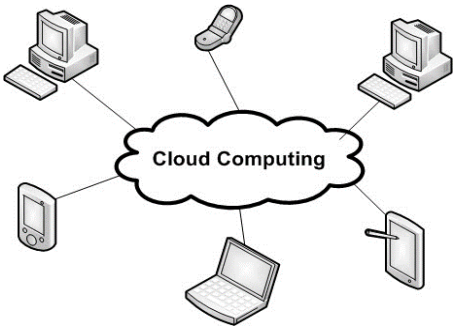
VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS)
Ibrahim Bagh, Hyderabad-31

Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored by
VASAVI ACADEMY OF EDUCATION
Hyderabad

SYLLABI UNDER CBCS FOR
SECOND YEAR B.E (IT) WITH EFFECT FROM 2017-18
(For the students admitted in 2016-17)



DEPARTMENT OF INFORMATION TECHNOLOGY
+91-40-23146050, 23146051
Fax: +91-40-23146090
Website: www.vce.ac.in

VISION

To be a centre of excellence in core Information Technology and multidisciplinary learning and research, where students get trained in latest technologies for professional and societal growth.

MISSION

To enable the students acquire skills related to latest technologies in IT through practice- oriented teaching and training.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY
SCHEME OF INSTRUCTION AND EXAMINATION
B.E SEMESTER – III UNDER CBCS WITH EFFECT FROM THE ACADEMIC YEAR 2017-18

S No.	Course Code	Course Name	Scheme of Instruction Hours per week				Scheme of Examination			
							Duration in Hrs	Maximum Marks		Credits
			L	T	D	P		SEE	CIE	
THEORY										
1	BS330MA	Discrete Mathematics	3	-	-	-	3	70	30	3
2	BS360MA	Probability & Statistics	3	-	-	-	3	70	30	3
3	ES310IT	Data Structures	3	1	-	-	3	70	30	3
4	PC310IT	Basic Electronics	3	1	-	-	3	70	30	3
5	PC320IT	Digital Electronics & Logic Design	3	-	-	-	3	70	30	3
6	MC320CE	Environmental Science	2	-	-	-	3	70	30	2
7	MC310ME	Introduction to Entrepreneurship	1	-	-	-	2	35	15	1
8	HSC310EH	FS-I: Communication skills in English-I	2	2	-	-	3	70	30	2
9	OE3XXXX	Open Elective -I	2	-	-	-	3	70	30	2
PRACTICALS										
10	PC311IT	Basic Electronics Lab	-	-	-	2	3	50	25	1
11	ES311IT	Data Structures Lab	-	-	-	2	3	50	25	1
12	P319IT	Mini Project-I	-	-	-	2	3	-	25	1
Total			**22**	**4**	**-**	**6**	**-**	**695**	**330**	**25**
Grand Total			**32**				**-**	**1025**		

SEE: Semester End Examination **CIE: Continuous Internal Evaluation**

with effect from the academic year 2017-18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF MATHEMATICS
SYLLABUS FOR B.E III SEMESTER
DISCRETE MATHEMATICS

Instruction : 3 Hours/week	SEE Marks : 70	Course Code : BS330MA
Credits : 3	CIE Marks: 30	Duration of SEE Exam : 3Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	*At the end of the course students will be able to:*
1. *Understand* Propositions and theirequivalences, predicates and quantifiers and learn various proof strategies. 2. *Study*the concepts of number theory such Modular Arithmetic, Congruences and basic cryptography etc., 3. *Understand* the basics of counting, combinatory, and various methods of solving Recurrence relations. 4. *Understand* Relations, Equivalence relations, Posets and Hasse diagrams. 5. *Analyze* the concepts of Graphs.	1. *Use* logical notation to define and reason about fundamental athematical concepts and*synthesize* induction hypothesis and simple *Induction* proofs. 2. *Prove* elementary properties of modulararithmetic and basic cryptography and apply inComputer Science. 3. *Calculate* number of possible outcomes of lementary combinatorial processes such aspermutations and combinations*Model* and analyze computational processes using analytic and combinatorial methods. 4. *Prove* whether a given relation is an equivalence relation/poset and will be able to draw a Hasse diagram. 5. *Apply* graph theory models of data structures and to solve problems of connectivity.

UNIT – I

Logic: Logic- Logical connectives- Propositional equivalences– Predicates and quantifiers – Nested quantifiers.

Mathematical Reasoning, Induction: Proof Strategy- Methods of Proofs- Mathematical Induction- Second Principle of Mathematical Induction.

UNIT – II

Number Theory: The Integers and Division- Division Algorithm- Fundamental Theorem of Arithmetic –Modular Arithmetic-Integers and Algorithms- Euclidean Algorithm. Applications of Number Theory-Linear

Congruences- Fermat's Little Theorem- Public key cryptography- RSA Encryption and Decryption.

UNIT – III

Counting: Basics of counting- Pigeonholeprinciple- Permutations and combinations – Pascal's Identity- Vandermonde's Identity- Generalized Permutations and combinations.

Advanced Counting Techniques: Recurrence relations: Solving Recurrence Relations- Linear Homogeneous and Non-Homogeneous Recurrence relations.

UNIT – IV

Relations: Relations – Properties -Representing relations - Equivalence Relations - Partial Orderings- Poset- Hasse diagrams.

UNIT –V

Graph Theory: Introduction- Types of graphs- Graph terminology- Basic theorems- Representing Graphs and Graph Isomorphism - Connectivity- Euler and Hamiltonian paths - Planar graphs- Euler's Formula- Graph coloring- Basic Definitions.

Text Books:

1. Kenneth H.Rosen – Discrete Mathematics and its application – 5th edition, Mc Graw – Hill, 2003.
2. Joel. Mott. Abraham Kandel, T.P.Baker, Discrete Mathematics for Computer Scientist &Mathematicans, Prentiee Hail N.J., 2nd edn, 1986.

Reference Books:

1. Discrete and Combinatorial Mathematics by Ralph P. Grimaldi , Pearson International
2. J.P.Trembly, R.Manohar, Discrete Mathematical Structure with Application to Computer Science, Mc Graw- Hill – 1997.
3. R.K. Bisht, H.S.Dhami - Discrete Mathematics, Oxford University Press, 2015.

with effect from the academic year 2017-18

DEPARTMENT OF MATHEMATICS
SYLLABUS FOR B.E III SEMESTER
PROBABILITY AND STATISTICS

Instruction : 3 Hours/week	SEE Marks : 70	Course Code : BS360MA
Credits : 3	CIE Marks: 30	Duration of SEE Exam : 3Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	At the end of the course students will be able to:
1. *Study* the concepts and application of conditional probability 2. *Understand* various concepts ofRandom variables and standard Statistical Distributions 3. *Study* various methods of testing large samples 4. *Analyze* standard statistical tests employed for small samples 5. *Understand* fitting of a straight line to a given data and measuring Correlation between variables.	a) *Apply* conditional probability to the real world problems b) *Apply* various statistical distributions to solve practical problems,to estimate unknown parameters of populations and apply the tests of hypotheses. c) *Infer* properties of population conducting tests on samples d) Categorize population based on tests on small samples e) *Solve* problems on fitting of a straight line to the given data and also to find co-efficient of correlation and to determine regression lines and their application problems.

