

Bachelor of Technology (Computer Science & Engineering)										
Credit-Based Scheme of Studies/Examination										
Semester VIII (w.e.f. session 2021-2022)										
S. No.	Course Code	Subject	L:T:P	Hours/Week	Credits	Examination Schedule (Marks)				Duration of Exam (Hrs)
						Major Test	Minor Test	Practical	Total	
1	PE	Elective-VI	3:0:0	3	3	75	25	0	100	3
2	OE	Open Elective-III	2:0:0	2	2	75	25	0	100	3
3	OE	Open Elective-IV	2:0:0	2	2	75	25	0	100	3
4	PROJ-CS-402A	Project-III	0:0:12	12	6	0	40	60	100	3
5	PE-LA	Elective-VI Lab	0:0:4	4	2	0	40	60	100	3
		Total		23	15	225	155	120	500	

The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.

PE Elective-VI	
Cloud Computing: PE-CS-A402A	
Computer Graphics: PE-CS-A404A	
Software Reliability: PE-CS-A406A	
Mobile Apps Development: PE-CS-A408A	
OE Elective-III	OE Elective-IV
Cyber Security: OE-CS-402A	Web and Internet Technology: OE-CS-410A
Satellite Communication: OE-CS-404A	Automation in Manufacturing: OE-CS-412A
Social Networks Analysis & Mining: OE-CS-406A	IPR, Bioethics and Biosafety: OE-CS-414A
Agile Software Engineering: OE-CS-408A	Signal & Systems: OE-CS-416A

PE-CS-A404A	Computer Graphics						
Lecture	Tutorial	Practical	Credit	MajorTest	MinorTest	Total	Time
3	0	0	3	75	25	100	3 Hour
Purpose	Introduces Computer Graphics that help in designing different kinds of static and movable objects.						
Course Outcomes							
CO 1	Explore the background and standard line and circle drawing algorithms.						
CO 2	Exposure of various transformation approaches and its comparative analysis.						
CO 3	Illustrate Projection and clipping with explore different techniques.						
CO 4	Apply design principles to create different curves and explore hidden lines and surface techniques.						

Unit-I

Computer Graphics applications, Display Devices, Point & Positioning Devices, Plotting Techniques for point and Line, Line drawing algorithms: DDA, Bresenham's Circle drawing algorithms, Filled area algorithms: Scan line, Polygon filling algorithms, Boundary filled algorithms.

Unit-II

Window to view port transformation, Window to view port mapping, Two Dimensional transformation: translation, scaling, rotation, reflection and Shear, Homogeneous Coordinate system.
3-D transformation: Rotation, Shear, translation, Numerical Problems of transformation viewing pipeline.

Unit-III

Clipping: Point & Line clipping algorithm, 4-bit code algorithm, Cohen-Sutherland Line clipping algorithms, Liang-Barsky line clipping algorithms. Polygon clipping: Sutherland-Hodgeman Polygon clipping algorithm. Curve clipping, Text clipping. Projection: Parallel, Perspective, Vanishing Points.

Unit-IV

Representation of 3-D Curves and Surfaces: interpolation and approximation alphas, parametric conditions, Geometric continuity conditions, Bezier curves and surfaces: properties of beizer curves, beizer surfaces.
Hidden Surfaces removal: Hidden surface elimination, depth buffer algorithm, scan line coherence and area coherence algorithm, painter's algorithm

Suggested Books:

- Donald Hearn & M.Pauline Baker, Computer Graphics, 2nd Edition, Pearson Education.
- William M. Newmann & Robert F. Sproull, Principles of Interactive Computer Graphics, Tata McGraw-Hill Second Edition, New Delhi, India.
- Zhigang Xiang & Roy A Plastock , Computer Graphics, Second Edition, Schaum's Outline, Tata McGraw Hill Education Private Limited, New Delhi, India.
- Foley, van Dam, Feiner, and Hughes. Computer Graphics: Principles and Practice, 3rd edition in C.
- Hearn, D. Basker, Computer Graphics, Prentice Hall

LESSON PLAN

Subject: Computer Graphics(PE-CS-A404)

Name of Institute: Seth Jai Parkash Mukand Lal Institute of Engineering & Technology, Radaur Name of Faculty

with designation: Dr. Bhawna Sharma (AP, CSE)

