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DEPARTMENT OF INFORMATION TECHNOLOGY

II YEAR I SEMESTER

S. No.	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
1	IT301PC	Python Programming	3	0	0	3	30	70	100
2	MA302BS	Computer Oriented Statistical Methods	3	1	0	4	30	70	100
3	BE304MS	Business Economics and Financial Analysis	3	0	0	3	30	70	100
4	CS304PC	Data Structures using C	3	0	0	3	30	70	100
5	EC305ES	Analog and Digital Electronics	3	0	0	3	30	70	100
6	IT306PC	Python Programming lab	0	0	3	1.5	30	70	100
7	CS307PC	Data Structures Lab using C	0	0	3	1.5	30	70	100
8	EC308ES	Analog and Digital Electronics Lab	0	0	2	1	30	70	100
9	CS309PC	IT Workshop Lab	0	0	2	1	30	70	100
Total			15	1	10	21	270	630	900

Mandatory Course (Non-Credit)									
10	*GS309MC	Gender Sensitization Lab	0	0	2	0	100	-	100

*MC – Satisfied/Unsatisfied



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DEPARTMENT OF INFORMATION TECHNOLOGY

II YEAR II SEMESTER

S. No.	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
1	CS401PC	Operating Systems	3	0	0	3	30	70	100
2	IT402PC	Database Management Systems	3	1	0	4	30	70	100
3	CS403PC	Java Programming	3	1	0	4	30	70	100
4	IT404PC	Computer Organization and Microprocessor	3	0	0	3	30	70	100
5	CS405PC	Discrete Mathematics	3	0	0	3	30	70	100
6	CS406PC	Operating Systems Lab	0	0	3	1.5	30	70	100
7	IT407PC	Database Management Systems Lab	0	0	3	1.5	30	70	100
8	CS408PC	Java Programming Lab	0	0	2	1	30	70	100
Total			15	2	8	21	240	560	800

Mandatory Course (Non-Credit)									
9	*IT409MP	Micro Project - 2	0	0	3	0	100	-	100

*MC – Satisfied/Unsatisfied



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DEPARTMENT OF INFORMATION TECHNOLOGY

PYTHON PROGRAMMING

II B. TECH- I SEMESTER(R 20)								
Course Code	Programme	Hours / Week			Credits	Maximum Marks		
IT301PC	B.Tech	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> 1. Learn Syntax and Semantics and create Functions in Python. 2. Understand Lists, Dictionaries and Regular expressions in Python. 3. Handle Strings and Files in Python. 4. Implement Object Oriented Programming and graphics concepts in Python. 5. Build GUI Application and Database Programming in Python 								
COURSE OUTCOMES								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> 1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions. 2. Demonstrate proficiency in handling Strings and FileSystems. 3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions. 4. Interpret the concepts of Object-Oriented Programming and graphics as used in Python. 5. Implement exemplary applications related to GUI and Databases in Python. 								
UNIT-I	PYTHON BASICS						Classes: 12	
<p>Python Basics, Objects- Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types</p> <p>Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions, Related Modules Sequences - Strings, Lists, and Tuples, Mapping and Set Types.</p>								
UNIT-II	FILES AND OOPS CONCEPTS						Classes: 12	
<p>Features of Object oriented programming system (OOPS) – Classes and Objects, Encapsulation, Abstraction, Inheritance, Polymorphism.</p> <p>Classes and Objects: Creating a class, The Self variable, Constructor, Types of Variable, Namespaces, Types of Methods,</p> <p>FILES: File Objects, File Built-in Function [open()], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions.</p>								



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UNIT-III	FUNCTIONS & REGULAR EXPRESSIONS	Classes: 10
<p>Defining a function, calling a function, returning multiple values from a function, functions are first class objects, formal and actual arguments, positional arguments, recursive functions. Regular Expressions: Introduction, Special Symbols and Characters, Res and Python Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules</p>		
UNIT-IV	GUI PROGRAMMING	Classes: 12
<p>GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs WEB Programming: Introduction, Web Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application Advanced CGI, Web (HTTP) Servers.</p>		
UNIT-V	DATABASE PROGRAMMING	Classes: 12
<p>Database Programming: Introduction, Python Database Application Programmer's Interface (DB-API), Object Relational Managers (ORMs), Related Modules.</p>		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson. 2. R Nageswara Rao, —Core Python ProgrammingI, Dreamtech press,2017Edition. 3. DustyPhilips,—Python3ObjectOrientedProgrammingI,PACKTPublishing,2ndEdition,2015. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Introduction to Computation and Programming Using Python. John V. Guttag, TheMITPress. 2. James Payne, Beginning Python using Python 2.6 and Python 3, Wroxpublishing. 3. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3, The Pragmatic Bookshelf, 2nd edition (4 Oct.2013). 4. Charles Dierach, Introduction to Computer Science using Python 		
WEB REFERENCES		
<ol style="list-style-type: none"> 1. https://www.ibiblio.org/swaroopch/byteofpython/read/features-of-python.html 2. https://www.zeolearn.com/magazine/features-of-python 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. https://stackabuse.com/the-best-python-books-for-all-skill-levels/ 2. https://opensource.com/article/18/9/python-programming-book-list 		
MOOCS COURSES		
<ol style="list-style-type: none"> 1. https://nptel.ac.in/courses/106106145/ 2. https://www.digimat.in/nptel/courses/video/106106182/L01.html 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

COMPUTER ORIENTED STATISTICAL METHODS

II B. TECH- I SEMESTER (R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
MA302BS	B.Tech	3	1	0	4	30	70	100

COURSE OBJECTIVES

To learn

1. The ideas of random variables and various discrete and continuous probability distributions and their properties.
2. The basic ideas of statistics including measures of central tendency.
3. The statistical methods of studying data samples.
4. The idea of Characteristics of queuing system.
5. The idea of Classification of Random processes.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. After learning the contents of this paper the student must be able to Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
2. Students can solve estimation problems.
3. Students can able to understand the concept of hypothesis.
4. Students able to solve pure Birth-Death process problems.
5. After learning the contents of this paper the student must be able to solve examples of Markov chains, stochastic matrix.

UNIT-I	RANDOM VARIABLE AND DISTRIBUTIONS	Classes: 12
Random variables: Discrete and continuous random variables, Expectation of Random Variables, Variance of random variables, Binomial, Poisson, evaluation of statistical parameters for these distributions. Continuous random variables and their properties, distribution functions and densities, Normal distributions.		
UNIT-II	SAMPLING DISTRIBUTION AND ESTIMATION	Classes: 12
Population and samples, Sampling Distribution of mean, Proportions, difference of means, Estimation: Point and Interval, Bayesian estimations.		
UNIT-III	TESTING OF HYPOTHESIS	Classes: 10



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Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means; Test for single mean, difference of means for small samples, test for ratio of variances for small samples.

UNIT-IV	QUEUING THEORY	Classes: 12
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Structure of a queuing system, Operating Characteristics of queuing system –Transient and steady states, Terminology of Queuing systems ,Arrival and service process-pure Birth-Death process Deterministic queuing models-M/M/1 Model of infinite queue M/M/1 model of finite queue.

UNIT-V	STOCHASTIC PROCESS	Classes: 12
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Introduction to Stochastic Processes-Classification of Random processes, Methods of description of random processes, stationary and non stationary random processes, average values of single random process and two or more random processes. Markov process, markov chain, classification of states – examples of markov chains, stochastic matrix

TEXT BOOKS

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9thEdition, Pearson Publications
2. Fundamentals of Mathematical Statistics, Khanna Publications, S C Gupthaand V.K.Kapoor
3. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khannapublications.
4. S. D. Sharma, Operations Research, Kedarnath and Remnant Publishers, Meerut, Delhi

REFERENCE BOOKS

1. T.T. Soong, Fundamentals of Probability and Statistics for Engineers, John Wiley & Sons Ltd, 2004.
2. Sheldon M Ross, Probability and statistics for Engineers and scientists, Academic Press.

