BCA

BCA 101 Math

PROGRAM OUTCOME / GRADUATE ATTRIBUTES

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE OBJECTIVE:

      (i)   To get the knowledge about the matrices, determinants and limits.

      (ii)   To study the basics of differential and integral calculus

COURSE OUTCOMES

COs	At the end of the course the student will be able to understand the basic concepts of matrices, determinants, limits, continuity, differential and integral calculus.
CO1	To get the knowledge about the determinants and matrices.
CO2	To understand the basic concept of limits and continuity.
CO3	To study the basics of differential calculus and its applications.
CO4	To study the basics of integral calculus, Gamma and Beta function.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	1	1	1	1	1	1	2	3

CO2	3	3	2	1	1	2	1	1	1	1	3	3
CO3	3	3	1	2	2	1	1	1	1	1	3	3
CO4	3	2	1	2	1	2	1	1	1	1	2	3

[3=Highly Significant, 2=Moderate Significant, 1=Least Significant]

JIMS, Gr. Noida

PROGRAMME EDUCATION OBJECTIVES:

I. **Preparation**: A broad general education assuring an adequate foundation in mathematics, science relevant to information technology.

II. **Core Competence**: A solid understanding of concepts fundamental to the discipline of engineering in information technology.

III. **Breadth**: Good analytic, design and implementation skills required to formulate and solve engineering problems in information technology.

IV. **Professionalism**: The ability to function and communicate effectively as ethically socially responsible information technology professionals.

V. **Learning Environment**: To provide student awareness of life-long learning and provide a familiarity with professional issues in engineering in the discipline of information technology: ethics, emerging technologies, and fostering of important job related skills.

PROGRAMME OUTCOMES:

(a) Graduates will demonstrate knowledge of mathematics, science and engineering.

(b) Graduates will demonstrate an ability to identify, formulate and solve engineering problems in information technology.

(c) Graduate will demonstrate an ability to implement specified engineering problems in information technology and test information systems.

(d) Graduates will demonstrate an ability to design a software, hardware/software component or process as per needs and specifications.

(e) Graduates will demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks.

(f) Graduate will demonstrate skills to use modern engineering tools, softwares and

equipment to analyze problems.

(g) Graduates will demonstrate knowledge of professional and ethical responsibilities.

(h) Graduate will be able to communicate effectively in both verbal and written form.

(i) Graduate will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.

(j) Graduate will develop confidence for self education and ability for life-long learning.

(k) Graduate who can participate and succeed in competitive examinations.

MAPPING OF PEO's TO PO's:

Programme Education Objective	Programme Outcomes										
	a	b	c	d	e	f	g	h	i	J	k
I	X	X			X					X	X
II	X	X	X	X	X	X				X	X
III		X	X	X	X	X					X
IV							X	X	X	X	
V							X	X	X	X	

Course Objective

1. Learn to write project reports, technical reports etc
2. Learn to build up team as well as improve efficiency.
3. Learn to improve their communication skills as well as personality

Subject Name:Introduction to Programming Language using C

Subject Code: BCA 105

Program Specific Outcome (PSO)

To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for simple applications. The BCA Programme is designed with the following specific objectives.

I.   Graduates will have successful technical and professional career.
II. Graduates will continue to learn and adapt in a world of constantly evolving technology.
III. Graduates will be able to evaluate current and emerging technologies.
IV. Graduates will be able to assess IT impact on individuals, organizations, and the environment.

Program Outcome (PO)

PO1 Student should be able to apply knowledge of Mathematics, Programming languages, Software Engineering and Technical communication to update him with current technology.

PO2 Apply the knowledge of core computer subjects in order to get good command on software designing and development.

PO3 Demonstrate the understanding of concepts of core computer application areas.

PO4 Student should be able to apply basic knowledge, analyze and synthesize information, access the value of information and communicate effectively.

PO5 Student should be able to apply critical thinking and logical skills for real time applications.

PO6 Student should be able to function effectively as an individual as a team member in different work culture.

PO7 Student should be able to apply Professional ethics & values in IT solutions.

PO8 Student should be able to demonstrate his technical skills to fulfill the requirements of the Industry at national as well as International level.

PO9 Student should possess aptitude for mathematics, ability to learn and memorize programming languages, ability to handle multitasking, solid be able to programming skills to meet the current standard of Industry.

