



ACE Engineering College

Ankushapur(V), Ghatkesar(M), R.R.Dist - 501301

(Autonomous)

B.TECH COURSE STRUCTURE & SYLLABUS

(Common to CSE, EEE, IT, CSE(DS))

(R20)

II B. TECH I-SEMESTER

S. No.	Course Code	Course Title	% Deviation	L	T	P	Credits
1	CS301PC	Discrete Mathematics	3%	3	0	0	3
2	CS302PC	Data Structures	0	3	1	0	4
3	MA305BS	Mathematical and Statistical Foundations	0	3	0	0	3
4	CS304PC	Computer Organization and Architecture	0	3	0	0	3
5	CS310PC	Advanced Python Programming	New	2	0	0	2
6	SM302MS	Business Economics & Financial Analysis	0	3	0	0	3
7	CS307PC	Data Structures Lab	0	0	0	3	1.5
8	CS311PC	Advanced Python Programming Lab	New	0	0	3	1.5
9	MC309HS	Gender Sensitization Lab	0	0	0	2	0
		Total Credits		17	1	8	21

CS301PC/ CS401PC: DISCRETE MATHEMATICS

Existing JNTUH R18 Syllabus	Proposed ACE CSE R20 Autonomous Syllabus	% Deviation with JNTUH R18 Syllabus	Reasons for the Deviation
UNIT – 4	UNIT – 4		
<p>Discrete Probability and Advanced Counting Techniques : An Introduction to Discrete Probability, Probability Theory, Bayes’ Theorem, Expected Value and Variance</p> <p>Advanced Counting Techniques: Recurrence Relations, Solving Linear Recurrence Relations, Divide- and-Conquer Algorithms and Recurrence Relations, Generating Functions, Inclusion- Exclusion, Applications of Inclusion-Exclusion</p>	<p>Discrete Probability and Advanced Counting Techniques : An Introduction to Discrete Probability, Probability Theory, Bayes’ Theorem, Expected Value and Variance</p> <p>Advanced Counting Techniques: Solving Linear Recurrence Relations, Divide-and-Conquer Algorithms and Recurrence Relations, Generating Functions, Algebraic Structures, Semi-group and Monoids, Group Theory, Residue Arithmetic.</p>	3%	<p>Repeated Concepts removed (Recurrence Relations, Generating Functions, Inclusion-Exclusion, applications of Inclusion-Exclusion).)</p>

CS301PC/ CS401PC: DISCRETE MATHEMATICS

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS301PC/ CS401PC	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite:								
Course Objectives:								
<ul style="list-style-type: none"> • Introduces the elementary discrete mathematics for computer science and engineering. • Topics include formal logic notation, methods of proof, induction, sets, relations, graph theory, permutations and combinations, counting principles; recurrence relations and generating functions. 								
Course Outcomes:								
<ul style="list-style-type: none"> • Ability to understand and construct precise mathematical proofs • Ability to use logic and set theory to formulate precise statements • Ability to analyze and solve counting problems on finite and discrete structures • Ability to describe and manipulate sequences • Ability to apply graph theory in solving computing problems 								
Unit - 1	The Foundations: Logic and Proofs					No. of Classes:9		
The Foundations: Logic and Proofs: Propositional Logic, Applications of Propositional Logic, Propositional Equivalence, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy.								
Unit - 2						No. of Classes:9		
Basic Structures, Sets, Functions, Sequences, Sums, Matrices and Relations Sets, Functions, Sequences & Summations, Cardinality of Sets and Matrices Relations, Relations and Their Properties, n-ary Relations and Their Applications, Representing Relations, Closures of Relations, Equivalence Relations, Partial Orderings.								
Unit - 3	Algorithms, Induction and Recursion					No. of Classes:8		
Algorithms, The Growth of Functions, Complexity of Algorithms Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms, Program Correctness								
Unit - 4	Discrete Probability and Advanced Counting Techniques					No. of Classes:10		
Discrete Probability and Advanced Counting Techniques : An Introduction to Discrete Probability, Probability Theory, Bayes' Theorem, Expected Value and Variance Advanced Counting Techniques: Solving Linear Recurrence Relations, Divide-and-Conquer Algorithms and Recurrence Relations, Generating Functions, Algebraic Structures, Semi-group and Monoids, Group Theory, Residue Arithmetic.								
Unit - 5	Graphs					No. of Classes:9		
Graphs: Graphs and Graph Models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Coloring. Trees: Introduction to Trees, Applications of Trees, Tree Traversal, Spanning Trees,								