WEB REFERENCES

1. <https://www.efunda.com/math/gamma/index.cfm>
2. <https://ocw.mit.edu/resources/#Mathematics>
3. <https://www.sosmath.com/>
4. <https://www.mathworld.wolfram.com/>

E -TEXT BOOKS

1. <https://www.e-booksdirectory.com/listing.php?category=4>
2. <https://www.e-booksdirectory.com/details.php?ebook=10830>

MOOCS COURSES

1. <https://swayam.gov.in/>
2. <https://swayam.gov.in/NPTEL>



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DEPARTMENT OF INFORMATION TECHNOLOGY

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

II B. TECH- II SEMESTER (R 20)

Course Code	Programme	Hours/Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
BE304MS	B. Tech	3	0	0	3	30	70	100

COURSE OBJECTIVES

To learn

1. To learn the basic Business types, impact of the Economy on Business and Firms specifically.
2. To analyze the Business from the Financial Perspective.
3. To Plan production and cost concepts for maximizing profit.
4. To construct financial statement in accordance with generally accepted accounting Principles.
5. To analyze the financial performance of business through Ratios.
6. To Estimate investment proposals through Capital Budgeting Methods.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Understand Business with the use of economic theories and business structure.
2. Learn Production and cost concepts for maximizing profit.
3. Construct financial statement in accordance with generally accepted accounting principles.
4. Analyze the Financial performance of business through Ratios.
5. Estimate investment proposals through Capital Budgeting Methods

UNIT-I	INTRODUCTION TO BUSINESS AND ECONOMICS	Classes: 13
Business: Characteristic features of Business, Features and evaluation of Private Enterprises and Public Enterprises. Economics: Significance of Economics, types, Concepts and Importance of National Income, Inflation, Nature and Scope of Business Economics. Demand Analysis: Demand Definition, Types, Demand Function, Law of Demand, Elasticity of Demand, Types, Demand Forecasting Methods.		
UNIT-II	PACKAGES AND FILE HANDLING	Classes: 13
Theory of Production and Cost Analysis: Theory of Production: Factors of Production, Production Function, Production Function with one variable input, two variable inputs (ISO Quants and ISO Costs), Scale of Production with Law of Returns, Cobb-Douglas Production Function. Cost Analysis: Types of Costs, Short run and Long run Cost Functions, Break Even Analysis.		



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UNIT-III	MARKET STRUCTURES, PRICING & FINANCIAL ACCOUNTING	Classes: 12
Market Structures, Pricing & Financial Accounting: Market Structures, Pricing: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, and Monopolistic Competition, Types of Pricing. Financial Accounting: 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, and Preparation of Final Accounts.		
UNIT-IV	FINANCIAL ANALYSIS THROUGH RATIOS	Classes: 11
Financial Analysis Through Ratios : Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Capital Structure Ratios and Profitability Ratios, (simple problems), Cash Flow Statement (simple problems) and Funds Flow Statement (simple problems)		
UNIT-V	CAPITAL BUDGETING	Classes: 10
Capital, significance, Types of Capital, Methods and sources of raising finance. Nature of Capital Budgeting features of Capital Budgeting proposals, Methods of Capital Budgeting: Pay Back Period Method (PBP), Accounting Rate of Return (ARR), Net Present Value Method (NPV) simple problems.		
TEXT BOOKS		
<ol style="list-style-type: none"> 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 Mc –Graw Hill,2011. 3. Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics,2e, 4. Tata Mc Graw Hill Education Pvt. Ltd.2012. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Paresh Shah, Financial Accounting for Management 2e, Oxford Press,2015. 2. S. N. Maheshwari, Sunil K Maheshwari, Sharad K Maheshwari,Financial 3. Accounting, 5e, Vikas Publications,2013 		
WEB REFERENCES		
<ol style="list-style-type: none"> 1. https://nptel.ac.in/courses/110106050/17 2. https://nptel.ac.in/courses/110106050/39 3. https://nptel.ac.in/courses/110106050/38 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. https://www.sciencedirect.com/book/9780750644549/business-economics 2. http://www.freebookcentre.net/Business/Economics-Books.html 		
MOOCS COURSES		
<ol style="list-style-type: none"> 1. https://nptel.ac.in/courses/110106050/ 2. https://nptel.ac.in/courses/110106050/11 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

DATA STRUCTURES USING C

II B. TECH- I SEMESTER (R 20)								
Course Code	Programme	Hours/Week			Credits	Maximum Marks		
CS304PC	B. Tech	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES								
<ol style="list-style-type: none"> To learn Exploring basic data structures such as stacks and queues and linked list. Introduces a variety of data structures such as Dictionary, hash tables, search trees, tries, heaps, graphs. Introduces sorting and pattern matching algorithms 								
COURSE OUTCOMES								
<ol style="list-style-type: none"> Upon successful completion of the course, the student is able to 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. 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-I	INTRODUCTION TO DATA STRUCTURES						Classes: 13	
Introduction to Data Structures: Abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Double & Circular linked list implementations, Stack ADT & Stacks-Operations, array and linked representations of stacks & applications, Queue ADT & Queues-operations, array and linked representations, types of Queue, Applications of Queue.								
UNIT-II	DICTIONARIES						Classes: 12	
Dictionaries: linear list representation, skip list representation, operations - insertion, deletion and searching. Hash Table Representation: hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, and rehashing, and extendible hashing. Applications of Dictionary Data structures.								
UNIT-III	SEARCH TREES						Classes: 10	
Nonlinear data structures tree, Binary trees, representations ,traversals and implementations, Binary Search Trees, Definition, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Rotations, Operations – Insertion, Deletion and Searching, Red –Black, Splay Trees.								
Introduction to Red –Black trees and Splay Trees, B-Trees-B-Tree of order m, height of a B-Tree,								



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insertion, deletion and searching, Comparison of Search Trees		
UNIT-IV	GRAPHS	Classes: 11
Graphs: Definition & terminologies, types of graph, Graph implementation methods, Graph traversal Methods. Sorting: Insertion sort, Selection sort, Quick sort, Bucket sort, Heap Sort, External Sorting- Model for external sorting, Merge Sort.		
UNIT-V	PATTERN MATCHING AND TRIES	Classes: 12
Pattern Matching and Tries: 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, 2nd 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, PHI/Pearson Education.

REFERENCE BOOKS

1. Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilberg and B.A. Forouzan, Cengage Learning

WEB REFERENCES

1. <https://learntocodewith.me/posts/data-structures/>
2. <http://cgm.cs.mcgill.ca/~godfried/teaching/algorithms-web.html>
3. <https://www.javatpoint.com/data-structure-tutorial>
4. <https://www.geeksforgeeks.org/data-structures/>

E -TEXT BOOKS

1. <https://www.freetechbooks.com/algorithms-and-data-structures-f11.html>
2. <https://opendatastructures.org/>

MOOCS COURSES

1. <https://nptel.ac.in/courses/106102064/>
2. <https://swayam.gov.in/explorer?searchText=data+structures>



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ANALOG AND DIGITAL ELECTRONICS

II B. TECH- I SEMESTER(R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
EC305ES	B.Tech	3	0	0	3	30	70	100

COURSE OBJECTIVES

To learn

1. To introduce components such as diodes, BJTs and FETs.
2. To know the applications of components.
3. To give understanding of various types of amplifier circuits.
4. To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
5. To understand the concepts of combinational logic circuits and sequential circuits.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. **Identify** and characterize diodes and their applications
2. **Analyze** the BJT characteristics and biasing circuits
3. **Understand** the operation of FET and know about the logic families and realization of logic gates.
4. **Learn** Postulates of Boolean algebra and to minimize combinational logic functions.
5. **Design** and analyze sequential circuits

UNIT-I

DIODES AND APPLICATIONS

Classes: 14

Junction diode characteristics: Open circuited p-n junction, p-n junction as a rectifier, V-I characteristics, Effect of temperature, Diode resistance, Transition capacitance, Diffusion capacitance, Zener diode, Tunnel diode, Photo diode, LED.

