

**DEPARTMENT OF MECHANICAL
ENGINEERING**

**SUBHARTI INSTITUTE OF TECHNOLOGY &ENGINEERING,
SVSU**

ODD SEMESTER M. TECH (P)

IST SEMESTER

ADVANCED WELDING TECHNOLOGY (MMP-121)

COURSE OUTCOMES: at the end of the course, the student will be able to:

CO1. Students can develop welding techniques for various alloys.

CO2. Students can develop welding application concepts.

CO3. Students can develop mechanized welding techniques

CO4. Students can develop welding electrodes and inspection techniques.

CO5. Develop use of automation and robotics in welding.

ADVANCED MANUFACTURING LAB-II (MMP-152)

COURSE OUTCOMES: at the end of the course, the student will be able to:

CO1. Students can understand the advanced Manufacturing processes & classify the advanced machining processes according to source of energy used for material removal.

CO2. Students can illustrate working principle, equipment, process parameters and applications of different advanced machining processes & Able to manufacture simple components using 3D printing/CNC machine.

CO3. Students can solve the numerical for calculation of process parameters for advanced machining processes.

CO4. Students can explain advancements in casting processes, welding processes and forming processes.

CO5. Demonstrate the following skills

- I. Presentation skills
- II. Communication skills
- III. Report writing.

Metal Forming (MMP-111)

COURSE OUTCOMES: at the end of the course, the student will be able to:

CO1.

Students able to understand Stress/strain/strain-rate characteristics of materials, Yield criteria, classification of metalworking processes, Formability and theory of sheet metal working

CO2.

Students have basic knowledge of Rolling-Determination of rolling pressure, roll separating force, driving torque and power, Power loss in bearings, Forging-Forces in strip forging and disc forging.

CO3.

Students can able to understand the basic knowledge Determination of workload and spring back, Extrusion-Determination of workload from stress analysis and energy consideration, Power loss, Hydrostatic extrusion.

CO4.

Students can have basic knowledge Comparison with conventional extrusion, Pressure required extruding, variables affecting the process.

CO5.

Students able to understand the concepts operation problems in high speed forming operation, Introduction to high forming process such as explosive forming, Electrical and Mechanical high speed forming techniques

Simulation Modeling and Analysis (MMP-102)

COURSE OUTCOMES: at the end of the course, the student will be able to:

- CO1: Student can understand Simulation as a research tool and how to simulate a physical system.
- CO2: Can understand Linear and rotational system simulation.
- CO3: Can understand the importance of Mathematical modeling and how to analysis Queuing Model.
- CO4: Can understand different models like Monte Carlo, normal distributions Poissons Distribution etc.
- CO5: Can understand the importance of verification data and validation of model.

Simulation Modeling and Analysis lab (MMP-151)

COURSE OUTCOMES: at the end of the course, the student will be able to:

- CO1: Student can understand Simulation as a research tool and how to simulate a physical system.
- CO2: Can understand Linear and rotational system simulation.
- CO3: Can understand the importance of Mathematical modeling and how to analysis Queuing Model.
- CO4: Can understand different models like Monte Carlo, normal distributions Poissons Distribution etc.
- CO5: Can understand the importance of verification data and validation of model.

ADVANCED MANUFACTURING (MMP-101)

COURSE OUTCOMES: At the end of the course, the student should be able to:

- CO1: Define and describe the fundamentals and principals of unconventional machining processes.
- CO2: Apply relevant theories to solve manufacturing problems and help in process optimization.
- CO3: Understand Generative Manufacturing Processes and improve issues related to GMP software.
- CO4: Identify part families and incorporate the concept of group technology in manufacturing system. Understand and develop flexible manufacturing systems
- CO5: Understand the role of computers (both hardware and software) in CIM for advanced modeling and database requirement in manufacturing.

REASERCH METHDOLOGY & IPR (METC-101)

COURSE OUTCOMES: At the end of the course, the student will be able to:

- CO1. Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
- CO2. Have basic knowledge on qualitative research techniques
- CO3. Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis
- CO4. Have basic awareness of data analysis-and hypothesis testing procedures

ENGLISH FOR RESEARCH PAPER WRITING (METC-111)

COURSE OUTCOMES: At the end of the course, the student will be able to:

- CO1.** Students able to improve their writing skills and level of readability and utilize the skill for writing research paper for the development of the nation.
- CO2.** Students will have basic knowledge of writing and use these in communication in industries.
- CO3.** Students able to have analytical writing skill and can change the prevailing situation by adopting proper writing skill to ease complexity of the situation and promote growth of industry.
- CO4.** Students can address national and internal issues in their writing for the promotion of awareness among people for economic development of nation.

EVEN SEMESTER M. TECH (P)

II SEMESTER

MODERN WELDING & CASTING PROCESS (MMP-201)

Course Outcomes

At the end of the course, a student would be able to:

MMP-201.1:

Analyze the welding process behavior for common and newer welding techniques

MMP-201.2:

Understand requirements to achieve sound welded joint while welding different similar and dissimilar engineering materials.

MMP-201.3:

Develop welding techniques for various alloys. Also predict the possible defect locations using simulation software and select proper remedial actions to avoid defect formation.

MMP-201.4:

To Show knowledge in an advanced foundry by taking into account the fundamental of casting process.

MMP-201.5:

To explain special molding, core making and advanced casting techniques and modern equipment's in casting operation.