UNIT –I (8 classes)
Conditional Probability: Introduction to Permutations and Combinations, Definition of Probability – Addition Law of probability, Conditional Probability- Baye's Theorem

UNIT –II (14 classes)
Statistical Distributions: Random Variables - Probability Distribution function for Discrete and Continuous Random variables - Expectation – Variance – Moments -Moment Generating Function- Poisson and Normal Distributions

UNIT-III (6 classes)
Sampling and Inference: Testing of Hypothesis, Level of Significance, Tests of Significance for large samples

UNIT-IV (6 classes)

Tests of Significance for small samples - t-test - F- test - χ^2 - test.

UNIT-V (6 classes)

Curve Fitting: Curve fitting by the Method of Least Squares **-** Fitting of Straight line – Regression - Lines of Regression - Correlation – Karl Pearson's Co-efficient of Correlation.

Text Books:

1. R.K. Jain & S.R.K. lyengar, Advanced Engineering Mathematics, Third Edition, Narosa Publications, 2007.
2. Dr.B.S Grewal, Higher Engineering Mathematics, 40th Edition, Khanna Publishers.

Reference Books:

1. Kreyszig E Advanced Engineering Mathematics, 8thEdition, John Wiley & Sons Ltd, 2006.
2. N.P.Bali& Manish Goyal,A text book of Engineering Mathematics Laxmi Publication.
3. Gupta & Kapoor Fundamentals of Mathematical Statistics, Sultan Chand & sons, New Delhi.

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
DATA STRUCTURES

Instruction:3+1Hours/week	SEE Marks : 70	Course Code : ES310IT
Credits : 3	CIE Marks: 30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Explore efficient storage mechanisms for easy access, design and implementation of various data structures	1. Identify appropriate linear data structure to solve a problem. 2. Illustrate the usage of linked lists for various applications. 3. Demonstrate the usage of non-linear data structures – graphs & trees for traversals. 4. Implement Binary Search Trees, Max/Min-Heaps, and understand the basic concepts of self-balancing Binary Search Trees such as Red-Black and AVL trees. 5. Apply different sorting and hashing techniques to a given problem

UNIT-I:
LINEAR DATA STRUCTURES: Abstract Data Type [ADT]: List, Stack, Queue, Using Arrays – review, Polynomial Abstract Data Type, String Abstract Data Type. Applications of Stacks: A Mazing problem, Evaluation of Expressions

UNIT-II:
Linked List: Single Linked List, Stack and Queue – Review, Doubly-linked list, Applications of Lists – Polynomial manipulation- Operations (Insertion and Deletion)

UNIT-III:
Non-Linear Data Structures: Trees: Introduction, Binary Trees, Binary Tree Traversal ,Binary Search Trees, Heaps. **Graphs**: Graph abstract data type, elementary graph operations (Depth First Search (DFS), Breadth First Search (BFS) , Minimum cost spanning trees (Prim's and Kruskal's Algorithm), Shortest path algorithm – Dijkstra's Algorithm.

UNIT-IV:

Efficient Binary Search Trees: AVL Trees, Red-Black Trees, Splay Trees, M-way Search Trees, B-Trees.

UNIT-V:

Sorting and Hashing: Sorting: Insertion sort**,** Quick sort, Merge Sort, Heap Sort. **Hashing**: Introduction, Hash Function, Linear Probing, Quadratic Probing, Double Hashing.

Learning Resources:

1. Ellis Horowitz, Sartaj Sahni and Susan Anderson-Freed, Fundamentals of Data Structures in C, 2/e, Universities Press, 2008
2. Mark Allen Weiss, —Data Structures and Algorithm Analysis in C, Second Edition, Pearson Education, 1996
3. Seymour Lipschutz, Data Structures with C, McGraw Hill, 2011
4. Robert Kruse, C.L. Tondo, Bruce Leung, Shashi Mogalla , — Data Structures and Program Design in C, Second Edition, Pearson Education, 2007
5. Jean-Paul Tremblay, Paul G. Sorenson, 'An Introduction to Data Structures with Application', TMH, 2nd Edition.
6. Richard F, Gilberg, B.A. Forouzan, "Data Structures, A Pseudocode Approach with C", Cengage, 2nd Edition
7. http://nptel.ac.in/courses/106103069/

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DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
BASIC ELECTRONICS

Instruction:3+1Hours/week	SEE Marks : 70	Course Code : PC310IT
Credits : 3	CIE Marks: 30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Identify different electronic devices, their characteristics and use them in building simple electronic circuits.	1. Explain and design simple circuits like rectifiers, voltage regulators, clipping and clamping circuits using diodes. 2. Identify different types of bipolar junction transistors and analyze circuits which are constructed using BJTs. 3. Implement basic Boolean logic functions using CMOS circuits. 4. Explain the principle of operation of feedback amplifiers, oscillators and power amplifiers. 5. Analyze and design simple circuits using Operational Amplifier.

UNIT – I

PN junction diode , Biasing, Zener diodes, Rectifier Circuits, Limiting and clamping circuits, Schottky Barrier diode and Varactor diode.

UNIT – II

Bipolar junction transistors –characteristics, analysis of transistor circuits at DC, , biasing, transistor as amplifier, effect of emitter bypass capacitance, h-parameter model of BJT, approximate analysis of BJT circuits using h-parameter model, transistor as switch, internal capacitance. Pi equivalent circuit, low frequency and high frequency operation, thermal run away

UNIT – III

MOSFET current-voltage characteristics, MOSFET as an amplifier and as a switch,

Digital CMOS logic circuits: Introduction, digital IC technologies and logic circuit families, Voltage Transfer Characteristic (VTC) of inverter, Noise Margins, Propagation delay, static and dynamic operation of CMOS inverter. CMOS logic gate circuits: Basic structure (PUN and PDN),

Implementation of 2-input NOR gate, NAND gate, complex gates and exclusive OR gate.

UNIT – IV

Feedback – Structure, Properties of negative feedback, Topologies, Advantages of negative feedback amplifiers Sinusoidal Oscillators – Loop gain, Barkhausen criteria, RC Phase shift, LC and Crystal Oscillators.
Power Amplifiers: class A, B and C amplifiers.

UNIT – V

Operational Amplifiers : Ideal characteristics, op. amp. as adder, Subtractor, Integrator, differentiator and comparator using op. amp. generation of square and Triangular waveforms, Monostable multi vibrator. Op. Amp. As Voltage –controlled current switch(VCCS), Current-controlled Voltage source(CCVS), Instrumentation Amplifier, antilogarithmic amplifiers and analog multipliers.

