



**SHRI MATA VAISHNO DEVI UNIVERSITY**  
**SCHOOL OF MECHANICAL ENGINEERING**  
Kakryal, Katra-182320, Jammu & Kashmir

Ref. No.: SMVDU/SoME/26/078

Date: 06/02/2026

Minutes of Meeting of Board of Studies held on 16-01-2026

The meeting of Board of Studies of School of Mechanical Engineering was held on 16-01-2026 at 12:00 noon in the Conference Room of SoME.

The External Experts Dr. Shiva S, Associate Professor, Department of Mechanical Engineering, IIT, Jammu and Mr. Pranav Arora, Head-Production Planning & Control, Bosch Ltd., Jaipur were present in the ONLINE mode.

The following internal members were physically present in the meeting:

1.	Dr. Yatheshhh Anand, Head, School of Mechanical Engineering	Chairman
2.	Prof. (Dr.) Raghvendra Kumar Mishra	Member
3.	Prof. (Dr.) Balbir Singh	Member
4.	Prof. (Dr.) Ankush Anand	Member
5.	Dr. Sanjay Mohan	Member
6.	Dr. Sanjay Sharma	Member
7.	Dr. Mir Irfan Ul Haq	Member
8.	Dr. Kapil Chopra	Member
9.	Dr. Amit Kumar Sinha	Member
10.	Dr. Ankush Raina	Member
11.	Dr. Pradeep Singh	Member
12.	Dr. Rajiv Kumar	Member Secretary

\* Prof. Eswaramoorthy and Dr. Rajiv Dutta, were on leave.

The following agenda items were discussed:

Agenda 1: Proposal of new subject 'Electric Vehicle - MEM SE 105' under Skill Enhancement Course

(SEC) category

Dr. Kapil Chopra proposed a new subject 'Electric Vehicle - MEM SE 105' of two credits with L-T-P as 2-0-0 under the category of Skill Enhancement Course (SEC). The proposed syllabus of the course is attached in Annexure-I

Agenda 2: Modification in syllabus of subjects 'Heat and Mass Transfer - MEL DC 304' and 'Computational Fluid Flow and Heat Transfer - MEE 4234'

Prof. Eswaramoorthy proposed changes in the syllabus of the subject 'Heat and Mass Transfer'. Addition of topics *Heat pipe* and *pulsating heat pipe* in Unit IV.

Dr. Pradeep Singh proposed changes in the syllabus of the subject 'Computational Fluid Flow and Heat Transfer'. The details of the proposed changes in the syllabus of the subjects 'Heat and Mass Transfer' and 'Computational Fluid Flow and Heat Transfer' are attached in Annexure-I

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**Agenda 3: Inclusion of 'Measurement Techniques for Engineers - MEM SE 106' as a Skill Enhancement Course**

Dr. Mir Irfan Ul Haq proposed that "*Measurement Techniques for Engineers*" be introduced as Skill Enhancement Course with 1-0-2 which shall be open for all engineering and Science Students with a maximum capping of 30 students. The course contents are annexed.

**Agenda 4: Inclusion of 'Fundamentals of Automobile Engineering- MEM SE 107' as a Skill Enhancement Course**

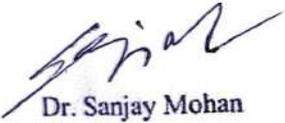
Dr. Mir Irfan Ul Haq proposed that "*Fundamentals of Automobile Engineering*" be introduced as Skill Enhancement Course with 1-0-2 which shall be open for all Engineering/B.Arch./B.Design and Science Students with a maximum capping of 30 students. The course contents are annexed.

The meeting ended with vote of thanks by Member Secretary.

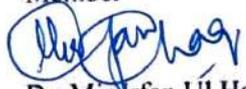
  
Prof. (Dr.) Balbir Singh  
Member

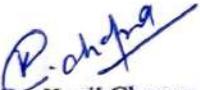
  
Prof. (Dr.) Raghendra Kumar Mishra  
Member

  
Prof. (Dr.) Ankush Anand  
Member

  
Dr. Sanjay Mohan  
Member

  
Dr. Sanjay Sharma  
Member

  
Dr. Mir Irfan Ul Haq  
Member

  
Dr. Kapil Chopra  
Member

  
Dr. Ankush Raina  
Member

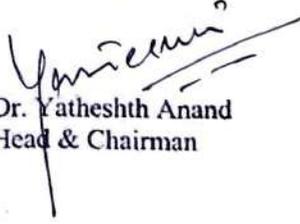
  
Dr. Amit Kumar Sinha  
Member

  
Dr. Pardeep Kumar Singh  
Member

  
Dr. Shiva S.  
External Expert

  
Mr. Pranav Arora  
External Expert

  
Dr. Rajiv Kumar  
Member Secretary

  
Dr. Yatheshth Anand  
Head & Chairman



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Annexure-I

Electric Vehicle-MEM SE 105 (L: T: P-2:0:0)