MMP-201.6:

To perform optimization of gating system with use of modern software

FLEXIBLE MANUFACTURING SYSTEMS (MMP 224)

Course Outcomes:

At the end of the course, a student would be able to:

CO'S	Statement
MMP 224.1	Classify and distinguish FMS and other manufacturing systems including job shop and mass production systems.
MMP 224.2	Explain processing stations and material handling systems used in FMS environments.
MMP 224.3	Design a manufacturing cell and cellular manufacturing system.
MMP 224.4	Understand tool management in FMS.
MMP 224.5	Analyze the production management problems in planning, loading, scheduling, routing and breakdown in a typical FMS.

DISASTER MANAGEMENT (METC-212)

CORSE OUTCOMES: At the end of the course, a student would be able to:

CO1.

Students are able to identify the problems in Disaster and Hazards. And have engineering knowledge of their cause and remedies for sustainable development.

CO2.

Students have basic knowledge of Natural and Manmade Disaster such as earthquakes, volcanos, cyclones, nuclear reactor meltdown etc. They can think out of box solution for this complexity of problems for the development of nation building.

CO3.

Students can able to understand the basic knowledge of seismic zone and develop mathematical tool for measurement and analysis of Drought, landslides and cyclones and can contribute lifelong learning in the society.

CO4.

Students can have basic knowledge of monitoring of phenomenon Triggering and Risk and they can conduct research in complex engineering problems and contribute the economic development by saving nature and livestock.

CO5.

Students able to understand the concepts of disaster Risk Reduction and Risk Situations and the address the problem in the scientific community for the sustainable and economic solution to the Complex problem.

INDUSTRIAL SAFETY (MMP234)

Course Outcomes

At the end of the course:

MMP 234.1: Illustrate the Safety Precaution Indifferent industrial operations such as welding, hot bending, machining operation, etc. Students will be able to identify the various possible hazards in different fields of engineering.

MMP 234.2: students will get the knowledge about the role of safety policy, safety management, gained for maintaining safety, occupational health and hygiene in an industry.

MMP 234.3: Illustrate different hazards and their preventive action in industry that will also influence the creativity of the students.

MMP 234.4: will be aware about the different act for industrial safety. Students will be able to examine the factors that lead to an accident.

MMP 234.5: Implementation of the key function of a safety management in the industrial safety. Students will be able to plan the safety measures appropriate for an industry.

ADVANCE INDUSTRIAL ENGINEERING (MMP-202)

Course Outcomes:

At the end of the course, a student would be able to:

CO	Statement
MMP 202.1	Recognize the concept of productivity; understand the factor affecting productivity and different approach of productivity.
MMP 202.2	Understand the work study & method study & work measurement and their different method.
MMP 202.3	Understand the facility layout, different factors considering while selecting a location for establishing the plant.
MMP 202.4	Discussed the material handling equipment and different types of material handling equipments.
MMP 202.5	Understanding the management information system, system engineering, and phases of system engineering and life cycle of a system.

RELIABILITY ENGINEERING (MMP-214)

Course Outcomes: At the end of the course, a student would be able to:

CO1. Students will be able to identify the problems in Reliability and its analysis. They have engineering knowledge to improve reliability.

CO2. Students have basic knowledge of regarding Maintainability, Availability & Failure Analysis of any system. They can think out of Breakdown analysis and Types of failures.

CO3. Students can able to understand the basic knowledge of Overhauling and repair in terms of reliability where students have to give its application.

CO4. Students can have basic knowledge Maintenance and they can conduct research in complex engineering problems where they will implement CPM and PERT analytically.

CO5. Students able to understand the concepts of Condition Monitoring as well as Safety Aspects where they will explain Future trends in industrial safety.

MODERN WELDING & CASTING PROCESS LAB-III

(MMP-251)

COURSE OUTCOMES: at the end of the course, the student will be able to:

CO1. Students can explain advancements in casting processes, welding processes also can develop welding techniques for various alloys.

CO2. Students can develop welding application concepts. Also can develop mechanized welding techniques

CO3 Students can develop welding electrodes and inspection techniques & Develop use of automation and robotics in welding.

CO4. Students can standardize the process with various productivity and quality control techniques in a casting industry.

CO5. Students can make special molding, core making and advanced casting techniques and modern equipment's in casting operation & perform optimization of gating system with use of modern software.

ODD SEMESTER

3rd SEMESTER

Micro Electro Mechanical systems (PEC-301)

COURSE OUTCOMES: at the end of the course, the student will be able to:

PEC301.1: Understand the fundamentals of mechatronic systems in a synergistic framework machines

PEC301.2: Design and develop intelligent engineered products and processes to solve challenging technological problems.

PEC301.3: Design and simulate mechatronic systems using microcontrollers and programmable logic controllers

PEC301.4: Develop innovative approaches to solve real life problems

QUALITY ENGG AND MANAGEMENT (PEO– 302)

COURSE OUTCOMES: at the end of the course, the student will be able to:

CO1: Students will be able to get the knowledge about the significance of quality and the various tools/concepts of building quality into products.

CO2: Students have basic knowledge of study about control charts.

CO3: Students can be able to understand the basic knowledge of probability theory, hypergeometric, Binomial and Poisson distributions, Acceptance inspection 100% inspection.

CO4: Students can have basic knowledge Economics of product inspection real point, selection of economic sampling plans etc.

CO5: Students able to understand the Technique related to quality improvement.