Haldia Institute of Technology

(An Autonomous Institution Under Maulana Abul Kalam Azad University of Technology, West Bengal)

Syllabus for M. Tech in Mechanical Engineering (Program Code-124)

[Specialization in Manufacturing Technology]

With effect from AY-2026-2027

Curriculum Structure

Semester -I

THEORY							
Sl. No.	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Total**	**Credit**
1	MMT 101	Operational Management	3	0	0	3	3
2	MMT 102	Advanced Metal Cutting	3	0	0	3	3
3	MMT 103	Elective I	3	0	0	3	3
4	MMT 104	Elective II	3	0	0	3	3
5	MMT 105	Product Design & Life-cycle Management	3	0	0	3	3
6	MMT A1	Audit Course	2	0	0	2	0
	Total Theory					**16**	**15**
PRACTICAL							
1	MMT 191	Advanced Metal Cutting Lab	0	0	4	4	2
2	MMT 192	CAD/CAM Lab	0	0	4	4	2
	Total of Practical					**8**	**4**
	Total of Semester					**24**	**19**

Elective I

MMT 103A- Computer Graphics & CAE
MMT 103B- Advanced Manufacturing Systems
MMT 103C- Artificial Intelligence for Manufacturing

Elective II

MMT 104A- Hydraulics & Pneumatics
MMT 104B- Ergonomics & Work System Design
MMT 104C- Statistical Process Control
MMT 104D- Industrial and Systems Engineering

Semester -II

THEORY							
Sl. No.	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Total**	**Credit**
1	MMT 201	Reverse Engineering and Rapid Prototyping	3	0	0	3	3
2	MMT 202	Micro Machining & Nano Fabrication	3	0	0	3	3
3	MMT 203	Robotics	3	0	0	3	3
4	MMT 204	Elective III	3	0	0	3	3
5	MMT 205	Elective IV	3	0	0	3	3
6	MMT 206	Research Methodology & IPR	2	0	0	2	2
	Total Theory					**17**	**17**
PRACTICAL							
1	MMT 291	Robotics & Mechatronics Lab	0	0	4	4	2
2	MMT 281	M. Tech Thesis Part - I (Term Paper)	0	0	4	4	2
3	MMT 282	Term Paper Seminar and Viva-voce	-	-	-	-	1
	Total of Practical					**8**	**5**
	Total of Semester					**25**	**22**

Elective III

MMT 204A-Mechatronics
MMT 204B-Agent Based Systems & Agentic AI
MMT 204C-Industry 4.0 & 5.0

Elective IV

MMT 205A- Reliability and Safety Engineering
MMT 205B- Quality Function Deployment
MMT 205C- Business Process Reengineering
MMT 205D - Product Analysis and Cost Optimisation

Audit course (MMT A1)

1. English for Research Paper Writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management by Yoga
8. Personality Development through Life Enlightenment Skills.

Semester -III

Sessional							
1	MMT 381	M. Tech Thesis Part - II (Progress Report)	0	0	24	24	8
2	MMT 382	Progress Report Seminar & Viva-voce	0	0	0	-	3
	Total of Semester					**24**	**11**

Semester -IV

Sessional							
1	MMT 481	M. Tech Final Thesis	0	0	24	24	12
2	MMT 482	Thesis Seminar and Viva-voce	0	0	0	0	4
	Total of Semester					**24**	**16**
Total							**68**

Department of Mechanical Engineering
Haldia Institute of Technology
[An Autonomous Institute under MAKAUT]

HALDIA, 16/06/2026

[Minutes of the Meeting]

The Board of Studies (BOS) Meeting of the Department of Mechanical Engineering, Haldia Institute of Technology (HIT), Haldia, was convened on 16th June 2026 at 10:00 a.m. **in** Room No. 2003 of the Department of Mechanical Engineering. The meeting was organized in a hybrid mode with the participation of 32 distinguished members, comprising 30 members attending online and 2 members attending physically.

The meeting was chaired by Prof. T. K. Jana, Principal, HIT as Chairman of the Board of Studies. The primary objective of the meeting was to deliberate upon academic and administrative matters concerning the undergraduate and postgraduate programs of the department. The Head of the Department and Convener of BOS Prof G. K. Bose warmly welcomed all internal and external experts, university nominees, industry representatives, alumni members, and faculty members, expressing gratitude for their valuable presence and continued support in enhancing academic excellence. The members appreciated the efforts of the department in organizing the meeting in a hybrid format, ensuring wider participation and constructive deliberations. After confirming the quorum, the Chairperson declared the meeting open and proceeded with the agenda items for detailed discussion and necessary resolutions.

