UNIT – IV: Logic Families:

Classification of Integrated circuits, comparison of various logic families, standard TTL NAND Gate - Analysis & characteristics, TTL open collector O/Ps, Tristate TTL, MOS & CMOS open drain and tri-state outputs, CMOS transmission gate, IC interfacing- TTL driving CMOS & CMOS driving TTL, Design using TTL-74XX & CMOS 40XX series, code converters, decoders, Demultiplexers, decoders & drives for LED & LCD display. Encoder, priority Encoder, multiplexers & their applications, priority generators/ checker circuits. Digital arithmetic circuits-parallel binary adder/ subtractor circuits using 2's, Complement system. Digital comparator circuits.

UNIT – V: Sequential Circuits:

Flip-flops & their conversions. Design of synchronous counters. Decade counter, shift registers & applications, familiarities with commonly available 74XX & CMOS 40XX series of IC counters. Memories: ROM architecture, types & applications, RAM architecture, Static & Dynamic RAMs, synchronous DRAMs.

TEXT BOOKS :

1. D. Roy Chowdhury, "Linear Integrated Circuits", 2nd ed., New Age International (p) Ltd, 2003.
2. Ramakanth A. Gayakwad, "Op-Amps & Linear ICs", Prentice Hall India, 1987.
3. Floyd and Jain, "Digital Fundamentals", 8th ed., Pearson Education, 2005.

REFERENCES :

1. R.F. Coughlin and Fredrick F. Driscoll, "Operational Amplifiers and LinearIntegrated Circuits", Prentice Hall India, 1977.
2. Denton J. Daibey, "Operational Amplifiers and Linear Integrated Circuits:Theory and Applications", TATA McGrawhil Co.
3. Sergio Franco, "Design with Operational Amplifiers and Analog Integrated Circuits", 3rd ed., McGraw Hill, 2002.
4. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/video-lectures

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MT324 INTERACTIVE COMPUTER GRAPHICS

Course Description & Objectives:

This course teaches students computer graphics, its powerful capabilities, a history of its technologies as well as up-to-date developments, to its far reaching

potentials across the consumer, industrial, and military domains, and how to achieve these potentials.

Course Outcomes:

Undergoing this course would enable the students to:

1. *understand the fundamentals of the modern computer graphics pipeline*
2. *know the mathematics of affine transformations in three dimensions*
3. *know the common data structures to represent and manipulate geometry*
4. *understand colour and light representation and manipulation in graphics systems*
5. *know basic shading techniques*
6. *apply mathematics to graphics systems*

UNIT–I: Graphics Systems:

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, and raster-scan systems, random scan systems, graphics monitors and workstations and input devices. Output primitives: Points and lines, line drawing algorithms, midpoint circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary fill and flood-fill algorithms

UNIT–II: 2-D Geometrical Transforms:

Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems 2-D viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-Beck line clipping algorithms, Sutherland –Hodgeman polygon clipping.

UNIT–III: 3-D Object Representation:

Polygon surfaces, quadric surfaces, Spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon-rendering methods. 3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT–IV: Visible Surface Detection Methods:

Classification, back-face detection, depth buffer, scan-line, depth sorting, BSP-tree methods, area subdivision and octree methods.

UNIT–V: Computer Animation:

Design of animation sequence, general computer animation functions, raster

animation, computer animation languages, key frame systems, motion specifications.

TEXT BOOKS:

1. Donald Hearn and M.Pauline Baker, "Computer Graphics C version", Pearson Education.
2. Foley, VanDam, Feiner and Hughes, "Computer Graphics Principles & practice", 2nd ed., Pearson Education.

REFERENCES:

1. Donald Hearn and M.Pauline Baker, "Computer Graphics",2nd ed., Prentice Hall India.
2. Zhigand xiang, Roy Plastock, "Computer Graphics Second ed.", Tata McGraw Hill.
3. David F Rogers, "Procedural elements for Computer Graphics", 2nd ed., Tata McGraw Hill.
4. Neuman and Sproul, "Principles of Interactive Computer Graphics", Tata McGraw Hill.
5. Shalini Govil, Pai, "Principles of Computer Graphics", Springer Publications, 2005.

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MT322 INDUSTRIAL MANAGEMENT

Course Description & Objectives:

This course prepares an engineering graduate to take up a managerial position by teaching him / her all the nuances of industrial management.

Course Outcomes:

Upon completion of this program, Operations Management graduates will be able to:

1. *explain the major concepts in the functional areas of accounting, marketing, finance, and management.*
2. *evaluate the legal, social, and economic environments of business.*
3. *describe the global environment of business.*