumference as pointer arguments and radius as an ordinary argument.

11. Unit VI (Cycle 11)

1. Write a program to:
Create a file by the name given by the user or by command line argument and add the text given by the user to that file.
 - a) Open the file created above and display the contents of the file.
 - b) Copy a file into some other file, file names given by the user or by command line arguments.
 - c) Append a user mentioned file to another file.
 - d) Reverse the first n characters of a file.

12. Cycle 12:

Case study on Electricity Billing, Restaurant Billing System

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M		L		M				M			L

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. I year I Semester
B.Tech. CSE (Cyber Security)**

Workshop/Manufacturing Processes Lab

Code: 9BC61
Prerequisite: Nil

L T P/D C
0 1 3 2.5

COURSE OBJECTIVES:

- 1) To know the different popular manufacturing process
- 2) To gain a good basic working knowledge required for the production of various engineering products
- 3) To provide hands on experience about use of different engineering materials, tools, equipment's and processes those are common in the engineering field
- 4) To identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances

COURSE OUTCOMES: After completion of the course, the student will be able to:

- 1: Use various types of conventional manufacturing Processes
- 2: Manufacture components from wood, MS flat, GI Sheet etc. – hands on experience
- 3: manufacturing of components by machining like shafts, holes & threaded holes, surface finishing of components etc.
- 4: Produce small devices / products /appliances by assembling different components

LIST OF EXPERIMENTS

S.No	Trades	Experiment name
1	Fitting Shop	1. Preparation of T-Shape Work piece 2. Preparation of U-Shape Work piece which contains: Filing, Sawing, Drilling, Grinding.
2	Carpentry	3. Cross Half Lap joint 4. Half Lap Dovetail joint
3	Electrical & Electronics	5. One lamp one switch 6. Stair case wiring
4	Welding	7. Practice of Lap and Butt joint by Arc welding
5	Casting	8. Preparation of mould cavity using solid pattern 9. Preparation of mould cavity using split pattern
6	Tin Smithy	10. Preparation of Rectangular Tray 11. Preparation of Square box
7	Plastic molding & Glass Cutting	12 Injection Moulding 13 Glass Cutting with hand tools
8	Machine Shop (Demonstration only)	Demonstration of Turning, Drilling and grinding operations on Lathe, Drilling and grinding machines

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M					M	L					

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Engineering Physics

Code: 9HC07
Prerequisite: Nil

L T P/D C
2 1 0 3

Course Objectives:

- Explain about the Quantum Mechanics to understand wave particle duality, necessity of quantum mechanics to explore the behavior of sub atomic particles. Schroedinger's Time Independent Wave Equation, Physical Significance of the Wave Function – Application of Schroedinger wave equation.
- To understand the basic concepts of normal light, Laser and its applications and to know about the fiber optics, principle (TIR), Numerical Aperture, Types of optical Fibers, Step index and graded index Fibers, attenuation in optical fibers. Applications: optical fiber communication system, fiber optic sensors, medical endoscopy.
- To study the concepts of magnetism and superconductivity, Bohr magneton, Hysteresis nature, domain structure, Meissner effect, types of superconductors, BCS theory and applications of superconductors.
- To understand the concepts of dielectrics, polarizations and its types, internal fields, Clausius-Mossotti equation, Frequency and temperature effect on dielectrics and its applications – Piezo-electricity, Pyro-electricity and ferro-electricity.
- To know about the semiconductors, types, carrier concentration, Hall effect and also to understand the concept of PN-junction, I-V Characteristics, LED, Solar Cell and Photo diode.
- To discuss about the nano-technology, preparation techniques and characterization (XRD & TEM), CNTs.

Course Outcomes :After completing the course, students are able to

1. Differentiate the wave and particle, de-Broglie matter waves its experimental evidence, Schroedinger's wave concept and its application for a particle in one dimension box.
2. Explain about emission, its types, laser principle, types, working and its applications and to reveals about TIR principle, optical fiber-types and signal propagation, attenuation, communication system and applications of optical fibers (sensors and medical endoscopy)
3. Reveals about the magnetism-its origin and types, Hysteresis, domain theory, Superconductivity, experimental facts, theoretical analysis, types of superconductors and its applications.
4. Explain the basic concepts of dielectric materials, polarization and its types, local fields, frequency and temperature effect on dielectrics and their applications (Piezo, Ferro and Pyro electricity).
5. Explain semiconductor behavior, types, carrier concentration, Hall effect, Thermistor, demonstrate and analyze semiconductor devices like a PN-junction, I-V characteristics, LED, solar cell, photo diode and their applications.

6. Summarize nano& bulk concepts, surface to volume ratio, quantum confinement, CNTs and preparation methods (physical & chemical), analysis the techniques like XRD & TEM.

Unit:1

Wave nature of particles, Schroedinger equation and its application (8 Periods)

Waves and Particles, de-Broglie Hypothesis, Matter waves, Davisson and Germer's Experiment, G.P. Thomson Experiment, Heisenberg's Uncertainty Principle, Schroedinger's Time Independent Wave Equation – Physical Significance of the Wave Function – Application of Schroedinger wave equation - Particle in One Dimensional Potential Box.

Unit:2

Lasers and Fiber Optics (6+6 Periods)

Lasers: Characteristics of LASER, Spontaneous and Stimulated Emission of Radiation, Einstein's Coefficients and their significance. Meta-stable State, Pumping, Population Inversion and Optical resonator. Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers.

Fiber optics: Principle and construction of optical fiber, Acceptance Angle and Numerical Aperture. Based on refractive index profile classification of Optical Fibers: Single mode & Multimode mode Step index fibers, Single mode & Multimode mode graded index fibers. Attenuation in Optical Fibers (scattering, absorption and bending losses), optical Fiber communication system, Fiber Optic Sensors-Temperature sensor, Pressure sensor and Medical Endoscopy.

Unit:3

Magnetism and Superconductivity.(5+4 Periods)

Magnetic Materials: Origin of Magnetic Moment-Bohr Magneton. Ferromagnetic domain, Magnetization process by using domain, B-H curve explanation based on Domain theory and important outcomes of the curve.Hard and Soft Magnetic Materials.

Super conducting Materials: General properties of Superconductors. Effect of Magnetic Field, Critical current density, Meissner effect, Penetration depth.Type-I and Type-II superconductors, BCS theory, Magnetic levitation.

Unit:4 (8 Periods)

Dielectric materials: Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility. Electronic, Ionic polarizability (Quantitative) and Orientation Polarization (Qualitative). Internal fields in Solids, Clausius-Mossotti equation, Frequency and temperature effect on Dielectrics (Qualitative), Applications - Piezo-electricity, Pyro-electricity and Ferro-electricity.

Unit:5 (5+5 Periods)

Semiconductors and Semiconductor devices

Semiconductors: Fermi Level in Intrinsic and Extrinsic Semiconductors. Carrier concentration of Intrinsic and Extrinsic Semiconductor (qualitative).Direct & Indirect Band Gap Semiconductors, Hall Effect in semiconductors.

Semiconductor devices: Formation of a PN Junction and working of a PN Junction diode, Energy band Diagram of open circuited PN Diode, I-V Characteristics of PN Junction diode. Applications: LED, Solar Cell and Photo diode.

Unit:6

Nanomaterials and their fabrication: (7 Periods)

Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication, Sol-gel method, Chemical vapor Deposition technique (CVD); Top-down Fabrication; Ball Milling, Characterization of Nano materials (XRD & TEM), carbon nano tubes (CNTs), Applications of Nano Materials.

Text Books:

1.B.K. Pandey & S. Chaturvedi Engineering Physics, Cengage Learning

Reference Books:

- 1.P K Palanisamy, Engineering Physics, Sitech Publications
2. Charles Kittel, Introduction to Solid State Physics, John Wiley Publisher
3. A.S. Vasudeva , Modern engineering Physics, S. Chand
4. Dekker, Solid State Physics
5. Dr. M.N. Avadhanulu, Engineering Physics, S. Chand
6. Dekker, Solid State Physics
7. Halliday and Resnick, Physics
8. S.O. Pillai, Solid State Physics
9. A. Ghatak - Optics

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M	M									H

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)**

Data Structures

Code: 9EC01

Prerequisite: Problem Solving using C

L T P/D C
3 0 0 3

Course Objectives:

1. To provide the knowledge of structures, unions, enum and typedef.
2. To understand and learn the applications of Abstract data Type, linear data structures such as stacks, queues and linked list.
3. To comprehend different nonlinear data structures such as trees, graphs, heaps
4. To understand and analyze the concepts of various searching and sorting techniques.

Course Outcomes: After completion of this course student will be able to

1. Design the programs using structures, unions and enum.
2. Demonstrate the concepts of Abstract data type and also applications of stacks and queues.
3. Implement basic operations on singly, doubly and circular linked list.
4. Solve problems involving Binary Search trees and AVL trees.
5. Develop algorithms for various searching and sorting techniques and analyze their performance.
6. Articulate the concepts of graphs, heaps and hashing.

UNIT I:

Structures: Introduction, types, initialization and accessing, Array of Structures, Nested Structures, Self-referential structures. Unions, enum, typedef, Dynamic Memory allocation.

UNIT II:

Introduction to data structures: Abstract data type (ADT), Stacks, Queues and Circular queues and their implementation with arrays.

Applications of Stack: infix to post fix conversion, postfix expression evaluation.

Applications of Queues.

UNIT III:

Linked list: introduction, advantages of Linked list over Arrays.

Singly linked list: creation, insertion, deletion and display operations

Doubly linked list: creation, insertion, deletion and display operations

Circular singly linked list: creation, insertion, deletion and display operations,

Implementation of Stacks and Queues with singly linked list.

UNIT IV:

Trees: Terminology, Binary Tree: types, representation and traversals (in-order, pre-order, post-order).

Binary Search Tree: introduction, operations (insertion, deletion, display)

AVL Trees: Definition, examples, and operations (insertion, deletion and searching).

UNIT V:

Searching: linear and binary search methods.

Sorting: Bubble Sort, Insertion Sort, Selection Sort, Quick sort, Merge sort

Performance analysis of Searching and Sorting Algorithms.

UNIT VI:

Graphs: terminology, representation, traversals (DFS and BFS).

Heaps: Introduction, Min Heap, Max Heap, Operations on Heaps, Heap Sort.

Hashing: Hash Table, Hash functions.

Collision resolution techniques: separate chaining, open addressing-linear probing, quadratic probing, double hashing.

