

VALUE ADDED COURSE

Swarnnim Institute of Technology

Course Code: VACDS

Year: 2020-2021

Semester:- Even

Subject: Design and Simulation

Program:	Bachelor of Engineering	Branch:	Mechanical & Automobile Engineering
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Hours:- 30 hrs.

Objective:- To teach participants how to use simulation tools to analyze and optimize vehicle performance, durability, and safety.

Detail Syllabus

Sr.	Content	Total Hrs
1	Introduction to Design and Simulation: Overview of design principles, Importance of simulation in engineering, Introduction to relevant software tools (e.g., ANSYS, Solid Works, CATIA, MATLAB, Simulink)	10
2	Computer-Aided Design (CAD): Fundamentals of CAD, 2D drafting and 3D modeling, Parametric design and assembly modeling	10
3	Finite Element Analysis (FEA): Basics of FEA, Meshing techniques and types of elements, Static and dynamic analysis, Thermal analysis and multi-physics simulation	10

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher
1	Jack A. Collins, Henry R. Busby, and George H. Staab	Mechanical Design of Machine Elements and Machines: A Failure Prevention Perspective	Wiley, 2010
2	Saeed Moaveni	Finite Element Analysis: Theory and Application with ANSYS	Pearson, 2014
3	Eric Constans and Karl B. Dyer	Introduction to Mechanism Design: with Computer Applications	CRC Press, 2015

Online Resources:

1. <https://my.solidworks.com/training>
2. <https://www.simscale.com/docs/simwiki/fea-finite-element-analysis/what-is-fea-finite-element-analysis>

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