



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

Applied Science (Physics)

Semester/Year		I/II	Program			B.Tech				
Subject Category	BS	Subject Code:	PYB101		Subject Name:	Applied Physics				
Maximum Marks Allotted							Contact Hours			Total Credits
Theory				Practical		Total Marks				
End Sem	Mid-Sem	Quiz	Assignment	End Sem	Lab-Work		L	T	P	
60	20	10	10	30	20	150	3	0	1	4
Prerequisites:										
Intermediate Physics (Theory and Lab)										
Course Objective:										
This course is designed to impart fundamental knowledge about some areas of physics which are to the core of emerging technologies. It is planned to provide knowledge about Quantum mechanics, Lasers , Fiber Optics, Hologhphy, Superconductor, Nano materials, Dielectric and piezoelectric materials. Laboratory sessions are also designed which are blended with experiments on the fundamental and advanced areas of physics.										
Course Outcomes:										
After completion of the course, students will be able										
CO1	To understand basic quantum physics and apply it to the behaviour of a system at the microscopic level and solve the problems.									
CO2	To understand process of lasers and explain the requirements, properties, classification of various lasers. They will also develop an understanding of optical fibers and and holography and can explin the characteristics, various losses, dispersion in optical fibers and procsees of construction and reproction of holograms.									
CO3	To understand the basic concepts and theory of semiconductor for devices application.									
CO4	To understand and know the principle of superconductors and nanomaterils. The sdunednt will be able to explain types of superconductors, their properties and applications, nano technology and its applications.									
CO5	To understand the characteristic of Dielectrics and Piezoelectric materials in terms of their applications .									
CO6	To perform experiments related to the course contents.									
UNITS	Descriptions							Hrs.	CO's	
I	Quantum mechanics: Planck's quantum hypothesis, Wave-particle duality of radiation, de-Broglie matter waves, Davisson and Germer's electron diffraction experiment, Compton effect, Phase and group velocity, Heisenberg uncertainty principle and its applications, wave function and its significance, Eigen value and Eigen function,Schrödinger wave equations, particle in one dimensional potential box.							8		
II	Lasers: Properties of lasers, the basic process of lasers, Population-inversion, classification of lasers, working of He-Ne, Ruby, Nd: YAG and CO ₂ lasers, Applications of Lasers in Communication, Medical and Industry. Optical fibers: Light guidance through optical fibres, the qualitative idea of critical and acceptance angle, types of fibers, numerical aperture, V-Number, intermodal & material dispersions in fiber. Holography: Basic principle of holography, Construction and reconstruction of Image on hologram and applications of holography.							8		
III	Basic of semiconductors: Density of energy states, Energy-band formations. direct and indirect band gap. Effective mass. Fermi energv							8		