TEXT BOOKS:

1. Data Structures Using C second edition by ReemaThareja Oxford university press
2. Data Structure through C by YashavantKanetkar.

REFERENCES:

1. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft. Data Structures and Algorithms. Addison Wesley, 1983 .
2. Data Structures using c Aaron M.Tenenbaum ,YedidyahLangsam,MosheJAugenstein.
3. Introduction to Data Structures in C ByKamtane
4. Data Structures, A pseudocode Approach with C by Richard F. Gilberg and Behrouz A. Forouzan.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	H	M									

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Advanced Calculus

Code: 9HC12

L T P/D C
2 1 0 3

Prerequisite: Mathematics Knowledge at Pre-University Level

Course Objectives: To make the students to understand and expected to learn

1. Basic concepts of multivariable differential calculus.
2. Evaluation of double and triple integrals.
3. Solutions of first order linear and non-linear partial differential equations.
4. Series expansion of a given function in terms of sine and cosine terms.
5. Basic Concepts of vector differential calculus.
6. Concepts of vector integral calculus,

Course Outcomes: After the course completion the students will be able to

1. Find the limits and test for the continuity and differentiability of a function.
2. Solve the problems on multiple integrals.
3. Solve linear and nonlinear first order partial differential equations.
4. Find Series expansion a function defined over the intervals.
5. Find directional derivative, gradient, divergence and curl of a function.
6. Solve problems of line, surface and volume integrals.

UNIT-I: Functions of several variables: Limits, Continuity and partial derivative, total derivative, Jacobian, Maxima and minima of two variable functions (without constraints).

UNIT-II: Multiple Integrals: Double integrals, change of order of integration, change of variables (Cartesian to polar), Triple integrals (Cartesian form).

UNIT-III: Partial Differential Equations: Formation of partial differential equations, solutions to first order linear and non-linear partial differential equations - standard Forms,

UNIT-IV: Fourier series: Dirichlet conditions, Fourier series of functions over the intervals of length $2l$ & 2π . Half range sine and cosine series, Problems on Parseval's theorem (without proof).

UNIT-V: Vector Differentiation: Vector and scalar point functions, gradient, directional derivatives; divergence and curl of a vector point function and problems.

UNIT-VI: Vector Integration: Line integrals, surface integrals, volume integrals, Green, Gauss divergence and Stokes theorems (without proofs) and problems.

Suggested Readings:

1. R K Jain and S R K Iyengar Advanced Engineering Mathematics, Narosa Publications.
2. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers

3. Alan Jeffery, Advanced Engineering Mathematics, Academic Press
4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
5. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	L	M		H			M	M			

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Engineering Graphics

Code: 9BC01

Prerequisite: Nil

L T P/D C
1 0 4 3

Course objectives:

- 1: To teach students the basic principles of Engineering graphics and instruments used and construct curves.
- 2: To introduce the concept of projections in drawing and its applications for simple drawing entities ie points and lines.
- 3: To impart the knowledge of various types of planes and solids and their projections in different position wrt principle planes
- 4: To teach the concept of sections of solids and their developments.
- 5: To develop a clear understanding of the basic principles involved in three dimensional Engineering drawings.
- 6: To teach conversion from three dimensional drawing to two dimensional drawing and introduce the concepts of CAD.

Course outcomes:After completing this course, the student will able to:

1. Get familiar to use the instruments to solve the engineering problem and draw various type of curves used in engineering
2. Understand Orthographic projections and draw projections of simple drawing entities such as points Lines.
3. Draw projections of different types of regular Planes, solids in various positions wrt principal planes of projection.
4. Draw Sections of various Solids including Cylinders, cones, prisms and pyramids and draw the developments of these solids and their sections.
5. Construct Isometric Scale, Isometric Projections and Views.
6. Convert Isometric to orthographic views and understand basic sketching using computer aided design (CAD) software.

UNIT – I

Introduction to Engineering Drawing: Drawing Instruments and their uses, types of lines, Lettering, Dimensioning-Terms & notations, placing of dimensions, general rules of dimensioning **Scales**(concepts).:RF,Reducing, Enlarging and Full Scales

Curves: Conic Sections including Rectangular Hyperbola - General method, Cycloid and Involutess of circle.

UNIT – II

Orthographic Projection: Principles of Projection – Methods of projection, First angle and third angle projections.

Projections : Projections of Points, Projections of straight lines –line inclined to one plane and line inclined to both reference planes.

UNIT –III

Projections of regular Planes: types of planes, plane inclined to one reference plane, Oblique planes

Projections of regular Solids: types of solids, Projections of: Prisms, Cylinders, Pyramids, Cones – simple position and axis inclined to one plane only

UNIT –IV

Sections and sectional views of Solids: Sections and Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid – Auxiliary views.

Development of Surfaces: Methods of development, Development of lateral Surfaces of Right Regular Solids – Prisms, Cylinders, Pyramids, Cones and their sections.

UNIT – V

Isometric Projection: Introduction, Isometric axes, lines and planes, Isometric Scale – Isometric drawing or View – Isometric drawing of planes and simple solids such as prisms, pyramids, cylinder, cone.

UNIT –VI

Conversion of isometric views to orthographic views of simple objects.

Introduction to CAD : Benefits of CAD, Graphic input and output devices - Function performed by CAD Software, AUTOCAD-Drawing Entities, Editing commands.

TextBook:

Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House (In First-angle Projection Method)

Reference Books:

- 1) Shah, M.B. &Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
- 2) Agrawal B. &Agrawal C. M. (2012), Engineering Graphics, TMH Publication
- 3) AUTOCAD Software Theory and User Manuals

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M					L	L					

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)**

Basic Electrical and Electronics Engineering

Code: 9AC48
Prerequisite: Nil

L T P/D C
3 0 0 3

Course Objective:

Understand the basic fundamentals and working of various electrical and electronics components and devices and also understand the applications of them.

Course Outcomes: At the end of this course, the student will be able to

1. Outline the fundamentals of electrical engineering and DC machines.
2. Summarize the principles of AC circuits.
3. Inspect the principle and operation of three phase induction motor and measuring instruments.
4. Comprehend the principle and operation of diode.
5. Explain the principle and operation of transistor.
6. Enlist and describe the principles of digital electronics.

Unit – I: Fundamentals of Electrical Engineering and DC Machines:

Ohm's Law, Kirchhoff's Laws, types of sources, passive elements. Series parallel circuits, mesh and nodal analysis. Superposition, Reciprocity theorem.

DC Machines: Principle of operation of D.C generators, types, E.M.F equation. Principle of operation of D.C motors, Types motors, Torque equation, Losses and efficiency, simple problems on D.C Generators and motors.

Unit – II: Fundamentals of AC circuits:

AC voltage wave form and basic definitions: Peak Value, R.M.S. value, Average values, Form factor and Peak factor, 'j' operator, Analysis of single phase AC circuits series and parallel (Simple circuits). Three phase circuits – Star - delta connection, Relation between line and phase voltages / currents in a 3-phase Star-Delta balanced system.

Unit – III: Induction Motors and Instruments:

Concept of Faraday's laws, 3- phase induction motor working principle, operation and construction details.

Instruments: Introduction, classification of instruments, operating principles, essential features of measuring instruments, permanent magnet moving coil (PMMC) instruments, moving iron (MI) instruments.

Unit IV-Diode: Overview of Semiconductors, PN junction diode and Zener diode –Diode circuits: rectifiers (bridge type only), filters, clippers and clampers.

UNIT V- Transistor: BJT construction, operation, characteristics (CB, CE and CC configurations) and uses – JFET and MOSFET construction, operation, characteristics (CS configuration) and uses.

UNIT VI-Digital Electronics: Number systems – binary codes –binary arithmetic - Boolean algebra, laws & theorems - simplification of Boolean expression using K maps - logic gates - implementation of Boolean expressions is using logic gates - standard forms of Boolean expression.

Text Books:

1. Basic Electrical Engineering –T.K. Nagesarkar and M.S. Sukhja, Oxford University Press.2nd edition.
2. Basic electrical Engineering – M.S. Naidu and S. Kamakshiah – TataMcGraw-Hill, 2005 edition.
3. Principles of Electronics - V.K.Mehta, S.Chand Publications, 2nd edition.

References:

1. Theory and problems of Basic electrical Engineering- D.P.Kotahari&I.J.Nagrath PHI.
Electronic Devices and Circuits, Millman&Halkias, TMH publications.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level								M	M	H		

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Oral Communication Lab-II**

Code: 9HC62

Prerequisite: Oral Communications Lab- I

**L T P/D C
0 0 3 1.5**

Course Objectives:

- Understand the nuances of striking a great conversation in formal and informal situations.
- Gain experience of facing an audience and speaking in public.
- Design a winning presentation and present it with ease.

Course Outcomes: At the end of this course, the student will be able to

1. Strike a conversation and engage in effective small talk.
2. Lose stage fear and confidently interact with others in different roles and tap their creative side.
3. Speak for a minute, fluently and cohesively.
4. Make official presentations with effective use of PPTs.
5. Engage in group discussions in a confident and professional manner.
6. Shed fear of questions from the audience and the interviewers.

Units

OC Lab (2 hrs. per week)

Unit 1

Small talk and conversational techniques

Tips on enhancing conversation skills.

Conversation starters, small talk questions, how to talk to strangers and practice activities on initiating informal conversations.

- Talk about your favourite things.
- Interview each other.

Unit 2

Role Play/skit/one act play

- Role play assuming fictional characters and non-fictional characters.
- One Act plays
- Ad' Venture: Advertisement creation and enacting.

Unit 3

Just a minute (JAM)

One-minute speaking activity on topics of students' choice and Extempore.

Unit 4

Presentation skills

Introduction to structural talk. Techniques of making effective presentations.

- Five minute PowerPoint presentations.

Unit 5

Group Discussions

Tips on Dos and Don'ts of Group Discussion (GD). Discussion on evaluation pattern during GD.

- Practice sessions: GDs on different topics.

Unit 6

Facing questions: Mock Interviews

Strategies of handling Question and Answer sessions after Presentations/seminars.

- Question Toss: Practice on asking and answering questions.