Diode Applications - Clipping circuits, Comparators, Half wave rectifier, Full wave rectifier, Rectifier with capacitor filter.

UNIT-II

BJTS

Classes: 15

Transistor characteristics: The junction transistor, transistor as an amplifier, BJT Operation, BJT Symbol, BJT Hybrid Model, Determination of h-parameters from Transistor Characteristics CB, CE, CC configurations, comparison of transistor configurations, the operating point, self-bias or Emitter bias, bias compensation, thermal runaway and stability.



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UNIT-III	FETS AND DIGITAL CIRCUITS	Classes:13
<p>FETs: JFET, V-I characteristics, MOSFET, (Construction, principle of operation, symbol), Characteristics in Enhancement and Depletion modes.</p> <p>Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE OR gate, De Morgan Laws, NAND and NOR DTL & TTL gates, output stages, RTL and DCTL, CMOS, Comparison of logic families.</p>		
UNIT-IV	COMBINATIONAL LOGIC CIRCUITS	Classes: 13
<p>Basic Theorems and Properties of Boolean algebra, Canonical and Standard Forms, Digital Logic Gates, The Map Method, Product-of-Sums Simplification, Don't-Care Conditions, NAND and NOR Implementation, Exclusive-OR Function, Binary Adder-Subtractor, Magnitude Comparator, Decoders, Encoders, Multiplexers, Demultiplexer.</p>		
UNIT-V	SEQUENTIAL LOGIC CIRCUITS	Classes: 12
<p>Sequential Circuits, Storage Elements: Latches and flip flops, Design of Clocked Sequential Circuits, State Reduction and Assignment, Shift Registers, Ripple Counters, Synchronous Counters, Random-Access Memory, Read-Only Memory.</p>		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Integrated Electronics: Analog and Digital Circuits and Systems, 2/e, Jaccob Millman, Christos Halkias and Chethan D. Parikh, Tata McGraw-Hill Education, India, 2010. 2. Digital Design, 5/e, Morris Mano and Michael D. Cilette, Pearson, 2011. 3. Switching and Finite Automata Theory- ZviKohavi&Niraj K. Jha, 3rd Edition, Cambridge. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Electronic Devices and Circuits, Jimmy J Cathey, Schaum's outline series, 1988. 2. Digital Principles, 3/e, Roger L. Tokheim, Schaum's outline series, 1994. 3. Switching Theory and Logic Design – Anand Kumar, 3rd Edition, PHI, 2013. 4. Modern Digital electronics RP Jain 4th Edition, McGrawHill 5. Electronic Devices and Circuits Paperback – 2008 by DavidBell 		
WEB REFERENCES		
<ol style="list-style-type: none"> 1. http://nptel.ac.in/video.php?subjectId=117103063 2. http://www.nptelvideos.in/2012/12/basic-electronics-drchitralekha-mahanta.html 3. http://www.iitg.ac.in/engfac/chitra/ 4. https://lecturenotes.in/subject/203/switching-theory-and-logic-design-stld 5. http://www.infocobuild.com/education/audio-video-courses/electronics/DigitalCircuitsSystems 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. SIGNALS & SYSTEMS 2nd Edition Paperback – 1 Jul 2017 by H Hsu (Author), R Ranjan (Author) 2. Signals and Systems 2nd edition 2nd Edition (English, Paperback, Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab) 		
MOOCS Course:		
<ol style="list-style-type: none"> 1. http://www.onlinevideolecture.com/electronics-engineering 2. https://swayam.gov.in/courses/1392-digital-circuits-and-systems 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

PYTHON PROGRAMMING LAB

II B. TECH- I SEMESTER(R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
IT306PC	B. Tech	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	30	70	100

COURSE OBJECTIVES

To learn

1. To write, test, and debug simple Python programs.
2. To implement Python pattern programs with conditionals and loops.
3. Use functions for structuring Python programs, Read and write data from/to files in Python.
4. To represent compound data using Python lists, tuples, and dictionaries.
5. To design Gaming.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Write, test, and debug simple Python programs.
2. Implement Python pattern programs with conditionals and loops.
3. Develop Python programs step-wise by defining functions and calling them, Read and write data from/to files in Python.
4. Use Python lists, tuples, dictionaries for representing compound data.
5. Design a gaming.

LIST OF EXPERIMENTS

1. Write a python program to compute the GCD of two numbers.
2. Write a python program to find the square root of a number (Newton's method).
3. Write a python program to exponentiation (power of a number).
4. Write a python program to find the maximum of a list of numbers.
5. Write a python program to print a hollow diamond pattern.
6. Write a python program to print the arrow pattern.
7. Write a python program to print zigzag pattern.
8. (a). Write a python program for linear search.
(b). Write a python program for Binary search.
9. (a). Write a python program for Selection sort.
(b). Write a python program for Insertion sort.
(c). Write a python program for Merge sort.
10. Write a python program to find first n prime numbers.
11. Write a python program for multiply matrices.
12. Write a python program to take command line arguments (word count).
13. Write a python program to find the most frequent words in a text read from a file.
14. Write a python program to simulate elliptical orbits in Pygame.
15. Write a python program for simulate bouncing ball in Pygame.



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TEXT BOOKS

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.
2. R.NageswaraRao—Core Python Programming, Dreamtechpress, 2017 Edition.
3. Dusty Philips—Python 3 Object Oriented Programming, PACKT Publishing, 2nd Edition, 2015.

REFERENCE BOOKS

1. Introduction to Computation and Programming Using Python. John V. Guttag, The MIT Press.
2. James Payne, Beginning Python using Python 2.6 and Python 3, Wrox publishing.

WEB REFERENCES

1. <https://pythonbooks.revolunet.com/>
2. <https://www.digitalocean.com/community/tutorials/digitalocean-ebook-how-to-code-in-python>

E -TEXT BOOKS

1. <https://www.java67.com/2017/05/top-7-free-python-programming-books-pdf-online-download.html>
2. <http://freecomputerbooks.com/langPythonBooks.html>

MOOCS COURSES

1. <https://www.mooc-list.com/tags/python-programming>
2. <https://www.udacity.com/course/introduction-to-python--ud1110>



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DEPARTMENT OF INFORMATION TECHNOLOGY

DATA STRUCTURES LAB USING C

II B. TECH- I SEMESTER(R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
CS307PC	B. Tech	0	0	3	1.5	30	70	100

COURSE OBJECTIVES

To learn

1. Exploring basic data structures such as stacks and queues and linked list.
2. Introduces a variety of data structures such as Dictionary, hash tables, search trees, tries, Heaps, graphs
3. Introduces sorting and pattern matching algorithms

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Ability to select the data structures that efficiently model the information in a problem.
2. Ability to assess efficiency trade-offs among different data structure implementations or combinations.
3. Implement and know the application of algorithms for sorting and pattern matching.
4. Design programs using a variety of data structures, including hash tables, binary and general Tree structures, search trees, tries, heaps, and AVL-trees.

LIST OF EXPERIMENTS

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 implements stack (its operations) using i) Arrays ii) Pointers.
5. Write a program that implements Queue (its operations) using i) Arrays ii) Pointer
6. Write a program that implements Circular Queue (its operations) using i) Arrays ii) Pointers
7. Write a program that implements the following sorting methods to sort a given list of integers in ascending order i) Bubble sort ii) Selection sort iii) Insertion sort
8. Write a program that uses 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
9. Write a program to implement pre order, in order and post order traversal methods.
10. Write a program to implement i) DFS ii) BFS methods.



