

**DEPARTMENT OF MECHANICAL ENGINEERING (MANUFACTURING)**  
**M.E. MANUFACTURING ENGINEERING**

**SEMESTER I MFMEPC11 APPLIED PROBABILITY & STATISTICAL INFERENCES**

**COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Acquire basic knowledge in statistics.
2. Understand the basic concepts of Probability and Statistical techniques for solving real life problems and Engineering problems.
3. Formulate the hypothesis and carry out testing.
4. Differentiate various probability distributions.
5. Develop experimental design and analyze.

**SEMESTER I MFMEPC12 MECHANICAL BEHAVIOUR OF MATERIALS**

**COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the mechanical behaviour of metals.
2. Protect the metals from fatigue damage.
3. Understand the environmental factors affecting the mechanical behaviour of materials.
4. Evaluate the high temperature properties of metals.
5. Design the metals for specific applications.

**SEMESTER I MFMEMC15 RESEARCH METHODOLOGY AND IPR**

**COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand research problem formulation.
2. Analyze research related information.
3. Follow research ethics.
4. Understand that today's world is controlled by Computer and Information Technology.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasize the need of information about intellectual Property Right to be promoted among students in general & engineering in particular.
6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

**SEMESTER I MFMECP107 PRODUCTION ENGINEERING LABORATORY**

**COURSE OUTCOMES**

Upon completing this course, students should be able to correlate the theoretical knowledge with the practical knowledge in the following areas,

1. Forming processes and its metallurgy.
2. Welding processes and its metallurgy.

3. Forces involved and power consumption during metal machining.
4. Non-traditional machining processes.
5. Casting processes and its metallurgy.

#### **SEMESTER I MFMECP17 COMPUTER AIDED ENGINEERING LABORATORY**

##### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Gain practical experience in handling 2D drafting and 3D modeling using modeling software systems.
2. Acquire hands on experience on the finite element modeling.
3. Understand the effective input parameters of FEA.
4. Understand and apply the concepts G and M codes and manual part programming of turning and milling processes.
5. Perform finite element modeling analysis of solid mechanics, heat transfer problems, shell and contact problems in 2D and 3D.

#### **SEMESTER II MFMEPC21 METAL FORMING TECHNOLOGY**

##### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to

1. Understand the state of stress in various dimensions.
2. Understand the importance of flow curve in metal forming process.
3. Calculate the working load in various forming processes.
4. Determine the basic mechanical properties.
5. Differentiate various high speed energy forming process.

#### **SEMESTER II MFMEPC22 METAL JOINING TECHNOLOGY**

##### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Understand the basics of Physical Metallurgy, Welding Metallurgy and heat flow equations.
2. Studied about the Weldability of ferrous metals like Carbon Steels and High Strength Low Alloy Steels(HSLA).
3. Studied about the Weldability of Non-ferrous metals like aluminium, nickel and titanium.
4. Understand and Inspect welding defects using Non-destructive testing methods.
5. Understand the Weldability testing , Weldability Service tests and Corrosion tests.

#### **SEMESTER II MFMECP25 COMPUTING AND SIMULATION LABORATORY**

##### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Perform mathematical calculation such a matrix, graphing and random generations using computer software.
2. Perform some statistical analysis using Design of Experiment.
3. Carryout ANOVA, Regression and correlation analysis using software.

4. Carryout process simulations.
5. Generate Random numbers.

## **SEMESTER II MFMETS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT**

### **COURSE OUTCOMES**

1. The students can face the challenges in the practice with confidence.
2. The student will be benefited by the training with managing the situation arises during the execution of works related to Manufacturing Engineering.

## **SEMESTER III MFMETHOD33 THESIS PHASE-I & VIVA-VOCE**

### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Take up any challenging practical problems and find solution by formulating proper methodology
2. Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
3. Students will acquire collaborative skills through working in a team to achieve common goals.
4. Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it.
5. Students will acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms.