Suggested Reading:

- “Effective Technical Communication” by M. Ashraf Rizvi, McGraw Hill.
- “Skill Sutras” by JayashreeMohanraj, Prism Books Pvt. Ltd.
- “Technical Communication: Principles and Practice” by Meenakshi Raman, OUP.
- “Effective Communication” John Adair, Pan Macmillan Ltd.
- “Body Language”, by Allan Pease, Sudha Publications.
- “Business Communication: From Principles to Practice” MM Monippally, TataMcGraw Hill.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M					M	L		M			

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Engineering Physics Lab

Code: 9HC66
Prerequisite: Engineering Physics

L T P/D C
0 0 3 1.5

Course Objectives:

- Understand the concept of photo electric effect using photo voltaic cell.
- Discuss the dispersive power of prism-Minimum deviation method.
- Discussion of diffraction pattern using the grating – LASER.
- To study the concepts (numerical aperture) of an optical fiber.
- To explain about magnetic induction, Biot-Savart principle.
- Study the frequency of AC mains using Sonometer.
- Explaining about the electrical resonance by using the LCR circuit.
- To understand the rigidity modulus & periodicity.
- To discuss the energy gap (E_g) of a semiconductor diode.
- To study the LED characteristics and forward resistance.
- To know the time constant of RC circuit.

Course Outcomes :After completing the experiments, students are able to

1. Understand the concepts of photo electric effect, importance, photo current, colour filters, optical sensors.
2. Know about the light properties-dispersion, prism, spectrometer and minimum deviation arrangement.
3. Recognize the difference between the interference and diffraction, grating, laser characteristics.
4. Analyze the concepts of fiber optics, fundamentals, numerical aperture its importance, attenuation in fiber and applications.
5. Understand and search to apply the fundamentals of magnetic induction, Ampere's law, Oersted's law and the Biot-Savart law.
6. Know the difference between AC and DC fundamentals, Magnetostriction, resonance, air column vibrations.
7. Analyze the LCR circuit combination, parallel, series electrical resonance, inductance, reactance, capacitance and electrical and electronic fundamentals.
8. Summarize the fundamentals of modulus-types, stress, strain, elasticity, plasticity and Hook's law.
9. Analyze the concept a semiconductors, types, calculation of energy gap of a semiconductor diode and importance.
10. Analyze the difference between normal diode & LED, forward bias, reverse bias, I-V characteristics, direct and indirect band gap semiconductors.
 - Characterize the RC network, time constant, capacitor functioning and its application.

List of Experiments

- 1. Photo voltaic cell:**
 - Determination of Planck's constant by using photo voltaic cell.
- 2. Dispersive power:**
 - Calculation of dispersive power of a given material of prism by using Spectrometer.
- 3. Diffraction Grating:**
 - Determination of wavelength of a given laser source of light by using diffraction grating.
- 4. Numerical Aperture:**
 - Determination of a Numerical Aperture (NA) of an optical fiber.
- 5. Stewart-Gee's Experiment:**
 - Determination of magnetic induction flux density along the axis of a current carrying circular coil using Stewart and Gee's experiment.
- 6. Sonometer:**
 - Calculating the frequency of AC supply by using the Sonometer.
- 7. LCR Circuit:**
 - Study of series and parallel resonance of an LCR circuit.
- 8. Torsional pendulum:**
 - Determination of rigidity modulus of a given wire material using the Torsional pendulum.
- 9. Energy Gap:**
 - Determination of the energy gap (E_g) of a given semiconductor.
- 10. Light Emitting Diode:**
 - Studying the LED characteristics and calculating the forward resistance of it.
- 11. RC Circuit:**
 - Determination of time constant of an RC-circuit.

NOTE: Any TEN of the above experiments are to be conducted.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	M	M					H			M

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. I year II Semester
B.Tech. CSE (Cyber Security)
Data Structures using C Lab**

Code: 9EC61

Prerequisite: Problem Solving using C Lab

**L T P/D C
0 0 3 1.5**

Course objectives:

1. Create programs on structures and unions
2. Develop the programs on Linear and Non-Linear data structures
3. Write programs on various searching and sorting algorithms.

Course Outcomes: After completion of the course, the student will be able to:

1. Write programs on structures and unions.
2. Implement Stacks, Queues and circular queues using arrays.
3. Write programs to implement basic operations on various types of linked list.
4. Implement insertion and traversal operations on binary search tree
5. Develop programs on various searching, sorting algorithms.

Cycle 1:

1. Define a structure for complex number. Write functions on complex numbers (addition, subtraction, absolute value, multiplication, division, complex conjugate) and implement them in a menu driven style.
2. Define a structure student having members roll no., name, class, section, marks. Create an array of 10 students give the data and find the average marks, section-wise.

Cycle 2:

3. Write a C program that implement stack and its operations using arrays
4. Write a C program that implement Queue and its operations using arrays.
5. Write a C program that implement Circular Queue and its operations using arrays.

Cycle 3:

6. Write a C program that uses Stack operations to perform the following:
 - i) Converting infix expression into postfix expression
 - ii) Evaluating the postfix expression

Cycle 4:

7. Write a C program that uses functions to perform the following operations on singly linked list:
 - i) Creation ii) Insertion iii) Deletion iv) Traversal

Cycle 5:

8. Write a C program that uses functions to perform the following operations on doubly linked list:
 - i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways

Cycle 6:

9. Write a C program using functions to perform the following operations on circular singly linked list:
i) Creation ii) Insertion iii) Deletion iv) Traversal

Cycle 7:

10. Write a C program to implement operations on the following Data Structures Using Singly linked list:
i) Stack ii) Queue

Cycle 8:

11. Write a C program that uses functions to perform the following:
i) Creating a Binary Search Tree.
ii) Traversing the above binary tree in pre-order, in-order and post-order.

Cycle 9:

12. Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
i) Linear Search ii) Binary Search

Cycle 10:

13. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Bubble Sort ii) Insertion Sort iii) Selection Sort

Cycle 11:

14. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Quick sort ii) Merge sort iii) Heap Sort

Cycle 12:

- 15 .Lab Projects- Design and Develop Case Studies such as ,Graph Traversal Techniques, Collision Resolution Techniques.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	3	2	2	1								

H: High, M: Medium, L: Low Correlation

A22- Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)
Statistical Methods and Number Theory

Code: 9J301

L T P/D C
3 0 0 3

Prerequisite: Mathematics courses of first year of study.

Course Objectives:

To learn the theory of Probability and probability distributions of single random variable.
 To learn the sampling theory and testing of hypothesis and making inferences

Course Outcomes: At the end of this course, the student is able to

1. Apply and solve the factorization techniques and CRT. (L3)
2. Apply the probability distributions to obtain mean and Standard deviation of a random variable. (L1, L3).
3. Compute the Sampling distribution of a statistic and estimating the population parameter. (L2, L3)
4. Test the hypothesis based on the large and small samples. (L4)
5. Explain Central tendency and determine Correlation coefficient using Karl Pearson's formula and Spearman's rank correlation. (L2, L5)
6. Construct the curve by least squares method and find the regression lines. (L1, L3)

UNIT - I

Greatest Common Divisors and Prime Factorization: Greatest common divisors, The Euclidean algorithm, Fundamental theorem of arithmetic, Factorization of integers and the Fermat numbers,

Congruence's: Introduction to congruence's, Linear congruence's, The Chinese remainder theorem, Systems of linear congruence's.

UNIT - II

Random Variables and Probability Distributions:

Conditional probability, Multiplication theorem, Baye's Theorem (without Proof). Random variables – Discrete and Continuous, Probability Mass and Density functions, Expectation and Variance. Probability Distributions: Binomial, Poisson and Normal Distributions.

UNIT - III

Sampling Distributions and Estimation:

Populations and Samples, Sampling distribution of the Mean (σ - known and unknown), Sums and Differences, Central limit theorem. Estimation: Point Estimation and Interval Estimation concerning Means for Large Samples.

UNIT-IV

Tests of Hypothesis for Large Samples:

Tests of Hypothesis, Type-I and Type-II Errors, Hypothesis testing concerning one mean and two means and test of hypothesis concerning to one Proportion and difference of proportions.

UNIT-V

Basic Statistics and Correlation: (10L)

Measures of Central tendency: Moments, skewness and kurtosis – Types of correlation, coefficient of correlation, Properties. Methods of finding the coefficient of correlation, Scatter diagram, direct method, Spearman's rank correlation, Karl Pearson's formula.

UNIT - VI

Curve fitting and Regression: (10L)

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Types of Regression, linear regression, multiple regressions.

TEXT BOOKS:

1. Kenneth H. Rosen, Elementary number theory & its applications, sixth edition, Addison-Wesley, ISBN 978 0-321-50031-1
2. Miller and Freund's, Probability and Statistics for Engineers, 8th Edition, Pearson Educations.
3. SCHAUM'S outlines: Probability and Statistics, Murray R. Spiegel, John Schiller, R. Alu Srinivasan, Mc Graw Hill publishers.

REFERENCE BOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics for Engineers & Scientists, 9th Ed. Pearson Publishers.
2. T.T. Soong, Fundamentals of Probability and Statistics For Engineers, John Wiley & Sons Ltd, 2004.
3. Sheldon M Ross, Probability and statistics for Engineers and scientists, Academic Press.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	L									H

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)**

Object Oriented Programming through Java

Code: 9EC02

Prerequisite: Data Structures

L T P/D C
2 1 0 3

Course Objective:

Understand the concepts of Object oriented programming principles of Java. Write the programs and execute using OOP Principles such as garbage collection, overloading methods, constructors, recursion, string handling, StringTokenizer, inheritance and its types, packages, multithreading and threads.

Course Outcomes:After completion of the course, the student will be able to

- 1 Comprehend the fundamentals of Java, Classes, Objects and design the programs using constructors and String handling methods.
- 2 Design the programs using inheritance, polymorphism and interface.
- 3 Develop programs using Packages, I/O Streams and collections.
- 4 Apply the concepts of Exception handling and Multithreading for various scenarios.
- 5 Create programs using AWT, Swings and develop applications using event handling.
- 6 Develop applications using Applets and client server programs using networking concepts.

UNIT I

History of Java, Java buzzwords, datatypes, variables, simple java program, scope and life time of variables, operators, expressions, control statements, type conversion and costing, arrays,, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, recursion, string handling, StringTokenizer.

Applications: Basic operations on the bank account of a customer.

UNIT II

Inheritance –Definition, single inheritance, benefits of inheritance, Member access rules, super class, polymorphism- method overriding, Dynamic method dispatch, using final with inheritance, abstract classes, Base class object.

Interfaces: definition, variables and methods in interfaces, differences between classes and interfaces, usage of implements and extends keyword, interfaces, uses of interfaces, packages

Applications: Extending the banking operations to the loan applicants.

UNIT III

Packages: Definition, types of packages, Creating and importing a user defined package.

Introduction to I/O programming: DataInputStream, DataOutputStream, FileInputStream,FileOutputStream, BufferedReader.

