CS-503: COMPUTER GRAPHICS

Teaching and Examination Scheme:

Teaching Scheme			Credits	Marks			Duration of End Semester Examination
L	T	P/D	C	Sessional	End Semester Exams	Total	
2	2	0	3	40	60	100	3Hrs

COURSE OBJECTIVE:

The course should enable the students to understand the basic concepts in computer graphics, rules and algorithms in generating graphical outputs and to develop 3-D objects using suitable transformations.

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	**Fundamentals of computer graphics:** Overview of graphic systems, video display devices, raster and random systems, graphic softwares and standards, applications of computer graphics. **Output primitives:** Points and lines, line drawing algorithms, line function, circle and ellipse generating algorithms, pixel addressing and object geometry, filled area primitives.	6
II	**Two dimensional geometric transformations:** Matrix representation and homogeneous coordinates, composite transformations, reflection and shearing, two dimensional viewing-viewing pipeline, viewing coordinate reference frame, window-to-viewport coordinate transformation, clipping operations- point, line and polygon clipping algorithm.	7
III	**Three dimensional concepts and object representation:** 3D display methods, polygon surfaces and tables, Plane equations, polygon meshes, curved lines and surfaces, quadratic surfaces, spline representations: Bezier curves and surfaces, B-spline curves and surfaces. **Three dimensional transformations and viewing:** 3D geometric and modeling transformations- translation, rotation, scaling, composite transformations, 3D viewing-viewing pipeline and coordinates, projections, clipping, parallel and perspective transformation, visible surface detection methods.	8
IV	**Illumination and Color models:** Basic illumination models-halftone patterns and dithering techniques, properties of light, XYZ, RGB, YIQ and CMY color models. **Computer graphics realism:** Tilling the plane- recursively defined curves- Koch curves-C curves, Dragons- space filling curves- fractals.	5

Dean
H.P. Technical University
Hamirpur - 177001

Text books:

1. D. Hearn and M.P. Baker, ***"Computer Graphics"***, Prentice Hall of India.

Reference Books:

1. D.Hearn and M.P. Baker, warren Carithers ***"Computer Graphics with OpenGL"***, Pearson Education.
2. Jeffery McConnel, ***"Computer Graphics: Theory into Practice"***, Jones and Bartlett Publishers.