Minimum Spanning Trees

Text Books:

1. Discrete Mathematics and its Applications with Combinations and Graph Theory- Kenneth H Rosen, 7thEdition, TMH.

Reference Books:

1. Discrete Mathematical Structures with Applications to Computer Science-J.P. Tremblay and R. Manohar, TMH,
2. Discrete Mathematics for Computer Scientists & Mathematicians: Joe L. Mott, Abraham Kandel, Theodore P. Baker, 2nded, Pearson Education.
3. Discrete Mathematics- Richard Johnsonbaugh, 7thEdn., Pearson Education.
4. Discrete Mathematics with Graph Theory- Edgar G. Goodaire, Michael M. Parmenter.
5. Discrete and Combinatorial Mathematics - an applied introduction: Ralph.P. Grimald, 5thedition, Pearson Education.

Web References:

E-Text Books:

CS302PC: DATA STRUCTURES

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS302PC	PCC	L	T	P	C	CIA	SEE	Total
		3	1	0	4	30	70	100
Contact Classes: 45	Tutorial Classes:15	Practical Classes: Nil			Total Classes: 60			
Prerequisite: A course on “Programming for Problem Solving”.								
Course Objectives:								
<ul style="list-style-type: none"> • Exploring basic data structures such as stacks and queues. • Introduces a variety of data structures such as hash tables, search trees, tries, heaps, graphs. • Introduces sorting and pattern matching algorithms 								
Course Outcomes:								
<ul style="list-style-type: none"> • Ability to select the data structures that efficiently model the information in a problem. • Ability to assess efficiency trade-offs among different data structure implementations or combinations. • Implement and know the application of algorithms for sorting and pattern matching. • Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees. 								
Unit -1	Introduction to Data Structures					No. of Classes: 12		
Abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, linked list representations of stacks , stack applications, Queues-operations, linked list representations of Queue .								
Unit -2	Dictionaries & Hash Table Representation					No. of Classes: 12		
Linear list representation, skip list representation, operations - insertion, deletion and searching. Hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.								
Unit -3	Search Trees:					No. of Classes: 12		
Binary Search Trees, Definition, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations – Insertion, Deletion and Searching, Red –Black, Splay Trees.								
Unit -4	Graphs & Sorting					No. of Classes: 12		
Implementation Methods. Graph Traversal Methods. Heap Sort, External Sorting- Model for external sorting, Merge Sort.								
Unit -5	Pattern Matching and Tries					No. of Classes: 12		
Pattern matching algorithms-Brute force, the Boyer –Moore algorithm, the Knuth-Morris-Pratt algorithm, Standard Tries, Compressed Tries, Suffix tries.								
Text Books:								
1. Fundamentals of Data Structures in C, 2 nd Edition, E. Horowitz, S. Sahni								

and Susan Anderson Freed, Universities Press. 2. Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M.J. Augenstein, <i>PHI/Pearson Education</i> .
Reference Books: 1. Data Structures: A Pseudo code Approach with C, 2 nd Edition, R. F. Gilberg and B.A. Forouzan, Cengage Learning.
Web References:
E-Text Books:

MA305BS: Mathematical and Statistical Foundations

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
MA305BS	BSC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 15	Practical Classes: Nil			Total Classes: 60			
Prerequisite: Mathematics courses of first year of study.								
Course Objectives: To learn								
<ul style="list-style-type: none"> • The Number Theory basic concepts useful for cryptography etc • The theory of Probability, and probability distributions of single and multiple random variables • The sampling theory and testing of hypothesis and making inferences • Stochastic process and Markovchains. 								
Course Outcomes: After learning the contents of this paper the student must be able to								
<ul style="list-style-type: none"> • Apply the number theory concepts to cryptography domain • Apply the concepts of probability and distributions to some case studies • Correlate the material of one unit to the material in other units • Resolve the potential misconceptions and hazards in each topic of study. 								
Unit - 1	Greatest Common Divisors and Prime Factorization				No.of Classes: 09(L), 03(T)			
Greatest common divisors, The Euclidean algorithm, The fundamental theorem of arithmetic, Factorization of integers and the Fermat numbers								
Congruences: Introduction to congruences, Linear congruences, The Chinese remainder theorem, Systems of linear congruences..								
Unit - 2	Simple Linear Regression and Correlation				No.of Classes: 09(L), 03(T)			
Introduction to Linear Regression, The Simple Linear Regression Model, Least Squares and the Fitted Model, Properties of the Least Squares Estimators, Inferences Concerning the Regression Coefficients, Prediction, Simple Linear Regression Case Study Random Variables and Probability Distributions: Concept of a Random Variable, Discrete Probability Distributions, Continuous Probability Distributions, Statistical Independence.								
Discrete Probability Distributions: Binomial Distribution, Poisson distribution								
Unit - 3	Continuous Probability Distributions, Fundamental Sampling Distributions				No.of Classes: 09(L), 03(T)			
Continuous Probability Distributions: Normal Distribution, Areas under the Normal Curve, Applications of the Normal Distribution, Normal Approximation to the Binomial								
Fundamental Sampling Distributions: Random Sampling, Sampling Distributions, Sampling Distribution of Means and the Central Limit Theorem, Sampling Distribution of S^2 , t -Distribution, F - Distribution.								
Unit - 4	Estimation & Tests of Hypotheses				No.of Classes: 09(L), 03(T)			
Introduction, Statistical Inference, Classical Methods of Estimation. Estimating the Mean, Standard Error of a Point Estimate, Prediction Intervals, Tolerance Limits, Estimating the Variance, Estimating a Proportion for single mean , Difference between Two Means, between Two Proportions for Two Samples and Maximum Likelihood Estimation.								
Unit - 5	Stochastic Processes and Markov Chains				No.of Classes: 09(L), 03(T)			
Stochastic Processes and Markov Chains: Introduction to Stochastic processes- Markov process. Transition Probability, Transition Probability Matrix, First order and Higher order Markov process, n-step transition probabilities, Markov chain, Steady state condition, Markov analysis.								

1. Kenneth H. Rosen, Elementary number theory & its applications, sixth edition, Addison-Wesley, ISBN 9780-321-50031-1
2. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics for Engineers & Scientists, 9th Ed. Pearson Publishers.
3. S. D. Sharma, Operations Research, Kedarnath and Ramnath Publishers, Meerut, Delhi

Reference Books:

1. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications
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.

Web References:

- 1) SWAYAM Online Courses <https://storage.googleapis.com/uniquecourses/online.html>
- 2) Directory of Open Access Journals <https://doaj.org/>
- 3) Springer Open Journals <https://www.springeropen.com/journals>
- 4) UG/PG MOOCs http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs_courses.php

E-Text Books:

- 1) National Digital Library: <https://ndl.iitkgp.ac.in/>
- 2) NCERT Text Books <http://ncert.nic.in/textbook/textbook.htm>
- 3) Directory of Open Access Books <https://www.doabooks.org/>

CS304PC: COMPUTER ORGANIZATION and ARCHITECTURE

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS304PC	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 50	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 50			
Prerequisite: Nil								
Course Objectives:								
<ul style="list-style-type: none"> • Students should grasp the basic concepts of computer organization and microprocessors, and understand the key skills needed for constructing cost-effective computer systems. • To familiarize the students with the assembly language programming and interfacing of microprocessors. 								
Course Outcomes:								
At the end of the Course Student will be able to:								
<ul style="list-style-type: none"> • Master the binary and hexadecimal number systems including computer arithmetic. (L1) • Understand the basic components and the design of CPU, ALU , Memory and Control Unit.(L2) • Analyze the instruction set, instruction formats and addressing modes of 8086 and select appropriate for solving real world problems.(L3) • Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor.(L3) • Design a pipeline for consistent execution of instructions with minimum hazards.(L4) 								
Unit - 1	Digital Computers					No.of Classes: 10		
Introduction, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture.								
Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.								
Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt. CISC Characteristics, RISC Characteristics.								
Unit - 2	Microprogrammed Control					No.of Classes: 10		
Control memory, Address sequencing, micro program example, design of control unit.								
Central Processing Unit: General Register Organization, Stack Organization, Instruction Formats, Addressing modes, Data Transfer and Manipulation, Program Control Instructions, Zero, One, Two and Three address instructions.								
Unit - 3	Data Representation & Computer Arithmetic					No.of Classes: 10		
Data types, Complements, Fixed Point Representation, Floating Point Representation. Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations								
Unit - 4	Input-Output Organization					No.of Classes: 10		
Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt Direct memory Access.								
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.								