Collections: interfaces, Implementation classes, and Algorithms (such as sorting and searching).

Applications: Searching for a string in the text. PNR status check, students' result sorting.

UNIT IV

Exception handling -exception definition, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

Multi-Threading: Thread definition, types of multitasking, uses of multitasking, thread life cycle, creating threads using Thread class and Runnable interface, synchronizing threads, daemon thread.

Applications: Illegal entry handling in the registration form. (Example: entering incorrect intermediate hall-ticket number in EAMCET Registration form)

UNIT V

Advantages of GUI over CUI ,The AWT class hierarchy, Introduction to Swings, Swings Elements:- JComponent, JFrame, user interface components- JLabels, JButton, JScrollbar, text components, check box, check box groups, choices, lists panels – scrollpane, menubar, graphics, layout, managers –boarder, grid, flow, card and grid bag.

Event handling: Delegation event model, closing a Frame, mouse and keyboard events, Adapter classes.

Applications: developing calculator, developing feedback form, developing bio data.

UNIT VI

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Applications: Developing of simple advertisements.

Networking – Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, sending file from server to client.

Applications: One to one Chat application

TEXT BOOKS:

1. Java; the complete reference, 6th edition, Herbert Schildt, TMH.
2. Introduction to Java programming 6th edition, Y. Daniel Liang, Pearson education.

REFERENCES:

1. Core Java 2, Vol 1, Fundamentals, Cay. S. Horstmann and Gary Cornell, seventh Edition, Pearson Education.
2. Core Java 2, Vol 2, Advanced Features, Cay. S. Horstmann and Gary Cornell, Seventh Edition, Pearson Education

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M										

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)
Discrete Mathematics**

Code: 7FC03

Prerequisite: Mathematics- I and II

L T P/D C
2 1 0 3

Course Objectives:

1. Define the syntax and semantics of propositional logic.
2. Translate statements from a natural language into its symbolic structures in logic.
3. Prove elementary properties of modular arithmetic and explain their applications in Computer Science, for example, in cryptography and hashing algorithms.
4. Apply the notion of relations on some finite structures, like strings and databases.
5. Analyze algorithms using the concept of functions and function complexity.
6. Demonstrate graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction, for example, scheduling.

Course Outcomes: After Completion of the Course, Students will be able to:

1. Evaluate elementary mathematical arguments and identify fallacious reasoning (not just fallacious conclusions).
2. Derive conclusion about arguments represented in Predicate logic.
3. Perform operations on discrete structures such as sets, functions, relations, and sequences.
4. Solve discrete mathematics problems that involve: computing permutations and combinations o.
5. Analyze and deduce problems involving recurrence relations and generating functions.
6. Apply graph theory models and demonstrate to solve problems of connectivity and constraint satisfaction.

UNIT – I

Propositional Logic: Statement and notations, Connectives, Well-formed Formulas, Truth Tables, Tautology, Equivalence, Implication, Rules of inference, Arguments, Proof by contradiction, Conditional Proof Normal forms, and Automatic theorem proving.

Objective: student will be able to understand statements, their truth value, constructing truth tables and will be able to prove them using different laws such as associative and commutative etc...

UNIT-II

First order logic: Predicates, Quantifiers, Free and Bound variables, Rules of inference, Consistency, Automatic Theorem Proving.

Objective: student will be able to use universal and existential quantifiers to describe predicates and effectively use automatic theorem proving

UNIT – III

Relations: Properties of Binary Relations, Equivalence, transitive closure, Compatibility & Partial Ordering Relations, Hasse Diagrams, Lattice and its properties.

Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and Monoids. Groups, Subgroups, Ring, Homomorphism, Isomorphism.

Objective: student will be able to learn different relations and their properties. use of different algebraic structures and their use in mathematics.

UNIT –IV

Elementary Combinatorics:

Basics of counting, Combinations & Permutations with and without repetitions, Constrained repetitions. Binomial coefficients, Binomial and Multinomial theorems, Euler function, Derangements, Principle of inclusion and exclusion, Pigeon hole principle and its applications.

Objective: student will be able to apply permutations and combinations to solve problems. use of pigeonhole principle and inclusion exclusion principles to solve problems.

UNIT V

Recurrence relations: Generating functions. Function of sequences. Recurrence relations, Solving recurrence relations by substitution and generating functions. Characteristic roots. Solution of Inhomogeneous recurrence relations.

Objective: student will learn to solve various recurrence relations by using different techniques.

Unit VI

Graph Theory: Basic concepts, Representation of Graph, DFS, BFS, Spanning trees, Planar graphs, coloring, Isomorphism and subgraphs, Multi graphs and connected graphs, Euler Circuits, Hamiltonian graphs, Chromatic numbers,.

Objective: student will learn the basics of graph theory, different ways of traversing the graph and different types of graphs and circuits which has important applications in further subjects.

TEXT BOOKS :

1. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker, PHI.
2. Discrete mathematics with applications to computer science, J.P.Tremblay and R.Manohar, TMH
3. Elements of Discrete mathematics – A computer Oriented Approach- C L Liu, D P Mohapatra. Third Edition, Tata MacGraw Hill.

REFERENCES:

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi.Pearson Education.
2. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.
3. Discrete Mathematical structures Theory and application-Malik & Sen, Cengage.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	M									

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)
Computer Organization and Architecture

Code: 9CC56

Prerequisite:

L T P/D C
2 0 0 2

COURSE OBJECTIVES

Learn about basic structure of computer, different data representations and Instruction sets; 8086 architecture, addressing modes and instruction set also write efficient programs to interface devices with 8086 processor.

COURSE OUTCOMES:After completing this course, student should be able to

1. Perceive basic operational concept of computer and data processing.
2. Use data types with instruction set of specified architecture
3. Justify different control unit design and algorithms for various operations.
4. Elaborate basic architecture of 8086 processor
5. Write assembly language programming and debug to 8086
6. Interface devices to 8086 processor.

UNIT-I

Basic Structure of Computer: Computer Types, Functional units, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers.

Data Representation: Fixed Point and Floating – Point Representation

UNIT-II

Register Transfer Language and Micro-operations: Register Transfer language. Arithmetic Micro-operations, logic micro-operations, shift micro operations, Arithmetic logic shift unit. Instruction codes.Computer instructions – Instruction cycle. Memory – Reference instructions. Input – Output and Interrupt; STACK organization; Instruction formats.

UNIT-III

Control Unit Design: Control memory, Address sequencing, micro-program example, design of control unit-Hard wired control, Micro-programmed control.

Computer Arithmetic Operations: Addition and subtraction, multiplication Algorithms, Division Algorithms, Fixed point Arithmetic operations.

UNIT-IV

Architecture of 8086 Microprocessor. Special functions of General purpose registers. 8086 flag register and function of 8086 Flags, Addressing modes of 8086, Instruction set of 8086.

UNIT-V

Assembler directives, simple programs, procedures, and macros. Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-VI

Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory interfacing to 8086 (Static RAM&EPROM). 8255 PPI-Variou modes of operation and interfacing to 8086. Stepper motor Interface to 8086. Interrupt structure of 8086. Vector interrupt table. Interrupt service routines.

TEXT BOOKS:

1. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson
2. Microprocessors and interfacing – Douglas V.Hall, TMH, 2nd Edition, 1999.

REFERENCES:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson
2. Micro computer systems, The 8086/8088 Family Architecture, Programming and Design – Y.Liu and G.A. Gibson, PHI, 2nd Edition.
3. Advanced microprocessor and Peripherals – A.K.Ray and K.M.Bhurchandi, TMH, 2000.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level						H	L	H	L	L		H

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)
Universal Human Values**

Code: 9HC03
Prerequisite: Nil

L T P/D C
3 0 0 3

Human Values Courses: This course also discusses their role in their family. It, very briefly, touches issues related to their role in the society and the nature, which needs to be discussed at length in one more semester for which the foundation course named as “H-102 Universal Human Values 2: Understanding Harmony” is designed which may be covered in their III or IV semester. During the Induction Program, students would get an initial exposure to human values through Universal Human Values – I. This exposure is to be augmented by this compulsory full semester foundation course.

OBJECTIVE: The objective of the course is four fold:

1. Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.
2. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
3. Strengthening of self-reflection.
4. Development of commitment and courage to act.

COURSE TOPICS: The course has 28 lectures and 14 practice sessions in 6 modules:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration–what is it? - Its content and process; ‘Natural Acceptance’ and Experiential Validation- as the process for self-exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’
8. Understanding the needs of Self (‘I’) and ‘Body’ - happiness and physical facility
9. Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of ‘I’ and harmony in ‘I’

11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail

12. Programs to ensure Sanyam and Health. Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfillment to ensure mutual happiness; Trust and Respect as the foundational values of relationship

14. Understanding the meaning of Trust; Difference between intention and competence

15. Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship

16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals

17. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

18. Understanding the harmony in the Nature

19. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature

20. Understanding Existence as Co-existence of mutually interacting units in all-pervasive space

21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding

22. Natural acceptance of human values

23. Definitiveness of Ethical Human Conduct

24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

Module 6: Harmony on Professional Ethics

25. Competence in professional ethics:

a. Ability to utilize the professional competence for augmenting universal human order

b. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

26. Case studies of typical holistic technologies, management models and production systems

27. Strategy for transition from the present state to Universal Human Order:

a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers

b. At the level of society: as mutually enriching institutions and organizations

28. Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. to discuss the conduct as an engineer or scientist etc.

3. READINGS:

3.1 Text Book

1.Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010 3.

2 Reference Books

- 1.JeevanVidya: EkParichaya, A Nagaraj, Jeevan VidyaPrakashan, Amarkantak, 1999.
- 2.Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004. 3.The Story of Stuff (Book).
- 4.The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
- 5.Small is Beautiful - E. F Schumacher.
- 6.Slow is Beautiful - Cecile Andrews
- 7.Economy of Permanence - J C Kumarappa
- 8.Bharat Mein Angreji Raj - PanditSunderlal
- 9.Rediscovering India - by Dharampal
- 10.Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
- 11.India Wins Freedom - Maulana Abdul Kalam Azad
- 12.Vivekananda - Romain Rolland (English)
- 13.Gandhi - Romain Rolland (English)

Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)
Fundamentals of Computer Networks

Code: 9JC01	L	T	P/D	C
Prerequisite: Nil	2	0	0	2

Course Objective:

- Equip the students with a general overview of the concepts and fundamentals of computernetworks.
- Familiarize the students with the standard models for the layered approach to communicate between machines in a network, protocols and functions of the various layers.