Old Syllabus	Proposed Syllabus	Content related to Indian Knowledge System
Not applicable	<p style="text-align: center;">Unit-I</p> <p>Transition from Conventional to Electric Vehicles: Evolution of transportation systems, Limitations of conventional internal combustion engine (ICE) vehicles, Working principle of petrol and diesel engines, Emissions, fuel dependency, and maintenance issues, Pros and cons of conventional vehicles, Comparison between ICE and electric vehicles, Policy-driven and technology-driven transition to electric vehicles, Global and Indian EV adoption trends</p> <p style="text-align: center;">Unit-II</p> <p>Electric Vehicle Energy Storage and Battery Efficiency: Types of batteries used in electric vehicles, Battery efficiency, state of charge (SOC), and state of health (SOH), Battery efficiency calculations and performance parameters, Charging and discharging characteristics, Factors affecting battery life and efficiency, Environmental impact of EV batteries, Recycling techniques for lithium-ion batteries, Disposal methods and sustainability concerns</p> <p style="text-align: center;">Unit-III</p> <p>Energy Consumption in Electric Vehicles; Energy flow in electric vehicles, Powertrain efficiency and energy losses, Driving cycles and their impact on energy consumption, Range</p>	-----

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estimation and real-world performance, Regenerative braking and energy recovery, Heat generation in EV batteries, motors, and power electronics, Heat dissipation techniques in electric vehicles, Battery thermal management systems, HVAC system working in electric vehicles, Impact of thermal management on performance and safety

**Unit-IV**

Commercialization and Sector-wise Implementation of EVs: Challenges in the Commercialization of Electric Vehicles, Cost, infrastructure, and policy considerations, Safety and Standards in Electric Vehicles: Electrical, thermal, and mechanical safety aspects of EVs, Battery safety and fire prevention, Crash safety considerations in EV design, ISO and international safety standards for electric vehicles, Safety regulations and compliance requirements

**Recommended Books:**

1. Introduction to Electric Vehicles (EVs) Technology – Tukesh Soni
2. Electric Vehicle Technology Explained – James Larminie & John Lowry
3. Electric Vehicle-Mr. Pankaj Verma, Mr. Amandeep, Mr. Abhay Mahajan, Ms. Ashu Suman

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Heat and Mass Transfer- MEL DC 304 (L: T: P-3:0:0)

Old Syllabus	Proposed Syllabus	Content related to Indian Knowledge System
<p><b>MEL3221: Heat and Mass Transfer</b></p> <p>Unit I: Heat Transfer            Modes of heat transfer; conduction; Fourier's law; thermal conductivity of solids, liquids, and gases; factors influencing thermal conductivity; general three-dimensional heat conduction equation in Cartesian, cylindrical, and spherical coordinates; heat flow through plane walls, cylinders, and spheres; heat source systems; plane wall and cylinder; critical thickness of insulation; different types of fins; heat transfer from fins of uniform cross-section; heat flow in a semi-infinite solid with sudden change in surface temperature; periodic variation of surface temperature.</p> <p>Unit II: Convection            Free and forced convection; basic concepts of hydrodynamic and thermal boundary layers; similarity conditions of heat transfer processes; equations of motion and energy; application of dimensional analysis; empirical equations of convective heat transfer; Reynolds analogy; fundamentals of boiling heat transfer; pool boiling; heat transfer in condensation; dropwise and film condensation; empirical equations.</p> <p>Unit III: Radiation            Thermal radiation; monochromatic and total emissive power; absorptivity, reflectivity, and transmissivity; black, grey, and real surfaces; Planck's distribution law; Wien's displacement law; Stefan-Boltzmann law; Kirchhoff's law; heat transfer by radiation between black and grey surfaces; heat transfer in</p>	<p>Unit I: Heat Transfer            Modes of heat transfer; conduction; Fourier's law; thermal conductivity of solids, liquids, and gases; factors influencing thermal conductivity; general three-dimensional heat conduction equation in Cartesian, cylindrical, and spherical coordinates; heat flow through plane walls, cylinders, and spheres; heat source systems; plane wall and cylinder; critical thickness of insulation; different types of fins; heat transfer from fins of uniform cross-section; heat flow in a semi-infinite solid with sudden change in surface temperature; periodic variation of surface temperature.</p> <p>Unit II: Convection            Free and forced convection; basic concepts of hydrodynamic and thermal boundary layers; similarity conditions of heat transfer processes; equations of motion and energy; application of dimensional analysis; empirical equations of convective heat transfer; Reynolds analogy; fundamentals of boiling heat transfer; pool boiling; heat transfer in condensation; dropwise and film condensation; empirical equations.</p> <p>Unit III: Radiation            Thermal radiation; monochromatic and total emissive power; absorptivity, reflectivity, and transmissivity; black, grey, and real surfaces; Planck's distribution law; Wien's displacement law; Stefan-Boltzmann law; Kirchhoff's law; heat transfer by radiation between black and grey surfaces; heat transfer in</p>	<p align="center">-----</p>

