

Course Specifications

M. Tech., / PG Diploma Programme



Faculty of Engineering & Technology
M. S. Ramaiah University of Applied Sciences
University House, New BEL Road, MSR Nagar, Bangalore – 560 054
www.msruas.ac.in

Course Specifications: Engineering Design and Technology Management

Faculty	Engineering and Technology
Department	Mechanical and Manufacturing Engineering
Course	Engineering Design and Technology Management
Dean of Faculty	Prof. H. K. Narahari
HOD	Prof. N. S. Mahesh

1. Title of the Award

M. Tech. in Engineering Design and Technology Management

2. Modes of Study

Full-Time Part-Time

3. Awarding Institution /Body

M S Ramaiah University of Applied Sciences - Bangalore, India

4. Joint Award

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5. Teaching Institution

Faculty of Engineering and Technology (FET)
M S Ramaiah University of Applied Sciences - Bangalore, India

6. Date of Course Specifications

October 2014

7. Date of Course Approval by the Academic Council of MSRUAS

November 2014

8. Next Review Date

October 2017

9. Course Approving Regulatory Body and Date of Approval

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10. Course Accrediting Body and Date of Accreditation

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11. Grade Awarded by the Accreditation Body

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12. Course Accreditation Validity

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13. Course Benchmark

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14. Rationale for the Course

This is a User Oriented Post Graduate Course. The students are sponsored from a company / organisation for a customised PG Course. However, the course structure will be the same as other PG courses of MSRUAS.

The sponsoring company / organisation has indicated modules which are relevant to their business. The company is involved in design and development of servo hydraulic equipment for materials and system level testing, encompassing a variety of static and dynamic loading conditions.

The company is keen on upgrading the knowledge, understanding and cognitive skills of engineers through this Masters programme.

15. Course Aim

The aim of the course is to produce postgraduates with ability to design and develop mechanical test and measurement equipment. The candidate will develop higher order critical, analytical, problem-solving and transferable skills and able to think rigorously and independently to meet higher level expectations of manufacturing industry.

16. Course Objectives

Students will be taught to design, build, test and operate mechanical test and measurement equipment with emphasis on adoption of latest technologies.

The objectives of the course are to educate and train the students on the following:

1. Mechanical behaviour of materials and testing for characteristic properties of engineering materials
2. Role and application of Mechatronics and Control Engineering design of testing equipment
3. Probability and statistical tools for data analysis and interpretation
4. Hydraulic system elements, analysis and design
5. Vibration analysis and methods for vibration damping
6. Design and development of servo hydraulic systems to meet functional requirements
7. Develop a career in mechanical testing system design, operation and research
8. Practice teamwork, lifelong learning and continuous improvement

17. Intended Learning Outcomes of the Course

The Intended Learning Outcomes (ILOs) are listed under four headings:

1. Knowledge and Understanding, 2. Cognitive Skills 3. Practical Skills and
4. Capability/Transferable Skills.

17.1 Knowledge and Understanding

After undergoing this course, a student will be able to:

- KU1: Explain the principles of mechanical behaviour of materials
- KU2: Discuss the methods and techniques as applied in designing of hydraulic systems
- KU3: Explain the significance of Control Engineering in operation of servo hydraulic systems
- KU4: Explain the methods for statistical analysis, vibration analysis and vibration damping

17.2 Cognitive Skills

After undergoing this course, a student will be able to:

- CS1: Analyse and select appropriate materials and testing methods for characteristic properties of engineering materials
- CS2: Analyse and suggest appropriate drives and control systems for testing equipment through analytical modelling and simulations
- CS3: Perform vibration analysis and suggest methods to dampen the vibrations
- CS4: Design servo hydraulic system based on the functional requirements

17.3 Practical Skills

After undergoing this course, a student will be able to:

- PS1: Use appropriate tools for modelling and simulations of servo hydraulic systems
- PS2: Use appropriate tools and techniques to measure the performance of servo hydraulic systems
- PS3: Perform mechanical testing of materials and engineering products
- PS4: Use statistical tools for data analysis and interpretation during testing

17.4 Capability/Transferable Skills

After undergoing the course, a student will be able to

- TS1: Evaluate critically the customer requirements and participate in developing mechanical test and measuring equipments
- TS2: Adopt a reflective approach to personal development and embrace the philosophy of continual professional development
- TS3: Present information concisely in a narrative and oral form
- TS4: Work effectively in groups as well as lead them

18. Course Structure

A student is required to successfully complete the following modules for the award of the degree. The course is delivered as per the Time-Table for every batch.

Course: Engineering Design and Technology Management			
Module Code	Modules	Credits	Duration (Weeks)
	Department- Common Modules		
	Foundation course		3
UET501	1. Business Management	5	8
UET502	2. Applied Mathematics	5	8
UET503	3. Mechanical Behaviour of Materials	5	8
	Course - Specialisation Modules		
UET504	1. Computer Aided Engineering	5	8
UET505	2. Signals and Systems	5	8
UET506	3. Control Systems Engineering	5	8
UET507	4. Hydraulic Systems -1	5	8
UET508	5. Hydraulic Systems -2	5	8
UET509	6. Mechatronics	5	8
	Faculty-Common Modules		
FET501	1. Principles of Management and Soft Skills Development	3	4
FET502	2. Research Methodology	3	4
	Elective Module (Any One)	5	8
UET555	Probability and Statistical Methods in Engineering		
UET556	Development of UACE 2020 Applications		
EMM599	Group Work-Project	10	10
EMM600	Dissertation	30	32
	Mandatory Module (Any One)	4	8
FET509	1. Conference Publication		
FET510	2. Journal Publication		
		100	138 *

Note:

1. The Vacations and other activities shall be as per the Time-Table for the corresponding batch.
2. * - Excluding Foundation Course

19. Module Delivery Structure- Part-Time

A module is delivered from Monday to Friday three days a week. The lecture classes will be normally held from 5.00 PM to 8.30 PM with 30 minutes of break. The laboratory classes will be scheduled during the same days in the first four weeks of the module.