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TEXT BOOKS
<ol style="list-style-type: none">1 Fundamentals of Data Structures in C, 2nd 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, PHI/Pearson Education.
REFERENCE BOOKS
<ol style="list-style-type: none">1 Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilberg and B.A.Forouzan, Cengage Learning
WEB REFERENCES
<ol style="list-style-type: none">1 https://www.javatpoint.com/singly-linked-list2 https://www.programiz.com/dsa/circular-queue.
E -TEXT BOOKS
<ol style="list-style-type: none">1 “Data Structures and Algorithms Made Easy: Data Structures and Algorithmic Puzzles” by Narasimha Karumanchi.2 Data Structures & Algorithms in Java, 2e by lafore
MOOCS COURSE
<ol style="list-style-type: none">1 https://www.mooc-list.com/tags/data-structures2 https://www.coursera.org/specializations/data-structures-algorithms



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DEPARTMENT OF INFORMATION TECHNOLOGY

ANALOG AND DIGITAL ELECTRONICS LAB

II B. TECH- I SEMESTER(R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
EC308ES	B. Tech	0	0	2	1	30	70	100

COURSE OBJECTIVES

To learn

1. To introduce components such as diodes, BJTs and FETs.
2. To know the applications of components.
3. To give understanding of various types of amplifier circuits
4. To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
5. To understand the concepts of combinational logic circuits and sequential circuits.

COURSE OUTCOMES

1. Upon successful completion of the course, the student is able to
2. Know the characteristics of various components.
3. Understand the utilization of components.
4. Design and analyze small signal amplifier circuits.
5. Postulates of Boolean algebra and to minimize combinational functions
6. Design and analyze combinational and sequential circuits
7. Known about the logic families and realization of logic gates.

LIST OF EXPERIMENTS

1. Forward & Reverse Bias Characteristics of PN Junction Diode.
2. Zener diode characteristics and Zener as voltage Regulator
3. Full Wave Rectifier with & without filters
4. Common Emitter Amplifier Characteristics
5. Common Base Amplifier Characteristics
6. Input and Output characteristics of FET in CS Configuration
7. Realization of Boolean Expressions using Gates
8. Design and realization logic gates using universal gates
9. Generation of clock using NAND / NOR gates
10. Design a 4 – bit Adder /Subtractor
11. Design and realization a Synchronous and Asynchronous counter using flip-flops
12. Realization of logic gates using DTL, TTL, ECL,etc.



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TEXT BOOKS
<ol style="list-style-type: none">1. Integrated Electronics: Analog and Digital Circuits and Systems, 2/e, Jaccob Millman, Christos Halkias and Chethan D. Parikh, Tata McGraw-Hill Education, India, 2010.2. Digital Design, 5/e, Morris Mano and Michael D. Cilette, Pearson, 2011.
REFERENCE BOOKS
<ol style="list-style-type: none">1. Electronic Devices and Circuits, Jimmy J Cathey, Schaum's outline series, 1988.2. Digital Principles, 3/e, Roger L. Tokheim, Schaum's outline series, 1994.
WEB REFERENCES
<ol style="list-style-type: none">1. Hands-On Electronics: A Practical Introduction to Analog and Digital Circuits by Daniel M. aplanand and Christopher G. White 15 May 20032. Foundations of Analog and Digital Electronic Circuits by Agarwal 24 September 2005
E -TEXT BOOKS
<ol style="list-style-type: none">1. https://www.analog.com/en/education/education-library/tutorials.html2. "Analysis and Design of Digital Integrated Circuits" by D A Hodges and H G Jackson
MOOCS COURSES
<ol style="list-style-type: none">1. https://www.mooc-list.com/tags/digital-electronics2. https://www.coursera.org/courses?query=electronics



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DEPARTMENT OF INFORMATION TECHNOLOGY

IT WORKSHOP LAB

II B. TECH- I SEMESTER (R 20)

Course Code	Programme	Hours/Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
CS309PC	B. Tech	0	0	2	1	30	70	100

COURSE OBJECTIVES

To learn

1. To nurture the students to identify the basic components of a computer.
2. To demonstrate the process of assembling and disassembling of computer parts.
3. To explain the installation of operating systems.
4. To make the students develop applications like spread sheet, documents, presentation using the software like MS office, LATEX.
5. To illustrate the usage of internet.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Identify various components and its functions.
2. Apply the knowledge of computer peripherals in assembling, disassembling and
3. Troubleshooting of personal computer.
4. Experiment with installation of operating system and make the computer ready to use.
5. Prepare word documents; excel sheets and power point presentation.
6. Develop Latex documents to handling equations and images effectively and make use of internet to enhance their technical skills.

LIST OF EXPERIMENTS

1. Identification of peripherals of a computer: Block diagram of the CPU along with the configuration of the each peripheral and its functions.
2. System Assembling and Disassembling: Disassembling the components of a PC and assemble them back to working condition.
3. Installation of softwares: Installation of operating Systems: Windows, Linux along with necessary Device Drivers, Installation of application softwares and Tools.
4. Troubleshooting (Demonstration): Hardware Troubleshooting: Identification of a problem and fixing a defective PC Software Troubleshooting: Identification of a problem and fixing the PC for any software issues.
5. Network Configuration and Internet: Configuring TCP/IP, proxy and firewall settings, Internet and World Wide Web-Search Engines, Types of search engines, netiquette, and cyber hygiene.
6. MS-Office / Open Office:
 - a. Word - Formatting, Page Borders, Reviewing, Equations, symbols.



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- b. Spread Sheet - organize data, usage of formula, graphs and charts.
 - c. Power point - features of power point, guidelines for preparing an effective Presentation.
 - d. Access- creation of database, validate data.
7. LaTeX: LaTeX - basic formatting, handling equations and images.

TEXT BOOKS

1. Textbook Of Workshop Technology Rs KhurmiJk Gupta,

REFERENCE BOOKS

1. Computer Hardware, Installation, Interfacing, Troubleshooting And Maintenance, K.L. James, Eastern Economy Edition.
2. Microsoft Office 2007: Introductory Concepts And Techniques, Windows XP Edition By Gary B. Shelly, Misty E. Vermaat And Thomas J. Cashman (2007, Paperback).

WEB REFERENCES

1. LATEX- User's Guide and Reference Manual, Leslie Lamport, Pearson, Second Edition LPE.

E -TEXT BOOKS

1. Foundations of Information Technology Coursebook 9: Windows 7 and MS Office 2007 (With MS Office 2010 Updates)-Sangeeta Panchal, Alka Sabharwal
2. Dell MS Office 2003-Diane Koers

MOOCS COURSES

1. [https://store.self-publish.in > products > a-textbook-of-workshop-technology](https://store.self-publish.in/products/a-textbook-of-workshop-technology)



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DEPARTMENT OF INFORMATION TECHNOLOGY

GENDER SENSITIZATION LAB

(An Activity-based Course)

II B. TECH- I SEMESTER(R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
*GS309MC	B.Tech	0	0	2	0	100	-	100

COURSE OBJECTIVES

To learn

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.

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

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. To develop students' sensibility with regard to issues of gender in contemporary India.
2. To provide a critical perspective on the socialization of men and women.
3. To introduce students to information about some key biological aspects of genders.
4. To expose the students to debates on the politics and economics of work.
5. To help students reflect critically on gender violence.
6. To expose students to more egalitarian interactions between men and women.

UNIT-I	UNDERSTANDING GENDER	Classes: 10
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-II	GENDER ROLES AND RELATIONS	Classes: 8



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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-III	GENDER AND LABOUR	Classes:10
Division and Valuation of Labor-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-IV	GENDER - BASED VIOLENCE	Classes: 8
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:“ <i>Chupulu</i> ”. 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-V	GENDER AND CULTURE	Classes: 8
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 Equals Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks- The Brave Heart.		