## **SEMESTER IV MFMETHOD41 THESIS PHASE-II & VIVA-VOCE**

### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Take up any challenging practical problems and find solution by formulating proper methodology.
2. Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
3. Students will acquire collaborative skills through working in a team to achieve common goals.
4. Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it.
5. Students will acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms.

### **PROFESSIONAL ELECTIVE COURSES**

#### **MFMEPEXX MECHANICS OF METAL MACHINING**

### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand the basic structures of concept of tools and tool materials.
2. Acquire fundamental knowledge about forces and chips formed during the metal machining process.
3. Distinguish between orthogonal and oblique cutting.
4. Understand the Heat distribution during machining.
5. Differentiate various types of wear.

### **MFMEPEXX MANUFACTURING MANAGEMENT**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Develop an understanding of various types of production systems.
2. Differentiate Production and services.
3. Gain an understanding and appreciation of the principles and applications relevant to the planning, design, and operations of manufacturing/service firms.
4. Develop the ability to identify operational methodologies to assess and improve an organizations performance.
5. Gain ability to recognize situations in a production system environment that suggests the use of certain quantitative methods to assist in decision making in the areas such as Aggregate planning, Inventory control, forecasting MRP and scheduling.

### **MFMEPEXX METAL CASTING TECHNOLOGY**

#### **COURSE OUT COMES**

Upon completing this course, students should be able to:

1. Understand the basic features and terminologies in casting process.
2. Design gating, reserving system .
3. Understand the mechanics of solidification in the casting process.
4. Obtain knowledge in the advanced casting process.
5. Study the types of defects occurred in casting and provide remedial solutions.

### **MFMEPEXX MACHINE TOOL DRIVES AND CONTROLS**

#### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand machine tool drives and their types.
2. Identify hydraulic components and circuits.
3. Ability to design simple logic circuits.
4. Understand the benefits and applications of Numerical control machines.
5. Get the knowledge on the design aspects of circuits for Machine Tool Control, the drive systems used for Machine Tools and N.C. systems.
6. Ability to develop N.C machines programming.

### **MFMEPEXX MAINTENANCE MANAGEMENT**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Develop a maintenance plan for a technical system.
2. Have a working knowledge of the techniques of reliability engineering.
3. Apply learned concepts to improve the maintenance, the maintainability, hazard risk and the safety of the plant.
4. Apply problem solving models to maintenance.
5. Analyze different failure of a component/equipment.

### **MFMEPEXX COMPUTER INTEGRATED MANUFACTURING SYSTEMS**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Become familiar on the basic concepts of CIM and its importance in the global competitive market.
2. Understand the anatomy of industrial robots and their application in various areas of manufacturing.
3. Understand the concepts of FMS and materials handling and storage systems used.
4. Understand the usage of group technology concept and clustering algorithms in modern manufacturing systems.
5. Get familiarize with the concepts of CAPP, CAQC and the usage of CMM.

### **MFMEPEXX PLANT LAYOUT AND MATERIAL HANDLING**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Understand the different layout planning techniques.
2. Apply layout planning techniques for solving layout problems.
3. Balance the production/assembly line for minimum cycle time.
4. Acquire knowledge about the various material handling systems.
5. Carryout economics analysis of material handling equipments.

### **MFMEPEXX COMPOSITE MATERIALS**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Obtain knowledge on classification of composite materials used in the modern world.
2. Differentiate various polymers.
3. Obtain knowledge on different types of production technique of composite materials.
4. Acquire knowledge on production of light weight composites that are used in aerospace industries.
5. Acquire knowledge about the properties of ceramic matrix composites.

### **MFMEPEXX TOOL ENGINEERING**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to

1. Develop an understanding of the cutting tool nomenclatures.
2. Develop and design of progressive and compound dies for simple sheet metal operations.
3. Calculate bending force, number of draw for the required cup shape, blank size for forged components.
4. Understand the modern techniques of tool engineering and the various phases in computer aided fixture design.
5. Acquire knowledge about the plastic tool materials and development methods.

