Course Number and Name

BME604 - CAD/CAM

Credits and Contact Hours

3&45

Course Coordinator's Name

Dr.Balambika

Text Books and References

TEXT BOOKS:

1. Radhakrishnan P. CAD/CAM/CIM, I Edition, New central Book Agency, 2006.

REFERENCES:

- 1. Rao P.N. CAD/CAM, Principles and Application, Tata McGraw Hill, 2005.
- 2. Mikell P.Groover, Automation, Production Systems and CIM, II Edition, Prentice Hall of India, 2001.
- 3. Chris McMahon and Jimmy Browne, CAD/CAM, Pearson Education, 2001.
- 4. sbmpme.blogspot.com/2011/01/cad-cam-cim-p-radhakrishnan.html

Course Description

This course will enable the student To gain knowledge about the basic fundamentals of CAD.																
Prerequisites								Co-requisites								
Manufacturing Technology-I							Nil									
required, elective, or selected elective (as per Table 5-1)																
Required																
Course Outcomes (COs)																
C	01	To gain knowledge on how computers are integrated at various levels of plannin manufacturing understand computer aided planning and control and computer monito											-			
CO2 Understand the concepts of CAD/CAM																
С	03	Understand writing programs														
CO4		Unde	Understand to give command													
CO5		Learn	Learn to draw 2D drawings													
CO6		Learn	Learn to do 3D modeling													
Student Outcomes (SOs) from Criterion 3 covered by this Course																
	COs/SOs	а	b	с	d	e	f	g	h	i	j	k	1			
	CO1	Н	Н							М			L			
	CO2															
	CO3			Н			н	М	М				L			
	CO4				н						М	М	L			

	CO5												
	CO6											L	
List of Topics Covered													

UNIT I INTRODUCTION TO CAD AND ITS ELEMENTS

Principles of Computer hardware, Software and Operating System, application Programs, Data Handling and File Structures, Computer aid in Phases of design- Development of Design Database using CAD Systems-Conceptual Design Process Analysis Optimization- Detailed Design and Documentation.

UNIT II ELEMENTS OF CAD SYSTEMS AND DESIGN USING COMPUTERS 9

Elements of CAD Systems, Introduction to Graphic Hardware, Software, Details of 2D Software Packages-Layering, Drawing Primitives, Display Techniques, Editing, utilities, Scaling, Dimensioning, 3D Visualization, Geometric Modeling-Wireframe and Solid models.

UNIT III DESIGN USING COMPUTERS

Design of Gears, Couplings, Flywheels, Shafts Connecting Rods etc. Software for Vibration Problems- Stress Analysis, Kinematic Analysis, Dynamic Analysis.

UNIT IV COMPUTER AIDED MANUFACTURING

Numerical Control- Modes- NC Elements- NC Machine Tools- CNC Machines- CNC Hardware Basics- CNC Tooling- CNC Machine Tools and Control System- Part Programming- Manual and Computer Aided- Turning Center Programming- Advanced Part Programming- Direct Numerical Control- Adaptive Control- Computer Aided Part Programming, APT. Introduction to Robotics, Group Technology, Computer Aided Process Planning, FMS.

UNIT V COMPUTER INTEGRATED MANUFACTURING

CIM as a Concept and a Technology- CASA/SME Model of CIM-Benefits- Communication Matrix in CIM-Fundamentals of Computer Communication n CIM, CIM Data Transmission Method, Serial , parallel, asynchronous, modulation, Demodulation, Simplex and Duplex- Types of Communications in CIM- Point to Point, Star and Multiplexing- CIM for Batch Production- Group Technology – FMS- Process Control in CIM-Characteristics of Manufacturing Process Data- Continuous, Analog, Discrete Binary and Pulse Data- ADC/DC Multiplexers, Process Monitoring Through Computer- Types of Computer Process Control- Preplanned, Direct Digital Control (DDC)- Regular Control and Feed Forward Control, Requirements of Control Programming Interrupt, Real Time Clock Input.

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