Unit - 5	Pipeline and Vector Processing	No.of Classes: 10
Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processor.		
8086 Processor: Register Organization of 8086, Architecture, PIN diagram, Minimum and Maximum Modes, Instruction formats, Addressing Modes, Instruction set, Assembler Directives and Operators.		
Assembly Language Programming with 8086: Assembly Language Example programs.		
Text Books:		
1. Computer System Architecture – M. Moris Mano, Third Edition, Pearson/PHI.		
Reference Books:		
1. Computer Organization – Car Hamacher, ZvonksVranesic, SafeaZaky, V th Edition, McGraw Hill.		
2. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.		
3. Structured Computer Organization – Andrew S. Tanenbaum, 4 th Edition, PHI/Pearson.		
Web References:		
1. https://nptel.ac.in/courses/106/105/106105163/		
E-Text Books:		
1. https://www.academia.edu/31003870/Computer_System_Architecture_3rd_Ed_by_M_Morris_Mano_text.pdf		

CS310PC: Advance Python Programming

B.Tech. II Year II Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS310PC	PC	L	T	P	C	CIA	SEE	Total
		2	0	0	2	30	70	100
Contact Classes: 45		Tutorial Classes:			Practical Classes: Nil		Total Classes: 45	
Prerequisite: Nil								
Course Objectives:								
<p>This course will enable students</p> <ul style="list-style-type: none"> • To learn how to write relatively advanced, well structured, computer programs in Python • To learn how to Apply understanding of how to manipulate and analyze datasets • To learn how to Apply Basic statistical analysis • To learn how to effectively visualize results • To learn how to Develop the skill of designing Graphical user Interfaces in Python • To learn how to Develop the ability to write database applications in Python 								
Course Outcomes:								
<p>Upon completion of the Course, the students will be able to:</p> <ul style="list-style-type: none"> • Write high quality, maintainable Python programs • Use the Numpy and pandas for performing complex numerical analysis tasks • Produce high quality 2D data visualizations using Matplotlib <p>Implement database and GUI applications.</p>								
UNIT: I	Regular Expressions and Python Multithreading					No.of Classes: 09		
<p>Regular Expressions – Concept of regular expression, re module, Using Special Characters, Regular Expression Functions, Password, email, url validation using regular expression, Pattern finding programs using regular expression.</p> <p>Python Multithreading: Understanding Threads and Processes, Threading Module, Programming using multithreading, The Global Interpreter Lock, Synchronizing the threads.</p>								
UNIT: II	XML,JSON and Python DataBase Connectivity					No.of Classes: 09		
<p>Working with XML and JSON: XML DOM and Sax, Introducing Element Tree and lxml, Parsing XML, Navigating the document, JSON: Introduction to JSON, JSON vs XML, JSON in Python, Serializing and DE serializing JSON.</p> <p>Database Programming: Introduction, Python Database Application Programmer's Interface (DB-API), SQL</p> <p>Database connection using python, Creating, Storing and Reading information on database, Object Relational Managers (ORMs).</p>								
UNIT: III	Numpy and SciPy					No.of Classes: 09		
<p>Introduction to NumPyarrays , Creating and manipulating NumPy arrays , NumPydtype, Computation on NumPy arrays , Arithmetic with NumPy Arrays, Indexing, Slicing and Sorting NumPy arrays, Mathematical and Statistical Methods, Reshaping Arrays</p>								

