



SurTech

DR. SUDHIR CHANDRA SUR INSTITUTE OF TECHNOLOGY AND SPORTS COMPLEX
(Formerly known as Dr. Sudhir Chandra Sur Degree Engineering College)

**COs for Mechanical Engineering Department (1st to
4th Semester)**



SurTech

SEMESTER – I

Course Name: Advanced Engineering Mathematics

Course Code: MM (ME) 101

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MM(ME) 101.1	Understand the basic ideas of statistics with different characterization of a univariate and bivariate data set. Apply statistical tools for analysing data samples and drawing inference on a given data set.
MM(ME) 101.2	Understand and evaluate eigenvalues and eigenvectors of a square matrix, use the power method to numerically find the largest eigenvalue in magnitude of a square matrix and the corresponding eigenvector.
MM(ME) 101.3	Apply the ideas of Fourier and Laplace Transforms and in the fields such as solution of ODE, PDE, Digital Signal Processing, Image Processing, Theory of wave equations and many others.
MM(ME) 101.4	Solve the problem of Interpolation, Numerical Integration, solution of algebraic and transcendental equation, Linear equation and ordinary Differential Equation. Find appropriate numerical methods to solve engineering problems.
MM(ME) 101.5	Apply different techniques to solve first and second order ordinary and partial differential equations with its formulation to address the modelling of systems and problems of engineering sciences.

Course Name: Production and Operations Management

Course Code: MME/101

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME/101.CO 1	Apply forecasting methods for predicting demands.
MME/101.CO 2	Make decisions under certainty, uncertainty, and conflicting situations.
MME/101.CO 3	Apply linear programming tools for optimal utilization of resources in various types of industries.
MME/101.CO 4	Solve transportation problems to minimize cost and understand the principles of assignment of jobs and recruitment polices.

Course Name: Nontraditional Manufacturing Processes

Course Code: MME/102

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME/102.CO 1	Formulate different types of non-traditional machining processes and evaluate mechanical energy based non-traditional machining processes.
MME/102.CO 2	Illustrate chemical and electro chemical energy based processes.
MME/102.CO 3	Evaluate thermo-electric energy based processes.



SurTech MME/102.CO 4 Interpret nano finishing processes.

Course Name: Mechatronics system Design and Application
Course Code: MME 103

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME 103. 1	Understand basic concepts of a mechatronic system and the motion Conversion technique.
MME 103. 2	Interpret the different aspects of electro-mechanical energy conversion with the help of transducers, stepper motors etc.
MME 103. 3	Apply the various features of control systems including electro-pneumatic and electro-hydraulic control, PLC Control, microprocessors and control.
MME 103. 4	Design typical mechatronic systems with the aid of robots, position and level Control systems etc.

Course Name: Hydraulics and Pneumatics
Course Code: MME 104/1

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME 104/1.C01	To understand the basic working principle of hydraulics, pneumatic systems and pumps.
MME 104/1.C02	To understand the working principles and application of different types of valves.
MME 104/1.C03	To relate different types of hydraulic and pneumatic actuators and accessories like Accumulator, Air- Breathe valve, Pressure switches etc
MME 104/1.C04	To devise hydraulic and pneumatic circuits and their application.

Course Name: Manufacturing Process Lab
Course Code: MME/191

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME/191.1	Understand different conventional and unconventional manufacturing methods employed for making different
MME/191.2	Understand integral parts of conventional lathe, shaping and milling machines and various accessories and attachments used
MME/191.3	Working fitting models according to drawings using hand tools- V-block,



SurTech	marking gauge, files, hack saw, Drills etc.
MME/191.4	Perform machining operations like that plain shaping, inclined shaping, keyway cutting, Indexing and Gear cutting

Course Name: Mechatronics Laboratory

Course Code: MME 192

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME 192. 1	Operate microprocessors for actuator system control.
MME 192. 2	Implement sensors and transducers in measurement of different parameters.
MME 192. 3	Develop mechanical actuation systems
MME 192. 4	Design on different mechatronic system modules related to hydraulic & pneumatic system.

Course Name: Seminar- 1

Course Code: MME 181.

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME 181.C01	To develop the ability to conduct investigations of complex engineering problems using research knowledge, methods and other modern engineering tools.
MME 181.C02	To analyze a situation or mechanical system and identify possible ideas for practical implementation.
MME 181.C03	To train the students in preparing project reports.
MME 181.C04	To train the students to face review and viva voice examination.

SEMESTER - II

Course Name: Computer Numerical Control of Machine Tools

Course Code: MME 201

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
C01	To understand the Fundamentals of Numerical Control, its classifications and differences
C02	To have a knowledge of Control of CNC Machines and engineering analysis of such systems.