REFERENCE BOOKS
1 Gender Sensitization Hardcover – 2012 by Dr. Tanuja Trivedi(Author)
WEB REFERENCES
1 http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/gender-sensitivity-a-training-manual-for-sensitizing-education-managers-curriculum-and-material-developers-and-media-professionals-to-gender-concerns/
E -TEXT BOOKS
1 http://www.himpub.com/documents/Chapter1951.pdf
MOOCS COURSES
1 https://www.humanrightscareers.com/magazine/free-online-course-on-gender-equality-and-sexual-diversity-sign-up-now/
2 https://www.mooc-list.com/tags/gender-equality



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DEPARTMENT OF INFORMATION TECHNOLOGY

OPERATING SYSTEMS

II B. TECH- II SEMESTER(R 20)								
Course Code	Programme	Hours / Week			Credits	Maximum Marks		
CS401PC	B.Tech	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> 1. To understand the OS role in the overall computer system 2. To study the operations performed by OS as a resource manager 3. To understand the scheduling policies of OS 4. To understand the different memory management techniques 5. To understand process concurrency and synchronization 6. To understand the concepts of input/output, storage and file management 7. To understand the goals and principles of protection 								
COURSE OUTCOMES								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> 1. Apply optimization techniques for the improvement of system performance. 2. Ability to design and solve synchronization problems. 3. Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible. 4. Ability to change access controls to protect files. 5. Ability to compare the different operating systems 								
UNIT-I	INTRODUCTION TO OPERATING SYSTEM						Classes: 12	
Operating System - Introduction , Structures - Simple Batch, Multiprogrammed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services, System Calls								
UNIT-II	PROCESS AND CPU SCHEDULING						Classes: 12	
Process and CPU Scheduling - Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, and Interposes Communication, Scheduling Criteria, Scheduling Algorithms, Multiple -Processor Scheduling. System call interface for process management -fork, exit, wait, waitpid, exec								



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UNIT-III	DEADLOCKS	Classes:10
<p>Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock</p> <p>Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors</p> <p>Interprocess Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.</p>		
UNIT-IV	MEMORY MANAGEMENT AND VIRTUAL MEMORY	Classes: 12
<p>Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.</p>		
UNIT-V	FILE SYSTEM INTERFACE AND OPERATIONS	Classes: 12
<p>File System Interface and Operations -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management. Usage of open, create, read, write, close, lseek, stat, ioctl system calls.</p> <p>Case Study-Linux: Linux History, Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File Systems, Input and Output, Inter-process Communication.</p>		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Operating System Concepts by Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 9th Edition, Wiley, 2016 India Edition 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Modern Operating Systems, Andrew S Tanenbaum, 3rd Edition, PHI 2. Operating Systems: A concept-based Approach, 2nd Edition, D.M. Dhamdhare, TMH. 3. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition. 4. An Introduction to Operating Systems, P.C.P. Bhatt, PHI. 5. Principles of Operating systems, Naresh Chauhan, Oxford University Press 		
WEB REFERENCES		
<ol style="list-style-type: none"> 1. Operating System Principles by Silberschatz, Galvin, Gagne 2. Operating Systems: Internals and Design Principles, 7e by Stallings 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. http://www.freebookcentre.net/ComputerScience-Books-Download/Operating-Systems-and-Middleware-Supporting-Controlled-Interaction.html 2. http://www.freebookcentre.net/ComputerScience-Books-Download/Operating-System-by-Gopi-Sanghani.html 		
MOOCS COURSES		
<ol style="list-style-type: none"> 1. https://www.mooc-list.com/tags/os 2. https://nptel.ac.in/courses/106106144/2 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS

II B. TECH- II SEMESTER(R 20)								
Course Code	Programme	Hours / Week			Credits	Maximum Marks		
IT402PC	B.Tech	L	T	P	C	CIE	SEE	Total
		3	1	0	4	30	70	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> To understand the basic concepts and the applications of database systems. To master the basics of SQL and construct queries using SQL. Topics include data models, database design, relational model, relational algebra, transaction Control, concurrency control, storage structures and access techniques 								
COURSE OUTCOMES								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> Gain knowledge of fundamentals of DBMS, database design and normal forms Master the basics of SQL for retrieval and management of data. Be acquainted with the basics of transaction processing and concurrency control. Familiarity with database storage structures and access techniques 								
UNIT-I	DATABASE SYSTEM APPLICATIONS						Classes: 12	
Database System Applications: A Historical Perspective, File Systems versus a DBMS, view of data, data abstraction instances and schema, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model, Database languages-DDL,DML,DCL,TCL,								
UNIT-II	INTRODUCTION TO THE RELATIONAL MODEL						Classes: 12	
Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity Constraints, querying relational data, logical data base design, introduction to views, destroying/altering tables and views. Relational Algebra-selection and projection set operations-renaming-joins-divisions, Relational calculus, Tuple relational Calculus, Domain relational calculus.								
UNIT-III	SQL: QUERIES, CONSTRAINTS, TRIGGERS						Classes:10	
SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases. Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms,								



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BCNF, lossless join decomposition, multi-valued dependencies, FOURTH normal form, FIFTH normal form.		
UNIT-IV	TRANSACTION CONCEPT	Classes: 12
Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple Granularity, Recovery and Atomicity, Log–Based Recovery, Recovery with Concurrent Transactions		
UNIT-V	DATA ON EXTERNAL STORAGE	Classes: 12
Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index data Structures, Hash Based Indexing, Tree base Indexing, Comparison of File Organizations, Indexes and Performance Tuning, Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM), B+ Trees: A Dynamic Index Structure.		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Fundamentals of Data Base Management Systems by Dr. P. Santosh Kumar Patra, Sri Krishna Publishing Company Pvt.Ltd. 2. Database System Concepts, Silberschatz, Korth, Mc Graw hill, Vedition. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7thEdition. 2. Fundamentals of Database Systems, ElmasriNavrate, <i>Pearson Education</i> 3. Introduction to Database Systems, C. J. Date, <i>Pearson Education</i> 4. Oracle for Professionals, the X Team, S.Shah and V. Shah, <i>SPD</i>. 5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, <i>PHI</i>. 6. Fundamentals of Database Management Systems, M. L. Gillenson, <i>Wiley Student</i> Edition. 		
WEB REFERENCES		
<ol style="list-style-type: none"> 1. http://www.freebookcentre.net/Database/Free-Database-Systems-Books-Download.html 2. https://www.gatevidyalay.com/transaction-states-in-dbms/ 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. http://www.ebooks-for-all.com/bookmarks/detail/Database-Management-Systems/onecat/0.html 2. http://freecomputerbooks.com/dbSystemsBooks.html 		
MOOCS COURSES		
<ol style="list-style-type: none"> 1. https://swayam.gov.in/nd2_cec19_cs05/preview 2. https://swayam.gov.in/nd2_nou19_lb03/preview 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

JAVA PROGRAMMING

II B. TECH- II SEMESTER (R 20)

Course Code	Programme	Hours/Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
CS403PC	B. Tech	3	1	0	4	30	70	100

COURSE OBJECTIVES

To learn

1. Language programming using a module's approach which gives emphasize to small programs.
2. To define exceptions and use I/O streams.
3. To introduce the design of Graphical User Interface using applets and swing controls.
4. To develop a java application with threads and generics classes.
5. To design and build simple Graphical User Interface.
6. Learn how to write moderately complex Java programs efficiently.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Knowing essential concepts, principles and theories of Java technology relating to the web applications.
2. Develop real-world programming problems and applications efficiently using the advanced JAVA library.
3. Develop Java applications with threads and generics classes.
4. Able to develop multithreaded applications with synchronization and applets for web applications.
5. Build Java applications using exceptions and I/O streams and interactive Java programs using swings.