SciPy - Installation and Environment Setup, Numpy VS SciPy, Linear Algebra in SciPy, Working with Polynomials in SciPy, Integration with SciPy, SciPy Special Functions.		
UNIT: IV	Pandas and Visualization with Matplotlib	No.of Classes: 09
<p>Introduction to Pandas, Series and Data Frames in Pandas, Data Indexing, Selection, and Filtering in Pandas, Selection with loc and iloc, Function Application and Mapping, Missing Data, Filtering and Filling In Missing Data, Vectorized String Functions in pandas, Data Transformation in pandas, Combining and Merging Datasets, Merging Joining and Concatenating, Group by, Grouping with Functions.</p> <p>Visualization with Matplotlib , Line Plots, Pie Chart, Setting the title, axis labels, ticks, and ticklabels, Adding legends, Bar Graph, Histogram , Box (Whisker) Plot, Scatter Plot , Customizing Plots , Multiple Subplots. Plotting with pandas.</p>		
UNIT: V	GUI and WEB Programming	No.of Classes: 09
<p>GUI Programming in Python (using Tkinter/wxPython/Qt) -What is GUI, Advantages of GUI, Introduction to GUI library, Layout management, Events and bindings, Font, Colors. Widget such as : Frame, Label, Button, Checkbutton, Entry, Listbox, Radiobutton, etc.</p> <p>WEB Programming: Introduction, Web Surfing with Python, Creating Simple Web Clients, Interacting with Web APIs, Web Scraping, CGI-Helping Servers Process Client Data, Building CGI Application Advanced CGI, Web (HTTP) Servers.</p>		
Text Books:		
<ol style="list-style-type: none"> 1. Core Python Programming, Wesley J. Chun, Third Edition, Pearson. 2. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython by Wes McKinny, O'Reilly Media. 3. Elegant SciPy: The Art of Scientific Python By Juan Nunez-Iglesias, Stéfan van der Walt, Harriet Dashnow, O'Reilly Media. 4. A. Lukaszewski, MySQL for Python: Database Access Made Easy, Pact Publisher. 		
Reference Books:		
<ol style="list-style-type: none"> 1. Data Science from Scratch, 2nd Edition by Joel Grus, O'Reilly Media, Inc, May 2019. 2. ScipyAndNumpy: An Overview for Developers by Eli Bressert, O'Reilly Media. 		
Web References:		
E-Text Books:		

SM302MS: BUSINESS ECONOMICS & FINANCIAL ANALYSIS

B.Tech. II Year II Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
SM302MS	HSMC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 50	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 50			
Prerequisite:								
Course Objectives: To learn the basic Business types, impact of the Economy on Business and Firms specifically. To analyze the Business from the Financial Perspective.								
Course Outcomes: The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The Students can study the firm's financial position by analyzing the Financial Statements of a Company.								
Unit - 1	Introduction to Business and Economics					No. of Classes:10		
Business: Structure of Business Firm, Theory of Firm, Types of Business Entities, Limited Liability Companies, Sources of Capital for a Company, Non-Conventional Sources of Finance. Economics: Significance of Economics, Micro and Macro Economic Concepts, Concepts and Importance of National Income, Inflation, Money Supply in Inflation, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist, Multidisciplinary nature of Business Economics.								
Unit - 2	Demand and Supply Analysis					No. of Classes:12		
Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Elasticity of Demand in decision making, Demand Forecasting: Characteristics of Good Demand Forecasting, Steps in Demand Forecasting, Methods of Demand Forecasting. Supply Analysis: Determinants of Supply, Supply Function & Law of Supply.								
Unit - 3	Production, Cost, Market Structures & Pricing					No. of Classes:12		
Production Analysis: Factors of Production, Production Function, Production Function with one variable input, two variable inputs, Returns to Scale, Different Types of Production Functions. Cost analysis: Types of Costs, Short run and Long run Cost Functions. Market Structures: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, Monopolistic Competition. Pricing: Types of Pricing, Product Life Cycle based Pricing, Break Even Analysis, cost Volume Profit Analysis.								
Unit - 4	Financial Accounting					No. of Classes:8		
Accounting concepts and Conventions, Accounting Equation, Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, preparation of Final Accounts.								
Unit - 5	Financial Analysis through Ratios					No. of Classes:8		
Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Profitability Ratios, Proprietary Ratios, Solvency, Leverage Ratios (simple problems).Introduction to Fund Flow and Cash Flow Analysis (simple problems).								
Text Books:								