SurTech	C03	To relate and apply Part Programming to create Tool path generation from CAD models.
	C04	To analyse economics of using CNC like Various Cost elements of CNC, Break-Even analysis, ROI and other techniques.

Course Name: Quality Management & Reliability
Course Code: MME 202

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME/202 .CO 1	Explain and analyze quality systems and organizational structures to apply quality principles in different processes
MME/202 .CO 2	Analyze and interpret the process quality using various graphical and statistical tools
MME/202 .CO 3	Apply the product reliability analysis methods for various system configurations.
MME/202 .CO 4	Describe and analyze various reliability methods / tests and the associated failure analysis methods

Course Name: Materials Handling System
Course Code: MME 203

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME/203 .CO 1	To know about the material handling systems used in industry.
MME/203 .CO 2	To learn about basic designing principles of some material handling systems
MME/203 .CO 3	To know about modern handling system using a robot.
MME/203 .CO 4	Describe and analyze safety and Maintenance

Course Name: Advanced Metal Forming and Joining Processes
Course Code: MME 204/1

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME 204/1. 1	Understand the detailed theory of elasticity and theory of plasticity.
MME 204/1. 2	Interpret different metal forming process and analysis along with high energy density metal forming process.
MME 204/1. 3	Analyse different types of welding processes by considering welding metallurgy and weldability.



SurTech MME 204/1. 4 Investigate different welded joints.

Course Name: CAD/CAM System
Course Code: MME 205/2

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
C01	To understand and different types of geometrical modelling techniques and their applications in CAD.
C02	To understand the basic elements of interactive computer graphics and data storage.
C03	To implement design and manufacturing techniques like group technology, concurrent engineering, CAPP etc.
C04	To apply knowledge of CAD/CAM in production planning and control and its use in Product data management, Product modelling, Assembly and tolerance modelling etc.

Course Name: CAD/CAM Lab
Course Code: MME 291

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
C01	To design models using CAD systems for two dimensional and three-dimensional computer graphics.
C02	To relate the Interaction with its systems and Models.
C03	To implement Design for Manufacture and Assembly.

Course Name: Seminar II
Course Code: MME 281

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
C01	To develop the ability to conduct investigations of complex engineering problems using research knowledge, methods and other modern engineering tools.
C02	To analyze a situation or mechanical system and identify possible ideas for practical implementation.



SurTech	C03	To train the students in preparing project reports.
	C04	To train the students to face review and viva voice examination.

Course Name: Comprehensive Viva

Course Code: PW ME 282

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
PW ME 282.1	Carry an overall knowledge of major engineering subjects with their applications.
PW ME 282.2	Communicate effectively in an interview.
PW ME 282.3	Learn discipline, body language, positive attitude and ethics to follow whole life.

SEMESTER - III

Course Name: Dissertation (Progress)

Course Code: MME 381

Stream: M. Tech. (ME)

Full Marks = 100 (40 for Continuous Evaluation; 60 for End Semester Exam.)

COURSE OUTCOME:

On successful completion of the learning sessions of the course, the learner will be able to:

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
C01	To develop the ability to conduct investigations of complex engineering problems using research knowledge, methods and other modern engineering tools.
C02	To analyze a situation or mechanical system and identify possible ideas for practical implementation.
C03	To train the students in preparing project reports.
C04	To train the students to face review and viva voice examination.

Course Name: Pre Submission Defence of Dissertation

Course Code: MME-382

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME-382. 1	Defend all possible queries regarding the domain of research with profound and overall comprehension.
MME-382. 2	Present effectively the aspects of exploration and investigations.
MME-382. 3	Develop positive attitude and ethics towards inquisitiveness and research.



SEMESTER – IV

Course Name: Dissertation (Completion)

Course Code: MME-481

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME-481. 1	Develop the ability to conduct investigations of complex engineering problems using research knowledge, methods and other modern engineering tools.
MME-481. 2	Analyze a situation or mechanical system and identify possible ideas for practical implementation.
MME-481. 3	Author the detailed project reports as a complete thesis.
MME-481. 4	Compile the conclusion based on the investigation against all conflicting factors.

Course Name: Post Submission Defence of Dissertation

Course Code: MME-482

COURSE OUTCOMES (COs)	
CODE	DESCRIPTION
MME-482. 1	Defend all possible queries regarding the domain of research with profound and overall comprehension.
MME-482. 2	Present effectively the aspects of exploration and investigations.
MME-482. 3	Develop positive attitude and ethics towards inquisitiveness and research.