Agenda 1: Restructuring of the curricula and syllabus of UG and PG as NEP 2020 and NCrF guidelines for the batch 2026-2030.

Resolution 1.1: The Board deliberated on the restructuring of the Undergraduate curricula and syllabi in accordance with the provisions of the National Education Policy (NEP) 2020 and the National Credit Framework (NCrF), to be implemented for the batch of students admitted in 2026 onwards. To ensure a balanced academic workload and facilitate multidisciplinary learning, the credit distribution across the four-year undergraduate program has been rationalized. The revised credit allocation is as follows: 41 credits in the first year, 48.5 credits in the second year, 45.5 credits in the third year, and 27 credits in the fourth year, thereby ensuring academic flexibility and alignment with national educational reforms.

Resolution 1.2: The Board also approved the revised credit distribution for the postgraduate program in conformity with NEP 2020 and NCrF guidelines. The semester-wise credit allocation has been rationalized as 17 credits in the first semester, 22 credits in the second semester, 11 credits in the third semester, and 16 credits in the fourth semester to ensure balanced academic progression and effective research orientation.

Resolution 1.3: The Board of Studies in Mechanical Engineering approved the syllabi of the courses Additive Manufacturing and Computer Aided Process Design for Chemical Engineering and recommended their implementation.

Agenda 2: Course outcomes of the courses

Resolution 2.1: The Board resolved that each course shall have six well-defined Course Outcomes (COs). The COs were framed and approved in accordance with Outcome-Based Education (OBE) principles to ensure compliance with accreditation requirements and to facilitate effective mapping with Program Outcomes and Program Specific Outcomes.

Agenda 3: Number of modules in each course.

Resolution 3.1: The Board resolved that the detailed syllabus of each course shall be structured into a maximum of six modules. The modules have been carefully designed to comprehensively cover all fundamental and advanced aspects of the subject, ensuring adequate depth, breadth, and systematic coverage of every essential component of the course curriculum.

Agenda 4: Type of value added courses would be offered for the improvement of employability.

Resolution 4.1: the following value-added courses are offered by the department as furnished hereunder.

Name of the value-added courses (with 30 or more contact hours) offered	Course Code, if any	Duration of course (in hours)
AutoCAD for Mechanical Engineers (Industry partner: CADD Center)	VAC ME 191	40 Hrs
3D Printing with FDM (Industry partner: Ardent Computech. Pvt. Ltd.)	VAC ME 192	40 Hrs
Solid Works (Industry partner: Ardent Computech. Pvt. Ltd.)	VAC ME193	40 Hrs

Agenda 5: Community services by the students.

The Board approved the inclusion of an Audit Course on National Service Scheme (NSS) in the first-year curriculum. The course is designed to inculcate social responsibility and community engagement through activities such as blood donation camps, campus cleanliness drives, Vigilance Awareness Week celebrations, environmental initiatives, and other community service programmes.
The meeting ended with vote of thanks to the external experts and the Chainman of BOS.

Prof. G. K. Bose.
Head ME & Convener, BOS, ME

- Annexure 1: Attendance record.
- Annexure 2: Credit compliance sheet UG. [Duly signed by external experts]
- Annexure 3: final UG course Structure.
- Annexure 4: final PG course Structure.

Copy to :

- The Principal, HIT
- All BOS Members .....
- Office file

Department of Mechanical Engineering
Haldia Institute of Technology
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BOS Meeting 15/06/2026

Credit Distribution UG Program in Mechanical Engineering		
Semester	Credit	
1	19	41
2	22	
3	26	48.5
4	24.5	
5	22.5	45.5
6	24	
7	11	27
8	13	
Total	162	

Credit Distribution PG Program in Mechanical Engineering		
Semester	Credit	
1	19	41
2	22	
3	11	27
4	16	
Total	68	