1. D.D. Chaturvedi, S.L. Gupta, Business Economics - Theory and Applications, International Book House Pvt. Ltd. 2013.
2. Dhanesh K Khatri, Financial Accounting, Tata McGraw Hill, 2011.
3. Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, TataMcGraw Hill Education Pvt. Ltd. 2012.

Reference Books:

1. Paresh Shah, Financial Accounting for Management 2e, Oxford Press, 2015.
2. S.N. Maheshwari, Sunil K Maheshwari, Sharad K Maheshwari, Financial Accounting, 5e, Vikas Publications, 2013.

Web References:

E-Text Books:

CS307PC: DATA STRUCTURESLAB

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS307PC	PCC	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: 45			Total Classes: 45			
Prerequisite: A Course on “Programming for problem solving”.								
Course Objectives:								
<ul style="list-style-type: none"> • It covers various concepts of C programming language • It introduces searching and sorting algorithms • It provides an understanding of data structures such as stacks and queues. 								
List of Experiments:								
<ol style="list-style-type: none"> 1. Write a program that uses functions to perform the following operations on singly linked list.: i) Creation ii) Insertion iii) Deletion iv) Traversal 2. Write a program that uses functions to perform the following operations on doubly linked list.: i) Creation ii) Insertion iii) Deletion iv) Traversal 3. Write a program that uses functions to perform the following operations on circular linked list.: i) Creation ii) Insertion iii) Deletion iv) Traversal 4. Write a program that implement stack (its operations) using i) Arrays ii) Pointers 5. Write a program that implement Queue (its operations) using i) Arrays ii) Pointers 6. Write a program that implements the following sorting methods to sort a given list of integers in ascending order i) Bubble sortii) Selection sort iii) Insertion sort 7. Write a program 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 8. Write a program to implement the tree traversal methods. 9. Write a program to implement the graph traversal methods. 								
List of Equipment/Software (with Specifications or Range) Required:								
A Computer System with Ubuntu operating system and GCC Compiler								

CS311PC: ADVANCED PYTHON PROGRAMMING LAB

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CS311PC	PCC	L	T	P	C	CIA	SEE	Total
		-	-	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45			Total Classes: 45			
<p>Prerequisite:</p> <ol style="list-style-type: none"> 1. A course on “Data Science, GUI and Web Programming”. 2. A course on “Python Programming”. 								
<p>Course Objectives: At the end of the course students should be able to:</p> <ol style="list-style-type: none"> 1. Manipulate and Analyze dataset. 2. Perform statistical analysis. 3. Effectively visualizing result. 4. Develop the skill of designing Graphical user Interfaces. 5. Develop Database Application. 								
<p>List of Experiments: LIST OF PROGRAMS:</p> <ol style="list-style-type: none"> 1. Create Regular Expressions that <ol style="list-style-type: none"> a) Recognize following strings bit, but, bat, hit, hat or hut b) Match any pair of words separated by a single space, that is, first and last names. c) Match any word and single letter separated by a comma and single space, as in last name, first initial. d) Match simple Web domain names that begin with www. and end with a “.com” suffix; for example, www.yahoo.com. Extra Credit: If your regex also supports other high-level domain names, such as .edu, .net, etc. (for example, www.foothill.edu). e) Match a street address according to your local format (keep your regex general enough to match any number of street words, including the type designation). For example, American street addresses use the format: 1180 Bordeaux Drive. Make your regex flexible enough to support multi-word street names such as: 3120 De la Cruz Boulevard. 2. Create Regular Expressions that: <ol style="list-style-type: none"> a) Extract the complete timestamps from each line. b) Extract the complete e-mail address from each line. c) Extract only the months from the timestamps. d) Extract only the years from the timestamps. e) Extract only the time (HH:MM:SS) from the timestamps. 3. Write a multithread program to create 3 threads where one thread calculates the factorial and second thread calculates square and third thread calculates the summation of a list of numbers. 4. Write a python program to create two threads to count how many lines in two text files (one thread will count lines from first file and other thread from second file). 								