Course Objectives:

- To be able to build own logic for a given problem and finally develop one's own Programs

- To understand the syntax and the semantics of C programming language.

Course Outcomes:

CO1   Student will be able to build own logic for a given problem and finally develop one's own programs.

CO2   Students will be able to write basic programs using selection and iteration logic.

CO3   Students will be able to write small programs using arrays, strings, structures, unions, functions and pointers.

CO4   Students will be able to implement the concept of Dynamic memory allocation, structures, unions, bit fields and can do various operations on files.

CO5   Students will be able to do various operations on string manipulations and various library functions.

CO-PO Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	2	3	2	1	2	3	3	3	3
CO2	2	3	2	2	3	3	2	3	3
CO3	2	3	2	2	3	3	3	3	3
CO4	2	3	2	2	3	2	3	3	3
CO5	2	2	2	2	3	3	2	3	3

S. NO.	COURSE CONTENT	HRS	COs
1	UNIT-1 The evolution of computers: Computer Generation from First Generation to Fifth Generation. Classifications of Computers: Micro, Mini, Mainframe and super computers Distributed Computer System, Parallel Computers. Computer Hardware: Major Components of a digital computer, Block Diagram of a computer Input-output devices Description of Computer Input Units, Output Units. CPU. Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives	12	CO1
2	UNIT-2 Computer Software: System software, assemblers, compilers, interpreters, linkers Elementary Operating System concepts, different types of operating systems, Introduction to MS Office(Word, Excel, Power point) Computer Programming and Languages: Algorithms flow chart, decision tables,pseudo code Low level languages and introduction to high level languages.	12	C02

3	UNIT-3 Computer Number System: Decimal, Binary, Octal, Hexa-decimal. Conversion: Decimal to all other number systems, Binary to octal and hexa decimal, Addition of binary numbers, Binary Subtraction, Use of complements to represent negative numbers, subtraction, Conversion of a binary fraction to a decimal fraction and decimal to binary fraction, Binary Coded Decimal(BCD), ASCII Codes, EBCDIC codes, Gray codes, Unicodes	10	CO3
4	Computer Network &Internet:Basic elements of a communication system, Data transmission modes, Data Transmissionspeed, Data transmission media, Digital and Analog Transmission, Network topologies Network Types (LAN, WAN and MAN) Client and Servers , Intranet, Extranet. Internet: Terminologies related to Internet: Protocol, Domain name, IP address, URL, World Wide Web. Overview of various services on Internet: E-mail, FTP, Telnet, Chat , Instant Messaging.	10	CO4

Course Outcome

After course completion students will be able to:	
CO1	Understand the Computer Basics
CO2	To know different types of Computer Software and Working with MS Office
CO3	To Understand Computer Number System and solve Numerical Problems based on it.
CO4	To learn basics of Computer Network and Internet Applications

MAPPING OF PEO's TO PO's:

Programme Education Objective	Programme Outcomes								
	a	b	c	d	e	f	g	h	i
I	X	X	X						
II				X	X				
III						X	X		
IV								X	X

BCA Physics Course Outcomes

After course completion students will be able to:	
CO1	To know the basic principles of physics in order to explain general phenomena.
CO2	To use the concepts of physics to gain an understanding of working of computer components
CO3	To apply the principles of physics to design scientific applications.
CO4	To solve problems related to functioning of computer systems based on understanding of concepts related to electricity and magnetism.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES:

COs/POs	a	b	c	d	e	f	g	h	i
CO1				X					
CO2	X		X						
CO3		X					X	X	
CO4					X				

COURSE OBJECTIVE:

      (i)   To get the knowledge of measuring of central tendency and regression.

      (ii)   To learn linear programming and queueing models.