• **Prof. Dr. T. K. Jana**	Principal, Haldia Institute of Technology, Haldia.	16.06.2026.
• **Prof. Dr. S. Mitra**	Professor, Department of Production Engineering, JU, Kolkata.	16.6.26
• **Prof. Dr. S. Bhaumik**	Professor, Deptt. of Aerospace Engineering & Applied Mechanics, IIEST, Shibpur, Howrah.	
• **Prof. Dr. S. Ghosh**	Professor, Dept. of Mechanical Engineering,IIEST, Shibpur, Howrah.	16/06/2026
• **Mr. Susobhan Patra**	Vice President, Haldia Energy Ltd.	16/6/26
• **Dr. Venkata Naga Vamsi Munagala**	Assistant Professor, Mechanical Engineering Department, IIT Kharagpur.	
• **Dr. Siddharth Tamang**	Assistant Professor, Mechanical Engineering Department, IIT Kharagpur.	16/06/26
• **Prof. Dr. G. K. Bose**	Professor & Head, ME Department, HIT, Haldia.	16.06.26

Department of Mechanical Engineering
Haldia Institute of Technology
[An Autonomous Institute under MAKAUT]
Attendance Record of BOS Meeting
15/06/2026

Name	Designation	Signature
Prof. Dr. T. K. Jana	Principal, Haldia Institute of technology, Haldia.	16.06.2026.
Prof. Dr. G. K. Bose	Professor & Head, ME Department, HIT, Haldia.	16.06.26
Prof. Dr. S. Mitra	Professor, Department of Production Engineering, JU, Kolkata.	16.6.2026.
Prof. Dr. S. Bhaumik	Professor, Deptt. of Aerospace Engineering & Applied Mechanics, IIEST, Shibpur, Howrah.	
Prof. Dr. S. Ghosh	Professor, Dept. of Mechanical Engineering,IIEST, Shibpur, Howrah.	16/06/2026
Mr. Susobhan Patra	~~GM~~ Vice President, Haldia Energy Ltd.	16/6/26
Dr. Venkata Naga Vamsi Munagala	Assistant Professor, Mechanical Engineering Department, IIT Kharagpur.	
Dr. Siddharth Tamang	Assistant Professor, Mechanical Engineering Department, IIT Kharagpur.	16/06/26
Prof. Dr. Bikash Bepari	Professor, ME Department, HIT, Haldia.	16/06/26
Prof. Dr. Balaram Dey	Professor, ME Department, HIT, Haldia.	16/6/26
Dr. Debasis Das Adhikary	Associate Professor, ME Department, HIT, Haldia.	16/06/26
Dr. Nilabha Sankar Mitra	Associate Professor, ME Department, HIT, Haldia.	16/06/2026
Dr. Supriyo Roy	Associate Professor, ME Department, HIT, Haldia.	16.06.2026.
Dr. Abhishek Samanta	Associate Professor, ME Department, HIT, Haldia.	16/6/26
Dr. Abhijit Saha	Associate Professor, ME Department, HIT, Haldia.	16/06/26
Dr. Bipradas Bairagi	Assistant Professor, ME Department, HIT, Haldia.	16/6/26
Dr. Premangshu Mukhopadhyay	Assistant Professor, ME Department, HIT, Haldia.	16/06/26
Dr. Ashoke Kr. Bera	Assistant Professor, ME Department, HIT, Haldia.	16/06/26

Sri Satyajit Chatterjee	Assistant Professor, ME Department, HIT, Haldia.	16/06/26
Sri Nirmalya Bayal	Assistant Professor, ME Department, HIT, Haldia.	
Sri Sourav Sarkar	Assistant Professor, ME Department, HIT, Haldia.	S. Sarkar 16.6.26
Sri Souvik Gantait	Assistant Professor, ME Department, HIT, Haldia.	16.6.26
Dr. Manas Kumar Bhukta	Assistant Professor, ME Department, HIT, Haldia.	16.06.26
Sri Pritam Pain	Assistant Professor, ME Department, HIT, Haldia.	Pritam Pain 16/6/26
Dr. Sourav Pattanayak	Assistant Professor, ME Department, HIT, Haldia.	16/06/2026
Sri Soumik Dutta	Assistant Professor, ME Department, HIT, Haldia.	16/6/26
Dr. Pradip Mondal	Assistant Professor, ME Department, HIT, Haldia.	16/06/26.
Dr. Prabir Kumau Kar	Assistant Professor, ME Department, HIT, Haldia.	Prabir Kumar Kar 16/6/26
Dr. Rahul Das	Assistant Professor, ME Department, HIT, Haldia.	16/06/26.
Dr. Soumyajit Roy	Assistant Professor, ME Department, HIT, Haldia.	Soumyajit Roy 16/6/26
Dr. Sourav Ganguli	Assistant Professor, ME Department, HIT, Haldia.	Sourav Ganguli 16/6/26
Dr. Sandip Mondal	Assistant Professor, ME Department, HIT, Haldia.	