1.	Title of the course	Finite Element Method in Engineering Mechanics
2.	Course number	ME502L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME5102/2
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To equip the students with the basics of Finite Element Analysis. To enable the students to formulate the design problems in a general 2-D and 3-Dimensions. To introduce basic physical and mathematical aspects of finite element technology for general field problems, heat transfer, fluid mechanics problems etc. To emphasize the numerical aspects of polynomial interpolation, domain discretization, and solution of the resulting algebraic systems.	
10.	**Course Content:** Introduction to one-dimensional Finite Element Method. Problems in structural mechanics using two dimensional elements; Plane stress, plane strain, axi-symmetric analysis; Three dimensional stress analysis; Shell analysis; Details of element formulations, numerical implantations, convergence aspects. Solution of heat conduction, fluid flow, vibration, stability, and nonlinear, large scale systems.	
11.	**Textbook(s):** 1. Hutton D V, *Fundamentals of Finite Element Analysis*, Tata McGraw Hill (2003). 2. Zienkiewicz O C and Morgon K, *"Finite Elements and Approximation*, Dover Publ (2006).	
12.	**Reference(s):** 1. Reddy J N, *An Introduction to Finite Element Method*, 3rd Edition, McGraw Hill (2005). 2. Cook R D, Malcus D S and Plesha,Concepts and Applications of Finite Element Analysis, 4th Edition, Wiley (1997). 3.ZienkiewiczO C and Taylor R L,The Finite Element Method, 5th Edition, Vol 1 & 2 Butterworth-Heinemann (2000). 4. Bathe K J, *Finite Element Procures*, 2nd Edition, Prentice Hall (1995).	