	<p>levels. Mobility and carrier concentrations (intrinsic). Radiative and non-radiative recombination mechanisms in semiconductors .</p> <p>Semiconductor Devices: Properties of PN junction and I-V diode equation, Photovoltaic cell, LED Materials for fabrication, LED Structures and Characteristics; Injection Laser Diode (ILD) - Laser action in semiconductors , structures and efficiency.</p>		
IV	<p>Superconductors: Free electrons theory of metals, Temperature dependence of resistivity in superconducting Metals , Effect of magnetic field (Meissner effect) , Temperature dependence of critical field, Type I and Type II superconductors, BCS theory (Qualitative), High-temperature superconductors and Applications of superconductors.</p> <p>Nanomaterials: Basic principle of nanoscience and technology, structure, properties ad uses of Fullerene and Carbon nanotubes, Applications of nanotechnology.</p>	8	
V	<p>Dielectrics Materials: Polar and Non-Polar Dielectrics, Dipole moment and Polarization, Dielectric constant& Polarization, Gauss law in Dielectric, the relation between electric field vector E, Pand D.</p> <p>Piezoelectric materials- Ferroelectric materials , Piezoelectric effect, direct and converse parameter definitions, Piezoceramics, Piezopolymers, Piezoelectric materials as sensor and transducers.</p>	8	
Guest Lectures (if any)			
Total Hours		40	
Suggestive list of experiments:			
<ol style="list-style-type: none"> 1. To determine the width of a single slit from the study of Fraunhofer diffraction pattern using a He-Ne Laser. 2. To determine the frequency of A.C. mains using an electrical - vibrator. 3. Determination of Planck's constant. 4. To determine the frequency of A.C. mains using a sonometer. 5. To study the nature of polarization of light using the half-wave plate. 6. To find the numerical aperture of the given fibre. 7. To determine the refractive indices μ_o and μ_e of Quartz prism for ordinary and extraordinary rays using the spectrometer. 8. To determine the wavelength of monochromatic source of light by Fresnel's biprism. 9. To study the V-I characteristics of semiconductor diode 10. To study V-I Characteristics of LED 11. To study the V-I characteristics of tunnel diode 12. To determine the radius of curvature of a given plano-convex lens by Newton's rings method. 13. To determine the absorption coefficient of a glass plate by "LUMMER- BRODHUM" photometer. 14. To determine the resolving power of a telescope. 15. To determine the wavelength of light emitted by mercury vapour lamp using a diffraction grating. 			
<p>Text Book-</p> <ul style="list-style-type: none"> • Concepts of Modern Physics, Arthur Beiser, Tata McGraw-Hill, 6th edition, 2009. • Optics, A. Ghatak, McGraw Hill, 2012. • Engineering Physics , Hitendra K Malik & A.K. Singh, Mc Graw Hill Education Private Limited • Elements of Modern Physics, S.H. Patil • Kiruthiga Sivaprashta, Modern Physics, S. Chand • A Textbook of Engineering Physics, Gaur and Gupta, Dhanpat Rai Publishers, New Delhi, 8th edition, 2011. <p>Electrical Engineering Materials by A.J. Dekker, PHI publication</p>			
<p>Reference Books-</p> <ul style="list-style-type: none"> • Lasers and non-linear optics, B.B. Laud, New Age international, 3rd edition, 2011 			

- Solid State Physics, S.O.Pillai , New Age International Ltd, publishers
- Electromagnetic Theory for Telecommunications, C.S.Liu and V.K.Tripathi, Foundation Books, New Delhi,2007
- Quantum Mechanics by L.I. Schiff, Mc Graw Hill Co.
- A Textbook of Quantum Mechanics by Piravonu Mathews, K. Venkatesan (Tata McGraw Hill)
- Cady, W. G., Piezoelectricity, Dover Publication
- Piezoelectric Materials & Devices: Application in Engineering And Medical Sciences By M.S. Vijiya .CRC Press.
- Electrical Engineering Materials Physics Properties by SP A Seth, Dhanpat Rai Publications.

Modes of Evaluation and Rubric

Assignments, Quiz, Tests & exams

Criteria	Excellent (3 points)	Good (2 points)	Fair(1 point)
Quiz	> 80%	60-80%	40-60%
Test & exam	>75%	60 -75%	< 60%
Assignment	Assignment is coherently organized and the logic / solution to all the problems provided. Writing is clear and concise and persuasive.	Assignment is generally well organized and logic / solution to maximum of the problems provided barring few inaccuracies.	Assignment is poorly organized and difficult to follow. Does not flow logically from one part to another with lots of mistakes

List/Links of e-learning resource

- <https://nptel.ac.in/courses/122107035/#>
- <https://nptel.ac.in/course.html>
- <http://www.tndte.gov.in/site/wp-content/uploads/2016/08/Engineering-physics.pdf>
- <https://physicstoday.scitation.org>
- Barbastathis, G. and Sheppard C., Optics, <https://ocw.mit.edu/courses/mechanical-engineering/2-71-optics-spring-2009/>

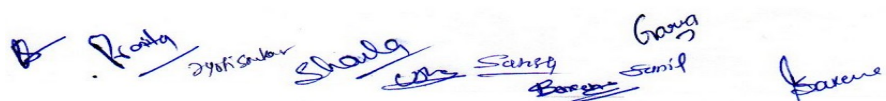
Recommendation by Board of studies on	14.06.2022
Approval by Academic council on	
Compiled and designed by	Jetendra Parashar
Subject handled by department	Applied Science (Physics)



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Computer Science and Engineering

