GITAM UNIVERSITY

(Declared as Deemed to be University U/S 3 of UGC Act, 1956)

REGULATIONS & SYLLABUS

OF

M.Tech. in CAD/CAM
(w.e.f 2017-18 admitted batch)

Gandhi Nagar Campus, Rushikonda

VISAKHAPATNAM – 530 045

Website: www.gitam.edu
M.Tech.in CAD/CAM  
Mechanical Department  
Effective from academic year 2017-2018 admitted batch

### M.Tech. - I Sem (CAD/CAM)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Category</th>
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<tr>
<td>1</td>
<td>EME705</td>
<td>Computer Aided Design</td>
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Total 25

### M.Tech. - II Sem (CAD/CAM)

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<td>Metrology and Computer Aided Inspection</td>
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<td>EME710</td>
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Total 27
### M.Tech. – III Sem (CAD/CAM)

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### M.Tech. – IV Sem (CAD/CAM)

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### Number of Credits

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### Interdisciplinary Elective-I

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### Interdisciplinary Elective-II

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EME705: COMPUTER AIDED DESIGN

L T P C
4 0 0 4

MODULE-I
12 hours
Fundamentals of CAD: Introduction, Design process, Application of computer for design, Benefits of CAD, CAD tools, CAD hardware, CAD software, Mechanical applications of CAD.
Geometric modeling - Types and Mathematical Representations of Curves: Wireframe models, wireframe entities, curve representation, parametric representation of analytic curves and synthetic curves, simple problems.

MODULE-II
10 hours
Geometric modeling - Types and Mathematical Representations of Surfaces: Surface models, surface entities, surface representation, parametric representation of analytic surfaces and synthetic surfaces, simple problems.

MODULE-III
10 hours
Geometric modeling - Types and Mathematical Representations of Solids: Solid models, solid entities, solid representation, fundamentals of solid modeling, half spaces, Boundary Representation (B-rep), Constructive Solid Geometry (CSG), Sweep Representation, Analytic Solid Modeling (ASM).

MODULE-IV
12 hours

MODULE-V
12 hours
Mechanical assembly: Assembly modeling, representation schemes, generation of assembly sequence, assembly analysis. Mass property calculations: Geometrical property formulation, mass property formulation, property evaluation, properties of composite objects.

Text Book:

References:
EME707: COMPUTER NUMERICAL CONTROL AND ADAPTIVE CONTROL

L T P C
4 0 0 4

MODULE-I
Introduction: NC, DNC, CNC, Programmed Automations, Machine control unit, Part program, NC tooling. NC machine tools: Nomenclature of NC machine axes, Types of NC machine tools, Machining centers, Automatic tool changes (ATC), Turning centers.

MODULE –II
Machine control unit & tooling: Functions of MCU, NC actuation systems, Part program to command signal, MCU organization, Computerized numerical control, Transducers for NC machine tools, Tooling for NC machining centers and NC turning machines, Tool presetting. Adaptive control of CNC machine tools – SMART manufacturing, Programmable logic controllers (PLC) – Hardware, ladder logic programming of PLCs using basic functions – timers and counters – Advanced programming with control and arithmetic instructions.

MODULE –III
Manual part programming: Part program instruction formats, Information codes: Preparatory function, Miscellaneous functions, Tool code and tool length offset, Interpolations, Canned cycles, Manual part programming for milling operations, turning operations, parametric subroutines.

MODULE –IV
APT programming: APT language structure, APT geometry: Definition of point, time, vector, circle, plane, patterns and matrices. APT motion commands: setup commands, point-to-point motion commands, continuous path motion commands. Post processor commands, complication control commands, Macro subroutines, Part programming preparation for typical examples.

MODULE –V
Computer aided part programming: NC languages: APT, NELAPT, EXAPT, GNC, VNC, Preprocessor, Post processor.

Text Books

References
EME709: ROBOTICS AND AUTOMATION

L T P C
4 0 0 4

MODULE-I

MODULE-II

MODULE-III

MODULE-IV

MODULE-V
Robot Programming: Methods of Robot Programming – Robot motion planning - configuration space concepts, Robot programming concepts - off line programming and simulation-Case studies in assembly, machine loading/unloading, palletizing, deburring etc.