Department: CSE

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
FEBRUARY L1	B.Tech 8 th sem	Introduction to Interactive Computer Graphics	Lecture	Assignment from 1 st Unit (based on previous question papers and important topics)
L2	B.Tech 8 th sem	Line and point plotting systems	Lecture	
L3	B.Tech 8 th sem	Raster and vector graphics, Continual refresh and storage displays	Lecture	
L4	B.Tech 8 th sem	Display Devices, Point & Positioning Devices	Lecture	
L5	B.Tech 8 th sem	Plotting Techniques for point and Line,	Lecture	
L6	B.Tech 8 th sem	Plasma panel display, Display Processors	Lecture	
L7	B.Tech 8 th sem	Filled area algorithms: Scan line,.	Lecture	
L8	B.Tech 8 th sem	Polygon filling algorithms,	Lecture	
L9	B.Tech 8 th sem	Boundary filled algorithms	Lecture	
L10	B.Tech 8 th sem	Colour display techniques	Lecture	
L11	B.Tech 8 th sem	Window to view port transformation, Window to view port mapping,	Lecture	
MARCH L12	B.Tech 8 th sem	Two Dimensional transformation: translation	Lecture	Assignment from 2 nd Unit Tute sheet1 (based on previous question papers and important topics)
L13	B.Tech 8 th sem	scaling,	Lecture	
L14	B.Tech 8 th sem	Continue...	Lecture	
L15	B.Tech 8 th sem	Rotation	Lecture	
L 16	B.Tech 8 th sem	Continue...	Lecture	
L 17	B.Tech 8 th sem	reflection and Shear	Lecture	
L 18	B.Tech 8 th sem	Continue...	Lecture	
L 19	B.Tech 8 th sem	Homogeneous Coordinate system	Lecture	
L20	B.Tech 8 th sem	3-D transformation: Rotation	Lecture	
L 21	B.Tech 8 th sem	Shear	Lecture	

L 22	B.Tech 8 th sem	Continue...	Lecture	Assignment from 3 rd Unit Tute sheet1 (based on previous question papers and important topics)	
APRIL	B.Tech 8 th sem	Translation	Lecture		
L 24					
L 25	B.Tech 8 th sem	Continue...	Lecture		
L26	B.Tech 8 th sem	Numerical Problems of transformation viewing pipeline.	Lecture		
L 27	B.Tech 8 th sem	Continue...	Lecture		
L 28	B.Tech 8 th sem	Clipping: Point & Line clipping algorithm	Lecture		
L29	B.Tech 8 th sem	Continue...	Lecture		
L30	B.Tech 8 th sem	4-bit code algorithm	Lecture		
L 31	B.Tech 8 th sem	Cohen-Sutherland Line clipping algorithms	Lecture		
L 32	B.Tech 8 th sem	Liang-Barsky line clipping algorithms	Lecture		
L33	B.Tech 8 th sem	Polygon clipping: Sutherland-Hodgeman Polygon clipping algorithm	Lecture		
L34	B.Tech 8 th sem	Continue...	Lecture		
L35	B.Tech 8 th sem	Curve clipping	Lecture		
L 36	B.Tech 8 th sem	Text clipping	Lecture		Assignment from 4 th Unit Tute sheet1 papers and important topics)
L 37	B.Tech 8 th sem	Projection: Parallel	Lecture		
MAY	B.Tech 8 th sem	Perspective	Lecture		
L 38					
L 39	B.Tech 8 th sem	Vanishing Points	Lecture		
L40	B.Tech 8 th sem	Representation of 3-D Curves and Surfaces: interpolation and approximation alpinas	Lecture		
L41	B.Tech 8 th sem	Continue...	Lecture		
L42	B.Tech 8 th sem	parametric conditions	Lecture		
L43	B.Tech 8 th sem	Geometric continuity conditions	Lecture		
L44	B.Tech 8 th sem	Beizer curves and surfaces	Lecture		
L45	B.Tech 8 th sem	Continue...	Lecture		
L46	B.Tech 8 th sem	properties of beizer curves, beizer	Lecture		

