1.	Title of the course	Computational Geometry
2.	Course number	CS510L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5027/8
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	**Course Objective(s):** To learn fundamental geometric structures and applications; To construct an optimal solution to various geometric problems using geometric properties, algorithms, and data structures.	
10.	**Course Content:** Introduction: scope of computational geometry, convex hull algorithms, visibility problems, art gallery problems, art gallery theorems, dual transformation and applications, intersection of half planes, duality range searching orthogonal range searching, priority search trees, non-orthogonal range searching, half-plane range query; Voronoi diagram: properties, algorithmic triangulations, Voronoi diagram in higher dimension; Point location and triangulation: planar point location, point location and triangulation, triangulation of arbitrary polygon; Epsilonnets: epsilon-nets, geometric set cover with bounded dimension.	
11.	**Textbook(s):** 1. Preparata F P and Shamos M, *Computational Geometry An Introduction*, 1st Edition, Springer-Verlag New York (2012).	
12.	**Reference(s):** 1. Demaine E D and O Rourke J, *Geometric Folding Algorithms: Linkages, Origami, Polyhedra*, 1st Edition, Cambridge University Press (2008). 2. Devadoss S and O Rourke J, *Discrete and Computational Geometry*, 1st Edition, Princeton University Press (2011). 3. Mulmuley K, *Computational Geometry: An Introduction Through Randomized Algorithms*, 1st Edition, Prentice-Hall (1994). 4. O'Rourke J, *How To Fold It: The Mathematics of Linkages, Origami, and Polyhedra*, 1st Edition, Cambridge University Press (2011).	