COURSE OUTCOMES

COs	At the end of the course the student will be able to understand the basic concepts of measurements of central tendency,regression, queuing theory,Lpp.
CO1	To get the knowledge about the Measurements of central tendency.
CO2	To understand the basic concept of regression and correlation.
CO3	To study the basics of linear programming problem.
CO4	To study the basics of Assignment and Transportation problem.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	1	1	1	1	1	1	2	3
CO2	3	3	2	1	1	2	1	1	1	1	3	3
CO3	3	3	1	2	2	1	1	1	1	1	3	3
CO4	3	2	1	2	1	2	1	1	1	1	2	3

[3=Highly Significant, 2=Moderate Significant, 1=Least Significant]

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JIMS ENGINEERING MANAGEMENT TECHNICAL CAMPUS
Plot No. 48/4 Knowledge Park-III
Greater Noida, U.P-201306
(Affiliated to Guru Gobind Singh Indraprastha University, Delhi)

COURSE OUTCOMES

COMPUTER ARCHITECTURE

Course Code: BCA 203	Semester: 3
L:T:P : 3:1:0	Credits: 4

COs	At the end of the course the student should be able to understand the concepts in modern computer architecture
CO1	To understand the basic computer organizations and designs. To learn the various micro-operations performed on ALU, registers, buses and memory.
CO2	To learn the design of Control Unit and ALU of a typical computer and the concepts of pipelining and vector processing.
CO3	To understand computer arithmetic using multiplication and division algorithms. To study the functionality of different types of Input-Output Organization.

CO4	To studythe memory hierarchy and its hardware structure, along with the it's types.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	2	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	1	3	3
CO4	3	2	3	3	3	3	3	3	3

[3=Highly Significant, 2=Moderate Significant, 1=Least Significant]

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Subject: Computer Architecture   **Subject Code: BCA 306**

Session: August – November' 2018

LESSON PLAN

S.No.	Topic	No. of Lectures	Syllabus Coverage	References	Course Outcomes
UNIT-I					
1.	**Register Transfer and Micro-operations**: Register Transfer Language, Register Transfer.	2	4%	[T1] [R1]	To understand the basic computer organizations
2.	Bus and Memory Transfers, Arithmetic Micro-operations.	3	6%	[T1] [R1]	

3.	Logic Micro-operations, Shift Micro-operations, Arithmetic logic shift unit.	2	6%	[T1] [R1]	and designs. To learn the various micro-operations performed on ALU, registers, buses and memory.
4.	**Basic Computer Organizations and Design**: Instruction Codes, Computer Registers,Computer Instructions.	1	3%	[T1] [R1]	
5.	Timing and Control, Instruction Cycle, Memory-Reference Instructions.	3	6%	[T1] [R1]	
6.	Register reference instructions, Input - Output Instructions, Design of Accumulator Logic.	2	5%	[T1] [R1]	
UNIT-II					
7.	**Central Processing Unit:** Introduction, General Register Organization.	2	4%	[T1] [R1]	To learn the design of Control Unit and ALU of a typical computer and the concepts of pipelining and vector processing.
8.	Stack Organization, Instruction Formats.	3	5%	[T1] [R1]	
9.	Addressing Modes	3	5%	[T1] [R1]	
10.	Difference between RISC and CISC	1	3%	[T1] [R1]	
11.	**Pipeline and Vector Processing**: Arithmetic and Instruction pipeline.	2	4%	[T1] [R1]	
12.	Vector operations, Matrix Multiplication, memory interleaving.	2	4%	[T1] [R1]	
UNIT-III					
13.	**Computer Arithmetic**: Introduction, Multiplication Algorithms, Division Algorithms, for fixed point-members.	2	5%	[T1] [R1]	To understand computer arithmetic using multiplication and division algorithms. To study the functionality of different types of Input-Output Organization.
14.	**Input-Output Organization:** Peripheral Devices, Input-Output Interfaces.	2	5%	[T1] [R1]	
15.	Asynchronous Data Transfer, Modes of Transfer.	2	5%	[T1] [R1]	
16.	Priority Interrupt	2	5%	[T1] [R1]	
17.	Direct Memory Access (DMA)	2	5%	[T1] [R1]	
UNIT-IV					

18.	**Memory Organization:** Memory Hierarchy, Main Memory.	2	5%	[T1] [R1]	To study the memory hierarchy and its hardware structure, along with the it's types.
19.	Auxiliary Memory, Associative Memory.	2	5%	[T1] [R1]	
20.	Cache Memory, Virtual Memory	2	5%	[T1] [R1]	
21.	Memory Management Hardware.	2	5%	[T1] [R1]	
	TOTAL	**44**	**100%**		

Text Books:

1. Morris Mano, Computer System Architecture, 3rd Edition, Prentice-Hall of India Private Limited, 1999.

Reference Books:

1. WIliam Stallings, Computer Organization and Architecture, 4th Edition, Prentice Hall of India Private Limited, 2001.
2. SubrataGhosal," Computer Architecture and Organization" , Pearson 2011.
3. Malvino, "Digital Computer Electronics: An Introduction to Microcomputers", McGraw Hill.