Text Book:

References:
EME741: COMPUTATIONAL METHODS IN ENGINEERING

MODULE-I 12 hours

MODULE-II 10 hours

MODULE-III 12 hours

MODULE-IV 12 hours

MODULE-V 10 hours

Text Book:

References:
EMU743: DESIGN OF EXPERIMENTS

MODULE-I
Introduction: The scientific method, The role of statistics in the advancement of science, The phases of an experiment, Specifying the problem and the hypotheses, Experimental designs, Analyses of experiments, Statistical inference, Estimation-Properties of estimators, Confidence intervals, Hypothesis testing, The Z-test, the T-test, the X2-test, and the F-test. Sample size.

MODULE-II
Completely Randomized Design: The one-factor experiments in a CRD, Linear model, Partitioning of the total sum of squares, the analysis of variance table, Orthogonal contrasts, Multiple range tests, Scheffe's test, Confidence intervals on means, Fixed and random models, Estimation of variance components, Randomized Complete Block Design-The model and assumptions, The ANOVA table, Tests after ANOVA.

MODULE-III
Latin Square and Related Designs: Latin squares and two-way restrictions on randomization, the linear model and assumptions for a one-factor experiment fitted in a Latin square design, ANOVA table.

MODULE-IV
Factorial Experiments: Complete factorial experiments in CRD's, Main effects and interactions, one observation per treatment combination, linear model and analysis, the error term and pooling, the meaning of a significant interaction, the case of n observations per treatment combination. Complete 2f factorial experiments in CRD's, Special notation, average effect of main effects and interaction, orthogonal contrasts and sum of squares, Yates's algorithm.

MODULE -V
Fixed, Random And Mixed Models: Single and two factor models, EMS rules, Pseudo-F test,
Nested and Nested – Factorial Experiments: Nested experiments, Nested-factorial experiments, Repeated-measures design and nested-factorial experiments, Factorial experiment in a randomized block design.

Text Books:

References:
EME745: RELIABILITY ENGINEERING

MODULE-I  12 hours
Reliability: Definition; Probability Concept; Addition of Probabilities; Complimentary Events; Kolmogorov Axioms. Failure Data Analysis: Introduction, Mean Failure Rate, Mean Time to Failure (MTTF), Mean Time between Failures (MTBF), Graphical Plots, MTTF in terms of Failure Density, MTTF in Integral Form.

MODULE-II  12 hours

MODULE-III  12 hours

MODULE-IV  10 hours
Redundancy, Optimization; Reliability – cost trade-off, Introduction to Repairable Systems, Instantaneous Repair Rate, MTTR, Reliability and Availability Functions, Important Applications.

MODULE-V  10 hours

Text Book:

References:
EME747: CONCURRENT ENGINEERING

L T P C
3 0 0 3

MODULE-I
Introduction: Concurrent design of products and systems - Product design - Fabrication and assembly system design - designing production systems for robustness and structure.

MODULE-II
Strategic approach and technical aspects of product design: Steps in the strategic approach to product design - Comparison to other product design methods - Assembly sequence generation - Choosing a good assembly sequence - Tolerances and their relation to assembly - Design for material handling and part mating - Creation and evaluation of testing strategies.

MODULE-III
Basic issues in manufacturing system design: System design procedure - Design factors - Intangibles - Assembly resource alternatives - Task assignment - Tools and tool changing - Part feeding alternatives - Material handling alternatives - Floor layout and system architecture alternatives.

MODULE-IV
Design of automated fabrication systems: Objectives of modern fabrication system design - System design methodology - Preliminary system feasibility study - Perform detailed work content analysis - Define alternative fabrication configurations - Configuration design and layout - Human resource considerations - Evaluate technical performance of solution.

MODULE-V
Assembly workstation design: Strategic issues - Technical issues analysis. Case studies: Automobile air conditioning module - Robot assembly of automobile rear axles.

Text Book:

References:
EME749: ADVANCED MATERIALS PROCESSING

L T P C
3 0 0 3

MODULE-I

MODULE-II
Hardening in steels- TTT diagrams - other heat treatment processes - formation of alloys in steel and cast irons - non ferrous alloys and their applications, special alloys.

MODULE-III
Polymers and polymerization-structure and properties of thermoplastics and thermosets-engineering applications property modifications-mechanical, thermal behavior-composites with polymer matrix

MODULE-IV
Ceramics-glasses-glass ceramics-fabrication methods-metal matrix and ceramic matrix composites.

MODULE-V
Processing of polymers-fabrication of composites-processing of ceramics-thermal spraying-ion beam machining-laser and electron beam processing-superplastic forming-thin films and their deposition-diamond coating techniques-tribological applications.