Learning Resources :

1. Jacob Millman, Christos C Halkais, Satybratajit, Electronic Devices and Circuits,Mc Graw Hill India Private Ltd, 3rd Edition
2. Adel S. Sedra, Kenneth C. Smith, Microelectronic Circuits, 5th Edition, Oxford International Student Edition, 2006
3. D. Roy Choudhury, Shail B. Jain, Linear Integrated Circuits, New Age International Publishers, 4th Edition.
6. JocobMillman, Arvin grable – Micro Electronics – 2nd Edition, McGraw Hill 1987.
7. Donald L. Schilling, Charles Belove, Electronic Circuits Discrete and Integrated, Tata Mc Graw Hill Education, 3rd Edition
8. https://onlinecourses.nptel.ac.in/noc17_ee02/preview

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
DIGITAL ELECTRONICS & LOGIC DESIGN

Instruction:3Hours/week	SEE Marks : 70	Course Code : PC320IT
Credits : 3	CIE Marks: 30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Understand the operation of different combinational and sequential circuits and use them in the design of digital circuits.	1. Simplify Boolean functions using different techniques and implement simplified functions using logic gates. 2. Design different combinational circuits using logic gates and programmable logic devices. 3. Explain the operation of different flipflops and use them for the analysis and design of synchronous and asynchronous sequential circuits. 4. Design digital circuits using ASM charts. 5. Implement different digital circuits using VHDL.

UNIT – I

Introduction to Boolean algebra and number system, Logic Gates, Optimized implementation of logic functions – Karnaugh Map, Strategies for minimization of product-of-sum and sum-of-product functions. Multiple output circuits. NAND and NOR logic networks, Cost functions, TTL 74 series gates, Introduction to CAD tools and VHDL

UNIT – II

Combinational circuit building blocks – Multiplexers. Decoders. Encoders. Code converters, Arithmetic comparison circuits. general structure of a PLA, gate level diagram, schematic diagram, PAL. Structure of CPLDs and FPGAs, 2-input and 3-input lookup tables(LUT). Design of Arithmetic-circuits using CAD tools. TTL 74 series ICs, VHDL for Combinational circuits

UNIT – III

Basic Latch, Gated SR Latch, gated D Latch, T Flip-flop, JK Flip-flop, excitation tables. Master-Slave edge triggered flip-flops. Set up and hold time of a flip-flop. Registers, Counter. TTL 74 series ICs,Using registers and counters with CAD tools. Design examples using VHDL.

UNIT – IV

Synchronous Sequential Circuits – Analysis of Synchronous sequential Circuits Basic design steps. State-Assignment problem Moore and Mealy state models. State minimization, Design of FSM with CAD Tools. Implementation using VHDL.

UNIT-V

Introduction to Asynchronous sequential circuits, Analysis of Asynchronous sequential circuits. Hazards: static and dynamic hazards. Significance of Hazards .Clock skew, ASM Charts, Digital Hardware Design Flow.

Learning Resources:

1. M. Moris Mano, Charles R. Kime, Logic and Computer Design Fundamentals, 2nd edition, Pearson Education Asia, 2001.
2. Stephen Brown ZvonkoVranesic – Fundamentals of Digital Logic with VHDL design, McGraw Hill – 2000.
3. Virendrakumar- Digital ElectronicsTheory& Experiments, New Age International Publishers, 2002
4. John F. Walkerly, Digital Design : Principles and Practices, Pearson India, 4th Edition.
5. Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss, Digital Systems: Principles and Applications, Pearson India, 10th Edition.
6. http://nptel.ac.in/courses/117105080/

with effect from the academic year 2017-18

DEPARTMENT OF CIVIL ENGINEERING
SYLLABUS FOR B.E III SEMESTER
ENVIRONMENTAL SCIENCE

Instruction:2Hours/week	SEE Marks : 70	Course Code : MC320CE
Credits : 2	CIE Marks: 30	Duration of SEE Exam : 3Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
In this subject the students will	*Upon the completion of this course students will be able to*
1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, various types of disasters and their mitigation measures.	1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, various types of disasters and their mitigation measures.

UNIT-I

Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods, drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

UNIT-II

Ecosystems: Structure and function of an ecosystem, producers, consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystem (ponds, oceans, estuaries).

UNIT-III

Biodiversity: Genetic species and ecosystem diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT-IV

Environmental Pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste & e-waste management.

UNIT-V

Social Aspects and the Environment: Water conservation, Climate change, global warming, acid rain, ozone layer depletion. Environmental Impact Assesment, population explosion.

Suggested Books:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2013.
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2006.
3. Suresh K. Dhameja, Environmental Studies, S.K. Kataria& Sons, 2010.

References Books:

1. De A.K., Environmental Chemistry, New Age International, 2003.
2. Odum E.P., Fundamentals of Ecology, W.B. Sunders Co., USA, 2004.
3. Sharma V.K., Disaster Management, National Centre for Disaster Management, IIPE, Delhi, 2013.
4. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2013.

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DEPARTMENT OF MECHANICAL ENGINEERING
SYLLABUS FOR BE III SEMESTER
INTRODUCTION TO ENTREPRENEURSHIP

Instruction:1Hours/week	SEE Marks : 35	Course Code : MC310ME
Credits : 1	CIE Marks: 15	Duration of SEE Exam : 2Hrs

Course objectives	Course Outcomes
The objectives of this course are to : • inspire students and help them imbibe an entrepreneurial mind-set. • introduce key traits and the DNA of an entrepreneur • provide the information about the facilities , schemes available to start enterprise in INDIA • educate the government policies and support structure for the entrepreneur • improve the entrepreneur skills	On completion of the course, the student will be able to: • develop awareness about entrepreneurship and successful entrepreneurs. • generate and analyse the business ideas • understand the supporting organizations available to establish the business in the country • understand the different government policies which support the entrepreneur • understand how to Prepare a business plan report

UNIT-I: Entrepreneurship: Entrepreneur characteristics – Classification of Entrepreneurships – Incorporation of Business – Forms of Business organizations –Role of Entrepreneurship in economic development –Start-ups.

UNIT-II: Idea Generation and Opportunity Assessment: Ideas in Entrepreneurships – Sources of New Ideas – Techniques for generating ideas – Opportunity Recognition – Steps in tapping opportunities.

UNIT-III: Institutions Supporting Small Business Enterprises: Central level Institutions: NABARD, SIDBI, NIC, KVIC, NIESBUD,SIDO, DST,EDI,FICCI,CII,ASSOCHAM etc. – state level Institutions –DICs- SFC-SIDC- Other financial assistance.