ASSESSMENT PATTERN:

Continuous Internal Evaluation (25 Marks)

Bloom's Category Marks	Class Test (15)	Class Performance (10)
Remember		
Understand		
Apply		
Analyze		
Evaluate		
Create		

End Semester Examination (75 Marks)

Bloom's Category Marks	University Examination
Remember	
Understand	
Apply	
Analyze	
Evaluate	
Create	

JIMS Engineering Management Technical Campus, Greater Noida

Bachelor of Computer Applications (BCA)

Department Vision

Bachelor Computer of Applications (BCA) aims to promote value based quality education to impart skills in the field of information technology and allied areas to meet the industry demands.

Department Mission

The overall mission of the BCA programme is to provide students with up-to-date curriculum and pedagogy in the field of information technology and to equip them with analytical skills, and prepare them to meet the growing demands of the industry and become competent and trained professionals.

Programme Educational Objectives (PEOs)

To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for simple applications. The BCA Programme is designed with the following specific objectives.

V.   Graduates will have successful technical and professional career.
VI.   Graduates will continue to learn and adapt in a world of constantly evolving technology.
VII.   Graduates will be able to evaluate current and emerging technologies.
VIII.   Graduates will be able to assess IT impact on individuals, organizations, and the environment.

Programme Learning Outcomes

a) Student should be able to apply knowledge of Mathematics, Programming languages, Software Engineering and Technical communication to update him with current technology.
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g) Student should be able to apply Professional ethics & values in IT solutions.

h) Student should be able to demonstrate his technical skills to fulfill the requirements of the Industry at national as well as International level.

i) Student should possess aptitude for mathematics, ability to learn and memorize programming languages, ability to handle multitasking, solid be able to programming skills to meet the current standard of Industry.

MAPPING OF PEO's TO PO's:

Programme Education Objective	Programme Outcomes								
	a	b	C	D	e	f	g	h	i
I	X	X	X						
II				X	X				
III						X	X		
IV								X	X

After course completion students will be able to:	
CO1	Understand different Object Oriented Features and disconnected architecture of .Net.
CO2	Understand .Net IDE and syntax for writing programs in VB.Net
CO3	Implement various object oriented features in .Net Environment through event based programming.
CO4	Create backend connection for .Net Applications using ADO Technology.
CO5	Understand and Implement Crystal Reports for VB.Net Applications.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES:

COs/POs	a	b	C	d	e	f	G	h	i
CO1			X						
CO2			X						X
CO3	X	X							X
CO4	X				X				
CO5			X		X				X

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S. NO.	COURSE CONTENT	HRS	Cos
1	**UNIT-I:** Introduction to .Net,Two tier and Three tier client server model, .Net Architecture, Features of .Net, Advantages of .Net,.Net Framework, CLR, CTS, CLS ,Assemblies ,Memory management issues –Garbage Collector and collection process, Exception Handling, Code Access Security	11	CO1
2	**UNIT-II:** Creating a project, Types of project in .Net, Exploring and coding a project, Solution explorer, toolbox, properties window, Output window, Object Browser, Similarities and Differences with Visual Basic Variables, Comments, Data Types, Working with Data Structures – Arrays, Array Lists, Enumerations, Constants, Structures, Introduction to procedures, calling procedures, argument passing mechanisms, scope of variable, conditional statement, Loops, Nesting of Loops MsgBox and Input Box	11	CO2
3	**UNIT-III:** Introduction to Window Applications, Using Form – Common Controls, Properties, Methods and Events, Interacting with controls - Textbox, Label, Button, Listbox, Combobox ,Checkbox, Picture Box, Radio Button, Panel, scroll bar, Timer, ListView, TreeView, toolbar, Status Bar, Dialog Controls, Creating and Using MDI applications, Toolbar, Status Bar, Creating custom controls, Creating Menus,Classes and Objects, Access Specifiers: Private, Public and Protected, Building Classes, Reusability, Constructors, Inheritance, Overloading, Overriding, Creating and Using Namespaces.	11	CO3
4	**UNIT-IV:** ADO vs ADO.Net, ADO.Net data namespaces, ADO.Net Object Model, Accessing data from Server Explorer, Creating Connection, Command, Data Adapter, Data Reader and Data Set with OLEDB and SQLDB, Data Binding, Connection to Database , Table, Queries Building Report, Modifying Report, Formatting Fields, Publishing and exporting report.	11	CO4 & CO5

TEXT BOOKS:

1. [T1]Visual Basic 2010 programming Black Book, by Kogent Learning Solutions, Wiley India.

