



KUPPAM ENGINEERING COLLEGE

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KUPPAM - 517 425, Chittoor Dist., A.P. ☎: 08570 - 256966 (O), 256977 (F)

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(17MEVA02) Robcad

Module 1:

- Basics of Robocad
- Work cell Layout
- Activity & Practice

Module 2

- Modeling and Kinematics
- Basic Simulation Techniques
- Activity & Practice


Module 3:


- Data Menu CAD Translating
- Robot Motion
- Activity & Practice

Module 4:

- Advanced Modeling and Kinematics Overview
- Automatic Kinematic Creation
- Attribute Based Component Searching
- Activity and Practice


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(17MEVA01) Advances in Additive Manufacturing

Module 1:

- Introduction to Generative Manufacturing Processes
- RP Versus CNC machines
- Need for time compression in Product development

Module2:

- Stereo Lithography apparatus(SLA)
- Photo polymerization, Layering technology, laser and laser scanning
- Laminated Object Manufacturing (LOM)

Module 3:

- Selective laser sintering (SLS)
- Three dimensional Printing (3DP)
- Rapid Tooling

Module 4:

- STL Format and STL File Problems
- Consequence of Building Valid and Invalid Tessellated Models
- STL file Repairs

Module 5:

- Application in Design
- Applications in Aerospace Industry, Automotive Industry
- RP Medical and Bioengineering Applications
- Design and Production of Medical Devices
- Forensic Science and Anthropology


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(18MEVA04) Robcad basics

Module 1:

- Introduction to Robocad
- Work cell Layout
- Activity & Practice

Module 2

- Activity & Practice
- Modeling and Kinematics
- Basic Simulation Techniques

Module 3:

- Data Menu CAD Translating
- Activity & Practice
- Robot Motion

Module 4:

- Advanced Modeling and Kinematics Overview
- Automatic Kinematic Creation
- Attribute Based Component Searching


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(18MEVA03) Turning-NC Control Programming

Module 1:

- Need of CNC
- Applications & Advantage of CNC
- Coordinates of CNC Longitudinal plane Axis X & Transverse Plane Axis Z
- CNC Dimensioning Absolute & Incremental-Geometric & Machine Codes function.

Module 2:

- Panel processing unit Menu & operation Navigation
- Various modes of operation Jog, MDI, SBK, Auto, Etc.

Module 3:

- Introduction to G codes and M codes
- Co-ordinate systems – Absolute and Incremental
- Plane Selection-Basic Motion Command
- Dwell, Feed, Spindle-Tool types & its properties


Module 4:


- Startup Program-Part program (Sub program)-End of program
- Tool nose radius, Tool orientation, Tool direction, Offset register
- Cutting speed, Feed rate, Depth of cut, Tool material, Work material

Module 5:

- Simple Turning cycle
- Simple facing cycle
- Stock removal turning cycle
- Stock removal facing cycle
- Stock removal contour cycle


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(18MEVA02) Manufacturing Welding Foundation

Module 1:

- Introduction to Metal Joining Processes
- Types of welding
- Applications of Welding

Module 2:

- Welding design and symbols
- Types of welding
- Arc and gas welding demonstration

Module 3:

- Weld bead geometry
- Welding joint Analysis
- Welding defects and NDT

Module 4:


- Welding Procedures and specification
- Welding Inspection and testing
- Automation in Welding.

Module 5:

- Introduction to Advanced Metal joining Processes
- LBW and EBW video demonstration.


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(18MEVA01) Manufacturing (CNC) –Foundation

Module 1:

- Input machining parameters -speeds, feeds, tool change information.
- Create a process sequence to manufacture a particular part.
- Create tool lists for a particular process sequence.
- Select and design work-holding fixtures.

Module 2:

- Read job orders and process sheets to determine tooling and setup information.
- Mount work holding device.
- Install cutting tools in holders.
- Identify different types of retention knobs; select appropriate knob for application.
- Load tools in tool changer.

Module 3:

- Change tool and work offsets.
- Reposition stock on fixture if required.
- Adjust speeds and feeds for optimum performance.

Module 4:

- Perform tapping operation.
- Perform milling operation (pocketing, contour profile, helical).
- Perform tool axis operations (drilling, boring, reaming).
- Perform contour surfacing operations.

Module 5:

- Read job orders and process sheets to determine tooling and setup information.
- Install cutting tools in holders.
- Load tools into turret.

