Computer Graphics & Multimedia (601)/ (DCS-601)

COURSE OUTCOMES:
After Completing the course student should be able to:

CO1	Understanding of different display devices, Scan conversion techniques, Line and circle drawing algorithms.
CO2	Understanding 2D Transformation, Illustrate the concept of Windowing and Clipping and respective algorithms .
CO3	Understanding 3D Transformation. Illustrate basic illumination models.
CO4	Learn and understand technical aspect of multimedia systems.
CO5	Learn and understand technical aspect of animation.

COURSE CONTENTS:

UNIT I INTRODUCTION TO COMPUTER GRAPHICS
Definition of Computer Graphics, Application of Computer Graphics, Graphics Hardware, Input and Output Devices, Display Devices, Refreshing Display Devices, Raster-Scan, Random-Scan
UNIT II GRAPHICS PRIMITIVES:
Points and Lines, Line-drawing Algorithms: DDA, Bresenham's line Algorithm, Circle-generating Algorithm, Midpoint Circle of Algorithm, Polygon Filling Algorithm: Scan-Line
UNIT III TRANSFORMATION, 2-D VIE WING AND CLIPPING
Basic Transformations (2D and3D),Translation, Rotation, Scaling, Shear, Reflection, Composite Transformations, Rotations about apoint Reflection about aline, Homogeneous Coordinate Systems, Clipping, Point Clipping, Line Clipping -Cohen-Sutherland Clipping algorithm. Polygon Clipping: Sutherland Hodgeman Algorithm, Windowing Transformation
UNIT IV PROJECTION
Parallel Projection: Orthographic, Axonometric, Oblique, Perspective Projection: Standard Perspective Projection General Perspective Projection, Vanishing Points
UNIT V SHADING, COLOUR MODEL AND ILLUMINATION
Chromaticity diagram-RGB, CMY, HSV, HLS, CIE models-Realism in rendering, Image manipulation: Illumination models, shading models for polygons, Gouraud and Phong shading, shadows, Transparency, Image Filtering, image processing, geometric Transformation of images. Basics of Multimedia Technology: Concepts of Multimedia: Types, Data Streams, Hardware and Software Requirements and Applications, Multimedia Authoring, Digital Audio: Audio Sampling, Recording Digital Audio, Audio Standards for Multimedia Applications, MIDI File Formats, MIDI Hardware, and Software, Image Compression Standards and Types.

Reference Books: -

1. Computer Graphics, Multimedia and Animations by Malay K. Pakhira, PHI Learning.
2. Computer Graphics by Donald Hearn and M.Pauline Baker, PHI
3. Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addition Wesley.
4. Introduction to Computer Graphics By N. Krishnamurthy T.M.H
5. Graphics, GUI, Games & Multimedia Projects in C by Pilania & Mahendra, Standard Pub

List of suggestive core experiments: -

1. Write a program for 2D line drawing as Raster Graphics Display. Write a program for circle drawing as Raster Graphics Display. Write a program for polygon filling as Raster Graphics Display Write a program for line clipping.
2. Write a program for polygon clipping.
3. Write a program for displaying 3D objects as display using perspective transformation.
4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
5. Write a program to show a bitmap image on your computer screen. Write a program to play "wave" or "midi" format sound files.

Network Security (602)/(DCS-602)

COURSE OUTCOMES:
After Completing the course student should be able to:

CO1	Understanding of external and internal threats and e familiar with how threats to an organization are discovered, analyzed, and dealt with. Rogue programs effects like viruses, Trojan horses, worms, and time (or logic) bombs.
CO2	Fundamentals of secret and public cryptography.
CO3	To be familiar with various protocols for security services.
CO4	To be familiar with advanced security issues and technologies
CO5	To be familiar with network security designs using available secure solutions (such as PGP, SSL, IPSec, etc). security issues.

COURSE CONTENTS:

UNIT I INTRODUCTION
Security overview, Computer security, network security, Key principles of Network Security-Confidently, Integrity, Availability. Threats to security, Need of security, Types of security, Security issues.