2.   [T2]Visual Basic 2010 Step By Step, Michael Halvorson, PHI .

REFERENCE BOOKS:

1. [R1]Mastering Microsoft Visual Basic 2010, Evangelos Petroutsos, Wiley Publications

2. [R2]Beginning Visual Basic 2010 (Wrox)

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g)Student should be able to apply Professional ethics & values in IT solutions.

h)Student should be able to demonstrate his technical skills to fulfill the requirements of the Industry at national as well as International level.

i)Student should possess aptitude for mathematics, ability to learn and memorize programming languages, ability to handle multitasking, solid be able to programming skills to meet the current standard of Industry.

MAPPING OF PEO's TO PO's:

Programme Education Objective	Programme Outcomes								
	a	b	c	d	e	f	g	h	i
I	X	X	X						
II				X	X				
III						X	X		
IV								X	X

PRINCIPLES OF ACCOUNTANCY (BCA 207)

After course completion students will be able to:	
CO1	To understand the basic concepts, principles and functions of accountancy.
CO2	To develop the ability to use a basic accounting system to create and record the data in the book of accountancy.
CO3	To develop the ability to summarise the recorded data to know the financial results and financial position of the organization.
CO4	To give an insight to the students on maintaining the records of fixed assets of the company after considering the depreciation andanalyse the stock value of the company.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES:

COs/POs	a	b	C	d	e	f	G	h	i
CO1				X			X		
CO2				X	X			X	
CO3				X	X		X	X	
CO4				X	X		X	H	

S. NO.	COURSE CONTENT	HRS	Cos
1	**UNIT-I:** Meaning and nature of accounting, Scope of financial accounting, Interrelationship of Accounting with other disciplines, Branches of Accounting, Accounting concepts and convention, Accounting standards in India.	11	CO1
2	**UNIT-II:** Journal, Rules of Debit and Credit, Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Ledger, Trial Balance	11	CO2
3	**UNIT-III:** Preparation of Final Accounts, Profit & Loss Account, Balance Sheet-Without adjustments and with adjustments.	11	CO3
4	**UNIT-IV:** Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories-FIFO, LIFO and Weighted Average Method, Concept of Deprecation, Causes of Depreciation, Meaning of Depreciation Accounting, Method of Recording Depreciation, Methods of Providing Depreciation.	11	CO4

TEXT BOOKS
[T1] Maheshwari, S.N. and Maheshwari, S. K., (2009) An Introduction to Accountancy,
Eighth Edition, Vikas Publishing House.

[T2] Tulsian, P.C., (2009) Financial Accountancy, 2nd edition, Pearson Education.

REFERENCE BOOKS

[R1] Gupta R. L., & Gupta V.K., "Principles & Practice of Accounting", Sultan Chand &
Sons, 1999.
[R2] Monga J R, "Introduction to Financial Accounting", Mayur Paperbacks, 2010.
[R3] Raja Sekaran/Lalitha, "Financial Accounting", Pearsons .

MAPPING OF CO & **COURSE OUTCOME**

Object-Oriented programming Course Outcome

On completion of the course students should be able to:

CO1: Understand the features of C++ supporting object oriented programming also the understanding of relative merits of C++ as an object oriented programming language. Understanding of how to use object oriented software to produce C++ program.

