Muzaffarpur Institute Of Technology

COURSE FILE

OF

COMPUTER AIDED DESIGN AND MANUFACTURING

(021730)

FACULTY NAME:

Mr. JIGESH YADAV ASSISTANT PROFESSOR,

DEPARTMENT OF MECHANICAL ENGINEERING

Department of Mechanical Engineering

Vision

• To strengthen the region through imparting superior quality technical education and research; which enables the fulfillment of industrial challenge and establish itself as a Centre of Excellence in the field of Mechanical Engineering.

Mission

• To build an academic environment of teaching and lifelong learning for students to make them competitive in context with advance technological, economical and ecological changes.

• To enable the students to enhance their technical skills and communications through research, innovation and consultancy projects.

• To share and explore the accomplishments through didactic, enlightenment, R & D programs with technical institution in India and abroad.

Mechanical Engineering Program Educational Objectives

After 4 year of graduation a B.TECH (ME) graduate would be able to

• Graduates will spread and enhance their technical capability and proficiency through vital domain of economic, environmental and social concerns affiliated with the mankind and industry.

• Graduates will able to work professionally with modern methods in the area of Thermal, Mechanical System Design, Manufacturing, Measurement, Quality control and other interdisciplinary fields of concerns.

• Graduates will practice Mechanical engineering in sensible, flexible and ethical manner to benefit the society, industry and nation toward the rapidly changing global technical standards.

• Graduates will serve as ambassadors for engineering by their knowledge, creativity, imagination and innovation and set new extremes in their profession through lifelong learning.

Mechanical Engineering Student Outcomes

Students who complete the B.TECH degree in ME will be able to:

1. An ability to apply the knowledge of mathematics, basic sciences and engineering concepts to solve the complex engineering problems.

2. The ability to conduct experiments and to critically analyze and interpret the experimental data to reach at substantial outcomes.

3. An ability to design systems, components, or processes to meet appropriate needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

4. An ability to identify, formulates, and solves the complex engineering problems.

5. An ability to function on multi-disciplinary teams that leads the ultidisciplinary projects.

6. An understanding of professional and ethical responsibility.

7. An ability to communicate effectively with written, oral, and visual means.

8. An ability to understand the impact of engineering solutions in a global, environmental, economic and societal context.

9. An ability to recognize the need to engage in life-long learning.

10. An ability to attain knowledge of contemporary issues.

11. An ability to use the techniques, skills, and modern tools necessary for Mechanical engineering practice.

12. Possess ability to estimate costs, estimate quantities and evaluate materials for design and manufacturing purposes.

Course Name: Computer Aided Design and Manufacturing

Course Objectives: The course content enables students to

1. Understand the computer application in the field of mechanical design and manufacturing
2. Able to learn various codes and programs used in part-programming of CAD/CAM software
3. Able to differentiate between NC, CNC and DNC programming
4. Learn about Anti Virus Guard (AVG)

SYLLABUS
COMPUTER AIDED DESIGN & MANUFACTURING

L-T-P : 3-0-2 **Credit : 4**

Unit-1 Introduction concept of CAD/CAM.

Unit-2 Computer system, Hardware in computer – Aided Design system, Product cycle Automation, part programming.

Unit-3 Computer aided design system software, Transformation, geometric modeling, Drafting applications

Unit-4 CAD/CAM technology to finite element data preparation, concept of data structures

Unit-5 NC, CNC, DNC programming

Unit-6 Introduction to AVG

Text Books:

1. CAD/CAM: Principles and Applications by P.N. Rao, TMH Publications
2. Fundamentals of CAD/CAM by Vikram Sharma, S.K. Katariya & Sons Publications
3. CAD/CAM: Computer-Aided Design and Manufacturing by M. Groover & E. Zimmers

Course Outcomes (CO):

At the end of the course students are able to:

1. Learn computer application in various design techniques as required in manufacturing industries
2. Learn computer application in various manufacturing process and use of computer in manufacturing and robotics industries
3. Learn various part programming for Computer aided design and manufacturing
4. Solve design problem of mechanical part or components
5. Understand Anti Virus Guard

CO-PO Mapping:

	CO 1	CO 2	CO 3	CO 4	CO 5
PO 1	3	3	3	3	3
PO 2			2	3	
PO 3			3	3	
PO 4	1	1	2	2	1
PO 5	2	2	3	3	2
PO 6					3
PO 7					
PO 8					3
PO 9					
PO 10			1	1	2
PO 11			1	1	
PO 12	3	3	3	3	3

TIME TABLE

7th SEMESTER Mechanical Engineering ROOM No.- 53

	09:00-10:00	10:00-11:00	11:00-12:00	12:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	04:00-05:00
MON		CAD/ CAM			LUNCH			
TUE			CAD/ CAM	CAD/ CAM				
WED								
THUY								
FRI								
SAT	CAD/ CAM	CAD/ CAM						

Lecture plan:

Part-A		Lecture Plan	
Sl. No.		**Topic Name**	**Periods**
1	**1.1**	Introduction	**2**
	1.2	Concepts of CAD/CAM	**2**
2	**2.1**	Computer system,	**1**
	2.2	Hardware in computer – Aided Design system	**2**
	2.3	Product cycle Automation	**2**
	2.4	Part programming	**2**
3	**3.1**	Computer aided design system software	**2**
	3.2	Transformation	**2**
	3.3	Geometric modeling	**2**
	3.4	Drafting applications	**2**
4	**4.1**	CAD/CAM technology to finite element data preparation,	**3**
	4.2	concept of data structures	**3**
5	**5.1**	NC, CNC, DNC programming	**9**
6	**6.1**	Introduction to AVG	**9**
		TOTAL	**43**

Assignment-1

Q.1 Explain CAD/CAM with and without the help of product cycle.

Q.2 Briefly explain the different hardware components and of general purpose digital computer.

Q.3 Explain the various types of output devices in CAD/CAM. Briefly discuss the various reasons for implementing CAD/CAM System.

Q.4 Explain geometric modeling and finite element analysis in CAD.

Assignment-2

Q.1 Define NC system. Explain working of basic components of NC machine.

Q.2 Explain Direct Numerical Control system.

Q.3 Write short notes on the following

(i) Fixed zero and Floating zero

(ii) Continuous path system

(iii) Automated Guided Vehicle

Q.4 Define Robot. Explain different components of a robot.