

Master of Technology in Advanced Manufacturing Technology

Department of Mechanical Engineering

(w. e. f. Session: 2022 - 23)

SEMESTER - III

Sr. No.	Course No.	Course Name	L : T : P	Hrs. / Week	Credits	Examination Schedule (Marks)				Duration of Exam (Hrs.)
						Major Test	Minor Test	Practical	Total	
1		Program Elective – V	3 : 0 : 0	3	3	60	40	–	100	3
2		Open Elective	3 : 0 : 0	3	3	60	40	–	100	3
3	MTAMT-201	Dissertation Phase - I	0 : 0 : 20	20	10	–	100	–	100	–
Total				26	16	120	180	–	300	

List of Program Electives-V	
MTIP-201 A	Enterprise Resource Planning
MTIP-203 A	Design of Experiments
MTIP-205 A	Strategic Entrepreneurship ✓

List of Open Electives		
1.	MTAMT-201	Artificial Intelligence
2.	MTAMT-203	Condition Monitoring ✓
3.	MTAMT-205	Machine Vision

SEMESTER - IV

Sr. No.	Course No.	Course Name	L : T : P	Hrs. / Week	Credits	Examination Schedule (Marks)				Duration of Exam (Hrs.)
						Major Test	Minor Test	Practical	Total	
1	MTAMT-202	Dissertation Phase - II	0 : 0 : 32	32	16	–	100	200	300	–
Total				32	16	–	100	200	300	–

Note 1: At the end of the second semester each student is required to do his/her Dissertation work in the identified area in consent of the Guide/Supervisor. Broad area for the Dissertation Part-I is to be specified/submitted within three weeks of the beginning of the Third Semester.

Note 2: Each admitted student is required to submit the report of his/her Dissertation Part-I as per the schedule mentioned in Academic calendar for the corresponding academic session otherwise the Dissertation Part-II cannot be continued at any level.

MASTER OF TECHNOLOGY IN ADVANCED MANUFACTURING TECHNOLOGY

Semester - III

MTIP-205 A		STRATEGIC ENTREPRENEURSHIP					
Lecture	Tutorial	Practical	Credit	Major Test	Minor Test	Total	Time
3	0	0	3	60	40	100	3 hrs
Objective	To provide knowledge to the students about entrepreneurship concepts and various development programmes and policies.						
Course Outcomes							
CO1	Students will be able identify small scale industries, scopes and the causes of their sickness.						
CO2	Students will be able to explain the EDP and different government policies.						
CO3	Students will be able to explain the business incubations and its future perspectives.						
CO4	Students will be able to describe E-business marketing and developments.						

UNIT-I

Small Scale Industries: Definition and types of SSI's; Role, scope and performance in national economy; Problems of small scale industries.

Industrial Sickness: Definition; Causes of sickness; Indian scenario, Government help; Management strategies; Need for trained entrepreneurs

UNIT-II

Entrepreneurship Development Programmes: Introduction, Origin of EDP's , Organizations involved in EDP's, Objectives of EDPs, Implementation of EDP's, Short comings of EDP's, Role in entrepreneurship development.

Step: Introduction, Origin, Status in India, Success and failure factors, Govt. polices and incentives, future prospects in India.

UNIT-III

Business Incubation: Introduction, Origin and development of business incubators in India and other countries, types of incubators, success parameters for a business incubator, Benefits to industries, institutes, government and society; future prospects. A few case studies (at least 2).

Project Management: Concept, Characteristics and Significance of Project Management. Components of Project Management. Project Life Cycle. Project Identification and Selection. Project Formulation and Appraisal.

UNIT-IV

Special Aspects of Entrepreneurship: Entrepreneurship, Social entrepreneurship, International entrepreneurship, Rural entrepreneurship, Community Development, Women entrepreneurship.

Network Marketing: Introduction, E-business, E-commerce, E-auction, A basic internet e-business architecture, A multi-tier e-business architecture.

RECOMMENDED BOOKS:

1. P.K. Gupta, Strategic Entrepreneurship, Everest Publishing House.
2. David Cleland, Project Management –Strategic Design and Implementation, McGraw Hill.
3. David H Holl, Entrepreneurship-New Venture Creation, Prentice Hall of India.
4. Steed & Steed, Sustainable Strategic Management, Prentice Hall of India.
5. Kotler, Marketing Management by Prentice Hall of India.
6. Tarek Khalil, Management of Technology, McGraw Hill.
7. Henry Steiner, Engineering Economic Principles, McGraw Hill.

Note: The paper will have a total of *NINE* questions. Question No. 1, which is compulsory, shall be OBJECTIVE Type and have contents from the entire syllabus (all Four Units).

All questions will have equal *weight* of 12 marks. The student will attempt a total of *FIVE* questions, each of 12 marks. Q. No. 1 is compulsory. *The student shall attempt remaining four questions by selecting only one question from each unit.*

MASTER OF TECHNOLOGY IN ADVANCED MANUFACTURING TECHNOLOGY

Semester - III

MTAMT-203	CONDITION MONITORING						
Lecture	Tutorial	Practical	Credit	Major Test	Minor Test	Total	Time
3	0	0	3	60	40	100	3 hrs
Objective	To understand the basic causes of vibration and remedial measures to faults.						
Course Outcomes							
CO1	Identify effective maintenance schemes in industries.						
CO2	Apply vibration monitoring techniques for system diagnoses.						
CO3	Apply oil analysis technique to diagnose the wear debris.						
CO4	Identify nonconventional methods for machine diagnoses.						
CO5	Develop modern technologies for effective plant maintenance.						