L48	B.Tech 8 th sem	Hidden Surfaces removal: Hidden surface elimination	Lecture	
L49	B.Tech 8 th sem	Continue...	Lecture	
L50	B.Tech 8 th sem	Depth buffer algorithm	Lecture	
L51	B.Tech 8 th sem	scan line coherence	Lecture	
L52	B.Tech 8 th sem	Continue...	Lecture	
L53	B.Tech 8 th sem	Area coherence algorithm	Lecture	
L54	B.Tech 8 th sem	Continue...	Lecture	
L55	B.Tech 8 th sem	Painter's algorithm	Lecture	
		surfaces.		(based on previous question)
L 47	B.Tech 8 th sem	Continue...	Lecture	

Tutorial No 1

Q 1 What is Internet? Also explain the history of internet.

Q 2 Write a short note on

- (a) Governance on the Internet
- (b) Collaboration and Communication

Q 3 What is the Designing navigation system .And also define the types of navigation system.

Q 4 Discuss the impact of internet on society .

Tutorial No 2

Q-1 Difference between HTML and XHTML.

Q-2 What is CSS? explain with syntax.

Q-3 What is difference between ordered list and unordered list in HTML? Explain with example.

Q-4 Short note on

- (a) Table
- (b) Forms

Tutorial No 3

Q-1 What is Python ? Also explain the application of Python.

Q-2 Difference between python data type and python variable .

Q-3 Explain recursion and global variables in python with example.

Q-4 Short note on

- (a) Iteration
- (b) Control structures

Tutorial No 4

Q -1 Difference between inheritance and encapsulation .

Q-2 Define regular expressions in python.

Q-3 What is the difference between multiple and multilevel inheritance ?

Q-4 How do we handle a exception?

Tutorial No 5

Q-1 Explain searching system.

Q-2 What is network security and explain the component of network ?

Q -3 How do we create ,insert and delete items in python ?

Q-4 Short note on.

- (a) WWW
- (b) TCP
- (c) URL
- (d) IP

PE—CS-A404AL	Computer Graphics Lab						
Lecture	Tutorial	Practical	Credit	Minor Test	Practical	Total	Time
-	-	4	2	40	60	100	3hrs
Purpose	To Design and implement various Line and Circle Drawing Algorithms.						
Course Outcomes(CO)							
CO1	To Implement basic algorithms related to Line & Circle Drawing.						
CO2	Implement various Line & Circle Drawing Algorithms.						
CO3	Hands on experiments on 2-D transformations.						
CO4	Conceptual implementation of Clipping and other drawing algorithms.						

List of Practicals

1. Write a program to implement DDA line drawing algorithm.
2. Write a program to implement Bresenham's line drawing algorithm.
3. Implement the Bresenham's circle drawing algorithm.
4. Write a program to draw a decagon whose all vertices are connected with every other vertex using lines.
5. Write a program to move an object using the concepts of 2-D transformations.
6. Write a program to implement the midpoint circle drawing algorithm any Object Oriented Programming Language like Python, C++, Java.
7. Implement the line clipping algorithm using any Object Oriented Programming Language like Python, C++, Java.
8. Implement boundary fill algorithm using any Object Oriented Programming Language like Python, C++, Java.
9. Implement the depth buffer algorithm using any Object oriented language like Python, C++, Java.
10. Perform the Polygon Clipping Algorithm using any Object oriented language like Python, C++, Java.
11. Draw a Rectangle using Bresenham's and DDA Algorithm using any Object oriented language like Python, C++, Java.

OE-CS-402A	Cyber Security						
Lecture	Tutorial	Practical	Credit	MajorTest	MinorTest	Total	Time
2	0	0	2	75	25	100	3 Hour
Purpose	To gain a broad understanding in order to get predictive ways out related to cyber security.						
Course Outcomes							
CO 1	To facilitate the basic knowledge of cyber security.						
CO 2	To explore and sort issues related to different types of activities in cyber crime.						
CO 3	To get enable to fix the various cyber attacks.						
CO 4	To deal with the digital forensics and related scenarios of cyber crimes.						