Week-1	Week-2	Week-3	Week-4	Week-5	Week-6	Week-7	Week-8
Module Delivery	Module Delivery	Module Delivery	Module Delivery	Study Work	Study Work	Study Work	Assignment submission & Presentation
						Examination	

20. Teaching and Learning Methods

The module delivery comprises of a combination of few or all of the following:

1. Face to Face Lectures using Audio-Visuals
2. Workshops, Group Discussions, Debates, Presentations
3. Demonstrations
4. Guest Lectures
5. Laboratory/Field work/Workshop
6. Industry Visit
7. Seminars
8. Group Exercises
9. Project Exhibitions
10. Technical Festivals

21. Mandatory Module

FET509 Conference Publication
A student can submit a paper and make a presentation in a conference which is approved by the department. The same paper shall be presented for assessment and the student is required to make a presentation to a team of examiners for assessment.

FET510 Journal Publication
A student can publish a paper in a technical journal. The proof of submission and a copy of the paper shall be submitted to the department. It will be assessed based on a presentation to a team of examiners.

22. Group Project

EMM599 A group shall have up to 5 students. The purpose of group project is that the group should be able to design a product in their area of specialisation and develop it. The students are required to develop a report for assessment and also need to demonstrate the working of the product. The IPR of all such work lies with the University only. The students are required to sign an agreement before the commencement of the project. The project should be approved by a committee of examiners before the start of the project. Students can choose a project from the database of projects available with the concerned department. The detailed procedure and evaluation procedure will be provided in Operations Manual / Student Handbook.

23. Individual Project

EMM600 A student chooses a topic for the individual project from the database of the projects available with the concerned department. The detailed procedure of executing and assessing individual project is available in the Student Handbook.

24. Assessment and Grading

A module assessment will have two components:

Component - 1

Assignment 50% weight

Component -2

Examination 50% weight

(Note: For more details on the break-up, please refer to the Module Specifications)

A student is required to score a minimum of 40% in each of the components and an overall 40% for successful completion of a module and earning the credits.

Note: Final marks awarded in each of the modules will be confirmed only after SAB/PAB as explained in Academic Regulations of M. Tech. Programme.

25. Failure and Readmissions

If a student fails in a module, he/she is required to re-attend the module when offered next time by re-registering to the module.

26. Attendance

A student is required to have a minimum of 85% attendance to be eligible to write the examination. Less than 85% attendance is considered FAIL; such a student is required to follow the same procedure as that of a failed student.

Any condoning of shortfall of the attendance is as per the Academic Regulations for M. Tech. Programme.

27. Award of Class

As per the Academic Regulations for M. Tech. Programme.

28. Student Support for Learning

Students are given the following support:

1. Module notes
2. Reference books in the library
3. Magazines and Journals
4. Internet facility
5. Computing facility
6. Laboratory facility
7. Workshop facility
8. Staff support
9. Lounges for discussions
10. Any other support that enhances their learning

29. Quality Control Measures

Following are the Quality Control Measures:

1. Review of module notes
2. Review of question papers and assignment questions
3. Student feedback
4. Moderation of assessed work
5. Opportunities for the students to see their assessed work
6. Review by external examiners and external examiners reports
7. Staff student consultative committee meetings
8. Student exit feedback
9. Subject Assessment Board
10. Programme Assessment Board

30. Curriculum Map

Module Code	Intended Learning Outcomes											
	Knowledge and Understanding				Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving, Innovation)				Practical Skills			
	KU1	KU2	KU3	KU4	CS1	CS2	CS3	CS4	PS1	PS2	PS3	PS4
UET501									X			
UET502	X											X
UET503	X	X		X	X	X	X	X	X	X	X	X
UET504	X	X	X	X	X	X	X		X	X		
UET505	X	X	X	X	X	X	X	X		X		X
UET506	X	X		X		X	X		X	X	X	X
UET507	X	X	X	X	X	X	X			X		X
UET508	X	X		X	X	X	X	X	X	X	X	X
UET509	X	X		X		X	X		X	X		
FET501												
FET502												
FET509			X	X	X	X	X	X	X	X	X	
FET510			X	X	X	X	X	X	X	X	X	
EMM599	X	X	X	X	X	X	X	X	X	X	X	X
EMM600	X	X	X	X	X	X	X	X	X	X	X	X

31. Capability / Transferable Skills

Module Code	Group work	Self-learning	Research Skills	Written Communication Skills	Verbal Communication Skills	Presentation Skills	Behavioural Skills	Information Management	Personal management/ Leadership Skills
UET501	X	X	X	X	X	X		X	X
UET502	X	X	X	X	X	X		X	X
UET503	X	X	X	X	X	X	X	X	X
UET504	X	X	X	X	X	X		X	X
UET505	X	X	X	X	X	X		X	X
UET506	X	X	X	X	X	X		X	X
UET507	X	X	X	X	X	X	X	X	X
UET508	X	X	X	X	X	X		X	X
UET509	X	X	X	X	X	X		X	X
FET501	X			X	X	X	X		X
FET502			X	X	X	X		X	
FET509		X		X	X	X		X	
FET510		X		X	X	X	X	X	X
EMM599	X	X	X	X	X	X	X	X	X
EMM600		X	X	X	X	X	X	X	X