CO2: Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, class & object, encapsulation, data hiding

CO3: Understand how to apply the remaining major object-oriented concepts to implement
object oriented programs in C++ namely inheritance and polymorphism

CO4: Understand how to handle data stored in file system using the concept of File Handling

PEO

CO/PEO	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PEO7	PEO8	PEO9
CO1	H	H	M	L	M	M	M	L	M
CO2	H	H	M	L	M	M	L	M	M
CO3	H	H	H	M	M	L	L	M	M
CO4	H	H	H	L	L	L	L	L	L

H:High; M: Medium ; L: Low

JIMS, GREATER NOIDA

Department: CSE

Subject: Operating Systems (ETCS-304)

Subject Faculty: Dr. Arun K. Chaturvedi

1. List of experiments followed in Laboratory
LIST OF EXPERIMENTS

Sr. No.	Experiments
1.	Study of Windows 2000 operating system – Preliminary Information (Versions, Developer, Latest release etc.) – History – Architecture – User Mode – Kernel Mode
2.	Administration of Windows 2000 operating system – Introduction – LDAP – DNS – Directory Services – DHCP – MMC

3.	Study of Linux operating system

	- Introduction
	   - Linux Properties
	   - Future Scope

4.	Linux basic commands, pipe and filter commands
	
	   - Display a file
	   - Concatenate two files
	   - Change directory
	   - Compare two files etc.
	   - Vi Editor Commands

5.	Administration of Linux operating system
	
	   - What System Administrators do?
	   - What System Administrators need to know?
	   - System Services
	   - Advantages of the Services Mechanism
	   ~~Annotated List of System Services~~

6.	Writing of Shell scripts: 1. To print the name, address and date of birth of a student 2. To print the date and the present working directory. 3. To calculate and print the sum of the 3 numbers 4. To find largest of three numbers. 5. To check for a number whether it is even or odd. 6. Write a shell script that accepts a string from the terminal and echo a suitable message if it doesn't have at least 5 characters including the other symbols. 7. Write a shell script to echo the string length of the given string as argument. 8. Write a shell script that searches for a single word pattern recursively in the current directory and displays the no. of times it occurred.

7.	Programs on implementation of O.S. Algorithms in C:
	1. Write a C program for ROUND ROBIN CPU scheduling Algorithm. 2. Write a C program for SJF CPU scheduling algorithm. 3. Write a C program for FCFS CPU scheduling Algorithm. 4. Write a C program for Bankers algorithm. 5. Write a C program for FIFO page allocation algorithm.

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2. List of text books and reference books

Text Books:

- ☐ Operating System Concepts by Silberchatz et al, 5th edition, 1998, Addison-Wesley.
- ☐ Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.
- ☐ Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice-Hall

Reference Books:

- ☐ Operating System By Peterson , 1985, AW.
- ☐ Operating System By Milankovic, 1990, TMH.
- ☐ Operating System Incorporating With Unix & Windows By Colin Ritche, 1974, TMH.
- ☐ Operating Systems by Mandrik & Donovan, TMH
- ☐ Operating Systems By Deitel, 1990, AWL.
- ☐ Operating Systems – Advanced Concepts By Mukesh Singhal , N.G. Shivaratri, 2003, T.M.H

3. Course Plan

Course Description

Course Title: Operating System

Course Code: ETCS-304

Semester : VI

Pre-requisite: Data Structures, Computer Architecture

Objective: To provide a grand tour of the major operating systems components and apply them

in OS administration using LINUX

Learning Outcomes: At the end of the course students shall be able to understand:

- Fundamental operating system abstractions such as *processes*, *threads*, *files*, *semaphores*, *IPC abstractions*, *shared memory regions*, etc.

- Implementation of the operating system abstractions.
- The principles of concurrency and synchronization, and to write correct concurrent programs/software applying the concepts.
- Basic resource management techniques (scheduling or time management,) and principles and their implementations.
- Issues of performance and fairness objectives, avoiding deadlocks, as well as security and protection.

Topic Layout:

Topics	Learning Aid and Methodologies (Pedagogic Techniques)	Typical Student Activities	Learning Outcomes (Bloom's Taxonomy + Gardner's Intelligences)	L	L	T	P (on Linux Paltform)
					Mapping with Programme Outcomes		
Introduction			**Bloom's Taxonomy**	3	a, h, j		
Operating-Systems Structures		**Listens**	**Understanding/ Comprehension**	2			
Process Management		**Identifies**	**Remembering**	2	a, c, e, h, j, k		
CPU Scheduling	**Analogies**	**Recalls**	**Applying Analyzing**	3			
Process Synchronization		**Applies**		5			
Deadlocks	**Demonstration**	**Analyzes**	**Evaluating Creating**	5			
Memory Management		**Participates**		8			
File System	**Innovative Introduction**	**Questions**	**Gardner's Intelligences** **Mathematical-Logical**	3	a, h, j, k		
I/O Systems:		**Answers**		3			
Introduction to UNIX OS and Windows NT	**Case Study**	**Designs**	**Verbal-Linguistic** **Intrapersonal** **Interpersonal**	4			a, f, h, j, k
TOTAL LECTURES				**38**			
Sessional 1 Assessment: a, c,							