Unit-I

Introduction: Fundamentals of Cyber Crime, Nature and Scope of Cyber Crime, Types of Cyber Crime: crime against individual, Crime against property, Cyber extortion, Drug trafficking, cyber terrorism. Cryptanalysis-steganography, stream and block ciphers, modern block ciphers: Block cipher principles, Shannon's theory of confusion and diffusion, fiestal structure, Data Encryption Standard (DES), strength of DES, differential and linear crypt analysis of DES, block cipher modes of operations, triple DES-AES

Unit-II

Integrity checks and authentication algorithms MD5 message digest algorithm, Secure Hash Algorithm (SHA), Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm, authentication application, Kerberos and X.509, directory authentication service, electronic mail security, pretty good privacy (PGP), S/MIME.

Unit-III

Introduction to cyber attacks: passive attacks, active attacks, Cyber crime prevention methods, Application security (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology-Firewall and VPNs, Intrusion Detection, Access Control, Hardware protection mechanisms, OS Security.

Web Security: Secure socket layer and transport layer security-secure electronic transaction (SET)- system security: Intruders-Viruses and related threats, firewall design principles, trusted systems.

Unit-IV

Digital Forensics: Introduction to Digital Forensics, historical background of digital forensics, Forensic Software and Hardware, need for computer forensics science, special tools and techniques digital forensic life cycle, challenges in digital forensic.

Law Perspective: Introduction to the Legal Perspectives of Cybercrimes and Cyber security, Cybercrime and the Legal Landscape around the World, Why Do We Need Cyber laws, The Indian IT Act, Cybercrime Scenario in India, Digital Signatures and the Indian IT Act, Cybercrime and Punishment.

IP Security: Architecture-Authentication header-Encapsulating security payloads, combining security associations, key management.

Suggested Books:

- Nelson Phillips and Einfinger Steuart, “Computer Forensics and Investigations”, Cengage Learning, New Delhi, 2009.
- Robert M Slade,” Software Forensics”, Tata McGraw - Hill, New Delhi, 2005.
- Sunit Belapure and Nina Godbole, “Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives”, Wiley India Pvt. Ltd.

8th Sem

Name of Institution: Seth Jai Parkash Mukand Lal Institute of Engg. & Tech. Radaur

Name of the Faculty: Er. Alisha Gupta

Discipline: B.Tech

Semester: 8th

Subject: Cyber Security (OE-CS-402A)

Lesson Plan Duration: 40 lectures

Lecture	Topic
1	Unit-1: Introduction: Fundamentals of Cyber Crime, Nature and Scope of Cyber Crime
2	Types of Cyber Crime: crime against individual, Crime against property, Cyber extortion, Drug trafficking, cyber terrorism
3	Cryptanalysis-steganography, stream and block ciphers, modern block ciphers
4	Block cipher principles, Shannon's theory of confusion and diffusion, fiestal structure
5	Data Encryption Standard (DES), strength of DES
6	Differential and linear crypt analysis of DES, Block cipher modes of operations
7	Triple DES-AES
8	Unit-2: Integrity checks and authentication algorithms MD5 message digest algorithm
9	Secure Hash Algorithm (SHA)
10	Digital Signatures, authentication protocols
11	Digital signature standards (DSS)
12	Proof of digital signature algorithm, authentication application
13	Kerberos and X.509
14	Directory authentication service, electronic mail security
15	Pretty good privacy (PGP)
16	S/MIME
17	Unit-3: Introduction to cyber-attacks: passive attacks, active attacks
18	Cyber-crime prevention methods, Application security (Database, E-mail and Internet)
19	Data Security Considerations-Backups, Archival Storage and Disposal of Data
20	Security Technology-Firewall and VPNs
21	Intrusion Detection, Access Control
22	Hardware protection mechanisms, OS Security
23	Web Security: Secure socket layer and transport layer
24	Security-secure electronic transaction (SET)

25	System security: Intruders-Viruses and related threats
26	Firewall design principles, trusted systems
27	Unit-4: Digital Forensics: Introduction to Digital Forensics, historical background of digital forensics
28	Forensic Software and Hardware
29	Need for computer forensics science, special tools and techniques digital forensic life cycle
30	Challenges in digital forensic
31	Law Perspective: Introduction to the Legal Perspectives of Cybercrimes and Cyber security
32	Cybercrime and the Legal Landscape around the World
33	Why Do We Need Cyber laws
34	Cybercrime Scenario in India, Digital Signatures
35	Indian IT Act 2000
36	-----do-----
37	Cybercrime and Punishment
38	IP Security: Architecture-Authentication header
39	Encapsulating security payloads
40	Combining security associations, key management

Tutorial Sheet 1

1. Explain the fundamentals of Cyber Crime. Also explain the nature and scope of Cyber Crime
2. Discuss types of Cyber Crime.
3. Explain block cipher principle-Shannon's theory of confusion and diffusion.
4. Explain Data Encryption Standard (DES) algorithm .Discuss strength of DES.