Semester/Year				Program				B.Tech.				
Subject Category	ESC	Subject Code:	CSA103	Subject Name:	Problem Solving using Data Structures							
Maximum Marks Allotted								Contact Hours			Total Credits	
Theory				Practical			Total Marks	L	T	P		
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz						
60	20	10	10	30	10	10	150	3	0	2	4	
Prerequisites:												
Logical thinking and Computer Fundamentals												
Course Objective:												
Introduce the fundamentals of data structures and how these concepts are useful in problem solving.												
Course Outcomes:												
CO-1Understand- To teach efficient storage mechanisms of data for easy access.												
CO-2 Apply- To design and implementation of various basic and advanced data structures												
CO-3 Analyse- To introduce various techniques for representation of the data in the real world.												
CO-4 Evaluate-To develop applications using data structures.												
CO-5 Discuss- To improve the logical ability.												
UNITs	Descriptions										Hrs.	CO's
I	Problem solving concepts: top-down, bottom-up design, Concept of datatype, variable, constant and pointers. Dynamic memory allocation. Algorithm: Definition and complexity Analysis. Introduction to data structure: Linear, Nonlinear, Primitive and Nonprimitive. Arrays -Concepts of Arrays, Single dimensional array, two- dimensional array-Representation and Address Calculation, Operations on arrays with algorithms (traversing, searching, inserting, deleting) and analysis.										08	
II	List -Singly linked lists: Representation in memory, Operations on singly linked list with algorithms (traversing, searching, insertion, deletion)Doubly linked list-Operations with algorithms and analysis. Circular linked lists-Operations with algorithms and analysis. Representation & manipulations of polynomials/sets using linked lists.										06	
III	Stack - Introduction to Stack and its operations, Implementation of stack using array and linked list with comparison. Application of stacks (Polish Notations, converting infix to postfix notation, evaluating postfix notation, Parenthesis balancing, Recursion). Queue - Introduction to Queue and its operations. Implementation of queue using array and linked list. De-queue, circular queue, priority queue. Applications of queue.										09	
IV	Tree - Definition and terminology, concept of binary tree and representation, Traversing binary tree (pre order, post order, in order) Operation with algorithm - insertion and deletion. Binary Search Trees and Concept of balance tree (AVL). Graph - Definition and terminology, Types of graphs, Representation of graph. Traversing of graph- Breadth First Traversing and Depth First Traversing.										09	
V	Searching - Search methods- Linear search, Binary search and Hashing (collision, chaining and probing) with their algorithms and analysis. Sorting -Sorting Methods-Bubble sort, Selection sort, Insertion sort, Quick sort, Merge sort, Radix sort, Shell sort with their algorithms and analysis.										08	
Guest Lectures (if any)											-	
Total Hours											40	

List of Experiments														
<ol style="list-style-type: none"> Write program to implement pointers and structure in C to understand the concepts of Dynamic memory allocation. Write a program to implement concept of linear array with following operations: <ol style="list-style-type: none"> Traverse an array. Find minimum item, maximum item, and average of an array items. Insert a new item at beginning, end and middle position within an array. Delete an item from an array. Write a program to implement singly linked list with following operations <ol style="list-style-type: none"> Insert a new item at beginning, end and middle position within a single linked list. Delete an item from single linked list. Traverse a single linked list. Modify the singly linked list program to make it for doubly linked list. Write a program to implement Stack with its operations (Push, Pop, Peek, IsEmpty) using: <ol style="list-style-type: none"> Using array Using linked list Write a program to evaluate postfix notation using stack. Write program to implement queue with its operations (enqueue, dequeue) using: <ol style="list-style-type: none"> Using array Using linked list Modify the queue program to implement circular queue with its operations. Write a program to implement binary search tree with insert and delete operations. Write a program to implement depth first traverse and breadth first traverse on a graph. Write program to implement linear search and binary search on a given array. Write a program to sort a given list of 10000 random integers and compare their execution time using: <ol style="list-style-type: none"> Bubble sort Insertion sort Merge sort Quick sort Radix sort 														
Reference Books- <ul style="list-style-type: none"> Data Structure- Schaum's Series- McGraw Hill Publication Data Structure- Horwitz and Sartaj Sahni Data Structure through C, Yashwant Kanekar, BPB Publication. 														
Modes of Evaluation and Rubric														
The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end-semester examinations, and end-semester practical examinations.														
List/Links of e-learning resource														
Recommendation by Board of studies on								June-2025						
Approval by Academic council on								June-2025						
Compiled and designed by								Dr. Sandeep Raghuwanshi						
Subject handled by department								Computer Science & Engineering						
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO-1	2	2							1			2	2	2
CO-2	2	2		1								1	1	2
CO-3	2	3		1	2							2	2	3
CO-4	2	3		1	2							2	2	3
CO-5	1	1						2				1	2	

