Web Enabled M.Tech In Automotive Technology

The automotive sector has seen an unprecedented growth in the last decade. This has led to a number of Indian and multinational companies setting up their manufacturing and in many case their major research and development facilities in India. Indian Institute of Technology Madras (IIT Madras), being aware of these developments has always realised the importance of application of fundamental knowledge for the design and development of automotive systems. Automotive manufacturers have set up world class facilities for engine, transmission and subsystem development. Even major multi-nationals with well established research and development facilities have started in-house development to meet country specific demands and also to utilise the talent available in India to improve their products for the world market.

Several departments including mechanical engineering, engineering design, electrical engineering and chemical engineering have been actively involved in automotive research. Faculty of many departments have been interacting with leading automotive industries through R & D, consultancy projects and continuing educational programmes. Several projects have been towards development of products and processes and even joint patents have been filed with the industry.

About the Program

Based on approval and guidelines of the Senate and the needs of Automotive Industries IIT Madras has launched the M.Tech program in the online mode with adequate opportunity for student and teacher interaction. Post-class interaction will be facilitated by an effective course management platform. Candidates have to take four core courses and then six elective courses of their choice from a basket and can complete the entire M.Tech program at their own pace. On completion of each course, a certificate will be awarded and on finishing the required credits in different categories, the candidate will be eligible for a master's degree. The candidate has to also do a set of laboratory experiments in his industry and at IIT Madras. Two projects done in the industry which will be evaluated in the institute will then complete the degree requirements.

Expert faculty are drawn from IIT Madras specifically for this course. Where ever needed, faculty from other reputed academic institutions and automotive industries will also participate. There will be **two quizzes** and **one final exam** in each course. Based on the subjects and the course coordinator, there will be assignments and/or presentations to be submitted online. The courses will strictly follow the norms of other M.Tech courses of IIT Madras.

Course Content

The following are the four courses, two projects and one laboratory course that are to be done by all the students.

Core Courses:

ME 6000 Computational methods in engineering (9 credits)
ME 6080 Measurements in thermal engineering (9 Credits)
ME 6020 IC engine combustion and pollution (9 Credits)
ED 5220 Vehicle dynamics (12 Credits)

Laboratory (5 Credits)

Project 1 (15 Credits)
Project 2 (80 Credits)

Electives:

Apart from the courses all students have to do six electives from the list given below. The list of electives will be constantly updated based on the needs of the industries. However, any elective course can be run only if a sufficient number of students register for the same to make it viable to run the same.

Six electives are to be taken (Total Credits 54)

ME ****	Hybrid and Electric vehicles
ME ****	Autonomous vehicles
ED5330	Control of Automotive Systems
ME7400	Mechatronic Systems
ME7430	Oil Hydraulics and Pneumatic Systems
ME 7910	Acoustics and Noise Control
ME 6720	Failure Analysis and Design
ME6800	Finite Element Analysis
ME7680	Optimization Methods for Mechanical Design
ID5020	Multi Body Dynamics
ME6710	Theory of Mechanisms
ME6850	Product Reliability
ME6870	CAD/CAM for Product Design
ME6740	Computer Aided Machine Design
ME7410	Control Engineering
ME6760	Design of Mechanical Transmission systems
ME6030	Refrigeration and Cryogenics
ME6530	HVAC Systems and Applications
ME6690	Compact Heat Exchangers
ME 6010	Advanced Heat and Mass Transfer
ME7360	Theory of Vibrations
ME7640	Tribo-design and Analysis
ME6040	Incompressible Fluid Flow
ME 6400	Design of Combustion Engines
ME 6420	Simulation of IC Engines Processes
ME6430	Engine Systems & Performance
ME6440	Alternate Fuels for IC Engines

ME 6460	CFD and Its Applications to Engine Processes
ME6480	Transport Process in IC Engines
ME6490	Laser Diagnostics in Engine
ME6470	Engine Instrumentation and Electronic Management

•Any other subject after approval.
•The electives to be offered will depend on the number of students opting for a particular elective and availability of suitable faculty.

IPR and Course Fees

The course fee will be as follows:
•Rs. 50,000/- for 9/10 credit courses per student.
•Rs. 60,000/- for a 12 credit courses per student.
•Laboratory course: Rs. 25,000/-
•Project 1 (IITM Guide + Industry Guide/Mentor): Rs. 25,000/-
•Project 2:
–Mode 1: IITM role restricted to regular evaluation and ensuring that the objectives in all respects are met: Fees: Rs. 25,000/-
–Mode 2: IITM role will be Guidance (Retainer consultancy) and regular evaluation. Fees: Rs. 25,000/- and Retainer Consultancy Fees (worked out on a case to case basis)

In general when the project guidance is only from the company, IPR rests with the sponsoring company, unless the guidance is also by IIT Madras or there is a specific IPR agreement for any retainer consultancy.

The fees can only be paid by the concerned company and not by the individual students. No individual can register for any of these courses. For each semester, the fee for all the candidates sponsored by the organization/company shall be paid to IITM based on the total number of credits (courses) registered by the candidates sponsored by the organization during that semester.

Contact Information

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