Tutorial Sheet 2

1. What is MD5? Explain in detail.
2. Explain PGP.
3. Explain AES Algorithm.
4. Explain Kerberos and X.509.
5. What is DSS? Explain proof of digital signature algorithm.

Tutorial Sheet 3

1. Differentiate between active attacks and passive attacks.
2. Explain Security Technology-Firewall and VPNs.
3. Differentiate between Secure socket layer and transport layer security.
4. Explain Viruses and related threats.

Tutorial Sheet 4

1. Give brief introduction to Digital Forensics and historical background of digital forensics.
2. Explain special tools and techniques digital forensic life cycle.
3. Why Do We Need Cyber laws?
4. Explain The Indian IT Act 2000.
5. Explain Cybercrime and Punishment.

Tutorial Sheet 5

1. Differentiate between stream cipher and block cipher .
2. Explain differential and linear cryptanalysis of DES.
3. What is feistel structure ?
4. Explain electronic mail security.

OE-CS-410A	Web and Internet Technology						
Lecture	Tutorial	Practical	Credit	Major Test	Minor Test	Total	Time
2	0	0	2	75	25	100	3 Hour
Purpose	To learn the architecture and programming of Internet and study of scripting language :Python						
Course Outcomes							
CO 1	To Learn the basic concepts of internet and its connectivity						
CO 2	To Learn about the services of internet , designing and its architecture						
CO 3	To Learn the basic concepts of Python and its applications in information industry						
CO 4	To Acquaint the knowledge of latest programming language for the implementation of object based and procedure based applications using Python.						

Unit-I: Introduction to Internet

Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, basic Internet Terminology, Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet, The role of Information Architect, Collaboration and communication, Organizing information, Organizing web sites and Intranets, Creating cohesive organization systems, designing navigation systems, types of navigation systems, Integrated navigation elements, Searching systems, Searching your web site, designing the search interface.

Unit-II: Internet Services and Web Publishing

Setting up a connection: Hardware requirement, Selection of a Modem, Software Requirement, Modem Configuration, Common terminologies: Node, Host, Workstation, bandwidth, Interoperability, Network administrator, network security, Network Components: Servers, Clients, Communication Media, Service options – E-mail, News Firewall, etc.

Introduction to XHTML and HTML5: Basic Text Markup, Images, Hypertext Links, Lists, Tables, Forms in HTML, Syntactic Differences between HTML5 and XHTML, Cascading Style Sheets: Introduction, Levels of Style Sheets, Style Specification Formats, Selector Forms, Property Value Forms, Font Properties, List Properties, Color, Alignment of Text, Box Model, Background Images.

Unit –III: Introduction of Scripting Language: Python

Introduction to Python: Applications of Python in information industry, Introduction to Python, Data Types, Branching Programs, Control Structures, Array and Input, Iteration. Functions and Scoping: Functions and scoping, Recursion and Global variables. Creation, insertion and deletion of items: Strings, Tuples, Lists and Dictionaries.

Unit –IV: Advanced Python

Classes and Object-Oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and Information Hiding. File Handling, Exceptions Handling, Data base (MySQLdb) operation: file check, table creation, insertion and deletion of data, Regular Expressions – REs in Python and Plotting.

Suggested Books

1. “Information Architecture on the World Wide Web”, By Peter Morville, Louis Rosenfeld, O'Reilly Media, 2006.
2. “Programming The World Wide Web”, By Robert W. Sebesta, 8th Edition, Pearson India, 2015.
3. “The Fundamentals of Python: First Programs”, By Kenneth A. Lambert, 2011, Cengage Learning.
4. “Python: The Complete Reference”, By Martin C. Brown, Paperback March 2018
5. “Core Python Programming”, by R. Nageswara Rao, Dreamtech Publication, 2018