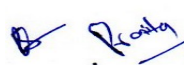









SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Computer Science and Engineering

Semester/Year				Program			B.Tech.					
Subject Category	ESC	Subject Code:	ITC101	Subject Name:	Python Programming							
Maximum Marks Allotted								Contact Hours			Total Credits	
Theory				Practical			Total Marks					
End Sem	Mid-Sem	Assign ment	Quiz	End Sem	Lab-Work	Quiz		L	T	P		
60	20	10	10	30	10	10	150	3	0	2	4	
Prerequisites:												
<ul style="list-style-type: none">● High School Level Mathematics● Elementary Knowledge of Computer												
Course Objective:												
This course introduces core programming basics—including data types, control structures, algorithm development, and program design with functions via the Python programming language. The course discusses the fundamental principles of Object-Oriented Programming.												
Course Outcomes:												
Upon completion of this course, the student will be able to: CO-1: Ability to install python and its different packages. CO-2: Implement solution logic of problem and draw it in the form of algorithm. CO-3: Design and write a python program for given algorithm. CO-4: Understand and apply the list logics to problem solution. CO-5: Understand Object Oriented with reference to python programming.												
UNITs	Descriptions										Hrs.	CO's
I	Introduction to computer science, algorithms, data representation in computers, hardware, software and operating system. Installation of python-interactive shell, IDLE, saving, editing, and running a script. The concepts of datatypes: variables, immutable variables, numerical types, operators, expressions, Indentation and comments in the program.										8	CO1
II	Conditional Statements- Conditions, Boolean Logic, Logical operators and Ranges. Control Statements- Break, Continue and Pass. Flow Control-if, if-else, nested if-else, Loop statements- for loop, while loop, Nested loops.										8	CO2
III	String: subscript operator, indexing, slicing a string; strings and number system: converting strings to numbers and vice versa. Strings and text files, manipulating files and directories, os and sys modules, text files: reading/writing text and numbers from/to a file, creating and reading a formatted file (csv or tab-separated).										9	CO3
IV	Lists, tuples, and dictionaries. Basic list operators, replacing, inserting, removing an element, searching and sorting lists, dictionary literals, adding and removing keys, accessing and replacing values, traversing dictionaries.										7	CO4
V	Classes and OOP: Classes, objects, attributes and methods, defining classes, design with classes, Inheritance, Overloading, Overriding, and Data hiding. Exception: Exception Handling, except clause, Try finally clause, User Defined Exceptions.										8	CO5
Guest Lectures (if any)											--	
Total Hours											40	
List of Experiments												

<ol style="list-style-type: none"> 1. Write a program in python to check a number whether it is prime or not. 2. Write a program to check a number whether it is palindrome or not. 3. Write a function to swap the values of two variables through a function. 4. Write a python program to Read a file line by line and print it. 5. Write a program to display the number of lines in the file and size of a file in bytes. 6. Write a program to calculate the factorial of an integer using recursion. 7. Write a program to print Fibonacci series using recursion. 8. Write a program for binary search. 9. Python Program for Sum of squares of first n natural numbers. 10. Python Program to find sum of array. 11. Python program to read character by character from a file. 12. Python Program to print with your own font. 13. Python program to print even length words in a string. 14. Python program to check if a string is palindrome or not. 15. Program to print ASCII Value of a character. 16. Python program to find smallest and largest number in a list. 17. Python program to find the size of a Tuple. 	
Text Books-	
<ul style="list-style-type: none"> • M. Mano, "Digital Logic and Computer Design", Pearson Education. • T. L. Floyd, "Digital Fundamentals", Pearson Education. • A. Anand Kumar, "Fundamentals of Digital Circuits", PHI. 	
Modes of Evaluation and Rubric	
The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end-semester examinations, and end-semester practical examinations.	
List/Links of e-learning resource	
List and Links of e-learning resources:	
<ol style="list-style-type: none"> 4. https://nptel.ac.in/courses/108/105/108105132/ 5. https://de-iitr.vlabs.ac.in/ 	
Recommendation by Board of studies on	June-2022
Approval by Academic council on	June-2022
Compiled and designed by	Computer Science & Engineering
Subject handled by department	Computer Science & Engineering



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Computer Science and Engineering