### **MFMEPEXX AUTOMOTS AND TRANSFER MACHINES**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to

1. Develop knowledge and skill to design of hydraulic, pneumatic and electro-pneumatic logic circuits for automating processes in manufacturing.
2. Demonstrate problem-solving skills in automation and safely use the machines in the industries.
3. Explore the use of different sensors, control valves, controllers and actuators for electro-pneumatic & hydraulic circuits.
4. Gain an insight into the Industrial Robotics and Mechatronics System.
5. Acquire knowledge about the various Automated Machineries.

### **MFMEPEXX DESIGN FOR MANUFACTURING AND ASSEMBLY**

#### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand contemporary issues and their impact on design for manufacturing and assembly.
2. Understand the latest design processes in the field of manufacturing technology.
3. Apply a systematic understanding of knowledge in the field of extrusion, sheet metal drawing and forging.
4. Ability to develop a project on design and product development, considering advanced production technologies.
5. Able to gain knowledge in the advanced manufacturing techniques.

### **MFMEPEXX IMPACT ENGINEERING**

#### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand the processes variables generated by explosions.
2. Protect the metals from surface damages.
3. Understand the environmental factors affecting the atmospheric contaminations.
4. Evaluate the high temperature explosive properties of metals.
5. Studying the metallurgical properties of explosive clad process.

## **MFMEPEXX PRECISION ENGINEERING AND NANO-TECHNOLOGY**

### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand the basic concepts of Precision Engineering.
2. Impart fundamental knowledge about MEMS.
3. Evaluate the Quantum Effect Futures.
4. Design the smart materials for specific applications.
5. Acquire knowledge about the nano instrumentation.

## **MFMEPEXX NANO MATERIALS TECHNOLOGY**

### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understand the basics of nano sized materials.
2. Understand the difference between bulk and nano materials.
3. Understanding the production methods of nanomaterials.
4. Applications of nanomaterials.
5. Usage of nanomaterials in biological applications.

## **OPEN ELECTIVE COURSES**

### **MFMEOEEXX ENGINEERING ECONOMICS**

#### **COURSE OUTCOMES**

Upon successful completion of this course, students will be able to

1. Acquire the knowledge on basics of economics.
2. Develop skills to apply cost analysis to engineering and take economically sound decisions.
3. Apply replacement analysis to determine economic life.
4. Calculate the depreciation values under various environments.
5. Understand the concept of cash flow analysis.

### **MFMEOEEXX TOTAL QUALITY MANAGEMENT**

#### **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Understand the core features of the total quality management in terms of various dimensions of quality.
2. Measure the cost of poor quality and process effectiveness and efficiency to track performance quality and to identify areas for improvement.
3. Develop an understanding on quality management philosophies and frameworks.
4. Develop the ability to apply the tools of quality control and quality management.
5. Understand proven methodologies to enhance management processes, such as benchmarking and business process reengineering, lean manufacturing.

### **MFMEOEEXX SUPPLY CHAIN MANAGEMENT**

## **COURSE OUTCOMES**

Upon completing this course, students should be able to:

1. Understand the roles of supply chain among various business functions and their roles in the organizations' strategic planning and gaining competitive advantage
2. Able to actively employ supply chain management methodologies.
3. Able to apply supply chain techniques in both manufacturing and service industries.
4. Analyze the principles, concepts and challenges for developing sourcing, manufacturing and distribution strategies in a global market.
5. Describe the role of information technology to improve the performance of the supply chain.

### **MFMEACXX SANSKRIT FOR TECHNICAL KNOWLEDGE**

## **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Understanding basic Sanskrit language.
2. Ancient Sanskrit literature about science & technology can be understood.
3. Being a logical language will help to develop logic in students.

### **MFMEACXX VALUE EDUCATION**

## **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Knowledge of self-development.
2. Learn the importance of Human values.
3. Developing the overall personality.

### **MFMEACXX CONSTITUTION OF INDIA**

## **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
4. Discuss the passage of the Hindu Code Bill of 1956.

### **MFMEACXX PEDAGOGY STUDIES**

## **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries?
2. What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners?