Course Outcomes: At the end of this course, the student will be able to

- 1 Classify network topologies for different networks. (L2)
- 2 Outline design issues of data link layer and MAC layer. (L2)
- 3 Explain error detection and correction methods. (L2)
- 4 Analyze the routing algorithms and Internetworking. (L4)
- 5 Explain the services of transport, session and application layer protocols. (L2)

UNIT I

Introduction: Uses of Computer Networks, Types of networks: WAN, LAN, MAN, Network Topologies, Reference models: OSI, TCP/IP.

Physical Layer: Transmission media: magnetic media, twisted pair, coaxial cable, fiber optics, wireless transmission.

UNIT II

Data link layer: Design issues in data link layer: framing, flow control, error control, Error Detection and Correction: Parity, CRC checksum, Hamming code, Flow Control: Sliding Window Protocols, Applications: Data link layer protocols HDLC, PPP.

UNIT III

Medium Access sub layer: Channel allocation problem, MAC Protocols: ALOHA, CSMA, CSMA/CD, MAC addresses, IEEE 802.X, Standard Ethernet, Wireless LANS. Bridges, Types of Bridges.

UNIT IV

Network Layer: Design issues in Network Layer, Virtual circuit and Datagram Subnets. Taxonomy of Routing: Hierarchical routing, Broad casting, Geo casting. Routing algorithm: Shortest path routing, Flooding, distance vector routing, Link state routing.

Internetworking: Concatenated Virtual Circuits, Connectionless internetworking, Tunneling, Internetwork routing, Fragmentation

UNIT V

Network layer in internet: IPv4, IP addresses, Sub netting, Super netting, NAT

Internet control protocols: ICMP, ARP, RARP, DHCP.

Congestion Control: Principles of Congestion, Congestion Prevention Policies.

Congestion Control in datagram Subnet: Choke packet, load shedding, jitter control.

Quality of Service: Leaky Bucket algorithm and token bucket algorithm.

UNIT VI

Transport Layer: Transport Services, Connection establishment, Connection release and TCP and UDP protocols.

Session Layer: SSH, HTTPS

Application Layer: Domain name system, FTP, HTTP, SMTP, WWW.

TEXTBOOKS:

1. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH
2. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.
3. Data Communication and Networks-Bhushan Trivedi-OXFORD Publications.

Recommended Textbooks & Other Readings:

1. An Engineering Approach to Computer Networks-S. Keshav, 2nd Edition, Pearson Education
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M										

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)**

Quantitative Aptitude and Logical Reasoning

Code: 9HC16
Pre Requisites: Nil

L T P/D C
3 0 0 3

Course objectives:

To answer general problems in his everyday life within in short time and to improves the certain skills of a student such as numerical and logical ability, mental capacity and also in sharpening minds.

Course outcomes: After completion of the course, the student will be able to:

1. Apply Number system, HCF and LCM, Averages, Ages and ratio and proportion.
2. Understand various important topics of quantative aptitude.
3. Understand Mensuration and data interpretation topics.
4. Illustrate Series Completion, analogy, classification and coding and decoding topics.
5. Illustrate Various topics of logical reasoning.
6. Apply Venn-diagrams, cubes and dice and also on clocks and calendar problems.

Unit I: Number System: Test for Divisibility, Test of prime number, Division and Remainders – HCF and LCM of Numbers–Fractions and Decimals -Average-Problems on Ages- Problems on Numbers- Ratio and Proportion.

Unit II: Percentage – Profit, Loss and Discount – Partnership and Share-Simple Interest - Compound Interest. Time and Work- Pipes and Cisterns-Time and Distance- Problems on Trains- Boats and Streams.

Unit III: Allegation or Mixtures, Clocks & Calendar.Mensuration : Area of Plane Figures, Volume and Surface Area of Solid Figures. Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs.

Unit–IV: Series Completion: Number Series, Alphabet Series, Alpha – Numeric Series. Analogy: Completing the Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy, and Number Analogy. Classification: Word Classification, Number Classification and Letter Classification. Coding & Decoding: Letter Coding, Number Coding, Matrix Coding, Substitution, Deciphering Message Word Codes, Jumbled Coding. Crypt arithmetic-Inequalities-Input Output Tracing

Unit–V: Blood Relations– Direction sense test- Number, Ranking & Time Sequence Test – Mathematical Operations-Arithmetical Reasoning. Puzzle Test: Classification Type Questions, Seating Arrangements, Comparison Type Questions, Sequential Order of Things, Selection Based on Given Conditions, Family Based Puzzles, Jumbled Problems.

Unit –VI: Logical Venn Diagrams –Cubes and Dice – Analytical Reasoning-Assertions and Reason–Logical Deductions-Syllogism -Statement and Arguments-Statement and Conclusions- - Data Sufficiency.

Text Books:

1. Quantitative Aptitude by R.S.Agarwal
2. Verbal and Non Verbal Reasoning by R.S.Agarwal.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	M						M			H

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)**

Object Oriented Programming through Java Lab

Code: 9EC62

Prerequisite: Data Structures

L T P/D C
0 0 4 2

Course objective:

Understand, design and execute the programs involving concepts of Java and object-oriented programming principles.

Course Outcomes: After completion of the course, the student will be able to:

1. Implement programs to generate Prime numbers, Roots of a quadratic equation and Fibonacci series.
2. Develop applications such as the banking system.
3. Design and develop operator, function overloading, and dynamic method dispatch.
4. Implement applications using interface and packages.
5. Create applications by using threads to remove inconsistencies on sharable resources.
6. Develop programs by applying the concepts of applets and event handling.
7. Write and execute applications to implement client and server scenarios.

List of Programs:

1. A) Write a program to print prime numbers up to a given number.
B) Write a program to print roots of a quadratic equation $ax^2+bx+c=0$.
C) Write a program to print Fibonacci sequence up to a given number.
2. A) Define a class to represent a bank account and include the following members
Instance variables:
 - (i) Name of depositor
 - (ii) Account No
 - (iii) Type of account
 - (iv) Balance amount in the account

Instance Methods:

To assign instance variables (Constructors-Zero argument and parameterized)

1. To deposit an amount
2. To withdraw amount after checking the balance
To display name and address
Define Execute Account class in which define main method to test above class.
- B) In the above account class, maintain the total no. of account holders present in the bank and also define a method to display it. Change the main method appropriately.
- C) In main method of Execute Account class, define an array to handle five accounts.
- D) In Account class constructor, demonstrate the use of “this” keyword.
- E) Modify the constructor to read data from keyboard.
- F) Overload the method deposit() method (one with argument and another

without argument)

G) In Account class, define set and get methods for each instance variable.

Example:

For account no variable, define the methods get Account No() and set Account No (intacco) In each and every method of Account class, reading data from and writing data to instance variables should be done through these variables.

3. A) Define Resister class in which we define the following members: Instance variables: resistance Instance Methods: give Data():To assign data to the resistance variable display Data(): To display data in the resistance variable constructors

Define subclasses for the Resistor class called Series Circuit and Parallel Circuit in which define methods: calculate Series Resistance () and calculate Parallel Resistance () respectively. Both the methods should take two Resistor objects as arguments and return Resistor object as result. In main method, define another class called Resistor Execute to test the above class.

- B) **Modify the above two methods which should accept array of Resistor objects as argument and return Resistor object as result.**

4. A) Write a program to demonstrate method overriding.
 B) Write a program to demonstrate the uses of “super” keyword (three uses)
 C) Write a program to demonstrate dynamic method dispatch (i.e .Dynamic polymorphism).
5. A) Write a program to check whether the given string is palindrome or not.
 B) Write a program for sorting a given list of names in ascending order.
 C) Write a program to count the no. of words in a given text.

6. A) Define an interface “Geometric Shape” with methods area() and perimeter() (Both method’s return type and parameter list should be void and empty respectively.

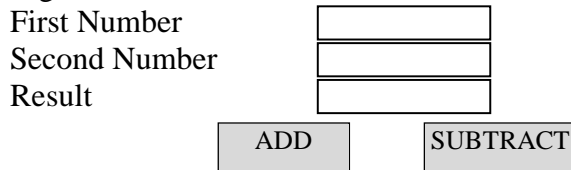
Define classes like Triangle, Rectangle and Circle implementing the “Geometric Shape” interface and also define “Execute Main” class in which include main method to test the above class

- B) Define a package with name “sortapp” in which declare an interface “SortInterface” with method sort() whose return type and parameter list should be void and empty. Define “subsortapp” as subpackage of “sortapp” package in which define class “SortImpl” implementing “SortInterface” in which sort() method should print a message linear sort is used. Define a package “searchingapp” in which declare an interface “SearchInterface” with search() method whose return type and parameter list should be void and empty respectively. Define “searchingimpl” package in which define a “SearchImpl” class implementing “SearchInterface” defined in “searchingapp” package in which define a search() method which should print a message linear search issued.

Define a class ExecutePackage with main method using the above packages (classes and its methods).

Use Array List class of Collections Framework to and use algorithms to search and sort the element of an array.

- 7) Modify the withdraw() method of Account class such that this method should throw “Insufficient Fund Exception” if the account holder tries to withdraw an amount that leads to condition where current balance becomes less than minimum balance otherwise allow the account holder to withdraw and update the balance accordingly.
- 8.A) Define two threads such that one thread should print even numbers and another thread should print odd numbers.
B) Define more than one thread to print tables using synchronization concept.
C) Define two threads such that one thread should read a line of text from text file and another thread should write that line of text to another file. (Thread communication example).
- 9) Design the user screen as follows and handle the events appropriately.



- 10) Write a Java program for handling mouse events and key events.
- 11) a) Write a program for handling window events.
b) Develop an applet that displays a simple message.
- 12) Develop a client that sends data to the server and also develop a server that sends data to the client (two-way communication)
- 13, 14) Develop Lab projects (such as banking application, simple gaming application, scientific calculator, Client-Server Communication in incorporating file handling mechanisms, etc.)

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M				L			M			

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)**

Basic Electrical and Electronics Engineering Lab

Code: 9AC95

Prerequisite: Basic Electrical and Electronics Engineering

L T P/D C
0 0 3 1.5

Electrical Experiments

1. Brake test on 3-phase induction motor (performance characteristics).
2. Speed control of DC shunt motor by
 - a. Armature Voltage Control .
 - b. Field flux control method.
3. Brake test on DC shunt motor.
4. Swinburne's test on DC shunt machine.
5. OCC characteristics of DC shunt generator.
6. Verification of superposition and Reciprocity Theorems.

