

Course Structure of MTech / MTech + PhD Dual Degree Program in Electric Drive Vehicles

Minimum Educational Qualification: Four-year Bachelor's degree or five-year integrated degree (with first division as defined by the awarding Institute/ University for Indian applicants and equivalent to International applicants, as assessed by the Institute) in Mechanical/Electrical/ Electronics and Communication/Automobile/Instrumentation and Control/Electronics/ Instrumentation//Production/Mechatronics Engineering. *Relaxation as per GoI norms in qualifying degree is applicable for SC and ST category applicants.*

Qualifying Examination:

(a) International students: Valid score of TOEFL or IELTS.
(b) Indian students: Valid GATE qualification in Mechanical (ME)/Electrical (EE)/Electronics and Communication (EC)/Production and Industrial (PI)/Instrumentation (IN) Engineering/Engineering Sciences (XE; Engineering Mathematics with Fluid mechanics/Material Science/Solid mechanics/Thermodynamics)

Categories of Admission:

(a) International Students: (i) International self-financed **(ISF)** students; (ii) International students sponsored by non-government organizations or by a reputed industry **(ISW)**; (iii) International students sponsored by foreign government or its organizations or through mutual collaborative programs of India with other countries **(GSW)**
(b) Indian Students: Teaching Assistantship **(Non-TA)**; (ii) Highly motivated sponsored candidate **(SW)** on full-time basis from highly reputed R and D organizations such as DRDO, ISRO, BHEL, C-DAC, ADE, ADA, etc. and highly reputed Industries; (iii) Defense Forces **(DF)**: Candidates sponsored by the Defense Forces; (iv) Regular institute staff **(IS)** of IIT Indore on part-time basis only.

Candidates of Non-TA, SW, DF and IS categories will not be provided any scholarship.

Duration of Program: 2 years on full-time basis.

Selection criteria: GATE Score and / or Interview. (Valid GATE score compulsory for Non-TA category)

Total Intake: Non-TA category + SW + DF + IS

Course Structure of 2-Year Full Time MTech Program in Hybrid Electric Drive Vehicles

1st Year: Semester-I

Course Code	Course Title	Contact hours (L-T-P)	Credits
ME 608*	Hybrid Electric Vehicles	2-1-0	3
EV 601/ EV 401	Vehicle Dynamics	2-1-0	3
EV 603	Autotronics	2-0-2	3
EV 605	Electric Machines and Drives	2-0-2	3
MM XXX	Energy Storage in Electric Vehicle	2-1-0	3
ZZ XXX	Elective I	2-1-0	3
Total minimum credits earned during the semester			18
Additional course (as per the requirement basis)			
HS 641	English Communication Skills	2-0-2	PP/NP

1st Year: Semester-II

Course Code	Course Title	Contact hours (L-T-P)	Credits
EV 602/ EV 402	Vehicular Communication System	2-1-0	3
ZZ XXX	Elective - II	2-1-0	3
ZZ XXX	Elective - III	X-X-X	3
ZZ XXX	Elective - IV	X-X-X	3
ZZ XXX	Elective - V	X-X-X	3
ZZ XXX	Elective - VI	X-X-X	3
EV 698	PG seminar course	0-2-0	2
Total minimum credits earned during the semester			20

2nd Year: Semester-III

Course Code	Course Name	Contact hours (L-T-P)	Credits
EV 799	MTech Research Project (Stage-I)	0-0-36	18

Second Year: Semester-IV

Course Code	Course Name	Contact hours (L-T-P)	Credits
EV 800	MTech Research Project (Stage-II)	0-0-36	18
Total minimum credits to be earned during the program			74

Courses for Elective I to VI †			
Course Code	Course Name	Contact hours (L-T-P)	Credits
EV 6XX	Fuel Cell Technology	2-1-2	3
MM 657*	Advances in Energy Storage Materials	2-1-0	3
MM 606*	Energy Materials	2-1-0	3
EV 6XX	Driver-Vehicle Interaction	2-1-2	3
ME 632/ 432*	Vibrations and Noise Control	2-1-0	3
ME 630*	Robotic Control Systems	2-1-2	4
ME672/ME472*	Reliability Engineering	2-0-2	3
ME 640/ ME 440*	Smart Materials and Structures	2-1-0	3
ME 644/ ME 444*	Robotics	2-0-2	3
ME 648/ ME 448*	MEMS and Micro-System Design	2-1-0	3
ME 756/ ME 456*	Industrial Automation	2-0-2	3
ME 643/ 443*	Micromechanics and Nanomechanics	2-1-0	3
ME 736 / ME 436*	Finite Element Methods	2-0-2	3
ME 637/ 437*	Fracture Mechanics	2-1-0	3
ME 671/ ME 471/ MA 671*	Operations Research	2-0-2	3
ME 618 / ME 418*	Computational Fluid Dynamics (CFD)	2-1-0	3
EE601*	Power Electronics	2-1-0	3
EE603*	Optimization Techniques	2-1-0	3
EE638*	System on Programmable Chip Design	2-1-0	3
CS 601/ CS 401*	Soft Computing	2-0-2	3
CS 603/CS403*	Machine learning	2-0-2	3
CS619/CS419/ICS419*	Computer Vision	2-1-0	3
CS620/CS420*	Embedded Systems	2-1-0	3
CS417/CS617*	Cryptography and Network Security	2-1-0	3

*Already approved course

† In addition to this course list, a student can also opt from the PG courses being offered by the other disciplines.

NOTE: 1. Request for conversion from MTech to MTech + PhD dual degree will be considered after evaluating the research potential of the promising and motivating PG students at the end of the **third semester of their program.**

2. If the student opts for the Dual Degree Programme but cannot complete the requirements of a PhD, an **exit option** with the MTech Degree can be earned at the end of the final semester of the normal MTech Programme by getting the MTech Research Project examined in the standard manner as per the requirements for the award of an MTech degree.

3. The enhancement in the scholarship from MTech to PhD will be from the beginning of the fifth semester or from the date on which all requirements for the award of MTech degree are fulfilled whichever is later.