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(19MEVA03) CNC Programming, Additive Manufacturing and Computer Aided Manufacturing Using NX-CAM

Module 1

- Introduction to surface modeling processes
- Using 3D curves as construction
- Geometry creating freeform shapes from splines

Module 2:

Feature Based Machining

- Tool path Parameters like Speed, Feed, & Cutting Speed.
- 2D Tool path - Face, Contour, Pocket & Drill Mill
- Tool Library

Module 3:

- Job Setup
- Roughening Operations- Parallel, Radial, Project & Flow line etc.
- Finish Operations- Parallel, Radial, Project & Shallow etc.
- NC Utilities

Module 4:


- Creating C L Files
- Integrated Simulation
- Verification (ISV)
- Programing

Module 5:

- G & M Code Tool path Generation
- Post Builder
- GPM Legacy Post Processor
- Manufacturing Turning


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(19MEVA02) Fundamental Aspects on Metals and Materials Manufacturing Technology

Module 1:

- Basic structure of solids
- Classification of materials based on the structure.
- Correlation between the structure and properties.

Module 2:

- Diffusion in ideal solutions,
- Kirkendall effect
- Rate and mechanism of diffusion
- Fick's first and second law of diffusion
- Applications of diffusion
- Concept of uphill diffusion

Module 3:

- Casting and heat treatment processes
- Solidification theory
- Microstructure of casting and microstructure development in wrought alloy processing

Module 4:

- Application of plasticity theory to key metal shaping processes
- Sheet metal forming, forging, extrusion and machining


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(19MEVA01) Prototype/Process Design Development

Module 1:

- Model Prototype
- Gathering and analysis of requirements.
- Valuation and assessment methods

Module 2:

- Creating a Prototype
- Product Life cycle Management
- Initial evaluation by the user.

Module 3:

- Refinement of Prototype
- Implementation of Prototype.
- Methods and parameters governing modelling

Module 4:

- Errors in Prototyping.
- Methods to overcome errors and improving result accuracy.
- Analysis of Prototypes

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(20MEVA01) Automotive Interior Trim Design

Module 1:

- Injection Molding
- Common Features
- Mold Design for Automotive Parts

Module 2:

- Secondary Operations
- Preparing the Model
- Draft
- Thin-Walled Bodies

Module 3:

- Power Copies
- Geometrical Sets
- Parting Line

Module 4:

- Surface Creation
- Surfacing Best Practices
- Wireframe and Surfacing Operations

Module 5:

- Evaluating Plastic Parts
- Face and Shape Fillets
- Plastic Part Assemblies


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(21MEVA06) Green Engineering

UNIT 1: INTRODUCTION TO GREEN ENGINEERING

Module 1 – Concepts and Issues

Module 2 – Theoretical Framework of Green Engineering

Module 3 – Green Engineering in Practice

UNIT 2: APPLICATION OF GREEN ENGINEERING PRINCIPLES

Module 1 – Utilization of Sustainable Materials and Energy

Module 2 – Sustainable Designs

Module 3 – Green Engineering Solutions

UNIT 3: Pyrolysis process


Module 1 – Types -Reaction mechanism of pyrolysis


Module 2 – Char production. Bio - oil production

Module 3 – Biochar and activated charcoal - torrefied wood –applications

Module 4 – chemicals and fuels production. Upgrading of pyrolysis products - refining of pyrolysis products


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(21MEVA05) Wiring Harness Design

Chapter 1: Wiring Harness Design Guidelines

- Introduction
- Prior to wiring harness design
- Wiring Harness Topology
- Routing Considerations
- Protection of Wiring Harness
- Fuse Selections
- Voltage Drop
- Selection of wire
- Selection of connectors
- Grounding strategy
- Preparation of wiring harness drawings
- Verification on harness drawing level
- DFMEA of wiring harness design
- Verification/Validation on vehicle
- Failures in the field


Chapter 2: Part Design


- Dress-up features
- Sketch-based features
- Transformations features
- Body define
- Assemble
- Pad
- Pocket
- Fillet
- Chamfer

Chapter 3: Assembly

- Types of Assembly
- Top down Assembly
- Bottom up Assembly
- Move
- Product structure tools
- Constraints


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Chapter 4: Drafting (2D Manufacturing Drawings)

- Views
- Annotations
- Geometry Manipulations
- Drawing
- Geometry Creation
- Dimensioning
- Text properties

Chapter 5: Defining Electrical Components

- Define Connector
- Define Clip
- Define Grommet
- Electrical Connection Points
- Electrical Device Definition



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(21MEVA04) Training on Pro-E CREO 3.0


Contents

ENGINEERING FEATURES OF PART DESIGNING

- Create Draft
- Create Draft
 - Constant Angle Draft
 - Variable Angle Draft
- Creating Drill Hole
- Rib Features
- Create A Shell Body
- Creating Round And Corners