Text Books:

References:
EME751: DESIGN OF MATERIAL HANDLING SYSTEMS

MODULE-I 10 hours
Flexible Hoisting Appliances: Type, selection and applications of material handling equipments, choice of material handling equipment – hoisting equipment – components and theory of hoisting equipment – chain and ropes – selection of ropes, pulleys, pulley systems, sprockets and drums.

MODULE-II 12 hours

MODULE-III 12 hours

MODULE-IV 12 hours

MODULE-V 10 hours

Text Books:

References:
EEI784: MEMS AND MICROSYSTEMS

MODULE-I 8 hours
Introduction to MEMS & Microsystems, introduction to microsensors, technology aspects of sensors, evolution of MEMS, microsensors, detection means of sensors, market survey, application of MEMS.

MODULE-II 10 hours
MEMS materials, mems materials properties, microelectronic technology for MEMS micromachining technology for MEMS, micromachining process, etch stop techniques and microstructure, surface and quartz micromachining.

MODULE-III 8 hours
Fabrication of micromachined microstructure, microstereolithography, MEMS microsensors thermal, micromachined microsensors mechanical, MEMS pressure and flow sensor, micromachined flow sensors, MEMS inertial sensors.

MODULE-IV 8 hours
Micromachined microaccelerometers for MEMS, MEMS accelerometers for avionics, temperature drift and damping analysis, piezoresistive accelerometer technology, MEMS capacitive accelerometer, MEMS capacitive accelerometer process.

MODULE-V 8 hours
MEMS gyro sensor, MEMS for space application, polymer MEMS & carbon nano tubes (CNT), wafer bonding & packaging of MEMS, interface electronics for MEMS, MEMS for biomedical applications (Bio-MEMS).

Textbooks:

References:
ECE781: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

L T P C
3 0 0 3

MODULE-I
Fundamentals of GIS, Functions and Features of Components, Data Type, Analysis and Modelling, Role of GIS and Applications

8 hours

MODULE-II

10 hours

MODULE-III
Satellite System Parameters, Sensor Parameters, Imaging Sensor Systems, Earth Resources and Meteorological Satellites, Microwave Sensors, Data Acquisition and interpretation

9 hours

MODULE-IV

7 hours

MODULE-V

8 hours

Text Books:

References:
ECS785: PROGRAMMING WITH JAVA

MODULE-I

MODULE -II
Classes, Objects and Methods: Introduction, Defining a class, Creating objects, Accessing class members, Constructors, Methods overloading, Static members. Inheritance Defining a sub class, Sub class constructor, Multilevel variables, Final classes, and Finalize methods, Abstract methods and classes, Visibility control. Managing Errors and Exceptions: Introduction, Types of Errors: Compile time and Run time errors, Exceptions, Types of Exceptions, Syntax of Exception handling code, multiple catch statements, using finally statement, throwing our own exceptions.

MODULE –III

MODULE – IV

MODULE – V

Text Books:

References:
MODULE-I
8085 Microprocessors and Architecture
Microprocessors historical perspective, 8085 pin diagram, architecture, addressing modes, Overview of 8085 instruction set, microprocessor communication and bus timings, 8085 functional block diagram.

MODULE-II
The Processor 8086:
Register organization of 8086, architecture, signal description of 8086, physical memory organization, I/O addressing capability, Minimum mode 8086 system and timings, Maximum mode 8086 system and timings.

MODULE-III
Instruction Set and Programming: Machine language instruction format, addressing modes of 8086, instruction set of 8086, assembler directives and example programs (assembly programs).

MODULE-IV
Interrupts and Programming: Interrupts and interrupt service routines, interrupt cycle of 8086, Non maskable interrupt, maskable interrupt (INTR), interrupt programming. Programmable Interrupt Controller 8259A.

MODULE-V
Interfacing of Peripherals to 8086: Interfacing I/O ports, PIO 8255, [Programmable I/O ports], modes of operation of 8255, Interfacing Digital to Analog converters- DAC 0800, Interfacing Analog to Digital Data converters- ADC0808/0809, Programmable Interval Timer 8253, Programmable Communication interface 8251 USART.