Semester/Year		II/I		Program		B.Tech				
Subject Category		ESC	Subject Code:	CSA104	Subject Name:	Principle of System Software				
Maximum Marks Allotted							Contact Hours			Total Credits
Theory				Practical		Total Marks		L	T	P
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work			3	-	-	
60	20	20	-	-	100		3	-	-	
Prerequisites:										
Fundamental knowledge of Computer										
Course Objective:										
<ul style="list-style-type: none">● To understand the relationship between system software and machine architecture.● To understand the processing of an HLL program for execution on a computer.● To understand the process of scanning and parsing.● To know the design and implementation of assemblers, macro processor, linker and compiler.● To have an understanding of loaders, system software tools.● To understand and know the working of device drivers										
Course Outcomes:										
On successful completion of the course, the student will: <ul style="list-style-type: none">1. Be able to compare various system software related to the given system2. Be able to understand the concepts required to develop the system software3. Be able to make proper use of system software tools										
UNITs		Descriptions							Hrs.	CO's
I		System Software and Language Processors software tools: Introduction, Language Processing Activities, Fundamentals of Language Processing & Language Specification, and Language Processor Development Tools. Data Structures for Language Processing: Search Data structures, Allocation Data Structures. Software Tools: Software Tools for Program Development, Editors, Debug Monitors, Programming Environments, User Interfaces.							8	1
II		Assemblers: Elements of Assembly Language Programming, A Simple Assembly Scheme, Pass Structure of Assemblers, Design of a Two Pass Assembler,							8	1
III		Macros and Macro Processors: Macro Definition and Call, Macro Expansion, Nested Macro Calls, Advanced Macro Facilities, Design of a Macro Preprocessor.							9	2
IV		Interpreters: Use and overview of interpreters, Pure and impure interpreters.							5	2
V		Linkers and Loaders: Introduction to linkers, Relocation and Linking Concepts, Design of a Linker, Self-Relocating Programs and Loaders							10	3
Guest Lectures (if any)								NIL		
Total Hours								40		
Suggestive list of experiments:										

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena


Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena
Dr. Kanak Saxena
Chairperson

Text Book-	
D. M. Dhamdhere, "Systems Programming and Operating Systems", Second Revised Edition, Tata McGraw-Hill, 1999.	
Reference Books-	
<ul style="list-style-type: none"> ● Leland L. Beck, "System Software – An Introduction to Systems Programming", 3rd Edition, Pearson Education Asia, 2000. ● Santanu Chattopadhyay, "System Software", Prentice-Hall India, 2007 ● Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, "Compilers: Principles, Techniques, and Tools", 2nd Edition, Pearson Education Asia 	
Modes of Evaluation and Rubric	
List/Links of e-learning resource	
Recommendation by Board of studies on	14.06.2022
Approval by Academic council on	
Compiled and designed by	Computer Science & Engineering
Subject handled by department	Computer Science & Engineering





 Dr. Kanak Saxena
 Chairperson



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Department of Applied Science

Semester/Year		Second/First		Program		B. Tech.				
Subject Category	Departmental Core	Subject Code:	MAB-102	Subject Name:	Statistics : Probability Distributions and Differential Equations					
Maximum Marks Allotted						Contact Hours			Total Credits	
Theory			Practical		Total Marks					
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work		L	T	P		
60	20	20	-	-	100	3	1	-	4	
Prerequisites:										
Basics of Differentiations, Integrations and Statistics.										
Course Objective:										
The objective of this course is to familiarize the prospective engineers with techniques in Differential equations and Statistics. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.										
Course Outcomes:										
This course primarily contributes to applied mathematics program outcomes that develop students abilities to:										
1.Acquire the basic knowledge of Statistics: Probability Distributions with their applications and fitting of curves using method of least squares.										
2.Learn the principal concepts about sampling and its advantages and also categorized the sampling methods.										
3.The Effective Mathematical Tools for the Solutions of Differential Equations that Model Physical Processes.										
4.Differential Equation for Solving Engineering Problems										
5.Partial Differential Equations are very much useful for Solving Various Boundary Value Problems										
UNITS	Descriptions						Hrs.	CO's		
I	Probability Distribution I : Binomial, Poisson and Normal distributions and their Mean and Variance, Methods of Least Squares and curve fitting.						8	1		
II	Probability Sampling distributions: t, F, χ^2 distributions and their applications.						8	2		
III	Differential Equations: Differential Equations of first order and first degree, first order and higher degree, Linear Differential Equation, Non-linear Differential Equation, Linear Differential of Higher orders with constant coefficient.						8	3		
IV	Differential Equation of other Types: Homogeneous Linear Differential Equations, Legendre Linear Equation, Simultaneous Linear Differential Equation. Method of Variation of Parameters.						8	4		
V	Partial Differential Equations: Definition and formation of Partial Differential Equations, Lagrange's Linear PDE, Non-linear PDE, Linear Partial Differential Equation of Second Order with Constant Coefficients. Applications of PDE (Wave equation and Heat Equations)						8	5		
Total Hours							40			
Reference Books:										
1. Higher Engineering Mathematics by B. S. Grewal 2. Engineering Mathematics by B. V. Rammana										
3. Advance Engineering Mathematics by E. Kreyszig 4. Veerarajan T, Statistics, Probability and Random Process, 2 nd Edition, Tata McGraw Hill Publishing company Ltd., New Delhi										
Recommendation by Board of studies on				14-06-2022						
Approval by Academic council on				16-06-2022						
Compiled and designed by				Board of Studies Applied Mathematics; Chairman Dr. Shailesh Jaloree						