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<p>the presence of re-radiating surfaces; electrical network method for solving radiation problems; radiation shields; shape factors.</p> <p>Unit IV: Heat Exchangers Basic types of heat exchangers; fouling factor; overall heat transfer coefficient; logarithmic mean temperature difference (LMTD); effectiveness-NTU methods; design of single- and multiple-pass heat exchangers</p> <p>Unit V: Mass Transfer Rate equations; mass diffusion in binary mixtures; evaporation in a column; forced convective mass transfer; heat and mass transfer analogies.</p> <p>Recommended Text Books: 1. Sachdeva, R.C.-Fundamentals of Engineering Heat and Mass Transfer, New Age International Publishers, New Delhi. 2. Holman J.P.- Heat and Mass Transfer, Tata McGraw Hill, New Delhi. 3. Kothandaraman, C.P.- Fundamentals of Heat and Mass Transfer, New Age International Publishers, New Delhi.</p>	<p>the presence of re-radiating surfaces; electrical network method for solving radiation problems; radiation shields; shape factors.</p> <p>Unit IV: Heat Exchangers Basic types of heat exchangers; fouling factor; overall heat transfer coefficient; logarithmic mean temperature difference (LMTD); effectiveness-NTU methods; design of single- and multiple-pass heat exchangers; <b>heat pipe and pulsating heat pipe.</b></p> <p>Unit V: Mass Transfer Rate equations; mass diffusion in binary mixtures; evaporation in a column; forced convective mass transfer; heat and mass transfer analogies.</p> <p>Recommended Text Books: 1. Yunus A. Cengel, Afshin J. Ghajar <i>Heat and Mass Transfer: Fundamentals &amp; Applications in SI Units</i> 6th Edition Published: August 7, 2020 2. Özisik, M. N. (1993). <i>Heat Transfer: A Basic Approach</i>. New York: McGraw-Hill. 3. Sachdeva, R.C.-Fundamentals of Engineering Heat and Mass Transfer, New Age International Publishers, New Delhi. 4. Holman J.P.- Heat and Mass Transfer, Tata McGraw Hill, New Delhi. 5. P K Nag HEAT and MASS TRANSFER, 3/e 26 April 2011 McGraw Hill Education 6. Kothandaraman, C.P.- Fundamentals of Heat and Mass Transfer, New Age International Publishers, New Delhi.</p>	
	<p>% change in syllabus – 02%</p>	

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	Chung- Cambridge University Press. 3. An introduction to Computational fluid dynamics: The finite volume method, H Versteeg and W Malalasekera. Pearson.	
	% change in syllabus - 40-45%	