Text Book(s):

References:
EME721: MATERIALS CHARACTERIZATION LAB

1. On UTM static and dynamic properties evaluation Toughness, ductility, Resilience and stiffness
   a. Tensile
   b. Compression
2. Fatigue test
3. Forming Limit diagrams (FLD)
4. 3-point bending test
5. 2-point bending test
6. Wear test on Pin on disc
7. Damping properties evaluation
8. Friction and Wear test on four ball tester
9. Micro structure characterization
10. Residual test

EME723: COMPUTER AIDED DESIGN LAB

1. Introduction to Modeling packages – Pro-Engineer, Ideas, CATIA, Unigraphics, Solid Works.
2. 2D-drawings using sketcher options - 3 Exercises
3. 3D-modelling using form features - 3 Exercises
4. Assembly – 3 Exercises
   a) Flange coupling
   b) Knuckle joint
   c) Oldham coupling
5. Drafting - 3 Exercises
6. Introduction to pre-processing software - Hyper mesh
7. 2D-Meshing - 3 Exercises
8. 3D-Meshing - 3 Exercises
EME708: METROLOGY AND COMPUTER AIDED INSPECTION

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MODULE-I

MODULE-II

MODULE-III
Surface and form metrology - flatness, roughness, waviness, roundness, cylindricity, etc. Computer Aided Metrology - Principles and interfacing, software metrology.

MODULE-IV

MODULE-V
Coordinate Measuring Machine - Types of CMM - Probes used - Applications - Non contact CMM using Electro optical sensors for dimensional metrology - Non contact sensors for surface finish measurements, Image processing and its application in Metrology.

Text book:

References:
1. A.S. T.M.E. Hand Book of Industrial Metrology, Prentice Hall of India, New Delhi
2. Technology of the metal Trade, Wiley Eastern Limited.
EME710: FLEXIBLE MANUFACTURING SYSTEMS

MODULE-I 10 hours
**Introduction:** The economic justification of FMS, The basic components of FMS and their integration in the data processing system, the concept of the 'total system'. The FMS relational: Economic and technological justification for FMS Management decisions during FMS project planning, design and implementation: Designing the FMS, Data processing design, FMS project and software documentation.

MODULE-II 10 hours
Design and Planning of FMS: the role of associated technologies such as GT, JIT and simulation Installation, Operation and evaluation scheduling problems. Control aspects of FMS DNC of machine tools, cutting tools, robots, quality control and inventories.

MODULE-III 12 hours
**Distributed processing in FMS:** Introduction to database management systems (DBMS) and their application in CAD/CAM and FMS, Distributed systems in FMS, Distributed tool data bases in FMS: The distributed tool data structure with a general purpose tool description facility, Implementation of the FMS tool data base, Application possibilities of the FMS tool data base.

MODULE-IV 12 hours
**FMS database for clamping devices and fixtures:** The FMS clamping device and fixture data base, the analysis and calculation of pallet alignment and work mounting errors, mating surface description methods for automated design and robotized assembly, Application of industrial robots in FMS, The application of automated guided vehicle (AGV) systems.

MODULE-V 12 hours
Inspection and Cleaning stations Personnel and infrastructural aspects Flexible machining cells and islands Flexible assembly Systems; structure, control and applications FMS in action: Typical case studies, Future prospects.

Text Book:

References:
EME712: RAPID PROTOTYPING AND VIRTUAL PROTOTYPING

MODULE–I

MODULE–II

MODULE–III

MODULE–IV

MODULE–V
Introduction to Virtual prototyping- End to end prototyping-simulation- components of virtual prototyping- effects- economics of virtual prototyping.

Text Books:

References:
Module I
Artificial Intelligence - Definition Components - Scope - Application Areas; Goals of artificial intelligence – AI techniques – problem representation in AI – Problem reduction and solution techniques

Module II
Knowledge Based Systems (Expert Systems) - Definition - Justification - Structure – Characterization

Module III
Knowledge Sources – Expert - Knowledge Acquisition- Knowledge Representation - Knowledge Base - Inference Strategies - Forward and Backward Chaining; Expert System Languages - ES Building Tools or Shells; Typical examples of shells.

Module IV
Expert Systems Software for Manufacturing applications in CAD, CAPP, MRP, Adaptive Control, Robotics, Process Control, Fault Diagnosis, Failure Analysis; Process Selection, GT etc. Linking Expert Systems to other software such as DBMS, MIS, MDB; Process Control and Office Automation.

Module V
Case studies of typical applications in Tool selection, Process selection, Part classification, Inventory control, Process Planning etc.

Text book:

References:
Module -I
Introduction to Machine Vision basics of picture processing, Binary and grey scale images.