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena
Dr. Kanak Saxena
Chairperson



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Computer Science and Engineering

Semester/Year				Program			B.Tech.				
Subject Category	ESC	Subject Code:	CSL110		Subject Name:		Computer Workshop				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
--	--	--	--	60	20	20	100	--	--	2	2
Course Objective:											

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena
Dr. Kanak Saxena
Chairperson

1. To teach principles of operating system including File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking Commands, Basic Linux commands, Scripts and filters.
2. To familiarize fundamentals of the Bourne again shell (bash), shell programming, pipes, input and output redirection Control structures, arithmetic in shell interrupt processing, functions, debugging shell scripts.
3. To impart fundamentals of file concepts kernel support for file, File structure related system calls (file API's).
4. To facilitate students in understanding Inter process communication.
5. To facilitate students in understanding semaphore and shared memory.
6. To facilitate students in understanding process.

Course Outcomes:

Upon completion of this course, the student will be able to:

- CO1. Ability to use various Linux commands that are used to manipulate system operations at admin level and a prerequisite to pursue job as a Network administrator.
- CO2. Ability to write Shell Programming using Linux commands.
- CO3. Ability to design and write application to manipulate internal kernel level Linux File System.
- CO4. Ability to develop IPC-API's that can be used to control various processes for synchronization.
- CO5. Ability to develop Network Programming that allows applications to make efficient use of resources available on different machines in a network.

UNITs	Descriptions	Hrs.	CO's
I	INTRODUCTION TO LINUX AND LINUX UTILITIES: A brief history of LINUX, architecture of LINUX, features of LINUX, introduction to vi editor. Linux commands, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, Text Processing utilities and backup utilities	4	CO1
II	Introduction to Shells: Linux Session, Standard Streams, Redirection, Pipes, Command-Line Editing, Options, Shell/Environment Customization. Filters: Filters and Pipes, Concatenating files, Display Beginning and End of files, Operations on Characters, Files with Duplicate Lines, Count Characters, Words or Lines, Comparing Files.	4	CO2
III	Grep: Operation, grep Family, Searching for File Content. Sed: Scripts, Operation, Addresses, commands, Applications, grep and sed. UNIX FILE STRUCTURE: Introduction to UNIX file system, inode (Index Node), file descriptors, system calls and device drivers. File Management: File Structures, System Calls for File Management, Directory API.	4	CO3
IV	PROCESS AND SIGNALS: Process, process identifiers, process structure: process table, viewing processes, system processes, process scheduling, zombie processes, orphan process, unreliable	4	CO4

	signals, interrupted system calls. File locking: creating lock files, locking regions, use of read and write with locking, competing locks, other lock commands, deadlocks.		
V	INTER PROCESS COMMUNICATION: Pipe, process pipes, the pipe call, parent and child processes, and named pipes, semaphores, message queues, shared memory. INTRODUCTION TO SOCKETS: Socket, socket connections - socket attributes, socket addresses.	4	CO5
Guest Lectures (if any)		--	
Total Hours		20	
List of Experiments			

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena

Dr. Kanak Saxena
Chairperson

1. Write a program using echo, printf, script, passwd, uname, who, date, stty, pwd commands.
2. Write a program using unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp commands.
3. Write a program using telnet, rlogin. Text Processing utilities and backup utilities, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk commands.
4. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
5. Illustrate by writing script that will print, message "Hello World, in Bold and Blink effect, and in different colours like red, brown etc using echo commands?
6. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
7. Illustrate by writing script using for loop to print the following patterns?
8. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
9. Write a program inter-process communication.
10. Write a program to communicate using sockets.