Electronics Experiments

1. PN Junction diode characteristics A. Forward bias B. Reverse bias.
2. Zener diode characteristics
3. Half wave Rectifier with and without filters.
4. Full wave Rectifier (Centre tapped and Bridge)with and without filters
5. Transistor CE characteristics (Input and Output)
6. Verification of Logic gates

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M	M						M			

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year I Semester
B.Tech. CSE (Cyber Security)**

Computer Organization and Computer Networks Lab

Code: 9J361

Prerequisite: Data Structures

L T P/D C
0 0 2 1

Course Objectives:

Analyze and apply working of 8086. Compare the various interface techniques. Analyze and apply the working of 8255, 8279 ICs and design and develop the programs. Learn the Communication Standards. To provide an understanding of the design concepts of framing Error Detection & correction, Routing, Congestion concepts and Network tools.

Course Outcomes: At the end of this course the student will be able to

- CO1. Experiment with Arithmetic operations of binary number system using 8086 processor. (L3)
- CO2. Demonstrate the data link layer framing methods, error detection and error correction techniques, routing algorithms and basic network commands. (L2)

Computer Organizations Lab Exercises:

PART – A

Introduction to MASM/TASM Assembler

Familiarization with 8086 Kit

Experiment I, II

Write ALP and execute the program to

1. Add two 8-bit numbers
2. Subtract two 32-bit numbers
3. Multiply two 16-bit numbers
4. Perform 16-bit division
5. Find cube of a number
6. Exchange two numbers
7. Find factorial of a given number

Experiment III

Write ALP and execute the program to

8. Add a given series of numbers
9. Find average of a given series of numbers
10. Find sum of squares of a given series of numbers
11. Find sum of cubes of a given series of numbers

Experiment IV

Write ALP and execute the program to

12. Find largest number from a given series of numbers
13. Sort a series of given numbers in descending order

Experiment V

Write ALP and execute the program to

14. Move a string of data bytes from one location to another
15. Reverse a given string

Experiment V1

Write ALP and execute the program to

16. Compare two strings
17. Find length of a given string

PART-B

Write ALP and interface with 8086

18. Interface a stepper motor
19. Generate a triangular wave, square wave and saw tooth waves

Computer Networks Lab Exercises:

1. Implement the data link layer framing methods such as
 - a) Character / Byte stuffing
 - b) Bit stuffing.
2. Implement on a data set of characters the three CRC polynomials
 - a) CRC 12 b) CRC 16 c) CRC CCITT.
3. Implement Hamming code for error detection and error correction
4. Implement Dijkstra's algorithm to compute the shortest path through a graph.
5. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table for each node using distance vector routing algorithm.
6. Implement Congestion control using Leaky-Bucket Algorithm
7. Execute the basic Networking Commands
 - i. Arp
 - ii. Hostname
 - iii. ipconfig
 - iv. ipconfig/all
 - v. Ipconfig/renew
 - vi. Ipconfig/release
 - vii. ipconfig/flushdns
 - viii. pathping
 - ix. ping
 - x. route
 - xi. tracert
8. **Lab Project:** Using Cisco Packet Tracer Tool: Create network architectures using virtual environment and check architectures performance factors, such as QoS (in Guest mode).

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M		M		H							

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Python Programming**

Code: 9FC02

**L T P/D C
2 1 0 3**

Prerequisite: Knowledge of C programming

Course Objectives:

Use Python interactively, execute a Python script at the shell prompt, use Python types, expressions, and None, use string literals and string type, use Python statements (if...elif..else, for, pass, continue, . . .), understand the difference between expressions and statements, understand assignment semantics, write and call a simple function., utilize high-level data types such as lists and dictionaries, understand the difference between mutable and immutable types, write a simple class and access methods and attributes, import and utilize a module, read from and write to a text file.

Course Outcomes: After taking this course, you should be able to

- 1: Gains exposure towards Python versions and their specifications.
- 2: Build programs using primitive data types.
- 3: Write applications that include functions, modules, packages along with respective exceptional handling mechanism.
- 4: Writes applications using OO features of Python
- 5: Write applications using Files.
- 6: Hands on exposure on NumPy/Tkinter/Plotpy modules.

Unit -I :

Introduction to Python: History, Features, Modes of Execution, Setting up path, working with Python Basic Syntax, Variable and Data Types, Operators. Conditional Statements (If, If-else, Nested if-else) Looping (for, While Nested loops) Control Statements (Break, Continue, Pass).

Input-Output:Printing on screen, Reading data from keyboard, Opening and closing file

Unit-II:

Functions:Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables

String Manipulation: Accessing Strings, Basic Operations, String slices, Function and Methods

Lists:Accessing list, Operations, Working with lists Function and Methods

Tuple:Accessing tuples, Operations, Working.

Dictionaries: Accessing values in dictionaries, working with dictionaries, Properties Functions and Methods.

Unit-III:

Modules: Importing module, Math module, Random module, Packages

Exception Handling: Exception, Exception Handling, Except clause, Try? Finally clause User Defined Exceptions

Unit-IV:

Python- OOPs concept: Class and object, Attributes, Inheritance, Overloading Overriding, Data hiding.

Regular expressions: Match function, Search function, Matching VS Searching, Modifiers Patterns.

Unit -V:

Introduction to Files, File Handling, Working with File Structure, Directories, Handling Directories

Unit -VI:

Case Study with NumPy/PlotPy/SciPy/GUI Programming, Introduction, Tkinter programming, Tkinter widgets

TEXT BOOK:

1. [Apress]-Beginning Python. From Novice to Professional, 2nd ed. - [Hetland] (2008)

Reference books:

1. Introduction to Computation and Programming using Python, Revised and Expanded Edition, John V. Guttag, The MIT Press.
2. Programming Python, Fourth Edition by Mark Lutz, O'Reilly
3. Python Programming using problem solving approach, ReemaThareja, Oxford Higher Education.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	M			M		H				

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Information Security**

Code: 9JC02

**L T P/D C
2 0 0 2**

Prerequisite: Fundamentals of Computer Networks

Course Objectives:

- Learn the concepts of security attacks, security services and understand the various cryptographic techniques.
- Learn IP security Architecture and its role in security framework.

Course Outcomes: At the end of this course, the student will be able to

- CO1. Classify the different types of Security Attacks and security standards. (L3)
- CO2. Analyze various confidentiality, authentication and email privacy techniques. (L4)
- CO3. Comprehend the authentication, confidentiality and key management protocols related to network security. (L2)
- CO4. Explain various threats, firewalls and Intrusion Detection System. (L4)

UNIT – I: Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs.

UNIT – II: Conventional Encryption Principles, Conventional encryption algorithms: DES, TDES, AES, cipher block modes of operation, location of encryption devices, key distribution, Approaches of Message Authentication, Secure Hash Functions: SHA1 and HMAC.

UNIT – III: Public key cryptography principles, public key cryptography algorithms: RSA, DIFFIE HELL MAN, digital signatures, digital Certificates, Certificate Authority and key management
Kerberos, X.509 Directory Authentication Service. Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT - IV

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT – V

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET). Intruders, Viruses and related threats

UNIT – VI: Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS:

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education, 4th Edition.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn IdoDubrawsky, Steve W.Manzuik and Ryan Permech, wileyDreamtech

REFERENCE BOOKS:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	H	M	M								

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Database Management Systems**

Code: 9FC04

Prerequisite:

L T P/D C
3 0 0 3

Course Objectives

- Understand the different issues involved in the design and implementation of a database system.
- Learn the physical and logical database designs, database modeling, relational, hierarchical, and network models and to understand and use data manipulation language to query, update, and manage a database.
- Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency and design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outcomes: After completion of this course student will learn to:

1. Comprehend importance, significance, models, Database languages, architecture and design of DataBaseSystems.
2. Design Relational Models and apply Integrity Constraints, Querying fundamentals, Logical data base design and Views of databases along with application of Relational Algebra.
3. Apply queries in SQL Query using Nested Queries Set, Comparison Operators, Aggregative Operators, Logical connectivity's with Joins statements and develop applications.
4. Learn to eliminate data redundancy through normalforms.
5. Understand ACID properties and Serializability in Transaction management and Database Recovery.
6. Use different External Storage Organization techniques and apply Indexing in databases to enhance systemperformance.

UNIT I

Data Base Systems: Data Vs Information, Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor.

Data base design and ER diagrams – Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Data Modeling checklist.

Application- ER diagram for a college

UNIT II

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus.

Application - Student database design.

UNIT III

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers, Embedded SQL.

Application - working with Aviation company database.

UNIT IV

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Multi valued Dependencies – FORTH NormalForm.

Application - Faculty Evaluation Report.

UNIT V

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation-Based Protocols – Multiple Granularity, Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage.

Application - Production Management System.

UNIT VI

Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic IndexStructure.

Application – Creating B+ tree on InstructorFile.

TEXT BOOKS:

1. Data base System Concepts, Silberschatz, Korth, McGraw hill, Vedition.
2. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATAMcGrawHill 3rdEdition
3. Database Management Systems, Peter Rob, A.AnandaRao,Carlos Coronel ,CENGAGE Learning

REFERENCES:

1. Data base Systems design, Implementation, and Management, Peter Rob and Carlos Coronel 7thEdition.
2. Fundamentals of Database Systems, ElmasriNavratePearsonEducation
3. Introduction to Database Systems, C.J.DatePearsonEducation

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M	M		M	M						

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Software Engineering

Code: 9EC03

Prerequisite: Database management systems

L T P/D C
2 0 0 2

Course Objectives

- To understand the importance of software engineering lifecycle models in the development of software
- To understand the various design principles in modeling a software
- To Test a software which adheres to the standard benchmarks
- To undergo Practical exposure on testing tools to meet current market value

Course Outcomes: After completion of the course, the student should be able to

1. Students can able to identify software process and software engineering practices to select and justify approaches for a given project and its constraints and distinguish lifecycles for developing software product.
2. Students know what and how to gather the requirements for a project and able to prepare requirement document
3. Students understand the importance and principles of Unified Modeling Language, its building blocks and to relate UML paradigm for problem solving.
4. Students can able to understand what is testing and format for writing test cases for different applications
5. Students can able to measure a software quality by using different metrics during whole software development life cycle
6. Students can able to know different testing techniques and their significance

UNIT I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Characteristics of Software, Software myths.

A Generic view of Process: Software engineering- A layered technology, a Process framework. The Capability Maturity Model – Integrated (CMM-I)

UNIT II

Software Requirements: Functional and Non-functional Requirements, User Requirements, System Requirements, the Software Requirements Document.