ASSEMBLY MODELING

- Top Down Assembly
- Bottom Up Assembly
- Inserting The Component Into Assembly
- Create A New Component In Assembly
- Placing & Replacing The Component
- Defining Assembly Constraint
 - Define Mating Between Parts
 - Create Align Constraint
 - Define Tangency
 - Define Point On Line & Surface
 - Automatic Constraint
 - Fix The Part
- Create Multiple Copies Of Parts In Assembly
- Flexible Component
- Edit Constraint Definition
- Patterning
- Change The Order Of Component


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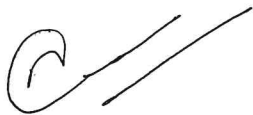
- Deleting Component
- Explode The Assembly Creating Bill Of Material (BOM)

SHEET-METAL MODEL FUNDAMENTALS

- Sheet-Metal Model Fundamentals
- Understanding Developed Length
- Creating a New Sheet-Metal Part in Assembly Mode
- Creating a New Sheet-Metal Model in Part Mode
- Converting a Solid Model to a Sheet-Metal Model

MODIFYING SHEET-METAL MODELS

- Bends
- Bend Options
- Unbend Features
- Bend Back Features
- Flat Pattern
- Sheet-Metal Cuts
- Die Form Features
- Punch Form Features
- Rip



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(21MEVA03) Solar Power System Design and Installation

CHAPTER -1: PHOTOVOLTAIC (PV) TECHNOLOGY

- Solar Energy
- PV Technology
- PV Materials
- PV Types
- PV Module Rating
- PV System Components

CHAPTER - 2: PV SYSTEM CONFIGURATIONS

- System Configurations
- Grid Connected PV Systems
- Standalone PV Systems
- Grid Tied with Battery Backup Systems
- Comparison

CHAPTER - 3: BATTERIES

- Batteries
- Batteries Types and Classification
- Lead Acid Batteries
- Alkaline Batteries
- Battery Parameters
- Battery Rating and Sizing
- Selection of Battery for PV Systems

CHAPTER - 4: CHARGE CONTROLLERS

- Charge Controller
- Charge Regulation
- Types of Charge Controllers
- Selection of Charge Controllers


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(21MEVA02) Industrial Automation with PLC

Module -1

- Introduction about industrial automation
- History of industrial automation
- Need of automations in industries
- Example for industrial automation
- Automation control circuit and power circuit
- Control system in Industry

Module -2


- Introduction about Programmable Logic Controller
- History of PLC
- Architecture of PLC
- CPU
- IO Modules
- Power Supply and Communications
- Input and Output Devices
- Need of PLC for Industrial Automation

Module -3

- Shift and Rotate Instructions
- Math function
- Compare and Compute Functions
- Scaling Concept
- Explain about PI ,PD ,PID operation
- Explain control of conveyor system
- Develop the ladder program for conveyor system
- Execute the logic [relay] functions by using functional block diagram
- Develop The FBD program for conveyor system


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(21MEVA01) Design and Analysis of Power and Process Piping

Module-1 Piping Design and Engineering (fundamentals)

- Introduction to piping designing & engineering
- Evolution of piping
- Manufacturing methods
- Piping materials and selection
- Pipe dimensioning
- Schedule numbers
- Common piping abbreviations
- Major organizations for standards
- Commonly American code in piping ASME/ANSI
- Common abbreviations etc

Module-2 Piping Equipment

- Horizontal vessels/accumulators
- fractionation columns, pumps
- heat exchangers
- re-boiler
- air cooled heat exchanger
- cooling towers
- heaters/boilers
- storage tanks
- fractional distillation process and vendor data drawings
- Prepare layout of Different type lights

Module-3 Process system

- Purpose of P&ID'S
- study of P&ID'S
- stages of development of P&ID'S
- process and instrumentation diagrams
- process equipment
- symbols usage according to industrial practices
- Purpose of P&ID in process industrial/plants.

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Module-4 Designing & engineering of Piping Diagram in software


- Plant Co-ordinate Systems
- Site Plans, Unit Plot Plan
- Equipment Location Drawing
- Foundation Location Drawing
- Pipe Rack Spacing
- Drawing pipe in the rack
- pipe insulation shoes, pipe guides
- field supports, dummy supports
- hanger rods
- spring hangers
- pick-up pipe supports
- plant utilities
- control valve manifolds
- utility stations
- sewer and under ground piping system

Module-5 Basic knowledge of applicable standards

- ASME/ANSI Codes & Specification
- Specification classes
- Piping abbreviations
- General abbreviations



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