5. Write a python script that performs basic operations using MySQL database and a corresponding Python database adapter.
6. Write a python script that performs basic operations using SQLite Database and a corresponding Python database adapter
7. Write a program to demonstrate operations in Numpy.
8. Write a python program to demonstrate data indexing, selection and filtering in Pandas.
9. Write a python program to create GUI application to illustrate slider tool that controls the size of the text font in the label widget. (Greater the slider position, larger the font and vice-versa)
10. Write a python program to create GUI application to implement road signs with the appropriate foreground and background colours based on sign type stop, wait and Go signal.
11. Write a python program to create a "Comments" or "Feedback" page for a Web site. Take user feedback via a form, process the data in your script, and return a "thank you" screen.
12. Create a CGI application that not only saves files to the server's disk, but also displays the content of file back to the client.

TEXT BOOKS:

1. Core Python Programming, Wesley J. Chun, Third Edition, Pearson.
2. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython by Wes McKinny, O'Reilly Media.
3. Elegant SciPy: The Art of Scientific Python By Nunez-Iglesias, Stefan van der Walt, Harriet Dashnow, O'Reilly Media.
4. A. Lukaszewski, MySQL for Python: Database Access Made Easy, Pact Publisher.

REFERENCE BOOKS:

1. Data Science from Scratch, 2nd Edition by Joel Grus, O'Reilly Media, Inc, May 2019.
2. Scipy and Numpy: An Overview for Developers by Eli Bressert, O'Reilly Media.

List of Equipment/Software (with Specifications or Range) Required:

1. **Python.org**

MC309HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
MC309HS	MC	L	T	P	C	CIA	SEE	Total
		0	0	2	0	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: 30			Total Classes: 30			
COURSE DESCRIPTION								
<p>This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.</p> <p>This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.</p>								
Course Objectives:								
<ul style="list-style-type: none"> • To develop students' sensibility with regard to issues of gender in contemporary India. • To provide a critical perspective on the socialization of men and women. • To introduce students to information about some key biological aspects of genders. • To expose the students to debates on the politics and economics of work. • To help students reflect critically on gender violence. • To expose students to more egalitarian interactions between men and women. 								
Course Outcomes:								
<ul style="list-style-type: none"> • Students will have developed a better understanding of important issues related to gender in contemporary India. • Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film. • Students will attain a finer grasp of how gender discrimination works in our society and how to counter it. • Students will acquire insight into the gendered division of labour and its relation to politics and economics. • Men and women students and professionals will be better equipped to work and live together as equals. • Students will develop a sense of appreciation of women in all walks of life. • Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence. 								
Unit -1	UNDERSTANDING GENDER				No.of Classes: 9			
Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men-Preparing for Womanhood. Growing up Male. First lessons in Caste.								
Unit -2	GENDER ROLES AND RELATIONS				No.of Classes: 9			
Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its								

Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary		
Unit -3	GENDER AND LABOUR	No.of Classes: 9
Division and Valuation of Labour-Housework: The Invisible Labor- “My Mother doesn’t Work.” “Share the Load.”-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work.-Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming		
Unit -4	GENDER - BASED VIOLENCE	No.of Classes: 9
The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing-Coping with Everyday Harassment- Further Reading: “Chupulu”. Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-“I Fought for my Life....”		
Unit -5	GENDER AND CULTURE	No.of Classes: 9
Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equalization and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.		
Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.		
<ul style="list-style-type: none"> - Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on “Gender”. - ESSENTIAL READING: The Textbook, “Towards a World of Equals: A Bilingual Textbook on Gender” written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote,Vasudha Nagaraj, Asma Rasheed, GoguShyamala, DeepaSreenivas and Susie Tharupublished by Telugu Akademi, Telangana Government in 2015. 		
ASSESSMENT AND GRADING:		
<ul style="list-style-type: none"> • Discussion & Classroom Participation: 20% • Project/Assignment: 30% • End Term Exam: 50% 		