UNIT-IV: Government Policy and Taxation Benefits: Government Policy for SSIs- tax Incentives and Concessions –Non-tax Concessions – Rehabilitation and Investment Allowances.

UNIT-V: Entrepreneurial skills-design thinking, selling and communication. Project Formulation and Appraisal: Preparation of Project Report –Content; Guidelines for Report preparation, project report and pitching

Learning Resources:

1. Bruce R. Barringer and R. Duane Ireland, "Entrepreneurship: successfully launching new ventures", 3rd edition, Pearson Prentice Hall, 2009.
2. P. Denning and R. Dunham, "The Innovator's Way", MIT Press: Cambridge, Massachusetts, 2010.
3. Arya Kumar, "Entrepreneurship", Pearson Education, Delhi, 2012.
4. Michael H. Morris, D.F.Kuratko, J G Covin, "Corporate Entrepreneurship and Innovation", Cengage learning, New Delhi,2010
5. Peter F. Drucker, "Innovation and Entrepreneurship", Routledge Classics, 2015 .
6. https://www.wfglobal.org/initiatives/national-entrepreneurship-network/

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DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E. III-SEMESTER
FS-I: COMMUNICATION SKILLS IN ENGLISH-I

Instruction:2+2Hrs/ Week	SEE Marks: 70	Course Code: HS310EH
Credits: 2	CIE Marks: 30	Duration of SEE: 3 Hrs

Course Objective	Course Outcome
• The four major skills of language learning, listening, speaking, reading and writing provide the right key to success. • The main objective of this finishing school curriculum is to involve content for all the above mentioned four skills in teaching English and to get students proficient in both receptive and productive skills	1. Respond to questions and Engage in an informal conversation. 2. Narrate a message/story/incident, both verbally and in writing. 3. Describe an event/a session/ a movie/ an article. 4. Respond to others while being in a casual dialogue. 5. comprehend facts given and respond in an appropriate manner. 6. Construct sentences in a coherent form 7. Provide explanations 8. Recognize and list the key points in a topic/message/article. 9. Participate in group and forum discussions by providing factual information, possible solutions, and examples. 10. Debate on a topic by picking up the key points from the arguments placed. 11. Provide logical conclusions to the topics under discussion. 12. Prepare, present, and analyze reports

UNIT I – FUNDAMENTALS OF COMMUNICATION

Competencies:

3. Basic conversational ability.
4. Write e-mails introducing themselves & their purpose

Topics covered

Greeting and Introductions
Small Talk
Recalling

Topic Level Details

Greeting & Introductions

Competencies:

- Greeting appropriately
- Introducing themselves, a friend
- Responding to simple statements and questions both verbally and in writing
- Seeking introduction from others about themselves or about any topic.
- Writing an email with appropriate salutation, subject lines, self introduction, and purpose of mail.

Small Talk

Competencies:

- Identifying the topic of conversation.
- Speaking a few sentences on a random list of topics
- Reading simple information like weather reports, advertisements
- Seeking clarifications.

Recalling

Competencies:

- State takeaways from a session or conversations

UNIT II :NARRATIONS AND DIALOGUES

Competencies:

- Framing proper phrases and sentences to describe in context
- Speaking fluently with clarity and discrimination
- Responding to others in the dialogue.

Topics covered

Paraphrasing

Describing

Topic Level Details

Paraphrasing

Competencies:

- Listen for main ideas and reformulating information in his/her own words
- Draw appropriate conclusions post reading a passage.
- Writing an email confirming his/her understanding about a topic

Describing

Competencies:

- Speaking, Reading, and Writing descriptive sentences and paragraphs.

UNIT-III:RATIONAL RECAP

Competencies:

- Organizing and structuring the communication
- Detailing a topic
- Summarizing a topic.

Topics Covered:

Organizing
Sequencing
Explaining
Summarizing

Topic Level Details

Organizing

Competencies:

- Organizing the communication based on the context and audience

Sequencing

Competencies:

6. Structuring the content based on the type of information.

Explaining

Competencies:

- Explaining a technical/general topic in detail.
- Write an email giving detailed explanation/process

Summarizing

Competencies:

9. Recapitulating

UNIT-IV: PROFESSIONAL DISCUSSIONS AND DEBATES

Competencies:

- Analytical and Probing Skills
- Interpersonal Skills

Topics Covered:

Discussing
Debating

Topic Level Details

Discussing

Competencies:

- Thinking
- Assimilating

Debating

Competencies:

- Comprehending key points of the debate and note decisive points including supporting details.
- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects

UNIT -V: DRAWING CONCLUSIONS AND REPORTING

Competencies:

- Reasoning skills - Coherent and logical thinking
- Reporting and Analyzing skills.

Topics Covered:

Concluding
Reporting

Topic Level Details

Concluding

Competencies:

- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

Reporting

Competencies:

- Reporting an incident
- Writing/Presenting a project report

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
BASIC ELECTRONICS LAB

Instruction:2Hours/week	SEE Marks : 50	Course Code : PC311IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Identify the different electronic devices and use them in building different application circuits.	1. Identify and use different electronic devices and measuring equipments. 2. Use PN diode, Zener diode for applications like rectifiers, clipping and clamping circuits and voltage regulators. 3. Use BJT transistor in the design of amplifier circuit. 4. Implement different types of oscillator circuits. 5. Use operational amplifier for different applications and verify the operation of different digital circuits.

ANALOG:

1. CRO and its applications: Measurement of amplitude, frequency. Obtaining transfer characteristics and Lissajous figures. Determination of unknown frequency using CRO.
2. Characteristics of PN junction diode ,
3. Characteristics of Zener diode BJT.
4. Zener diode as a Voltage Regulator
5. Half-wave Rectifier, clipping and clamping circuits,
6. Full-wave rectifier
7. clipping and clamping circuits
8. Frequency response of Common Emitter amplifier
9. Hartley, Colpitts and RC phase shift oscillators
10. Operational Amplifier as an adder, subtractor, and comparator

DIGITAL:

11. Truth table verification of logic gates using TTL 74 series ICs. Transfer characteristics of a TTL gate using CRO
12. Half Adder, Full Adder, Decoder, MUX, implementation of Boolean logic using decoders and MUXes.
13. Truth table verification of D flip flop, T flip-flop and JK flip-flop
14. Counters
15. Shift Registers

Note: Depending on the amount of work done in each activity and submission of the record, marks / grade will be awarded.

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
DATA STRUCTURES LAB

Instruction:2Hours/week	SEE Marks : 50	Course Code : ES311IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Develop skills in design and implementation of abstractions of various linear and non linear data structures and their practical applications.	1. Perform various operations on linear data structures such as stack, queues, linked lists. 2. Implement various sorting techniques. 3. Perform different operations on trees and graphs.