3. How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

#### **MFMEACXX STRESS MANAGEMENT BY YOGA**

##### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Develop healthy mind in a healthy body thus improving social health also.
2. Improve efficiency.

#### **MFMEACXX PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS**

##### **COURSE OUTCOMES**

Upon successful completion of the course, the students are able to:

1. Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life.
2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity.
3. Study of Neetishatakam will help in developing versatile personality of students.

## **M.E. WELDING ENGINEERING**

### **SEMESTER I    MFWEPC11 WELDING PROCESSES –I**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the principles of fusion welding processes.
2. Distinguish between consumable arc and non-consumable arc welding processes.
3. Select an appropriate welding process for specific applications.
4. Acquire knowledge on modern developments in welding techniques.
5. Awareness about allied welding processes.

### **SEMESTER I    MFWEPC12 PHYSICAL METALLURGY**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the basics of crystal structure.
2. Acquire knowledge on phase diagrams.
3. Select the heat treatment methods for specific alloys.
4. Design the alloys for specific applications.
5. Develop mechanisms to strengthen metals and alloys.

### **SEMESTER I    MFWEMC15 RESEARCH METHODOLOGY AND IPR**

#### **COURSE OUTCOMES**

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information.
3. Follow research ethics.
4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about .
6. Intellectual Property Right to be promoted among students in general & engineering in particular.
7. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

### **SEMESTER I    MFWECP16 WELDING PROCESSES LABORATORY**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Acquire practical knowledge on fusion and solid state welding processes.
2. Understand the effect of welding parameters on quality of welded joint.
3. Expertise on using welding software packages.

4. Analyse the experimental results using statistical tools.
5. Evaluate various input parameters and their effects.

#### **SEMESTER I    MFWCEP17 MODELLING & SIMULATION LABORATORY**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Know concepts in problem solving.
2. Analyze simulation results.
3. Prepare effective documentation.
4. Acquire expertise in usage of modern software.

#### **SEMESTER II    MFWCEP21 WELDING PROCESSES - II**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the variants of resistance welding processes.
2. Acquire knowledge on friction based processes.
3. Utilize advanced joining techniques for critical applications.
4. Select an appropriate welding process for a specific application.
5. Gain knowledge of allied welding processes.

#### **SEMESTER II    MFWCEP22 WELDING METALLURGY**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the interaction between heat and metals/alloys.
2. Predict the microstructure of different regions of a weldment.
3. Understand the weldability issues in ferrous and non-ferrous alloys.
4. Estimate the pre-heat, post heat and interpass temperatures for welding.
5. Select appropriate welding procedures to weld a specific alloy.

#### **SEMESTER II                    MFWCEP26 WELDABILITY TESTING & EVALUATION LABORATORY**

##### **COURSE OUTCOMES**

Evaluate the mechanical properties of welded joints as per standards.

1. Characterize microstructural features using modern tools.
2. Acquire practical knowledge on weldability testing.
3. Inspect weld quality as per the standards.
4. Utilize NDT instruments to assess the damages in welded joints.

#### **SEMESTER II                    MFWETS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT**

##### **COURSE OUTCOMES**

1. Expose the students in the actual industrial environment.
2. Understand the difference between theory and practice.
3. Verify the theory with practical work.

4. The students will be getting the training to face the audience and to interact with the audience with confidence.
5. To tackle any problem during group discussion in the corporate interviews.

### **SEMESTER III MFWETH33 THESIS PHASE-I & VIVA-VOCE**

#### **COURSE OUTCOMES**

Upon completion of this course, the students will be able to:

1. Take up any challenging practical problems and find solution.
2. Learn to adopt systematic and step-by-step problem solving methodology.

### **SEMESTER IV MFWETH41 THESIS PHASE-II & VIVA-VOCE**

#### **COURSE OUTCOMES**

Upon completion of this course, the students will be able to

1. Select the application oriented industry problem.
2. Capable to solve the problems by applying scientific methods.
3. Prepare technical reports and research paper.