UNIT II INFORMATION SYSTEM SECURITY MANAGEMENT
Security Polices, Security Awareness, security control - Physical Controls, Procedural Controls, Technical Controls and Legal and liability, Identification and Authentication- Password, Biometrics, Single Sign On.

UNIT III SECRETE COMMUNICATION
Introduction to secrete communication, Basics of Cryptography – Substitution cipher, Cryptographic primitives, Encryptions, Symmetric Encryption- Stream cipher, Block cipher, Sharing Keys,. Asymmetric Encryption
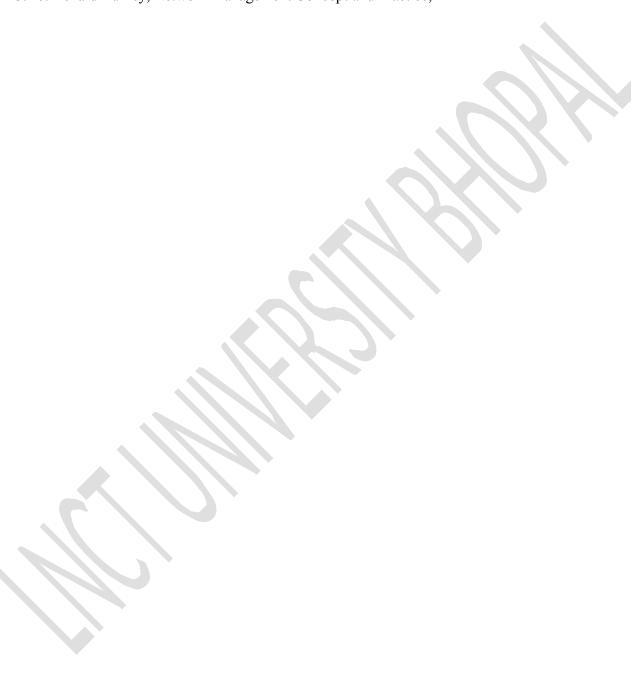
UNIT IV NETWORK MANAGEMENT
Definition Need and advantages, .Windows NT Networking Architecture, Windows NT Operating System, Design and Basics, Open Systems and Industry Standards, Client/Server Computing, Interoperating with Other Networks, Remote Access Service-Point to point protocol, Network Security and Domain Planning- Security Model Architecture

UNIT V NETWORK SERVICES
Enterprise Level-Installing and Configuring TCP/IP, Configuring TCP/IP Clients, Dynamic IP Addressing Configuring DHCP, Accessing the DHCP Manager, Managing DHCP Scopes Simple Network Management Protocol (SNMP) for Network Management

Reference Books: -

1. Fundamentals of Network Security by John E.Canavan
2. Network Security Bible by Dr. Eric Cole, Dr. Ronald Krutz, and James W.Conley
3. Network Management: A Practical Perspective by Allan Leinwand and Karen Fang
4. Forouzan, TCP/IP Protocol Suite 4th edition, TMH
5. J.Richard Burkey, Network Management Concept and Practice, PHI

Artificial Intelligence (603)/(DCS-603)

COURSE OUTCOMES:
After Completing the course student should be able to:

CO1	Illustrate various techniques for solving issues related to knowledge representation and Game playing
CO2	Describe the various searching, reasoning and learning techniques for AI based problems.
CO3	Solve the knowledge representation and Game playing problems by using appropriate AI algorithms
CO4	Apply appropriate searching.
CO5	Apply reasoning and learning algorithms for solving various problems.

COURSE CONTENTS:

UNIT I INTRODUCTION TO AI
Meaning and definition of Artificial Intelligence, Characteristics of A Problems, Scope and Future Expectation of AI, Application of AI.