1. Menu driven program that implements Stacks using arrays for the following operations
   a)create b)push c)pop d) display
2. Menu driven program that implements Queues using arrays for the following operations
   a)create b)insert c)delete d) display
3. Menu driven program that implements Circular Queues for the following operations
   a)create b)Insert c)delete d) display
4. Implementation of Infix to Postfix Conversion
5. Implementation of evaluation of postfix expression.
6. Implementation of Single Linked List.
7. Implementation of Stacks using Single Linked List.
8. Implementation of Queues using Single Linked List.
9. Implementation of Doubly Linked List.
10. Implementation of Tree Traversals on Binary Trees.
11. Implementation of Insertion and deletion operations on AVL Trees.
12. Implementation of Breadth First search Traversal on Graphs.
13. Implementation of Depth First search Traversal on Graphs
14. Implementation of Quick sort.
15. Implementation of Merge sort.

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E III SEMESTER
MINI PROJECT-I

Instruction:2Hours/week	SEE Marks : -	Course Code : P319IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Develop and implement a project using any of the programming languages/simulation tools/electronic components.	1. Develop effective solutions to various computing problems by applying the theoretical knowledge gained. 2. Implement projects and demonstrate them using presentations and technical reports

- During the implementation of the projects, Personnel Software Process (PSP) has to be followed.
- Two reviews will be conducted.
- Report of the project work has to be submitted for evaluation.

with effect from the academic year 2017-18

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS FOR BRIDGE COURSE B.E III SEMESTER
C-PROGRAMMING
(Common to all Branches)

Instruction:2Hours/week	SEE Marks : 50	Course Code : CS2090
Credits : -	CIE Marks:--	Duration of SEE Exam : 3Hrs

Course Objectives	Course Outcomes
Students should be able to	At the end of the course, students will be able to
• Acquire problem solving skills • Develop flow charts • Understand structured programming concepts • Write programs in C Language	• Develop flowcharts and algorithms for solving a problem and choose appropriate data type for writing programs in C language • Design modular programs involving input output operations, decision making and looping constructs • Apply the concept of arrays for storing, sorting and searching data • Apply the concept of pointers for dynamic memory management and string handling • Design programs to store data in structures and files

UNIT-I

Introduction to Computers: Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs, Flowcharts.
Introduction to C Language- Background, C Programs, Identifiers, Types, Variables, Constants, Input/Output, Expressions, Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion, Statements, Bitwise Operators.

UNIT-II

Selection: Logical Data and Operators, if… else, switch Statements, Standard Functions.
Repetition: Loops, while, for, do-while Statements, Loop Examples, break, continue, goto.
Functions: Designing Structured Programs, Functions Basics, User Defined Functions.

UNIT-III

Recursion-Recursive Functions, Preprocessor Commands.

Arrays: Two-Dimensional Arrays, Linear Search and Binary Search, Selection Sort and Bubble Sort.

UNIT-IV

Pointers: Introduction, Pointers to Pointers, Arithmetic operations using pointers

Strings – Concepts, C Strings, String Input/output, Functions, Arrays of Strings, String Manipulation Functions.

UNIT-V

Structure: Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Unions.

Input and Output: Files, Streams, Standard Library Input/Output Functions, Character

Input/Output Functions.

Suggested Books:

1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C, 3rd Edition (2013), Cengage Learning.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd Edition (2006), Prentice-Hall.
2. Rajaraman V, The Fundamentals of Computer, 4th Edition (2006), Prentice-Hall of India
3. Steve Oualline, Practical C Programming, 3rd Edition (2006), O'Reilly Press.
4. Jeri R. Hanly, Elliot B. Koffman, Problem Solving and Program Design in C, 5th Edition (2007), Pearson Education.
5. Balagurusamy E, Programming in ANSI C, 4th Edition (2008), TMG.
6. Gottfried, Programming with C, 3rd Edition (2010), TMH.
7. R G Dromey, How to Solve it by Computer, 1st Edition (2006), Pearson Education.

Online Resources:

1. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/
2. http://nptel.ac.in/syllabus/syllabus.php?subjectId=106104128

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY
SCHEME OF INSTRUCTION AND EXAMINATION
UNDER CBCS WITH EFFECT FROM THE ACADEMIC YEAR 2017-2018
B.E IV-SEMESTER

S No.	Course Code	Course Name	Scheme of Instruction				Scheme of Examination			
			Periods per week				Duration in Hrs	Maximum Marks		Credits
			L	T	D	P		SEE	CIE	
1	PC410IT	Data Base Management Systems	3	1	-	-	3	70	30	3
2	PC420IT	Object Oriented Programming	3	1	-	-	3	70	30	3
3	PC430IT	Computer Organization	3	-	-	-	3	70	30	3
4	PC440IT	Data Communications	3	-	-	-	3	70	30	3
5	PC450IT	Design & Analysis of Algorithms	3	1	-	-	3	70	30	3
6	HS410EH	FS-II: Communication skills in English –II	2	2	-	-	3	70	30	2
7	MC300EH	Human Values Professional Ethics-I	1	-	-	-	2	50	30	1
8	OE4XXXX	Open Elective-II	1	-	-	-	2	35	15	1
9	OE4XXXX	Open Elective-III	2	-	-	-	3	70	30	2
PRACTICALS										
10	PC411IT	Data Base Management Systems Lab	-	-	-	2	3	50	25	1
11	PC421IT	Object Oriented Programming Lab	-	-	-	2	3	50	25	1
12	P419IT	Mini Project-II	-	-	-	2	-	-	25	1
Total			**21**	**5**	**-**	**6**	**-**	**675**	**330**	**24**
Grand Total			**32**				**-**	**1005**		
SEE: Semester End Examination			**CIE: Continuous Internal Evaluation**							

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV SEMESTER
DATABASE MANAGEMENT SYSTEMS

Instruction:3+1Hours/week	SEE Marks :70	Course Code : PC410IT
Credits : 3	CIE Marks:30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Explain the need of database for storing, accessing and updating the data; eliminate redundant data; allow multiple users to be active at one time and protect the data from unauthorized access.	1. Understand functional components of the DBMS 2. Develop ER model for a given problem and map ER it to Relational model 3. Devise queries using Relational Algebra and SQL 4. Design a normalized database schema using different normal forms. 5. Understand transaction processing, concurrency control and recovery techniques

UNIT – I

Introduction to DBMS: Overview, File system vs DBMS, Advantages of DBMS, Database System Applications, Relational Databases, Object – Based and Semi-structured Databases, Data Storage and Querying, Database Architecture, Database Users and Administrators.

Database Design and the E-R Model: Overviewof the Design Process, The E-R Model, Constraints, E-R Diagrams, E–R Design Issues, Weak Entity Sets, Extended E-R Features.

UNIT – II

Relational Model: Structure of Relational Databases, Reduction to Relational Schemas, Other Aspects of Database Design.

Relational Algebra: Fundamental Relational-Algebra Operations, Additional Relational – Algebra Operations, Extended Relational - Algebra Operations, Null Values.