Requirements engineering process: Feasibility studies, requirements elicitation and analysis, requirements validation, Requirements management, RTM

Process Models: Software Development Life Cycle, The waterfall model, Incremental Process models, RAD Model, Unified Process Model, Evolutionary Process models(Prototype Model, Spiral Model, Concurrent Development Model, V-Model, Agile Model)

UNIT III

Introduction to UML: Importance of Modeling, Principles of Modeling, Conceptual model of the UML, Architecture,.

Diagrams: Class Diagrams, Forward and Reverse engineering for class Diagram. Use case Diagrams, Sequence Diagram,

UNIT IV

Testing: What is Testing, Characteristics of Test Engineers, Software Testing Life Cycle, Levels of Testing, Testing Approaches, Test Cases: Format for Writing Test Case, Test plan: Format to prepare Test plan

Purpose of testing, Dichotomies, Consequences of bugs

UNIT V

Flow graphs and Path testing: Basics concepts of path testing

Data Flow Testing: Basics of Data flow Testing

Logic Based Testing : Decision Tables

Software Metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance

UNIT VI

Software Testing Techniques: Black-box Testing, White box testing, Gray box Testing, Boundary value Analysis, Regression Testing, Cause Effect graphing, CRUD, Database, Mutation Testing , Random Testing, Performance testing, Stress Testing, Spike Testing, Accepting Testing, Alpha and Beta Testing , V& V

Automated Testing Tools: Need for Automated testing tools, Taxonomy of Testing Tools, Exposure to Software Testing Tools: Selenium, UFT

TEXT BOOKS

1. Software Engineering, A Practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition. (Unit 1,2,5)
2. Grady Booch, James Rumbaung, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Education.(Unit 3)
3. Software testing techniques – Boris Beizer, Dreamtech, second edition.(Unit 4,5,6, Refer Internet)

REFERENCES:

1. Software Testing and continuous Quality Improvement, by William E.Lewis,Gunasekaran,2nd Edition Auerbach publications (Unit 6,Refer Internet)
2. Software testing tools – by Dr. K.V.K.K Prasad Dreamtech (Unit 4)
3. Software Engineering- Sommerville, 7th edition, Pearson education.
4. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
5. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, John Wiely.
6. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
7. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies
8. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
9. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
10. AtulKahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
11. Mark Priestley: Practical Object-Oriented Design with UML,TATA McGrawHill

12. Craig Larman Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Pearson Education
13. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M									M	M

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Business Economics and Financial Analysis

Code: 9ZC01

Prerequisite: Nil

L T P/D C
3 0 0 3

Course Objective:

Learn and identify the different production and cost analysis models with the implications of financial aspects and accounting

Course Outcomes: After completion of the course, the student should be able to

1. Understand the nuances of Business and its relation to economics
2. Outline the production function and cost concepts
3. Summarize the basic market structures and their relevance to business
4. Comprehend the fundamentals of financial accounting concepts
5. Apply the fundamental concepts of financial accounting in preparation of financial statements.
6. Appraise the financial ratios that are used to analyze the financial performance of the company.

UNIT I

INTRODUCTION TO BUSINESS ECONOMICS:

Definition, Nature and Scope of Business Economics–Demand Analysis: Demand Determinants, Law of Demand and its exceptions, Elasticity of Demand, Types of Elasticity of Demand and Demand Forecasting – Statistical and Non-Statistical techniques.

UNIT II

THEORY OF PRODUCTION AND COST ANALYSIS:

Production Function – Isoquants and Isocosts, Internal and External Economies of Scale, Law of Returns Cost Analysis: Cost concepts, different types of costs, Break-even Analysis (BEA)- Determination of Break-Even Point (simple problems).

UNIT III

INTRODUCTION TO MARKETS

Market structures: Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition, Pricing Methods and strategies.

UNIT IV

FINANCIAL ACCOUNTING - I:

Accounting concepts and Conventions, Double-Entry system of Accounting, Accounting Cycle, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance.

UNIT V

FINANCIAL ACCOUNTING – II:

Introduction to Final accounts, Revenue and Capital Expenditure, elements of Financial Statements, Preparation of Final Accounts with simple adjustments (simple problems).

UNIT-VI

FINANCIAL ANALYSIS THROUGH RATIOS:

Concept of Ratio Analysis, Various Types of Ratios: Liquidity Ratios (short term solvency ratios), Leverage Ratios (long term solvency ratios), Turnover Ratios and Profitability Ratios (simple problems).

TEXT BOOKS:

1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, PHI, 4th Ed.
3. Suma Damodaran, Managerial Economics, Oxford University Press.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H					M	H	M				M

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Environmental Science**

Code: 9HC05

Prerequisite:

L T P/D C
3 0 0 0

Course Objectives:

1. To understand structure and function of ecosystem
2. To learn classification and uses of natural resources
3. To learn about Understanding the impacts of developmental activities and mitigation measures.
4. To know the source, causes and preventive methods of pollution
5. To understand the importance of ecological balance for sustainable development.
6. To understand the environmental policies and regulations

UNIT-I Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity.

UNIT-II Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source.

UNIT-III Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation.

UNIT-IV Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants. Acid rain-Threshold limit values of chemicals present in environment, Global warming, Ozone layer depletion, Water pollution: Sources and types of pollution. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Sewage water Treatment, Kyoto protocol, and Montréal Protocol.

UNIT-V Sustainable development and Green Technology: Concept of sustainable development, threats to sustainability population and its explosion, Crazy consumerism, over-

exploitation of resources, strategies for achieving sustainable development environmental education, conservation of resources, urban sprawl sustainable cities and sustainable communities, human health , role of IT in Environment, Environmental Ethics, Environmental Economic – Concept of Green Building, Clean Development Mechanism (CDM).

UNIT-VI Environmental Policy, Legislation & Environment Impact Assessment: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects.Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).

Course Outcomes

After completion of the course, the student will be able to:

1. Understand about ecosystem and energy flow among the organisms.
2. Know the resources available, use of them and overexploitation of the resources in the nature.
3. Learn the value, use and value of biodiversity.
4. Understand the causes and effect of pollution and implement measures in control of pollution.
5. Understand the sustainable development and implement green technology for sustainable development.
6. Learn and implement policy to protect the environment.

TEXT BOOKS:

1. Perspectives in **Environmental Studies: Kaushik A. and Kaushik, C.P.** New Age International (P) Ltd. (2008)

REFERENCE BOOKS:

1. Environmental Studies by ErachBharucha, 2005 University Press.
2. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
3. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
4. Environmental Science by Daniel B. Botkin& Edward A. Keller, Wiley INDIA edition.
5. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
6. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	L	L	L	M		L			M			M

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Database Management Systems Lab

Code: 9FC63

Prerequisite:

L T P/D C
0 0 3 1.5

Course objective:

Design the optimal queries using structured and unstructured query languages like SQL and PL/SQL by making use of control structures, cursors, triggers and functions/procedures.

Course Outcomes: At the end of this course, the student will be able to

- 1 Create tables for a database and apply Queries using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
- 2 Learn and write Queries using Aggregate functions such as [COUNT, SUM, AVG, MAX, MIN, GROUP BY, HAVING], Conversion functions and use string functions for a given application.
- 3 Implement programs using PL/SQL programs using exceptions, COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
- 4 Design programs using WHILE LOOPS, FOR LOOPS, nested loops using BUILT-IN Exceptions and write Procedures.
- 5 Learn to write Programs for stored functions invoke functions in SQL Statement and write Programs for packages specification.
- 6 Apply and write programs using features of CURSORS and its variables.
- 7 Develop Programs implementing Triggers.

Exercises:

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
 Example: - Select the roll number and name of the student who secured fourth rank in the class.
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
5. i) Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

- ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
 7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT-IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.
 8. Programs development using creation of procedures, passing parameters IN and OUT Of PROCEDURES.
 9. Program development using creation of stored functions, invoke functions in SQL Statement and write complex functions.
 10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
 11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
 12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.
 13. Queries using SQL-INJECTION: AND/OR Attack, Comments Attack, String Concatenation Attack, UNION Injection Attack

TEXT BOOKS:

- 1) ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3Edition
- 2) ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
- 3) SQL and PL/SQL for Oracle 10g, Black Book, Dr. P. S.Deshpande.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	M	M	M			L			M			H

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Python and Information Security Lab

L T P/D C
0 0 3 1.5

Code: 9J462

Prerequisite: Python Programming, Information Security, Data Structures Lab

Course Objectives:

1. Learn and write programs in Python
2. Learn the fundamental of information security principles and services offered to secure the data.

Course Outcomes: At the end of this course, the student will be able to

- CO1. Design and implement programs in Python using different packages. (L3)
- CO2. Execute different cryptographic, Hashing and Key Exchange programs. (L3)Python Programming Lab

Week -1:

1. Use a web browser to go to the Python website <http://python.org>. This page contains information about Python and links to Python-related pages, and it gives you the ability to search the Python documentation.
2. Start the Python interpreter and type help() to start the online help utility.
3. Start Python interpreter and use it as Calculator.

Week -2:

4. If you run a 10 kilometer race in 43 minutes 30 seconds, what is your average time per mile? What is your average speed in miles per hour? (Hint: there are 1.61 kilometers in a mile).
5. The volume of a sphere with radius r is 5? (Use Sphere volume formula)
6. Suppose the cover price of a book is \$24.95, but bookstores get a 40% discount. Shipping costs \$3 for the first copy and 75 cents for each additional copy. What is the total wholesale cost for 60 copies?

Week -3:

7. A function object is a value you can assign to a variable or pass as an argument. For example, do_twice is a function that takes a function object as an argument and calls it twice:

```
defdo_twice(f):
    f()
    f()
```

Here's an example that uses do_twice to call a function named print_spam twice.

```
defprint_spam():
    print 'spam'
do_twice(print_spam)
```

- a. Type this example into a script and test it.
 - b. Modify `do_twice` so that it takes two arguments, a function object and a value, and calls the function twice, passing the value as an argument.
 - c. Write a more general version of `print_spam`, called `print_twice`, that takes a string as a parameter and prints it twice.
 - d. Use the modified version of `do_twice` to call `print_twice` twice, passing 'spam' as an argument.
8. Write a function that draws a grid like the following:

```
+-----+-----+
|         |         |
|         |         |
|         |         |
+-----+-----+
|         |         |
|         |         |
|         |         |
+-----+-----+
```

Hint: to print more than one value on a line, you can print a comma-separated sequence.