Unit - I

Introduction: Failures – System, component and services failures – classification and its causes, Maintenance Schemes – objectives – types and economic benefits, break down, preventive and predictive monitoring.

Unit - II

Vibration Monitoring: Causes and effects of vibration, review of mechanical vibration concepts – free and forced vibrations, vibration signature of active systems – measurement of amplitude, frequency and phase.

Vibration Monitoring Equipment: Vibration sensors (contact and non-contact type) – factors affecting the choice of sensors, signal conditioners, recording and display elements, vibration meter and analyzers, measurement of overall vibration levels.

Unit - III

Contaminant Analysis: Contaminants in used lubricating oils– monitoring techniques (wear debris) – SOAP technique, Ferrography, X-ray spectrometry, Particle classification.

Temperature Monitoring: Various techniques – thermograph, pyrometers, indicating paint and NDT methods.

Unit - IV

Special Techniques: Ultrasonic measurement method, shock pulse measurement, Kurtosis, Acoustic Emission mentoring, critical speed analysis, shaft orbit analysis, Cepstrum analysis. Non-destructive techniques, Structural health monitoring weld-ments for surface and subsurface cracks

RECOMMENDED BOOKS:

1. Rao J.S., Vibration Condition Monitoring, Narosa Publishing House, 2/e 2000.
2. Isermann R., Fault /diagnosis Application, Springer-Verlag Berlin, 2011.
3. Allan Davis, Hand book of Condition Monitoring, Chapman and Hall, 2000.
4. Choudhary K.K., Instrumentation, Measurement and Analysis, Tata McGraw Hill.
5. Collacott, R.A., Mechanical Faults Diagnosis, Chapman and Hall, London, 1990.
6. P. Girdhar, Machinery vibration analysis and predictive maintenance, Elsevier publications
7. R.G. Eisenmann – Machinery Malfunction diagnosis and correction, Pearson Publication.

Note: The paper will have a total of *NINE* questions. Question No. 1, which is compulsory, shall be OBJECTIVE Type and have contents from the entire syllabus (all Four Units).

All questions will have equal *weight of 12 marks*. The student will attempt a total of *FIVE* questions, each of 12 marks. Q. No. 1 is compulsory. *The student shall attempt remaining four questions by selecting only one question from each unit.*

MASTER OF TECHNOLOGY IN ADVANCED MANUFACTURING TECHNOLOGY

Semester - III

MTAMT-201	DISSERTATION PHASE – I							
Lecture	Tutorial	Practical	Credits	Major Test	Minor Test	Practical Marks	Total	Time (Hrs.)
0	0	20	10	-	100	-	100	-
Objective	The main objective of this course is to plan a research work (which includes the problem formulation/literature review, proposed objectives, proposed methodologies and references) in the field of advanced manufacturing/Industrial and Production Engineering or interrelated fields of applications.							
Course Outcomes								
CO 1	Students will be exposed to various self-learning topics.							
CO 2	Students will be exposed to an exhaustive survey of the literature such as books, national/international refereed journals, resource persons and industrial surveys for the selection/ identification of engineering/research problem.							
CO 3	Students will be able to set the research objectives of the identified engineering/research problem.							
CO 4	Students will learn modern tools/techniques related to the identified engineering/research problem for the solution and able to improve technical report writing skills.							
CO 5	Students will develop oral and written communication skills to present and defend their work in front of technically qualified audience.							

The students will start their research work in third semester with a research problem having research potential involving scientific research, design, generation/collection and analysis of data, determining solution and must preferably bring out the individual contribution.

The examination shall consist of the preparation of report consisting of a detailed problem statement and a literature review. The preliminary results (if available) of the problem may also be discussed in the report. The work has to be presented in front of the examiners panel set by Head and PG coordinator. The candidate has to be in regular contact with his/her supervisor and the topic of dissertation must be mutually decided by the supervisor and student.

The students will be required to submit a progress report related to their dissertation work by the end of September. The progress report will cover the following:

- The goal set for the period.
- Research papers studied.
- Methodology used in achieving the goal.
- The extent of fulfillment of the goal.

The progress report must be at least of 3-4 pages and the cover page should include the tentative topic, name of the candidate, name of the supervisor, period of progress report, signature of candidate and supervisor.

The students will be required to appear for comprehensive Seminar & Viva-voce and submit a synopsis report based on their progress related to the dissertation as per the presentation date mentioned in the academic calendar for the session. The synopsis report will be submitted in the same format as that of the thesis and will contain the following:

1. Introduction
2. Literature Survey
3. Gaps in Literature
4. Objectives of the Proposed Work
5. Methodology
6. References

*** Student will choose his/her guide in the end of second semester.**