UNIT – III

Structured Query Language: Data Definition, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Complex Queries, Views, Modification of the Database, Joined Relations.

Advanced SQL and PLSQL: SQL Data Types and Schemas, Integrity Constraints, Authorization, SQL functions, procedural SQL, embedded SQL, cursors, ODBC and JDBC, triggers and active database.

UNIT – IV

Schema Refinement: Features of Good Relational Design, Functional-Dependency Theory, Decomposition Using Functional Dependencies, Normalization, First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT – V

Transactions: ACID properties, Transaction States, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability.

Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols, Validation-Based Protocols, Multiversion Schemes, Deadlock Handling.

Recovery System : Aries, Log-Based Recovery, Media recovery.

Learning Resources :

1. Abraham Silberschatz, Henry F Korth, S. Sudarshan, Database System Concepts, 6th Edition, McGraw-Hill International Edition, 2010.
2. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, Third Edition, McGraw-Hill International Edition, 2003.
3. Elmasri, Navathe, Somayajulu and Gupta, Fundamentals of Database System, 6th Edition, Pearson Education, 2011.
4. Patric O'Neil, Elizabeth O'Neil, Database-principles, programming, and performance, Morgan Kaufmann Publishers, 2001.
5. http://www.nptelvideos.in/2012/11/database-management-system.html

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV SEMESTER
OBJECT ORIENTED PROGRAMMING

Instruction:3+1Hours/week	SEE Marks :70	Course Code : PC420IT
Credits : 3	CIE Marks:30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	**At the end of the course student will be able to:**
explain the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, building simple GUI applications.	1. Understand fundamental concepts in Object oriented approach. 2. Develop object-oriented programs using the concepts of exception handling and multi threading. 3. Demonstrate the usage of Java I/O streams to handle user input and output. 4. Design and develop GUI programs. 5. Develop Applets for web applications.

UNIT- I

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables-scope and lifetime, Operators, Control statements, Structure of a Java class, Classes, Methods, Inheritance, and Command Line Arguments.

Arrays: One-dimensional arrays, creating an array, declaration of arrays, initialization of arrays, two-dimensional arrays.

Packages: Creation, importing a package and user defined package.

Interfaces: Defining interfaces, extending interfaces, implementing interfaces.

UNIT- II

Exception Handling: Introduction, types of exceptions, syntax of exception handling code, multiple catch statements, using finally statement, user-defined exceptions.

Multithreaded Programming: Introduction to threads, creating threads, extending the Thread class, implementing the Runnable interface, life cycle of a thread, priority of a thread, synchronization, and Inter-thread Communication.

UNIT- III

Basic I/O Streams: Java I/O classes and interfaces, Files, Stream and Byte classes, Character Streams, Serialization.

Exploring java.lang: Object, Wrapper classes, String, StringBuffer, System

Exploring java.util: Scanner, StringTokenizer, BitSet , Date, Calendar, Timer.

UNIT- IV

Introducing AWT working with Graphics: AWT Classes, Working with Graphics.

Event Handling: The Delegation Event Model, Event Classes, Source of Events, Event Listener Interfaces.

Awt Controls: Control Fundamentals, Labels, Using Buttons, Applying Check Boxes, CheckboxGroup, Choice Controls, Using Lists, Managing Scroll Bars, Using TextField, Using TextArea, Understanding Layout Managers, Menu bars and Menus, Dialog Boxes, FileDialog, Exploring the controls, Menus ,and Layout Managers.

UNIT- V

Applet Programming: Introduction, how applets differ from applications, building applet code, applet life cycle, HTML-APPLET tag, passing parameters to applets.

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill, 2006.
2. James M Slack, Programming and Problem solving with JAVA, Thomson Learning, 2002.
3. C Thomas Wu, An Introduction to Object Oriented Programming with Java 5th edition, McGraw Hill Publishing, 2010.
4. Y. Daniel Liang , An Introduction to JAVA Programming, Tata McGraw Hill, 2009.
5. Kathy Sierra, Head First Java, 2/e, Shroff Publishers, 2012.
6. http://www.nptelvideos.com/video.php?id=1472

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV SEMESTER
COMPUTER ORGANIZATION

Instruction:3Hours/week	SEE Marks :70	Course Code : PC430IT
Credits : 3	CIE Marks:30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Gain knowledge about the architectural details of a computer and interfacing the different peripherals.	1. Describe the organization of computer and various instruction formats 2. Discuss the design of control unit. 3. Identify various peripheral device architectures and operations. 4. Classify different memory systems and mapping techniques 5. Identify the importance of pipelining and multiple function units in the design of high-performance processors.

Unit I: Basic Structure of Computers

Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Software, Performance, Multiprocessors and Multicomputer, Memory locations and Addresses, Memory operations, Instructions and Instruction Sequencing, Addressing Modes, Assembly language, Additional Instructions

Unit II: Basic Processing Unit

Register Transfer Language and Micro operations: Register Transfer Language, Register Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations, Arithmetic logic shift unit.

MICROPROGRAMMED CONTROL: Control memory, address sequencing, micro program example, Design of control unit, hardwired control, micro programmed control.

Unit III: Input Output organization

Peripheral devices, Input-output Interface, Asynchronous Data Transfer, Modes of Transfer, and Priority interrupt, Direct Memory Access.

Unit IV: Memory System

Some Basic Concepts, Semiconductor RAM Memories, Read -Only memories, Cache Memories, Performance considerations, Virtual Memories, Memory Management Requirements, Secondary Storage-Magnetic Hard disks, Optical Disks, Magnetic Tape Systems

Unit V: Pipelining

Basic Concepts, Data Hazards, Instruction Hazards, Influence on Instruction sets, Data path and control considerations, Super Scalar Operation

Learning Resources:

1. Carl Hamacher, ZvonkoVranesic, SafwatZaky, Computer Organization, 5th Edition, McGraw Hill, 2002.
2. M. M. Mano, Computer System Architecture, 3rd Edition, Prentice Hall, 1994.
3. W. Stallings, "Computer Organization and Architecture - Designing for Performance", Prentice Hall of India, 2002.
4. J .P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998.
5. Pal Chouduri, Computer Organization and Design, 2nd Ed. Prentice Hall of India, 2007
6. D. A. Patterson and J. L. Hennessy, "Computer Organization and Design - The Hardware/Software Interface", 2005.
7. http://www.nptelvideos.in/2012/11/computer-organization.html

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV SEMESTER
DATA COMMUNICATIONS

Instruction:3Hours/week	SEE Marks :70	Course Code : PC440IT
Credits : 3	CIE Marks:30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Familiarize with the basics of Data Communications and Transmission media. Describe various encoding techniques, transmission modes, data link protocols, multiplexing techniques and Ethernet.	1. Demonstrate the basic components of communication model. 2. Describe the different encoding schemes. 3. Understand the different flow and error control techniques. 4. Explain the bandwidth utilization techniques. 5. Understand different categories of Ethernets.