**Measurement Techniques for Engineers-MEM SE 106 (L: T: P-2:0:0)**

Old Syllabus	Proposed Syllabus	Content related to Indian Knowledge System
	<p>Unit 1: Introduction to Measurement Systems            Definition and objectives of measurement            Measurement standards: primary, secondary, working standards            Basic terminology: accuracy, precision, sensitivity, resolution, repeatability            Classification of measurement systems            Static and dynamic characteristics of instruments</p> <p>Unit 2: Errors and Uncertainty Analysis            Types of errors: gross, systematic, random            Sources of errors            Statistical analysis of experimental data            Mean, standard deviation, confidence limits            Error propagation and uncertainty estimation</p> <p>Unit 3: Linear and Angular Measurement Techniques            Line standards and end standards            Vernier calipers, micrometers, height and depth gauges            Slip gauges and gauge blocks            Angular measurements: bevel protractor, sine bar, angle gauges</p> <p>Comparators: mechanical, optical</p> <p>Unit 4: Measurement of Mechanical Quantities            Measurement of force: load cells, proving rings            Measurement of torque            Measurement of pressure: manometers, Bourdon gauge            Measurement of speed: tachometers, stroboscope            Measurement of displacement and vibration</p> <p>Unit 5: Electrical and Electronic Measurement Techniques            Measurement of voltage, current and resistance            Analog and digital measuring instruments            Transducers: resistive, inductive, capacitive, piezoelectric            Signal conditioning and data acquisition basics</p>	

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	<p>Unit 6: Temperature and Thermal Measurements          Temperature scales and standards Thermocouples and RTDs Thermistors Infrared temperature measurement          Calibration of temperature measuring instruments</p> <p>Unit 7: Industrial Measurement and Calibration          Calibration methods and procedures          Measurement system selection          Industrial inspection techniques          Quality control and measurement          Introduction to ISO standards in metrology</p> <p><b>List of Experiments :</b></p> <ol style="list-style-type: none"> <li>1. Measurement of Linear Dimensions</li> <li>2. Error and Uncertainty Analysis</li> <li>3. Angular Measurement Techniques</li> <li>4. Measurement of Force / Load</li> <li>5. Measurement of Pressure</li> <li>6. Temperature Measurement</li> <li>7. Speed and Displacement Measurement</li> </ol> <p><b>List of Recommended Books:</b>          Engineering Metrology – <i>R.K. Jain</i>          Mechanical Measurement and Control – <i>D.S. Kumar</i>          Measurement and Instrumentation: Theory and Application – <i>Alan S. Morris &amp; Reza Langari</i></p>	
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**Fundamentals of Automobile Engineering MEM SE 107 (L: T: P-2:0:0)**

Old Syllabus	Proposed Syllabus	Content related to Indian Knowledge System
	<p>Unit 1: Introduction to Automobiles            Major automobile systems, Vehicle specifications and standards</p> <p>Unit 2: Automobile Engines            Types of IC engines, Working principles of SI and CI engines, Engine components: cylinder, piston, crankshaft, camshaft, Engine performance parameters            Cooling systems (air &amp; water cooling), Lubrication systems</p> <p>Unit 3 : Fuel Supply and Ignition Systems            Fuel supply system for petrol engines, Carburetion and fuel injection systems, Diesel fuel injection system, Ignition systems: battery ignition, magneto ignition, Emission formation basics</p> <p>Unit 4: Transmission System</p>	

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	<p>Need for transmission system, Clutches: types and working, Gearboxes: sliding mesh, constant mesh, synchromesh, Manual and automatic transmission basics Propeller shaft, universal joint, differential</p> <p>Unit 5: Steering and Suspension Systems Functions of steering system, Types of steering mechanisms, Suspension system requirements, Types of suspension: leaf spring, coil spring, independent suspension, Shock absorbers</p> <p>Unit 6: Braking Systems Need for braking, Types of brakes: mechanical, hydraulic, pneumatic, Drum and disc brakes, Anti-lock Braking System (ABS) – basics, Braking performance parameters</p> <p>Unit 7: Wheels, Tyres and Electrical Systems Wheels and rims, Tyre construction and types, Tyre wear and maintenance, Automobile electrical system, Battery, alternator, starter motor, Lighting and accessories</p> <p>Unit 8: Emissions, Safety and Emerging Trends Pollutants and emission standards (BS norms – overview) Emission control techniques, Vehicle safety systems: passive &amp; active safety, Introduction to Electric Vehicles (EVs), Hybrid vehicles and future mobility</p> <p><b>List of Experiments :</b> Experiment 1: Study of Automobile Layout and Major Systems Experiment 2: Study of SI and CI Engines Experiment 3: Performance Test on Single Cylinder Engine (Demonstration) Experiment 4: Study of Fuel Supply and Ignition System Experiment 5: Study of Transmission System Components Experiment 6: Study of Steering and Suspension Systems Experiment 7 :Study of Braking System Experiment 8: Study of Automobile Electrical System</p>	
	<p>Books Recommended:</p> <ol style="list-style-type: none"><li>1. Automotive Mechanics – William H. Crouse &amp; Donald L. Anglin</li><li>2. Automobile Engineering – Kirpal Singh</li></ol>	

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