Module -II
Preprocessing concepts Digital image, Image representation –Image sampling, Digitization and quantization– Image transforms. Geometrical correction, Grey scale modification, Sharpening and smoothing the images.

Module -III

Module -IV
Software for measurement and pattern recognition applications with examples Two and three dimensional measurements, Fourier transform for pattern recognition applications, Image operation studies

Module -V

Text Book:

References:
1. Robot Vision by Prof. Alan Pugh (Editor), IFS Ltd., U.K.
Module -I
INTRODUCTION
Introduction to Process Planning and Production Planning – Process Planning in the Manufacturing cycle - Process Planning and Concurrent Engineering, CAPP, Group Technology.

Module -II
PART DESIGN REPRESENTATION

Module -III
PROCESS ENGINEERING AND PROCESS PLANNING

Module -IV
COMPUTER AIDED PROCESS PLANNING SYSTEMS
Logical Design of a Process Planning - Implementation considerations –manufacturing system components, production Volume, No. of production families - CAM-I, CAPP, MIPLAN, APPAS, AUTOPLAN and PRO, CPPP.

Module -V
AN INTERGRADED PROCESS PLANNING SYSTEMS

Text Book:

References:
EME748: MANAGEMENT OF FINANCE, MARKETING AND PERSONNEL

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MODULE-I

12 hours

MODULE-II
Issues with working capital, financing current assets, Capital budgeting, Generating investment project proposals, Project evaluation, selection and monitoring. Intermediate and long-term financing. Term loans and leases, Provision of loan agreements, equipment financing, Lease financing and its evaluation.

10 hours

MODULE-III

12 hours

MODULE-IV

10 hours

MODULE-V
Introduction to personnel management: concept of labour, organization and function of the personnel department, personnel policies. Manpower planning: Selection, Recruitment, Training, Performance appraisal, Wage and Salary, Administration: Job evaluation and merit rating.

12 hours

Text Books:

References:
EME762: OPTIMIZATION METHODS IN ENGINEERING

L T P C
3 0 0 3

MODULE-I 12 hours

MODULE-II 10 hours
Dynamic programming (D P): Multistage decision processes, Concepts of sub optimization, computational procedure in dynamic programming, calculus method and tabular methods, Linear programming as a case of D.P and Continuous D.P.

MODULE-III 12 hours

MODULE-IV 10 hours
Stochastic Programming (S P): Basic concepts of Probability Theory, Stochastic linear programming, stochastic non-linear programming.

MODULE-V 12 hours
Unconventional optimization techniques: Multi-objective optimization - Lexicographic method, Goal programming method, Genetic algorithms, Simulated Annealing, Neural Networks based Optimization.

Text Book:

References:
EEI785: TRANSDUCERS AND SIGNAL CONDITIONING

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**MODULE-I**

Introduction to Transducers: Measurement systems, Basic electronic measuring system, Transduction principles, Classification of transducers, General transducers characteristics, Criteria for transducer selection.

**MODULE-II**

Resistive, Capacitive and Inductive Transducers: Principles of operation, construction, theory, advantages and disadvantages, applications of potentiometers, strain gauges, (metallic and semi-conductor type), resistance thermometer, thermistors, variable capacitance transducers based upon familiar equation of capacitance, variable inductive transducers, LVDT (linear variable differential transformer).

**MODULE-III**

Active Transducers: Principle of operation, construction, theory, advantages and disadvantages and applications of following transducers: Thermocouple, piezo-electric transducer, magnetostrictive transducer, Hall effect transducer, photo-voltaic transducer and electrochemical transducer.

**MODULE-IV**

Elastic, Optical and Digital Transducers: Spring bellows, diaphragm, bourdon tube – their special features and application, Photo-emissive, photo-conductive and photo-voltaic cells.

Digital transducers: Optical encoder, shaft encoder, Fundamentals of feedback system, introduction to inverse transducer.

**MODULE-V**

Signal Conditioning: Concept of signal conditioning, introduction to ac/dc bridges, op-amp circuits used in instrumentation, instrumentation amplifiers, sampling, introduction to A/D and D/A conversion, signal filtering, averaging, correlation, interference, grounding and shielding.

**Text Books:**


**References:**

EEE786: ADVANCED CONTROL SYSTEM DESIGN

MODULE-I  10 hours
Review of state space analysis. State variable systems. Controllability and observability. State
variable feedback and its effect on controllability and observability. Elements of observer theory.