UNIT-I:

Introduction: Data Communications, Networks.Network models: Layered tasks - The OSI model-Layers in the OSI model, TCP/IP protocol suite. Analog and Digital: Data and Signals, Transmission media, Transmission Impairments, Data rate limits, Performance.

UNIT-II:

Physical Layer: Digital Transmission: Digital-to-Digital Conversion, Analog-to-Digital Conversion. Analog Transmission: Digital-to-Analog Conversion, Analog to Analog Conversion. Transmission Modes: Parallel Transmission, Serial Transmission.

UNIT-III:

Data Link Layer: Error detection and correction**:** Introduction, Block coding, Linear Block codes, Cyclic Codes, Checksum. Data Link control**:** Framing, Flow and Error control, Protocols-Noiseless channels, Noisy channels, HDLC, Performance Issues**.**

UNIT-IV:

Multiplexing: Frequency Division Multiplexing, Synchronous Time Division Multiplexing, Statistical Time Division Multiplexing. Asymmetric Digital Subscriber line, xDSL. Circuit Switching, Packet Switching & Frame Relay. ATM: Protocol Architecture, ATM Logical Connection, ATM Cells, Transmission of ATM cells.

UNIT-V:

Wired LANs: Ethernet: IEEE Standards, Standard Ethernet-MAC sub layer, Physical Layer, Bridged, switched and full duplex Ethernets. Fast Ethernet: MAC Sublayer, Physical sublayer, Gigabit Ethernet: MAC Sublayer, Physical Layer.

Learning Resources :

1. Behrouz A. Forouzan, "Data Communications and Networking", 4th Edition, Tata McGraw Hill, 2011.
2. William Stallings, "Data and Computer Communications", Tenth Edition, Pearson Education, 2013.
3. H. Taub, D L Schilling, G Saha, "Principles of Communications", 3rd Edition, Pearson Education, 2007.
4. Simon Haykin, " Communication Systems", John Wiley & Sons, 2004.
5. http://www.nptelvideos.in/2012/11/data-communication.html

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV- SEMESTER
DESIGN & ANALYSIS OF ALGORITHMS

Instruction:3+1Hours/week	SEE Marks :70	Course Code : PC450IT
Credits : 3	CIE Marks:30	Duration of SEE Exam : 3Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	At the end of the course student will be able to:
Analyze the performance of different algorithms for their time and space complexities, and for a given problem, design the optimal solution using various algorithmic design techniques.	1. Analyze asymptotic run-time complexity of algorithms including formulating recurrence relations 2. Identify algorithm design methodology to solve problems. 3. Formulate Non deterministic algorithms for NP hard and NP complete problems.

UNIT-I

Introduction: Algorithm Specification, Performance analysis, Space Complexity, Time Complexity, Amortized Complexity Asymptotic Notation(O, Omega, Theta), Masters theorem, Performance Measurement.

UNIT-II

Divide- and Conquer: The general method, Binary Search, Merge sort quick sort, Strassen's Matrix Multiplication.

Greedy Method: The general method, Knapsack problem, Job sequencing with deadlines, optimal merge patterns, Huffman Codes.

UNIT-III

Dynamic Programming and Traversal Technique: Bellman-Ford Algorithm, Multistage graph, All-Pairs Shortest Paths, Optimal Binary Search trees, 0/1 Knapsack, Traveling Salesman Problem.

UNIT-IV

Backtracking and Branch and Bound: The 8-Queens Problem, Graph Coloring, Hamiltonian cycles, 0/1 Knapsack Problem, Traveling salesperson problem

UNIT-V

NP-Hard and NP-Completeness: Basic concepts, NP-hard graph problems-Clique Decision Problem, Node Cover Decision Problem, NP-Hard Scheduling Problem - Job shop scheduling, NP-Hard code scheduling problems – Code generation with common sub-expression.

Learning Resources:

1. Horowitz E. and Sahani S: Fundamentals of Computer Algorithm, Second edition, University Press, 2007.
2. Anany Levitin, Introduction to the Design & Analysis, of Algorithms, Pearson Education, 2003.
3. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, Clifford Stein, "Introduction to Algorithms", Third edition, MIT, 2010
4. Aho, Hopcroft, Ulman, The Design and Analysis of Computer Algorithm, Pearson Education, 2000.
5. Parag H.Dave, Himanshu B. Dave, Design and Analysis of Algorithms, Pearson Education, 2008.
6. http://nptel.ac.in/courses/106101060/

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV- SEMESTER
FS-II: COMMUNICATION SKILLS IN ENGLISH-II

Instruction: 2+2Hrs/ Week	SEE Marks: 70	Course Code: HS410EH
Credits: 2	CIE Marks: 30	Duration of SEE: 3 Hrs

Course Objective	Course Outcomes
1. identify the various features and functions of human language and communication. 2. develop the habit of listening effectively so as to analyze the speaker's tone and tenor. 3. choose appropriate words so as to speak and write accurately. 4. read various types of texts and sift information correctly. 5. study organizational structures and behavioral patterns and adapt appropriately.	1. Participate in group and forum discussions by providing factual information, possible solutions, and examples. 2. Debate on a topic by picking up the key points from the arguments placed. 3. Provide logical conclusions to the topics under discussion. 4. Prepare, present, and analyze reports. 5. choose appropriate words and tone to present accurate, specific, and factual reports. 6. Compose a summary of beginning high level reading text that identifies the thesis and key supporting details. 7. Summarize with 70% comprehension. 8. Apply reading skills, including how to approach different types of literature.

UNIT I: PROFESSIONAL DISCUSSIONS AND DEBATES

Competencies:

- Analytical and Probing Skills
- Interpersonal Skills

Topics Covered:

Discussing
Debating

Topic Level Details

Discussing

Competencies:

- Thinking
- Assimilating

Debating

Competencies:

- Comprehending key points of the debate and note decisive points

including supporting details.
- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects

UNIT II: DRAWING CONCLUSIONS

Competencies:

- Reasoning skills - Coherent and logical thinking
- Reporting and Analyzing skills.

Topics Covered:

How to draw conclusions
Importance of Logic

Topic Level Details:

Drawing conclusions

Competencies:

- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

UNIT III - REPORTING

Competencies:

- Reporting an incident
- Writing/Presenting a project report

UNIT IV - READING FOR CONTEXT

Competencies

Develop metacognitive strategies

Topics covered

Develop critical reading skills:

- Recognition of author's purpose
- Awareness of stylistic differences
- Discernment of fact and opinion
- Evaluation of fact and opinion
- Recognition of propaganda techniques
- Present vocabulary building methods
- Use comprehension and vocabulary strategies to raise reading rate.