UNIT II PROBLEM SOLVING AND CONTROL STRATEGIES
State Space Representation, Problem Characteristics, Production System and its types, Characteristics of Production System, Breadth First Search and Depth First Search, Forward and Backward Chaining, Control Strategies and its Type

UNIT III HEURISTIC SEARCH TECHNIQUES
Hill Climbing, Branch and Bound Technique, Best First Search Technique and algorithm, A* Algorithm and AO*Algorithm, Constraints Satisfaction and related numeric problems

UNIT IV KNOWLEDGE REPRESENTATION
Representation and Mapping, Approaches to Knowledge Representation, Issues in Knowledge Representation, Knowledge Representation using Predicate Logic and Prepositional Logic, Resolution and Refutation, Deduction, Theorem Proving, Procedural Knowledge and Declarative Knowledge

UNIT V LEARNING AND NATURAL LANGUAGE PROCESSING
Introduction to Learning, Types of Learning, and Learning in neural network, Learning Processes Error Correction Learning, Memory based Learning, Hebbian Learning, Competitive Learning, Learning with teacher, Learning without teacher. **Game Playing:** Introduction to Game Playing, Mini max Search Procedure, Alpha-Beta Cut offs

Reference Books: -
1. Artificial Intelligence by Elaine Rich and Kerin Knight, Tata McGraw Hill Edition
2. Introduction to AI & ES by DAN W. Patterson, PHI learning
3. IntroductiontoArtificialIntelligencebyEugeneCharniakandDrewMcDermott, Addison Wesley.
4. Principles of Artificial Intelligence by Nils J.Nilson.

List of suggestive core experiments: -

1. Study about Cut and Fail situation in Artificial Intelligence
2. Develop system in Prolog to demonstrate the use if domain, predicate and clause.
3. Develop system in prolog to demonstrate the use of reading and write.
4. Develop system in prolog to demonstrate the use of facts and rules.
5. Develop system in prolog to demonstrate the use of controls.
6. Develop system in prolog to implement the water jug problem
7. Develop system in prolog for medical diagnosis model/chemical syntheses.
8. Implementation of Min-Max search procedure for Game Playing.

Major project (604)/ (DCS-604)

COURSE OUTCOMES:
After Completing the course student should be able to:

CO1	Map the technical knowledge acquired in the previous semesters for solving real world problems.
CO2	Apply new technologies & design techniques (platform, database, etc.) concerned for devising a solution for a given problem statement
CO3	Apply project management skills (scheduling work, procuring parts and documenting Expenditures and working within the confines of a deadline).
CO4	Work with team mates, sharing due and fair credits and collectively apply effort for making project successful.
CO5	Communicate technical information by means of written and oral reports.

COURSE CONTENTS:

Project Guidelines: The focus of the Project is on preparing a working system (e.g., software system/Interface, hardware/software interface design etc.), using system analysis tools and design techniques and submit it in the form of a write-up i.e., detail project report. The student should select some real-life problems for their project and maintain proper documentation of different stages of project such as requirement specification, objectives, work plan, analysis, design, implementation, and test plan. Each student is required to prepare a project report and present the same at the final examination with a demonstration of the system.

Industrial Training (605)/ (DCS-605)

COURSE OUTCOMES:
After Completing the course student should be able to:

1. Acquaint with Industry environment and culture.

2. Develop professional skills

3. Enhance the usage skills of modern tools

4. Develop Communication and leadership skills.

5. Encourage entrepreneurship

COURSE CONTENTS:

Guidelines: 2 weeks summer internship after V Th Semester. It should be undertaken in an industry/Govt. or Pvt. Certified Agencies which are in social sector/Govt. Skill Centers/Schemes. Evaluation is based on work done, quality of report, performance in viva-voce, presentation etc.

Professional Activity (606)/ (DCS-606)

The mission of this program is to inform, challenge, and train our diverse student body for a constantly changing world of technology. To educate graduates who can:

- Perform as a professional in the discipline.
- Work effectively in a variety of contexts using various languages, systems and environments.
- Continue to independently learn and master new tools of the profession.