MODULE-II  8 hours
Classical compensation of continuous time Control systems. Design of phase lead compensator
using Root Locus technique. Design of phase lag compensator using Root Locus technique.
Design of phase lead compensator using Bode diagram method. Design of phase lag
compensator using Bode diagram method. Design of phase lead compensator using s-plane

MODULE-III  8 hours

MODULE-IV  8 hours
State variable feedback compensation: State variable Feedback compensation of continuous
time and discrete time systems. Design by Pole placement technique using state feedback for linear
SISO time invariant system.

MODULE-V  8 hours
Integral square error compensation: Parameter optimization using Integral square error criterion
with and without constraints.

Text Books:

References:
MODULE-I
Overview of Architecture and Microcontroller Resources: Introduction to Microcontroller, Resources in advanced and next generation microcontrollers, 8051 microcontroller Architecture, Internal and External memories and interface, Internal RAM, and SFRs, Counters and Timers, Synchronous serial-cum, asynchronous serial communication, interrupts and priorities.

MODULE-II
8051 Family Microcontrollers Instruction Set: Basic assembly language Programming, Data transfer instructions, Data and Bit-manipulation Instructions, Arithmetic instructions, Instructions for Logical operations on the test among the Registers, Program flow control instructions, Interrupt control flow.

MODULE-III
Real Time Control: Interrupt handling structure of MCU, Interrupt Latency and Interrupt deadline, Multiple sources of the interrupts, Non-maskable interrupt sources, Enabling or disabling of the sources, Polling mode and priority assignment, Interrupt interval and density constraints, Real Time Control, Timers, Programmable Timers, Free running counter and real time control.

MODULE-IV
Systems Design: Keypad and Keyboard interfacing, Keyboard-cum-Display controller (8279), Alphanumeric Devices, Display Systems and its interfaces, Printer interfaces, interfacing with the Flash Memory, Analog input interfacing, ADC interfacing with Microcontroller.

MODULE-V
16/32 - Bit Microcontrollers: Introduction to 16/32 Bit microcontrollers, 80196 architecture and memory organization, ARM 32 Bit MCUs, ARM Programming model and addressing modes, ARM Thumb Programming model, ARM and Thumb instruction set

Text Book(s):

References:
EME726: COMPUTER AIDED ENGINEERING LAB

1. Introduction to Finite Element Analysis software – ANSYS / NISA / Nastran
2. Static Structural Analysis of 1D problems – bars, trusses, beams and frames
3. Static Structural Analysis of 2D problems – plane stress, plane strain, axisymmetric
4. Static Structural Analysis of 3D problems – various brackets
5. Dynamic Structural Analysis of 1D problems – beams and frames
6. Steady State Thermal Analysis of 1D and 2D models
7. Transient Thermal Analysis of 1D and 2D models
8. Couple Field (Thermal/Structural) Analysis

EME728: CAM LAB

1. Preparation of manual part programme for turning, drilling and milling
2. To Generate NC programme using Master CAM simulation software for a turning Job using Lathe Version.
   a) Step turning, taper turning, drilling
   b) Thread cutting, grooving,
   a) Face milling, pocketing, drilling, contouring
   b) Gear cutting.
5. To Generate NC & APT programme using CATIA Manufacturing software for Prismatic Machining.
6. Machining of one job on CNC Lathe.
7. Machining of one job on CNC Drilling.
8. Robot programming through computer / teaching box method.
EME792 TECHNICAL SEMINAR

Each student has to prepare a power point presentation on a selected technical topic with a novelty and get it evaluated by the faculty assigned for this purpose.

EME891 PROJECT WORK-I

Each student is required to submit a report of first part of Thesis work i.e. about the problem definition, literature review and methodology to be adopted including experiments and tests to be performed on topic of Thesis as per the guidelines decided by the department. The Thesis work is to be evaluated through Presentations and Viva-Voce during the semester end.

EME893 COMPREHENSIVE VIVA VOCE

EME892 PROJECT WORK-II

Each student is required to submit a detailed Thesis report about the work on topic of Thesis as per the guidelines decided by the department. The Thesis work is to be evaluated through Presentations and Viva-Voce during the semester and Final evaluation will be done at the end of semester as per the guidelines decided by the department from time to time. The candidate has to present/publish one paper in national/international conference/seminar/journal of repute is must before submission. However candidate may visit research labs/institutions with the due permission of chairperson on recommendation Of supervisor concerned.