Haldia Institute of Technology

[An Autonomous Institute under MAKAUT]

Report on

Academic Audit (2023-2024)

Department of Mechanical Engineering

Schedule of the Academic Audit on 6th November 2023

1. **Auditor 1 :** **Dr. S. Mitra**
   Professor
   Department of Production EngineerigJU,
   Kolkata.

2. **Auditor 2 :** **Dr.S. Bhaumik**
   Professor
   Dept. of Aerospace Engineering & Applied Mechanics, (IIEST) Shibpur, Howrah.

S.No	Time	Auditor –I Departments	Auditor-II Departments
1	10.30 AM to 01.30 PM	File Check 1-13	File Check 14-26
2	01.00 PM to 02.00 PM	Lunch	
3	02.00 PM to 03.00 PM	CO, PO & PSO Attainment	Students Project Analysis
4	03.00 PM to 04.00 PM	• Workshop & Lab Visit • Placement and Internship	
5	04.00 PM to 4.30 PM	Report writing and Closing Meeting	

List of Files Audited:

S.No	F. No	Description
	I - Curricular Aspects	
1	AE/F1.1	Department Vision, Mission, PEO, PSOs
2	AE/F1.2	Department PEO, Academic calendar & adherence
3	AE/F1.3	Department SWOT analysis
4	AE/F1.4	Field Project Internship and Inplant training and industrial visits
5	AE/F1.5	Board of Studies Minutes, Regulations, Curriculum and Syllabus for all Regulations
6	AE/F1.6	Feedback on curriculum enrichment (Feedback from all stake holders)
7	AE/F1.7	Curriculum enrichment for (Employability, EDC, Skill Development)
8	AE/F1.8	Value Added Courses (Please verify students certificate in value added course)
	II – Teaching learning & support system Aspects	
9	AE/F2.1	Students strength and Faculty Students Ratio (as per NBA format)
10	AE/F2.2	Record of Teaching and Non-Teaching staff profile
11	AE/F2.3	Students mentoring file and action taken (Please verify the document and comment)
12	AE/F2.4	CO-PO mapping and CO attainment (Please verify the attainment for all years with proof)
13	AE/F2.5	Student Satisfaction Survey on overall institutional performance (Please verify the feedback), survey on infrastructure and facilities.
14	AE/2.6	Students achievement in examination (result analysis) (Please verify students secured more than 8.25 CGPA & more than 6.75, single attempt pass without backlog for 2nd and 3rd year)
15	AE/F2.7	Continuous Assessment Analysis (Both Theory and Practical courses), Evaluation, Question, CO compliance etc. Result publication.

16	AE/F2.8	End Semester Exam Result Analysis
17	AE/F2.9	Feedback on Teaching Learning process & Syllabus
18	AE/F2.10	Course file (Theory and laboratory courses) (Please verify Internal Test Note (Theory) ,Class note , Assignment)
19	AE/F2.11	All Lab Maintenance, Stock Register, Stock Verification Record and Calibration details
20	AE/F2.12	Lab Manual, Records, Observation and Time Table (Please verify 2 Nos. /subject /class for all the practical courses)
21	AE/F2.13	Students' attendance (Please verify the Master attendance)
22	AE/F2.14	No. of Research Supervisors and Scholar details and Ph.D awarded (Please verify the proof)
23	AE/F2.15	Research paper publications (International / National Journal andConference (Please verify No. of Publication and Quality of publication)
24	AE/F2.16	Books, chapters and Conference Proceddings published by faculty (Please verify the documents)
25	AE/F2.17	Conference, Seminar etc organized by the Department (Please verify number of programmes organized with proof)
26	AE/F2.18	Details of Startups and IPR filing (Please verify status filed, published and awarded)

Key Findings:

1. **Curriculum and Syllabus:**
    - The curriculum is generally well-structured, with regular updates to align with industry trends and emerging technologies. However, there is room for further incorporation of interdisciplinary topics such as robotics, artificial intelligence, and advanced manufacturing.
    - The department offers a blend of core mechanical engineering subjects and elective courses that cater to diverse student interests and industry requirements.
2. **Teaching and Learning Process:**
    - Faculty members employ a variety of teaching methods, including lectures, tutorials, laboratory sessions, and project-based learning. The integration of modern educational technologies (such as online resources, simulation software, and industry visits) enhances student engagement.
    - The department also promotes active student participation through seminars, workshops, and technical events, but there is a need for more industry-driven projects and internships to improve practical exposure.
3. **Faculty and Research:**
    - Faculty members hold relevant academic qualifications and actively participate in research, with publications in reputed journals and conferences. However, there is an opportunity to increase collaborative research with industry and other academic institutions.
    - The department should encourage more faculty development programs to enhance teaching methodologies, research skills, and industry engagement.
4. **Student Performance and Outcomes:**
    - The academic performance of students is commendable, with a good number of students securing placements in reputed organizations. However, the department could improve career counseling and soft-skill development initiatives to better prepare students for the job market.
    - The student feedback system is robust and has led to improvements in teaching practices, but more emphasis could be placed on mentoring and individualized support.
5. **Infrastructure and Facilities:**
    - The department is equipped with modern laboratories, workshop facilities, and computing resources. However, some of the equipment in certain laboratories requires updating to ensure students are trained on the latest technologies.
    - The department could benefit from additional space for research activities and more state-of-the-art simulation tools.
6. **Research, Consultancy, and Extension Activities:**
    - The department has made strides in research, with faculty involved in funded projects and collaborations. However, there is potential to enhance research output and expand consultancy services by fostering stronger ties with industry partners.
    - The extension activities, such as community engagement and outreach, could be further expanded to include more hands-on training for students and local industry participation.
7. **Feedback Mechanism:**
    - The department collects feedback from students, alumni, and industry stakeholders, and uses this data to make informed decisions on curriculum changes, teaching methods, and infrastructural improvements.
    - A more structured alumni engagement program could be developed to provide career guidance, mentorship, and internships for current students.

Recommendations:

1. **Curriculum Enhancement:**
    - Introduce interdisciplinary electives in emerging areas like AI, data analytics, and sustainable engineering to prepare students for future challenges in the mechanical engineering domain.
    - Establish stronger industry-academia collaborations for curriculum development and real-world problem-solving.
2. **Improvement in Industry Exposure:**
    - Increase the number of industry internships and live projects for students to bridge the gap between academic learning and industry requirements.
    - Organize more guest lectures, webinars, and workshops by industry experts to expose students to current industry practices and technological advancements.

3. **Faculty Development:**
    - Encourage faculty to undertake short-term industry internships and research collaborations to enhance their practical knowledge and teaching expertise.
    - Promote faculty participation in national and international conferences, workshops, and seminars to stay updated on the latest developments in mechanical engineering education and research.
4. **Infrastructure Upgrades:**
    - Invest in updating laboratory equipment, especially in areas like manufacturing processes, robotics, and fluid dynamics.
    - Explore the possibility of expanding research facilities and providing more space for student innovation and experimentation.
5. **Strengthen Research and Consultancy:**
    - Foster a culture of collaborative research by encouraging joint projects with other departments and industries.
    - Increase the department's consultancy activities by leveraging faculty expertise in specialized areas of mechanical engineering.
6. **Enhance Career Services:**
    - Develop a stronger career counseling framework that includes soft skills training, mock interviews, and job placement support.
    - Engage alumni more actively in mentoring and placement activities to improve job readiness for graduates.

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