Topics	Learning Aid and Methodologies (Pedagogic Techniques)	Typical Student Activities	Learning Outcomes (Bloom's Taxonomy + Gardner's Intelligences)	L	L	T	P (on Linux Paltform)
				Mapping with Programme Outcomes			
e, g, k							
Sessional 2 Assessment: a, c, e, g, j, k							

Lesson Plan:

Topics	L	T	P
Chapte1: Introduction - What Operating Systems Do? - Computer-System Organization - Computer-System Architecture - Computer-System Structure - Process, Memory, and Storage Management, Protection and Security,	1 1 1		Lab1-2
Operating-Systems Structures - Operating-System Services, User Operating-System Interface - System Calls and Types of System Calls	1 1	Tutorial-1(Including Introduction)	
Processes - Process Concept and Process Scheduling - Operation on Processes	1 1	Tutorial-2	Lab 3-5
CPU Scheduling - Basic Concepts, Scheduling Criteria - Scheduling Algorithms	1 2	Tutorial-3	Lab-6
Process Synchronization - Background and The Critical-Section Problem - Synchronization Hardware, Semaphores - Classic Problems of Synchronization and Critical Regions	2 1 2	Tutorial 4-5	Lab-7
Deadlocks - System Model, Deadlock Characterization - Methods for Handling Deadlocks - Deadlock Prevention and Avoidance	2 2 1	Tutorial 6-7	
Memory Management - Background and Swapping, Contiguous Memory Allocation -Paging, Structure of the Page Table, **Virtual Memory** - Background and Demand Paging - Copy-on-Write - Page Replacement - Allocation of Frames, …	2 2 1 1 1 1	Tutorial 8, 9	
File System		Tutorial 10	Lab-8

Topics	L	T	P
- The Concept of a File	1		
- Access Method	1		
- Directory Structure, File-System Mounting, …	1		
I/O Systems Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues. - Domain of Protection, Access Matrix, …	1 1	Tutorial 11	
Study of UNIX OS and Windows NT OS Fundamentals of UNIX Windows NT OS	 2 2		

Teaching Methodology:

- Lectures will be delivered in interactive mode. Students will have to work individually as well as in groups inside as well as outside the class.
- Home assignments will strengthen and the understanding the concepts of Operating Systems.

Evaluation criteria	Marks
Sessional Exam1	15
Sessional Exam 2	15
Best of sessional 1 & 2	**15**
Attendance	5
Teacher's assessment : class test, quiz, assignments etc.	5
University exam	75
Total	**100**

Text Books: Silberschatz, Galvin, and Gagne, "Operating System Concepts with Java,"

7th Edition. *John Wiley & Sons*, Inc. 2007. ISBN: 0-471-76907-X

Reference Books: 1) William Stallings, "Operating Systems: Internal and Design Principles," 5th Edition. *Prentice-Hall*, Inc. 2005. ISBN: 9780131479548

2) Andrew S. Tanenbaum and Albert S Woodhull, "Operating Systems Design and Implementation," 3rd Edition. *Prentice Hall*, 2006. ISBN: 9780131429383.

Mapping of Course Objective and Programme Outcomes:

Course Objective	Programme Outcomes										
	a	b	c	d	e	f	g	h	i	j	k
			x		x	x	x				x

Programme Education Objective	Programme Outcomes										
	a	b	c	d	e	f	g	h	i	j	k
I.Preparation			x								
II. Core Competence			x								
III. Breadth			x		x						
IV.						x	x				