UNIT V- SOFT-SKILLS

1. Professional integrity
2. Managing time
3. Coping with stress
4. Organizational skills

DEPARTMENT OF MECHANICAL ENGINEERING
SYLLABUS FOR B.E. IV-SEMESTER
HUMAN VALUES AND PROFESIONAL ETHICS-I

Instruction:1Hrs/ Week	SEE Marks: 35	Course Code: MC300EH
Credits: 1	CIE Marks: 15	Duration of SEE: 2Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the students to	At the end of this course the student will be able to
6. Get a holistic perspective of value- based education. 7. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations. 8. Understand professionalism in harmony with self and society. 9. Develop ethical human conduct and professional competence. 10. Enrich their interactions with the world around, both professional and personal.	f) Gain a world view of the self, the society and the profession. g) Make informed decisions. h) Start exploring themselves in relation to others and their work –constantly evolving into better human beings and professionals i) Inculcate Human values into their profession. j) Validate their aspirations through right understanding of human relationship and see the co-relation between the human values and prevailing problems. k) Strike a balance between physical, mental, emotional and spiritual parts their being. l) Obtain a holistic vision about value-based education and professional ethics.

UNIT-1

A. Human and Ethical values

What are they? --The Indian concept of values-- Modern approach to the study of values - Basis for Moral Judgement--- A new approach to Human Values-- freedom, creativity, love, wisdom, concern.

UNIT-2

Canons of Ethics

Virtue Ethics-- Ethics of Duty-- Ethics of Responsibility-- Factors to be considered in making Ethical Judgments.

UNIT-3

The Value of time

The importance of managing time-- Factors that hinder time management--Benefits of time management-- Using time judiciously--practical strategies to manage time.

UNIT-4

The Power of Positive thinking

Nature and Scope of Positive thinking-- Methods to change one's thinking--Strategies to change the cycle of one's thinking.

UNIT-5

The Value of Setting Goals

Goal setting-- Importance of setting goals for oneself—Achieving excellence through SMART goals.

Suggested Books:

1. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
2. A.N Tripathy, 2003 Human values, New Age International Publishers.
3. EG Seebauer& Robert L. Berry,2000,Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.
4. Mike Martin and Ronald Schinzinger "Ethics in Engineering "McGraw Hill
5. Charles E Haris, Micheal J Rabins, " Engineering Ethics "Cengage Learning
6. Caroline Whitback< Ethics in Engineering Practice and Research, Cambridgs University Press
7. Georgs Reynolds, Ethics in Information Technology", Cengage Learning
8. Charles D.Fleddermann, " Engineering Ethics", Pearson Education Prentice Hall, New Jersey,2004 (Indian Reprint)

Online Resoureces:

- Value Education website, Http://www.universalhumanvalues.info
- UPTU webiste, Http://www.uptu.ac.in
- Story of stuff, Http://www.storyofstuff.com
- AlGore, As Inconvenient Truth, Paramount Classics ,USA
- Charlie Chaplin, Modern Times, United Artists, USA
- IIT Delhi, Modern Technology-The Untold story-Anand Gandhi, Right Here Right Now, Cyclewala production

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV- SEMESTER
DATABASE MANAGEMENT SYSTEMS LAB

Instruction:2Hours/week	SEE Marks :50	Course Code : PC411IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objective:	Course Outcomes:
The course will enable the students to:	At the end of the course student will be able to:
learn various SQL and PL/SQL constructs and enable them to develop small size database applications.	1. Design and implement a database schema 2. Devise queries using SQL commands 3. Develop application programs using PLSQL 4. Generate reports for given requirements

1. **DDL Commands:**
   a. Creation of tables with appropriate integrity constraints
   b. Usage of alter, drop commands
2. **DML Commands:**
   a. Data Insertion and Updating
   b. Usage of truncate command
3. **TCL and DCL Commands:**
   a. Setting privileges
   b. save point, commit and rollback commands
4. **SQL Queries:**
   a. Simple SQL queries using Select
   b. SQL Built-in functions
   c. SQL Operators and Nested queries
   d. Joins and aggregate functions
   e. Grouping and ordering commands
5. **PL/SQL:**
   a. Blocks, Select Statement and control statements
   b. Stored procedures and functions
   c. Exception Handling
   d. Cursors
   e. Triggers
6. **Generating reports based on different queries**

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV- SEMESTER
OBJECT ORIENTED PROGRAMMING LAB

Instruction:2Hours/week	SEE Marks :50	Course Code : PC421IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objective:	Course Outcomes:
The course will enable the students to:	At the end of the course student will be able to:
learn Object Oriented Programming concepts using Java, essentials of Java Class Library, and event driven graphical user interface programming.	1. Develop Java programs on Object Oriented programming concepts. 2. Design and develop programs to process I/O 3. Create applications involving GUI with AWT, and web applications using Applets.

JAVA API (java.lang package)

1. A program to illustrate the concept of arrays in Java.
2. A program to demonstrate the use of command line arguments.
3. A program to illustrate the concept of inheritance.
4. A program to illustrate the concept of dynamic polymorphism.
5. A program to illustrate the concept of abstract class.
6. A program to demonstrate various access specifiers and their scope using packages.
7. A program to demonstrate how multiple inheritance is achieved using interfaces.
8. A program to demonstrate exception handling by using throw, finally & multiple catch statements.
9. A program to illustrate the concept of user-defined exception.
10. A program to create multiple threads using Thread class and Runnable interface.
11. A program to illustrate the concept of thread synchronization.

JAVA API(java.util package)

12. a) A program to demonstrate the use of Scanner class to read user input.
    b) A program to demonstrate the use of StringTokenizer.
    c) A program to demonstrate the use of Timer and TimerTask.

JAVA API(java.io package)

13. a) A program to illustrate the use of File input Stream and File output Stream.
    b) A program to illustrate the use of Buffered Input Stream and Buffered Output Stream.
    c) A program to illustrate the use of Object Input Stream and Object Output Stream.

JAVA API(java.awt , java.awt.event packages)

14. a)An application involving GUI with different controls.
    b)An application involving GUI with menus.
    c)An application involving GUI with event handling.

JAVA API(java.applet package)

15. A web application using Applets.

with effect from the academic year 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR B.E IV- SEMESTER
MINI PROJECT-II

Instruction:2Hours/week	SEE Marks :--	Course Code : P419IT
Credits : 1	CIE Marks:25	Duration of SEE Exam : 3Hrs

Course Objectives	Course Outcomes
The course will enable the students to:	At the end of the course student will be able to:
Develop and implement a project using any of the programming languages/simulation tools/electronic components.	1. Develop effective solutions to various computing problems by applying the theoretical knowledge gained. 2. Implement projects and demonstrate them using presentations and technical reports

- During the implementation of the projects, Personnel Software Process (PSP) has to be followed.
- Two reviews will be conducted.
- Report of the project work has to be submitted for evaluation.