UNIT-I	OBJECT-ORIENTED THINKING AND INHERITANCE	Classes: 13
<p>Object-Oriented Thinking- A way of viewing world – Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method binding, Overriding and Exceptions, Summary of Object-Oriented concepts. Java buzzwords, An Overview of Java, Data types, Variables and Arrays, operators, expressions, control statements, Introducing classes, Methods and Classes, String handling.</p> <p>Inheritance– Inheritance concept, Inheritance basics, Member access, Constructors, Creating Multilevel hierarchy, super uses, using final with inheritance, Polymorphism-ad hoc polymorphism, pure polymorphism, method overriding, abstract classes, Object class, forms of inheritance-specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance</p>		



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UNIT-II	PACKAGES AND STREAM BASED I/O	Classes: 12
<p>Packages - Defining a Package, CLASSPATH, Access protection, importing packages. Interfaces - defining an interface, implementing interfaces, Nested interfaces, applying interfaces, variables in interfaces and extending interfaces.</p> <p>Stream based I/O (java.io) – The Stream classes-Byte streams and Character streams, Reading console Input and Writing Console Output, File class, Reading and writing Files, Random access file operations, The Console class, Serialization, Enumerations, auto boxing, generics.</p>		
UNIT-III	EXCEPTION HANDLING AND GENERIC CLASSES	Classes: 12
<p>Exception handling - Fundamentals of exception handling, Exception types, Termination or resumptive models, Uncaught exceptions, using try and catch, multiple catch clauses, nested try statements, throw, throws and finally, built- in exceptions, creating own exception sub classes.</p> <p>Multithreading- Differences between thread-based multitasking and process-based multitasking, Java thread model, creating threads, thread priorities, synchronizing threads; inter thread communication</p> <p>Generic classes – generic methods – Bounded Types – Restrictions and Limitations.</p>		
UNIT-IV	COLLECTIONS FRAMEWORK AND INTERFACES	Classes: 12
<p>The Collections Framework (java.util)- Collections overview, Collection Interfaces, The Collection classes- Array List, Linked List, Hash Set, Tree Set, Priority Queue, Array Deque. Accessing a Collection via an Iterator, Using an Iterator, The For-Each alternative, Map Interfaces and Classes, Comparators, Collection algorithms, Arrays, The Legacy Classes and Interfaces- Dictionary, Hashtable ,Properties, Stack, Vector More Utility classes, String Tokenizer, Bit Set, Date, Calendar, Random, Formatter, Scanner.</p>		
UNIT-V	GUI PROGRAMMING WITH SWING	Classes: 13
<p>GUI Programming with Swing – Introduction, limitations of AWT, MVC architecture, components, containers. Understanding Layout Managers, Flow Layout, Border Layout, Grid Layout, Card Layout, Grid Bag Layout. Event Handling- The Delegation event model- Events, Event sources, Event Listeners, Event classes, Handling mouse and keyboard events, Adapter classes, Inner classes, Anonymous Inner classes.</p> <p>A Simple Swing Application, Applets – Applets and HTML, Security Issues, Applets and Applications, passing parameters to applets. Creating a Swing Applet, Painting in Swing, A Paint example, Exploring Swing Controls- JLabel and Image Icon, JText Field, The Swing Buttons- JButton, JToggleButton, JCheckBox, JRadioButton, JTabbedPane, JScrollPane, JList, JComboBox, Swing Menus, Dialogs.</p>		



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TEXT BOOKS

1. Java The complete reference, 11th edition, Herbert Schildt, McGraw Hill Education (India) Pvt. Ltd, 2018.
2. Cay S. Horstmann, Gary Cornell, —Core Java Volume –I Fundamentals, 11th Edition, Prentice Hall, 2018. Think Python First Edition, by Allen B. Downey, O'Reilly publishing.

REFERENCE BOOKS

1. Steven Holzner, —Java 2 Black book, Dreamtech press, 2011.
2. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
3. Timothy Budd, —Understanding Object-oriented programming with Java, Updated Edition, Pearson Education, 2000.
4. Java Programming and Object-oriented Application Development, R. A. Johnson, Cengage Learning.

WEB REFERENCES

1. http://www.developer.com/icom_includes/feeds/developer/dev-25.xml
2. <http://www.ibm.com/developerworks/views/java/rss/libraryview.jsp>
3. <http://www.javaworld.com/rss/index.html>
4. <http://feeds.feedburner.com/DevxLatestJavaArticles>

E -TEXT BOOKS

1. HTTP Programming Recipes for Java Bots by Jeff Heaton - Heaton Research, Inc.
2. Java Distributed Computing by Jim Farley - O'Reilly Media
3. Java Precisely by Peter Sestoft - IT University of Copenhagen
4. Java for Absolute Beginners: Learn to Program the Fundamentals the Java 9+ Way
5. Fundamentals of the Java Programming Language, Java SE 6
6. JAVA: Easy Java Programming for Beginners, Your Step-By-Step Guide to
7. Learning Java Programming
8. Android App Development in Android Studio: Java + Android Edition for Beginners

MOOC COURSES

1. <https://www.mooc-list.com › tags › java-programming>
2. <https://www.mooc-list.com › tags › java>
3. <https://www.edx.org › learn › java>
4. <https://www.quora.com › What-are-the-best-MOOCs-for-learning-Java>
5. <https://www.udacity.com › course › java-programming-basics--ud282>
6. <https://www.futurelearn.com › courses › begin-programming>.



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DEPARTMENT OF INFORMATION TECHNOLOGY

COMPUTER ORGANIZATION AND MICROPROCESSOR

II B. TECH- II SEMESTER(R 20)								
Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
IT404PC	B.Tech	3	0	0	3	30	70	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> To understand basic components of computers. To understand the architecture of 8086 processor. To understand the instruction sets, instruction formats and various addressing modes of 8086. To understand the representation of data at the machine level and how computations are performed at machine level. To understand the memory organization and I/O organization. To understand the parallelism both in terms of single and multiple processors. 								
COURSE OUTCOMES								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> Able to understand the basic components and the design of CPU, ALU and Control Unit. Ability to understand memory hierarchy and its impact on computer cost/performance. Ability to understand the advantage of instruction level parallelism and pipelining for high performance Processor design. Ability to understand the instruction set, instruction formats and addressing modes of 8086. Ability to write assembly language programs to solve problems. 								
UNIT-I	DIGITAL COMPUTERS						Classes: 12	
Digital Computers: Introduction of Computer, Computer Types, Functional units of Computer, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture. Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt, Complete Computer Description. Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit.								
UNIT-II	CENTRAL PROCESSING UNIT						Classes: 12	
Central Processing Unit: Features of 8085 microprocessor, Differences between 8085 and 8086 processor, Pin diagram of 8086 processor. The 8086 Processor Architecture, Register organization, Physical memory organization, General Bus Operation, I/O Addressing Capability, Special Processor Activities, Minimum and Maximum mode system and timings.								



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8086 Instruction Set and Assembler Directives-Machine language instruction formats, Addressing modes, Instruction set of 8086, Assembler directives and operators.		
UNIT-III	ASSEMBLY LANGUAGE PROGRAMMING WITH 8086	Classes:10
Assembly Language Programming with 8086- Machine level programs, Machine coding the programs, Programming with an assembler, Assembly Language example programs, Interrupts and Interrupt service routines, Interrupt cycle of 8086, Interrupt programming, Passing parameters to procedures, Macros, Timings and Delays.		
UNIT-IV	COMPUTER ARITHMETIC	Classes: 12
Computer Arithmetic: Introduction, Addition and Subtraction, Multiplication Algorithms, Division Algorithms, Floating - point Arithmetic operations. The Memory System: Basic concepts semi-conductor RAM memories, Read only memories(ROM) Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input – Output Processor (IOP),Intel 8089 IOP.		
UNIT-V	MEMORY ORGANIZATION	Classes: 12
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory. Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors, Multiprocessor and Multicomputer, IPC.		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Computer System Architecture, M. Moris Mano, Third Edition, Pearson. 2. Advanced Microprocessors and Peripherals, K M Bhurchandi, A.K Ray, 3rd edition, McGraw Hill India Education Private Ltd. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Computer Organization and Architecture, William Stallings, 9th Edition, Pearson. 2. David A. Patterson, John L. Hennessy: Computer Organization and Design – The Hardware/ Software Interface ARM Edition, 4th Edition, Elsevier, 2009. 		
E -TEXT BOOKS		
<ol style="list-style-type: none"> 1. A Text Book of Computer Organization & Architecture Paperback – 2016 by Prof. Jatinder Singh (Author), Er. Amardeep Singh(Author) 2. .Microprocessor Architecture, Programming and Applications with the 8085 6/e Paperback 1Oct 2013by Ramesh Gaonkar(Author) 		
MOOCS COURSES		
<ol style="list-style-type: none"> 1. https://www.edx.org/course/computation-structures-3-computer-mitx-6-004-3x-0 2. https://www.mooc-list.com/tags/microprocessors 		