### **PROFESSIONAL ELECTIVE COURSES MEWEPEXX DESIGN OF WELDMENTS**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Acquire knowledge on mechanics of solids.
2. Understand the different configurations of the welds.
3. Estimate stresses acting on welded joints.
4. Apply fracture mechanics concepts to design the welds.
5. Design a welded assembly for a specific application.

### **MEWEPEXX TESTING AND INSPECTION OF WELDMENTS**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the causes of various welding defects and prevention methods.
2. Acquire knowledge on weldability testing and procedures.
3. Select an appropriate weldability test for a specific application.
4. Design weldments against environmental damage.

### **MEWEPEXX WELDING CODES AND STANDARDS**

#### **COURSE OUTCOMES**

Acquire knowledge on welding procedures.

1. Prepare the procedure qualification record.
2. Select a consumable for a specific application.
3. Assure the quality of welded joints.
4. Understand the national and international codes and standards.
5. Select appropriate tests for welder qualification.

## **MEWEPEXX MECHANICAL BEHAVIOUR OF MATERIALS**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the mechanical behaviour of metals;
2. Protect the metals from fatigue damage.
3. Understand the environmental factors affecting the mechanical behaviour of materials.
4. Evaluate the high temperature properties of metals.
5. Design the metals for specific applications.

## **MEWEPEXX APPLIED MATHEMATICS**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the basic concepts of differential equations and complex variables.
2. 2. Solve the real life problems and Engineering problems.
3. 3. Acquire basic knowledge in probability and statistics.
4. 4. Know the basic merits and demerits of various statistical tools.
5. 5. Plan the experiments and analyse the data scientifically.

## **MEWEPEXX FAILURE ANALYSIS & MATERIALS CHARACTERIZATION**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Differentiate different types of failures in metals.
2. Identify the causes for various failures.
3. Acquire knowledge on characterization tools.
4. Understand the environmental factors promoting the failures.
5. Select an appropriate tool to analyse a specific failure.

## **MEWEPEXX NON-DESTRUCTIVE TESTING**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the principle of non-destructive testing methods.
2. Acquire knowledge on limitations and merits of each technique.
3. Determine the location of sub surface cracks.
4. Use of modern tools to assess the weld quality.
5. Select a suitable non-destructive test method for a specific application.

## **MEWEPEXX WELDING AUTOMATION**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the working principles of automated devices.
2. Improve the welding performance through automation.

3. Apply the robots in critical components welding.
4. Design an automation layout for specific component fabrication.
5. Integrate computers, robots and welding processes.

### **MEWEPEXX ADVANCED MATERIALS JOINING**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the various methods for joining composite materials.
2. Improve the joint qualities of advanced materials.
3. Understand the difficulties in joining of newer materials.
4. Select an appropriate technique to join a newer material.
5. Choose suitable method for joining dissimilar materials.

### **MEWEPEXX RESIDUAL STRESSES AND DISTORTION**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the factors influencing residual stresses.
2. 2. Learn the various methods of measuring residual stresses.
3. 3. Understand the causes of residual stresses and distortion.
4. 4. Estimate the residual stresses and distortion in the welded joints.
5. 5. Design the weld joint with minimum residual stress and distortion.

### **MEWEPEXX WELDING POWER SOURCES**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the electrical aspects of welding power sources.
2. Classify and characterize welding power sources.
3. Acquire knowledge on instruments used for testing power sources.
4. Measure the heat input and efficiency of different welding processes.
5. Select an appropriate power source for a specific application.

### **MEWEPEXX WELDING APPLICATION TECHNOLOGY**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Acquire sound knowledge on recent trends and developments in welding.
2. Understand the fabrication procedures employed in various industries.
3. Select appropriate material, welding process, consumable and procedures to fabricate a component.
4. Assure weld quality of welded components as per the standards.
5. Be familiar with various automatic welding systems.