Professionalism											
V.Learning Environment										x	

Outcome	Method	Supporting Tools	Demonstration
e: demonstrate an ability to identify, formulate and solve engineering Problems	Semi-structured	Blackboard, Slides/PPT	Problem solving Interactive Explaining phenomena
	Self Learning	Student presentations	improve ability to select appropriate distribution protocol for the method
c: demonstrate an ability to design a system, component or process as per needs and specifications	Semi-structured	Blackboard, Slides/PPT	Problem solving with identify properties of paradigms Explaining working principles Definitions Introduce a better choice of protocol if possible
	Self Learning	Student presentations	
	Case-based Group Interaction	Talks, Student presentations	
f: graduate will demonstrate knowledge of professional & ethical responsibilities	Case based group interaction	Talks, Students presentations	Identification of misconduct, Suggest corrective approach
g: graduate will be able to communicate effectively in both verbal and written form	Case-based Group Interaction	Student presentations and term paper writing	How to read and write a term paper

Outcome	Method	Supporting Tools	Demonstration
k: graduate who can participate and succeed in competitive examinations	Self Learning	Student presentations	Solve past competitive examination quizzes

PO, CO & CO-PO Mapping

COMPUTER GRAPHICS

(BCA 303)

Prepared By:

Dr. Sanjeev Punia

(Assistant Professor)

Department of Computer Science and Engineering

PO

Program Outcome

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

PO10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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CO 1. Understand the working of contemporary graphics hardware.
CO 2. Create interactive graphics applications in C++ using one or more graphics application programming interfaces.
CO 3. Apply geometrical transformations on graphical problem solving.
CO 4. Develop skill to generate computer graphics animation software.

CO - POMapping

CO's/PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO 1	3	1	1	2	3	3	2	2	2	3	1	3

CO 2	1	3	2	2	3	1	3	3	3	3	2	2
CO 3	3	2	1	2	1	1	1	2	1	3	1	1
CO 4	2	3	3	3	1	2	2	2	1	2	3	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

POs

JIMS Engineering Management Technical Campus

(Affiliated to GGSIP University, New Delhi)

48/4 Knowledge Park III, Greater Noida, Uttar Pradesh

Bachelor of Computer Applications (BCA)

Programme Educational Objectives (PEOs)

To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for simple applications. The BCA Programme is designed with the following specific objectives.

XIII.   Graduates will have successful technical and professional career.
XIV.   Graduates will continue to learn and adapt in a world of constantly evolving technology.
 XV.   Graduates will be able to evaluate current and emerging technologies.
XVI.   Graduates will be able to assess IT impact on individuals, organizations, and the environment.

Programme Learning Outcomes

a) Student should be able to apply knowledge of Mathematics, Programming languages, Software Engineering and Technical communication to update him with current technology.

b) Apply the knowledge of core computer subjects in order to get good command on software designing and development.

c) Demonstrate the understanding of concepts of core computer application areas.

d) Student should be able to apply basic knowledge, analyze and synthesize information, access the value of information and communicate effectively.

e) Student should be able to apply critical thinking and logical skills for real time applications.

f) Student should be able to function effectively as an individual as a team member in different work culture.

g) Student should be able to apply Professional ethics & values in IT solutions.

h) Student should be able to demonstrate his technical skills to fulfill the requirements of the Industry at national as well as International level.

i) Student should possess aptitude for mathematics, ability to learn and memorize programming languages, ability to handle multitasking, solid be able to programming skills to meet the current standard of Industry.

MAPPING OF PEO's TO PO's:

Programme Education Objective	Programme Outcomes								
	A	b	c	D	e	F	g	h	I
I	X	X	X						
II				X	X				
III						X	X		
IV								X	X

	After course completion students will be able to:
CO1	Understand the concept of e-commerce, EDI,SEO ,tools & technologies and web based e-commerce
CO2	Understand the concept of Electronic payment and security measures, Intranet, Extranet and VPN.
CO3	Understand the business process, strategy like Supply Chain Management
CO4	Understand legal issues, IT Act 2000 through some case studies.

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES:

COs/POs	A	b	c	d	e	f	g	h	I
CO1	X			X	X		X		X
CO2	X	X			X	X	X	X	
CO3			X	X			X	X	X
CO4			X	X		X	X	X	

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Course Outcomes:

After course completion students will be able to:	
CO1	Demonstrate understanding of HTML and client server computing.
CO2	Show understanding of the logic behind basic web applications using PHP.
CO3	Create and compile advanced dynamic web projects using PHP.
CO4	Demonstrate understanding of database applications with MySQL.

CO-PO Mapping:

COs/POs	a	b	c	d	e	f	g	h	i
CO1				X				X	
CO2		X		X			X		
CO3			X				X		
CO4			X			X		X	