9. Write a function called `gcd` that takes parameters `a` and `b` and returns their greatest common divisor.
10. Write a function called `is_palindrome` that takes a string argument and returns True if it is a palindrome and False otherwise. Remember that you can use the built-in function `len` to check the length of a string.

Week-4:

11. Write a function called `is_sorted` that takes a list as a parameter and returns True if the list is sorted in ascending order and False otherwise.
12. Write a function called `has_duplicates` that takes a list and returns True if there is any element that appears more than once. It should not modify the original list.
 - i. Write a function called `remove_duplicates` that takes a list and returns a new list with only the unique elements from the original. Hint: they don't have to be in the same order.
 - ii. The wordlist I provided, `words.txt`, doesn't contain single letter words. So you might want to add "I", "a", and the empty string.
 - iii. Write a python code to read a dictionary values from the user. Construct a function to invert its content. i.e., keys should be values and values should be keys.

Week-5:

12. If there are 23 students in your class, what are the chances that two of you have the same birthday? You can estimate this probability by generating random samples of 23 birthdays and checking for matches.
Hint: you can generate random birthdays with the `randint` function in the `random` module.
13. How does a module source code file become a module object?
14. Why might you have to set your `PYTHONPATH` environment variable?
15. What is a namespace, and what does a module's namespace contain?
16. How do you make a module? Give an example of construction of a module using different geometrical shapes and operations on them as its functions.

17. What is the purpose of a `__init__.py` file in a module package directory? Explain with a suitable example.
18. Use the structure of exception handling all general purpose exceptions.

Week-6:

19. a. Write a function called `draw_rectangle` that takes a Canvas and a Rectangle as arguments and draws a representation of the Rectangle on the Canvas.
 - b. Add an attribute named `color` to your Rectangle objects and modify `draw_rectangle` so that it uses the `color` attribute as the fill color.
 - c. Write a function called `draw_point` that takes a Canvas and a Point as arguments and draws a representation of the Point on the Canvas.
 - d. Define a new class called `Circle` with appropriate attributes and instantiate a few `Circle` objects. Write a function called `draw_circle` that draws circles on the canvas.
20. Write a Python program to demonstrate the usage of MRO in multiple levels of Inheritances.
21. Write a python code to read a phone number and email-id from the user and validate it for correctness.

Week-7:

22. Write a Python code to merge two given file contents into third file.
23. Write a Python code to open a given file and construct a function to check for given words present in it and display on found.

Week-8:

24. Import `numpy`, `Plotpy` and `Scipy` and explore their functionalities.
Write a GUI program to create a window wizard having two text labels, two text fields and two buttons as `Submit` and `Reset`.

Information Security Lab

1. Implement Substitution Cipher.
2. Implement Transposition Cipher.
3. Implement DES
 - (a) Generate Cipher text for the given Plaintext.
 - (b) Retrieve the Plaintext from the given Cipher text.
4. Implement Diffie Hellman Algorithm and generate Secret Key.
5. Implement RSA algorithm
 - (a) Generate Public key and Private key pair
 - (b) Generate Cipher text for the Plaintext
 - (c) Obtain the Plaintext from the Cipher text
6. Implement Hash Algorithm.
7. Generate Digital Signature
8. Implement Digital Envelope.

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M	M		M							

H: High, M: Medium, L: Low Correlation

**Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Software Engineering Lab**

Code: 9EC63

Prerequisite: Database Management Systems

**L T P/D C
0 0 3 1.5**

Course Objectives:

- Understanding how a software design may be represented as a set of interacting objects that manage their own state and operations.
- Helps the students to design the models in real market.
- Learns various conceptual models relating to UML.
- Over all understanding of the designing process in software engineering using UML concepts.
- In software testing lab the various manual and automation testing processes are carried out to efficiently learn the testing activities.
- Both commercial and open source testing tools are being taught to better the software testing in detail.
- According to the software industry requirements the testing tools are taught so that the students can directly make use of testing tools in industry.
- Implement various testing techniques and to make a thorough study on various testing tools.

Course Outcomes: At the end of this course, the student will be able to

1. Identify software process and software engineering practices to select and justify approaches for a given project and its constraints and distinguish life cycles for developing software product.
2. Comprehend the importance and principles of Unified Modeling Language, its building blocks and to relate UML paradigm for problem solving.
3. Define and design models for the requirements stated in the software project.
4. Design class, object and interactive diagrams and know their significance.
5. Design advanced behavioral and architectural modeling and work on case studies.

Exercises:

1. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e. Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. The student takes up the case studies mentioned below, and model it in different views i.e. Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
3. Prepare Test Plan document and write Test Cases for Small scale Project (Like for their

B.Tech IV Year Project or Post-Graduate Projects), they are learn how to Analyze SRS document in order to prepare Test Plan Document.

4. Demonstrate skills to use modern software testing tools (EX: UFT, Bugzilla, Selenium) and test application (web, Window application) by using the tools.
5. Demonstrate the ability to differentiate between different Testing tools present in the market (like functional testing tools, Test Management Tools, Bug Tracking Tools and Performance Testing Tools) and prepare Test Plan document and write Test Cases for Small scale Project (Like for their B.Tech IV Year Project or Post-Graduate Projects).

CASE TOOLS LAB:

Case Studies

1. Automatic Teller Machine
2. Library Management System
3. Railway Reservation System
4. Online Book Shopping System
5. Student Admission System

Week 1

1. Basic Structural Modeling:

- i) Class Diagrams.
- ii) Object Diagrams

Week 2

2. Basic Behavioral Modeling: i) Usecase Diagrams

Week 3

3. Basic Behavioral Modeling:

- i) Interaction Diagrams (Collaboration and Sequence Diagram)

Week 4

4. i) Basic Behavioral Modeling : Activity Diagram

- ii) Architectural Modeling : Deployment Diagram

Software Testing Lab :

Week 5

5. a) Write programs in ‘C’ Language to demonstrate the working of the following constructs:

- i) do...while
- ii) while...do
- iii) if ...else
- iv) switch
- v) for

b) A program written in ‘C’ language for matrix multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.

Week 6

6. a) Take any system (e.g. ATM system) and study its system specifications and report the various bugs.

- i) Open Source Bug Tracking Tool: Bugzilla

b) Write the test cases for any known application (Ex: Banking application)

Week 7

7.a) Create a test plan document for any application (Ex: Internet Banking Application)

- b) Study of Selenium IDE (open source testing tool)

Week 8-10

8. Study of any Functional and Regression Testing Tools: i) Licensed Tool : UFT
12.01

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level						M	L	L	M	H		H

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Soft Skills Lab

Code: 9HC63
Prerequisite: Nil

L T P/D C
0 1 2 2

Course objectives: Enable students to

- make self-assessment.
- know the importance of certain soft skills like time management and goal setting.
- enhance their team skills and design thinking capabilities for effective critical thinking and creativity.
- know their emotional quotient which guides their thinking, behavior and helps them manage stress efficiently.

Course Outcomes: After completion of the course, the student will be able to:

1. Determine the significance of soft skills in the working environment
2. Understand how to demonstrate empathy in a wide range of situations.
3. Effectively communicate through verbal/oral communication and improve the listening
4. Become more effective individual through goal/target setting, self motivation and practicing creative thinking.
5. Develop a positive and responsible attitude to their own well-being
6. Identify stress factors and handle stress effectively.

Tutorial (1 per week)

Unit-1

- 1.1 Introduction to soft skills
- 1.2 SWOT / SWOC Analysis
- 1.3 SWOT / SWOC Grid
- 1.4 Johari window

Unit-2

- 2.1 Emotional intelligence
- 2.2 Time management
- 2.3 Goal Setting

Unit-3

- 3.1 Attitude
- 3.2 Professional etiquette & Grooming

Unit-4

- 4.1 Styles of Communication
- 4.2 **Inter-personal Skills**
- 4.3 Team work, Team building
- 4.4 Leadership Skills

Unit-5

- 5.1 Problem Solving & Decision making
- 5.2 Critical & Creative thinking

Unit-6

- 6.1 Values : Personal, Social & Cultural

Lab (2 per week)

Unit-1

- Activities based on Soft skills
- Self-Analysis
- Questionnaire,
- SWOT Practice

Unit-2

Activities :

- big picture challenge
- Goal setting charts

Unit-3

Practice activities on

- Attitude
- Professional etiquette & Grooming

Unit-4

- Activities on social skills
- Role Plays
- Team building activities

Unit-5

Practice activities on

- Problem solving situations
- Games and puzzles
- Case Studies and Group Discussions on decision making and problem solving, creativity and innovation.

Unit-6

Practice activities

- Role Plays

Text Book: SOFT SKILLS – Dr. K. Alex, S. Chand publications

Suggested Readings: * SOFT SKILLS – MeenakshiRaman ; * Step Ahead with Soft Skills - Oxford University Press ; * Skill Sutras- JayashreeMohanraj * The Power of Soft Skills – Robert A. Johnson ; * Soft Skills for Everyone – Jeff Butterfield

PO's	1	2	3	4	5	6	7	8	9	10	11	12
Level	H	M				H	L		M	H		H

H: High, M: Medium, L: Low Correlation

Syllabus for B.Tech. II year II Semester
B.Tech. CSE (Cyber Security)
Technical Seminar

Code: 9J485
Prerequisite: Nil

L T P/D C
0 1 0 1

Course objective

Develop an ability to understand and present the latest technological developments in computer science. Identify one of them, understand its impact on the event/method/society as a whole and present the seminar on the same which enhances oratory and interview facing skills.

Course Outcomes : At the end of this course, the student will be able to:

1. Deliver lecture on emerging technologies.
2. Explain domain knowledge to resolve real time technical issues
3. Demonstrate ability to lead and explain concepts and innovative ideas.
4. Demonstrate team leading qualities.
5. Demonstrate public speaking and lifelong learning skills for higher studies and to pursue professional practice.
6. Exchange new information that would not have been available otherwise.
7. Develop debating and interview skills.

Procedure:

1. Seminar in-charges shall highlight the significance of Technical Seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar In-charge shall take signatures from students.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot / week.
5. Progress of the seminars needs to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for Technical Seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

There shall be a technical seminar evaluated for 100 marks. The evaluation is purely internal and will be as follows:

Sl.No	Description	Marks
1.	Literature survey, topic and content	20
2.	Presentation including PPT	30

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3.	Seminar Notes	05
4.	Final Report 3 copies	10
5.	Punctuality in giving seminar as per Scheduled time and date	10
6.	Viva	25