Text Books-

1. W. Richard. Stevens (2005), Advanced Programming in the UNIX Environment, 3rd edition, Pearson Education, New Delhi, India.
2. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg. Thomson

REFERENCES Books:-

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. UNIX Network Programming, W.R. Stevens, PHI. UNIX for Programmers and Users, 3rd Edition, Graham Glass, King Ables, Pearson Education


Modes of Evaluation and Rubric


The evaluation modes consist of performance in Quiz/ Assignments, term work, and end-semester practical examinations.

List/Links of e-learning resource

Recommendation by Board of studies on	June-2022
Approval by Academic council on	June-2022
Compiled and designed by	CS & IT
Subject handled by department	CS & IT




 Dr. Kanak Saxena
 Chairperson

												SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) Department of Humanities and Management											
Semester/Year			II Year			Program						B.Tech All Branches											
Subject Category		MAC		Subject Code:		MAC102			Subject Name:			Professional Ethics and Social Responsibility											
Maximum Marks Allotted												Contact Hours			Total Credits								
Theory						Practical			Total Marks	L			T	P									
End Sem	Mid-Sem	Quiz	Assignment		End Sem	Lab-Work	Quiz	L		T	P												
00	00	00	00		30	10	10	50	0	0	2	Grade											
Prerequisites:																							
To enable the students to instill moral, to create an awareness of professional ethics, human values, loyalty and social responsibility.																							
Course Objective:																							
At the end of the course, the students will be able to:																							
1. To learn the importance of values and ethics in personal life and professional careers.																							
2. To gain knowledge of ethical behavior.																							
3. To acquire the basics of social responsibility.																							
Course Outcomes:																							
1. To imbibe and internalize the basic purpose of human values.																							
2. To appreciate professional rules and codes of conduct in personal life and professional careers.																							
3. To know the importance of values and ethics in professional behavior.																							
4. To impart norms of professional ethics in life through rationality, consistency and impartiality .																							
5. To inculcate the sense of social responsibility.																							
UNITs		Descriptions										Hrs.		CO's									
I		Principles of professional ethics: honesty, trustworthiness, loyalty, being law-abiding, no sinister motives, socially responsible, respect, accountability and fairness to all										8		1									
II		Codes of conduct: public, clients, professional community, profession, workplace rights and responsibilities, other stakeholders.										6		2									
III		Factors necessitating professional ethics: advisory responsibilities, contractual duties; The importance of ethical behavior in business.										4		3									
IV		Personal ethics: impartiality, rationality, consistency and reversibility Norms of professional ethics in our life.										8		4									
V		Corporate social responsibility: environmental, philanthropic, ethical,										9		5									

	and economic responsibility.		
Guest Lectures (if any)		2	
Total Hours		40	
Suggestive list of experiments:			
1. N.A			
1. Text Book- Professional ethics includes Human values, R. Subramanian, Oxford higher education.			
Reference Books-			
2. Professional Ethics and Social Responsibility, Daniel E. Wueste, Rowman and Littlefield Publication, INC			
3. Professional ethics and human values, R. S. Naagarazan, New age international (P) limited ,New Delhi,2006.			
4. Human values and professional ethics,Jayshree Suresh, B. S. Raghvan,S. Chand			
5. http://www.slideword.org/slidestag.aspx/human-values-and-Professional-ethics .			
Modes of Evaluation and Rubric			
Questionnaire,Quiz,Presentation and standard procedure will be followed .			
List/Links of e-learning resource			
<ul style="list-style-type: none"> • https://onlinecourses.nptel.ac.in • https://www.classcentral.com (swayam) 			
Recommendation by Board of studies on		26/02/2022	
Approval by Academic council on			
Compiled and designed by		Dr. Manorama Saini and Dr. VeenaDatar	
Subject handled by department		Humanities and Management	

H. V.
15/06/2022

[Signature]

[Signature]

[Signature]