INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	CAD-CAM
2.	Course number	ME316L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Mechanical Engineering
6.	Proposed by	Govind Narayan Sahu
7.	Prerequisite	None
8.	**Course Objective(s):** To discuss the principles of computer-aided design (CAD) and computer-aided manufacturing (CAM) including the geometric transformations, curve, solid and surface design. To discuss design optimization, toolpath generation for CNC machining, design for manufacturability, group technology, flexible manufacturing, manual and automated assembly lines.	
9.	**Course Content:** Introduction to CAD-CAM; Geometric transformations; Design of curves, surfaces, and solids; Data exchange formats and CAD applications; Assembly modeling and constraints; Design optimization; Introduction to CAM and its role in manufacturing automation; Integration of CAD and CAM; Basics of CNC machining; CAM toolpath generation and post-processing; Simulation and verification of toolpath; Design for manufacturability principles; Advanced CAM techniques: multi-axis machining, high-speed machining, tool selection and optimization, adaptive machining and its benefits, computer aided engineering and computer integrated manufacturing; Manufacturing systems: single station manufacturing cells, group technology and cellular manufacturing, flexible manufacturing system, manual assembly lines, automated production lines, automated assembly systems.	
10.	**Textbook(s):** 1. Saxena A and Sahay B, Computer Aided Engineering Design, Springer (2005). 2. Chang T C, Wysk R A and Wang H P, Computer-Aided Manufacturing, 3rd Edition, Pearson Prentice Hall (2006).	
11.	**Reference(s):** 1. Rogers D F and Adams J A, Mathematical Elements for Computer Graphics, 2nd Edition, McGraw-Hill Inc. (1989). 2. Pande S S, Computer Graphics and Product Modelling for CAD/CAM, Alpha Science International (2011). 3. Singh N, Systems Approach to Computer-Integrated Design and Manufacturing, Wiley (2011).	