### **MEWEPEXX REPAIR WELDING & RECLAMATION**

#### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the significance of repair welding.
2. Select a suitable repair welding technique for specific damage.
3. Prescribe suitable consumables to enhance the life of the components.
4. Distinguish various types of wear
5. Gain knowledge about the methods of repairing pipe lines, pressure vessels, reactors etc.

#### **MEWEPEXX HEALTH, SAFETY & ENVIRONMENTAL ASPECTS IN WELDING**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Reduce the risks of accidents during welding.
2. Select suitable protective methods to reduce welding emission.
3. Awareness on health hazards to welders.
4. Understand the prevention and control of air pollution.
5. Be aware of Environment Protection Act.

#### **MEWEPEXX LIFE ASSESSMENT OF WELDED STRUCTURES**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the deformation and damage mechanics of welded structure.
2. Acquire knowledge on different life assessment tools.
3. Estimate the remaining life of the welded components.
4. Derive life assessment procedures for a specific welded component.
5. Utilize different techniques to enhance the life of the components.

#### **MEWEOEXX CORROSION ENGINEERING**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Assess the effects of environmental factors on corrosion.
2. Understand the mechanism of various corrosion methods.
3. Learn the various methods of corrosion testing.
4. Select suitable prevention technique to combat corrosion.
5. Distinguish between primary and secondary corrosion types.

#### **MEWEOEXX ADDITIVE MANUFACTURING**

##### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the Importance of AM in Manufacturing.
2. Acquire sound knowledge in different AM Technologies.
3. Select suitable materials for AM.
4. Select Different methods for Post-processing of AM parts.
5. Understand the Future Directions of AM.

## **MEWEOEXX SURFACE MODIFICATION TECHNIQUES**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Improve the surface properties through surface modification techniques.
2. Understand the principles of various surface modification techniques.
3. Enhance the life of the components through advanced surface modification process.
4. Select suitable surface modification technique for specific applications.
5. Understand the various diffusion processes.

## **MEWEOEXX FINITE ELEMENT ANALYSIS**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the basic concept and applications of FEM.
2. Analyze the various stresses of acting on the welded joint through FEM.
3. Estimate heat distribution during welding by FEM.
4. Evaluate effect of input parameters on the output responses.
5. Apply a suitable FE method for a specific problem.

## **MEWEOEXX TOTAL QUALITY MANAGEMENT**

### **COURSE OUTCOMES**

Upon successful completion of the course, student should be able to:

1. Understand the core features of the total quality management in terms of various dimensions of quality.
2. Measure the cost of poor quality and process effectiveness and efficiency to track performance quality and to identify areas for improvement.
3. Develop an understanding on quality management philosophies and frameworks.
4. Develop the ability to apply the tools of quality control and quality management.
5. Understand proven methodologies to enhance management processes, such as benchmarking and business process reengineering, lean manufacturing.

## **MFWEACXX SANSKRIT FOR TECHNICAL KNOWLEDGE**

### **COURSE OUTCOMES**

Students will be able to

1. Understanding basic Sanskrit language
2. Ancient Sanskrit literature about science & technology can be understood.
3. Being a logical language will help to develop logic in students.

## **MFWEACXX VALUE EDUCATION**

### **COURSE OUTCOMES**

Students will be able to

1. Knowledge of self-development



2. Learn the importance of Human values
3. Developing the overall personality

### **MFWEACXX CONSTITUTION OF INDIA**

#### **COURSE OUTCOMES**

Students will be able to:

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
4. Discuss the passage of the Hindu Code Bill of 1956.

### **MFWEACXX PEDAGOGY STUDIES**

#### **COURSE OUTCOMES**

Students will be able to understand:

1. What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries?
2. What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners?
3. How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

### **MFWEACXX STRESS MANAGEMENT BY YOGA**

#### **COURSE OUTCOMES:**

Students will be able to:

1. Develop healthy mind in a healthy body thus improving social health also.
2. Improve efficiency.

### **MFWEACXX PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS**

#### **COURSE OUTCOMES**

Students will be able to

1. Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life.
2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity.
3. Study of Neetishatakam will help in developing versatile personality of students.