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DEPARTMENT OF INFORMATION TECHNOLOGY

DISCRETE MATHEMATICS

II B. TECH- II SEMESTER (R 20)								
Course Code	Programme	Hours/Week			Credits	Maximum Marks		
CS405PC	B. Tech	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> 1. Introduces the elementary discrete mathematics for computer science and engineering. 2. 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								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> 1. Ability to understand and construct precise mathematical proofs. 2. Ability to use logic and set theory to formulate precise statements. 3. Ability to analyze and solve counting problems on finite and discrete structures. 4. Ability to describe and manipulate sequences. 5. Ability to apply graph theory in solving computing problems. 								
UNIT-I	INTRODUCTION TO BUSINESS AND ECONOMICS						Classes: 11	
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-II	SET'S, FUNCTIONS AND SEQUENCES						Classes: 12	
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-III	ALGORITHMS						Classes: 10	
Algorithms, Induction and Recursion: 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.								



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UNIT-IV	DISCRETE PROBABILITY AND ADVANCED COUNTING	Classes: 11
Discrete Probability and Advanced Counting Techniques: An Introduction to Discrete Probability, Probability Theory, Bayes' Theorem, Expected Value and Variance Advanced Counting Techniques: Recurrence Relations, Solving Linear Recurrence Relations, Generating functions, function of sequence, Calculating Coefficients of generating functions.		
UNIT-V	GRAPHS	Classes: 12
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 Combinatorics and Graph Theory- Kenneth H Rosen, 7th Edition, 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, 2nd ed, Pearson Education.
3. Discrete Mathematics- Richard Johnsonbaugh, 7Th Edn., 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, 5th edition, Pearson Education.

WEB REFERENCES

1. "Discrete Mathematics and its Applications" by Kenneth H Rosen
2. "Elements of Discrete Mathematics" by C L Liu
3. "Discrete Mathematics" by Norman L Biggs
4. "Discrete Mathematics for Computer Science" by Kenneth Bogart and Robert L Drysdale
5. "Discrete Mathematics with Applications" by Thomas Koshy
6. "Discrete Mathematics (Schaum's Outlines)" by Seymour Lipschutz and Marc Laras Lipson



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E -TEXT BOOKS

1. Combinatorics And Graph Theory Sarkar, Bikash Kanti , Chakraborty, Swapan Ku Discrete Mathematics Chandrasekaran, N., Umaparvathi, M.Mar
2. Discrete Mathematics And Graph Theory Biswal, PurnaChandra
3. Advanced Discrete Mathematics Rajput, Uday Singh

MOOCS COURSES

1. <https://www.mooc-list.com> › tags › discrete-mathematics
2. <https://www.mooc-list.com> › tags › discrete-mathematics
3. <https://www.mooc-list.com> › course › discrete-mathematics-coursera
4. <https://www.coursera.org> › learn › discrete-mathematics



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DEPARTMENT OF INFORMATION TECHNOLOGY

OPERATING SYSTEMS LAB

II B. TECH- II SEMESTER (R 20)

Course Code	Programme	Hours/Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
CS406PC	B. Tech	0	0	3	1.5	30	70	100

COURSE OBJECTIVES

COURSE OBJECTIVES

To learn

1. To understand the OS role in the overall computer system
2. To study the operations performed by OS as a resource manager
3. To understand the scheduling policies of OS
4. To understand the different memory management techniques
5. To understand process concurrency and synchronization
6. To understand the concepts of input/output, storage and file management
7. To understand the goals and principles of protection
8. Introduce system call interface for file and process management
9. To study different OS and compare their features.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Apply optimization techniques for the improvement of system performance.
2. Ability to design and solve synchronization problems.
3. Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible.
4. Ability to change access controls to protect files.
5. Ability to compare the different operating systems

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100MB free disk space.
2. Ubuntu OS



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LIST OF EXPERIMENTS

1. Write C programs to simulate the following CPU Scheduling algorithms
 - a) FCFS b) SJF c) Round Robin d) priority
2. Write programs using the I/O system calls of UNIX/LINUX operating system (open, read, write, close, fcntl, seek, stat, opendir, readdir)
3. Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention.
4. Write a C program to implement the Producer – Consumer problem using semaphores using UNIX/LINUX system calls.
5. Write C programs to illustrate the following IPC mechanisms
 - a) Pipes b) FIFOs c) Message Queues d) Shared Memory
6. Write C programs to simulate the following memory management techniques
 - a) Paging b) Segmentation
7. Write c programs to implement IPC between two process using
 - a) Message Queues b) shared memory
8. Write a c program to stimulate multilevel queue scheduling algorithms considering the following scenario. All the processes in the system are divided into two categories – system process and user process. System processes are to be given higher priority than user processes. Use FCFS scheduling for the process in each queue.

TEXT BOOKS

1. An Introduction to Operating Systems, P.C.P Bhatt, 2ndedition, PHI.
2. UNIX System Programming Using C++, TerrenceChan, PHI/Pearson.
3. Modern Operating Systems, Andrew S Tanenbaum, 3rdEdition, PHI

REFERENCE BOOKS

1. “Arch “Data Integrity in Pharmaceutical and Medical Devices Regulation Operations: Best Practices Guide to Electronic Records Compliance” by Orlando Lopez itecting the Internet of Things” by Dieter Uckelmann and Mark Harrison



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WEB REFERENCES

1. "TestFrame: An Approach to Structured Testing" by Chris C Schotanus
2. "Logistic Core Operations with SAP: Inventory Management, Warehousing, Transportation, and Compliance" by Jens Kappauf and BerndLauterbach
3. "Supply Chain Management Based on SAP Systems: Order Management in Manufacturing Companies (SAP Excellence)" by Gerhard F Knolmayer and PeterMertens

E -TEXT BOOKS

1. Operating System: From 0 to 1 by Tu, Do Hoang - Github ,2017
2. Operating Systems Tata McGraw-Hill
3. Introducing Windows 8: An Overview for IT Professionals by Jerry Honeycutt - Microsoft Press , 2012 education,1997
4. Microsoft Windows Server System Deployment Guide for Midsize Businesses - Microsoft Press ,2005

MOOCS COURSES

1. <https://www.classcentral.com> › tag ›operating-systems
2. <https://www.my-mooc.com> › mooc›introduction-to-operating-systems--u.
3. <https://www.computersciencezone.org> ›computer-science-education-free-.
4. <https://www.classcentral.com> › tag ›operating-systems.



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DEPARTMENT OF INFORMATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS LAB

II B. TECH- II SEMESTER (R 20)

Course Code	Programme	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
IT407PC	B. Tech	0	0	3	1.5	30	70	100

COURSE OBJECTIVES

To learn

1. Introduce ER data model, database design and normalization
2. Learn SQL basics for data definition and data manipulation

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Design database schema for a given application and apply normalization
2. Acquire skills in using SQL commands for data definition and data manipulation.
3. Develop solutions for database applications using procedures, cursors and triggers.

LIST OF EXPERIMENTS

1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. Querying (using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.)
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Develop a program using BEFORE and AFTER triggers, row and statement triggers and instead of triggers.
10. Develop a program using creation of procedures, passing parameters IN and OUT of Procedure.
11. Develop a program using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and cursor VARIABLES.

TEXT BOOKS

1. Fundamentals of Database Management Systems by Dr. P.Santosh Kumar Patra, Sri Krishna Publishing Company Pvt.Ltd
2. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3rd Edition
3. Database System Concepts, Silberschatz, Korth, McGraw Hill, Vedition



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REFERENCE BOOKS

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, ElmasriNavrate, Pearson Education
2. Introduction to Database Systems, C.J. Date, Pearson Education
3. Oracle for Professionals, the X Team, S. Shah and V. Shah, SPD.
4. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
5. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley StudentEdition.

WEB REFERENCES

1. <http://www.freebookcentre.net/Database/Free-Database-Systems-Books-Download.html>
2. <https://www.gatevidyalay.com/transaction-states-in-dbms/>

E -TEXT BOOKS

1. <http://www.ebooks-for-all.com/bookmarks/detail/Database-Management-Systems/onecat/0.html>
2. <http://freecomputerbooks.com/dbSystemsBooks.html>

MOOCS COURSES

1. https://swayam.gov.in/nd2_cec19_cs05/preview
2. https://swayam.gov.in/nd2_nou19_lb03/preview



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DEPARTMENT OF INFORMATION TECHNOLOGY

JAVA PROGRAMMING LAB

II B. TECH- II SEMESTER (R 20)

Course Code	Programme	Hours/Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	Total
CS408PC	B. Tech	0	0	2	1	30	70	100

COURSE OBJECTIVES

To learn

1. To build software development skills using java programming for real-world applications.
2. To understand and apply the concepts of classes, packages, interfaces, array list, exception handling and file processing.
3. To write programs using abstract classes.
4. To write programs for solving real world problems using java collection frame work and multithreaded programs.
5. To write GUI programs using swing controls in Java.

COURSE OUTCOMES

Upon successful completion of the course, the student is able to

1. Able to write programs for solving real world problems using java collection framework.
2. Able to write programs using abstract classes.
3. Able to write multithreaded programs.
4. Able to write GUI programs using swing controls in Java.

LIST OF EXPERIMENTS

1. Use Eclipse or Net bean platform and acquaint with the various menus. Create a test project, add a test class, and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods, and classes. Try debug step by step with a small program of about 10 to 15 lines which contains at least one if else condition and a for loop.
2. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result. Handle any possible exceptions like divided by zero.
3. a) Develop an applet in Java that displays a simple message.
b) Develop an applet in Java that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.
4. Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box.
5. Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the



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value of cube of the number.

6. Write a Java program for the following:
 - a) create a doubly linked list of elements.
 - b) delete a given element from the above list.
 - c) Display the contents of the list after deletion.
7. Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with "Stop" or "Ready" or "Go" should appear above the buttons in selected color. Initially, there is no message shown.
8. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.
9. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout.
10. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired (Use Adapter classes).
11. Write a Java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (\t). It takes a name or phone number as input and prints the corresponding other value from the hash table (hint: use hash tables).
12. Write a Java program that correctly implements the producer – consumer problem using the concept of interthread communication.
13. Write a Java program to list all the files in a directory including the files present in all its subdirectories.
14. Write a Java program that implements Quick sort algorithm for sorting a list of names in ascending order
15. Write a Java program that implements Bubble sort algorithm for sorting in descending order and also shows the number of interchanges occurred for the given set of integers.
16. Write a java program to design a registration form for creating a new eMail account.



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TEXT BOOKS

1. Arnold Ken, Gosling J, "The Java Programming Language", Addison Wesley.
2. Java for Programmers, P. J. Deitel and H. M. Deitel, 10th Edition Pearson education.
3. Thinking in Java, Bruce Eckel, Pearson Education.
4. Java Programming, D. S. Malik and P. S. Nair, CengageLearning.

REFERENCE BOOKS

1. "The Java Programming Language" by Arnold
2. "Java: The Complete Reference" by Herbert Schildt
3. "Core Java: An Integrated Approach, New: Includes All Versions up to Java 8" by RNageswara Rao and DT Editorial Services
4. "Java Programming Interviews Exposed (WROX)" by Noel Markham
5. "Advanced Java Programming" by Uttam Roy
6. "Cracking the C, C++ and Java Interview" by S G Ganesh and K U Subhash

WEB REFERENCES

1. Head First Java: A Brain-Friendly Guide 2nd Edition, Kindle Edition by Kathy Sierra.
2. Effective Java: A Programming Language Guide (Java Series) 2nd Edition, Kindle Edition by Joshua Bloch.
3. AI Algorithms, Data Structures, and Idioms in Prolog, Lisp, and Java Paperback – Import, 25 Aug 2008 by George F. Luger (Author), William A Stubblefield (Author).

E -TEXT BOOKS

1. Introduction to Java Programming and Data Structures, Comprehensive Version (11th Edition) 11th Edition by Y. Daniel Liang.
2. Java How to Program, Early Objects (11th Edition) (Deitel: How to Program) 11th Edition by Paul J. Deitel (Author), Harvey Deitel(Author).

MOOCS COURSES

1. <https://www.mooc-list.com> › tags ›java-programming
2. <https://www.mooc-list.com> › tags ›java
3. <https://www.edx.org> › learn ›java
4. <https://www.quora.com> › What-are-the-best-MOOCs-for-learning-Java



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MICRO PROJECT - 2

II B. TECH- II SEMESTER (R 20)								
Course Code	Programme	Hours / Week			Credits	Maximum Marks		
* IT409MP	B. Tech	L	T	P	C	CIE	SEE	Total
		0	0	3	0	100	-	100
COURSE OBJECTIVES								
To learn								
<ol style="list-style-type: none"> 1. Mini Project serves as a kind of road map for future Mini/Major Projects/Products. 2. Capable of carrying out mathematical, empirical or design research 3. Capable of writing a report on a research project 4. Capable of working independently 5. Capable of giving a presentation on a piece of research 								
COURSE OUTCOMES								
Upon successful completion of the course, the student is able to								
<ol style="list-style-type: none"> 1. Write, analyze, review, and rewrite programs, using workflow chart and diagram, and applying knowledge of computer capabilities, subject matter, and symbolic logic. 2. Correct errors by making appropriate changes and rechecking the program to ensure that the desired results are produced. 3. Understand detailed workflow charts and diagrams that describe input, output, and logical operation and convert them in to a series of instructions coded in a computer language 4. Compile and write documentation of program development and subsequent revisions, 5. Inserting comments in the coded instructions so others can understand the program. 								
LIST OF EXPERIMENTS								
Need to identify the following activities:								
<ol style="list-style-type: none"> 1. The student can specify a subject that is suitable for research in the specific area. 2. The student can determine the aim of the research. 3. The student can demarcate the subject. 4. The student can formulate a problem statement. 5. The student can collect and process relevant literature. <ol style="list-style-type: none"> a. The student can identify the technical object of concern from the problem definition. b. The student can identify models, methods and techniques to be used. c. The student can identify the steps in the development process and their relationships (methodology). d. The student can perform the steps according to the methodology, which should result in 								



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Specifications or prototype

6. The student can structure a report logically (logical layout of chapters, sections, appendices and footnotes and a logical buildup of the text within these sections).
7. The student can attune his style (complexity, exactness, compactness of information, vivacity, and involvement) to his purpose and his target audience.
8. The student can present arguments for his statements.
9. The student can make a report readable and accessible by writing introductions, tips for the reader and summaries.
10. The student can make a report readable and accessible by adding functional visual aids (layout, illustrations)

To accept a specific final project. To check the following.

Evaluation of Mini Project

- **Formalisation**
This activity results in project plan and a supervisors committee, which are the formal requirements for officially starting a final project;
- **Preparation (Requirement Analysis & Design)**
In this activity the most important background information for the project is studied and the project plan is refined;
- **Development**
In this activity the bulk of the development work is performed;
- **Reporting**
This activity results in a Master thesis;
- **Presentation preparation**
This activity results in the delivery of the final presentation.
- **Exploration**
This activity is performed before the official start of the project, and results in a decision.