PERI
INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)
Mannivakkam, Chennai – 600 048
(Approved by AICTE, Affiliated to Anna University & Accredited by NAAC)

DEPARTMENT OF MECHANICAL ENGINEERING

Minutes of the First Board of Studies Meeting

The first Board of Studies (BoS) meeting of the Department of Mechanical Engineering was conducted on **13/08/2024** at BETA Conference Hall at 11.30 am (IST). The following members were present,

S.No	Name of the Faculty	Designation
1.	**Dr. N. Tamiloli,** Head & Professor, Department of Mechanical Engineering, PERI Institute of Technology.	**Chairman**
2.	**Dr. M. Thirumal Azhagan,** Associate Professor, Department of Production Technology, Anna University, Chennai - 600 044. Phone: 9962593286 Email: thirumalazhaganm@mitindia.edu,	University Representative
3.	**Dr. S. Saravana Perumaal** Associate Professor, Department of Mechanical Engineering, National Institute of Technical Teachers Training and Research, Taramani, Chennai- 600 113 Email: saravanaperumaal@nitttrc.edu.in	External Subject Expert-Online
4.	**Dr. M. Cheralathan** Professor & Head SRMIT, Katankulathur, chennai. Email: cheralam@srmist.edu.in	External Subject Expert
5.	**Mr. U.P Praburaj,** Principal Member (R&D) Tractors and Form Equipments Limited, Chennai. Email: praburajuttrapandian@gmail.com	External Subject Expert
6.	**Mr. T. Uma Shankar** Senior Engineer, Saipem India Projects Private Limited, Perungudi, Chennai. Email: umashankartaravind@gmail.com	Alumnus
7.	Mr. Anil Kumar, Assistant Professor	Internal Subject Expert

8.	Dr. M. Rajagopal, Professor	Internal Subject Expert
9.	Dr. V. Abhilash, Assistant Professor	Internal Subject Expert
10.	Mr. Dhilip Kumar, Assistant Professor	Internal Subject Expert
11.	All faculty Members	Internal Subject Expert

Minutes Agenda:

1. **Introduction and Welcome:** The Chairperson welcomed the members and introduced the agenda.
2. **Review of Current Curriculum:** The HOD presented an overview of the current curriculum. Members discussed the strengths and weaknesses.
3. **Proposed Changes to Curriculum**: The HOD presented proposed changes. Members discussed and provided feedback.
4. **Discussion on Industry-Academia Collaboration:** Members discussed ways to enhance industry-academia collaboration.
5. **Any Other Business:** No other business was discussed.

Minutes:

Dr. N. Tamiloli, Chairman of the Board of Studies (BOS), commenced the meeting by warmly welcoming and providing an overview of the Department of Mechanical Engineering. He also took the opportunity to introduce the external members to the internal members. The Chairman then presented the following agenda to guide the discussions and deliberations of the members. The meeting's proceedings and outcomes are summarized below and aligned with the agenda items that were circulated prior to the meeting.

The Board of Studies (BoS) members have reviewed the syllabus for the following courses and provided their comments and suggestions, which are detailed below.

General and Curriculum Comments:-

1. The **internal and external evaluation procedures** were discussed, and the members expressed **satisfaction** with the norms followed at PERI IT.

2. The external members confirmed that the **Engineering Graphics subject in Semester I** meets the syllabus requirements through manual drawing with drafting tools and will transition to software from Semester II. **(Annexure 1)**

3. "The Board Chairman confirmed that the Idea Engineering Lab in Semester II has approximately 80-90% of the required facilities available, in response to our inquiry."

4. The members verified that open elective courses listed by departments are taken from other departments. **(Annexure 2)**

5. The external members suggested including **Metrology and Quality Control** in the core curriculum, aligning with mechanical engineering norms and standards. **(Annexure 3)**

6. The external members suggested including **Robotics and Automation**, reflecting their significant demand for job opportunities and design engineering. **(Annexure 4)**

7. The inclusion of **Gas Dynamics and Jet Propulsion as a core or elective subject** is recommended by the external members, due to its significance in advanced aero-related fields, master's degrees, and research. **(Annexure 4)**

8. The BoS members suggested including **Computational Fluid Dynamics as a core or elective** subject, given its importance in aero-related work, master's degrees, and research. **(Annexure 4)**

9. The members recommended including **Mechatronics** in the curriculum, either as a core or elective subject, due to its high demand in job opportunities, design engineering, and future scope. **(Annexure 4)**

10. The external members suggested that the lab subjects (AUTOCAD Lab, Solid Work Lab, CATIA Lab, and CAD/CAM Lab) be **renamed** to reflect their practical applications. **(Annexure 3)**

11. It is recommended that input from industrial experts be sought to develop the syllabus and external evaluation procedures, ensuring that they align with the accreditation standards of NAAC and NBA.

12. It is recommended that **milling-related** exercises be added to the **CAD/CAM** Laboratory, complementing the current lathe exercises. **(Annexure 5)**

13. The members suggested considering **foreign language inclusion**, if applicable, instead of basic science.

14. The **professional elective curriculum should feature Hydraulics and Pneumatics and Design of Jigs and Fixtures**, reflecting their significance in job opportunities and design and manufacturing engineering applications. **(Annexure 4)**

15. All members expressed satisfaction with the subject content prepared by internal subject experts. **(Annexure 6)**

16. The **core subjects' syllabus framework**, designed to meet industry requirements and prepare students for GATE and competitive exams, was well-received.

17. They advised rechecking course outcomes.

18. The BoS members suggested changing the subject **'Introduction (Basics) to Mechanical Engineering Profession'** to be renamed, as it is recommended that the title not begin with the word 'Introduction'. **(Annexure 3)**

19. They suggested changing the category of **Introduction to Mechanical Engineering Profession from Engineering Science to core. (Annexure 3)**

20. They recommended reducing the total credit to **160-165.**

21. The external members suggested reducing the number of **units to 5.**

22. The BoS recommended decreasing the credit for Semester I without affecting overall credit.

23. It is recommended that **Turbo Machine be offered as an elective paper. (Annexure 4)**

24. The BoS Chairman explained that Auto CAD is used for basic training in the first year, while Solid Works provides additional features for second-year students, clarifying the need for both software in the curriculum."

Resolutions in Meeting:

- **Agenda 1:** To discuss and finalize the course structures of I, II, III, IV, V, VI, VII and VIII B.E of R-24 (Autonomous) Regulations.
- **Resolutions:** The course Structure of the B.E programme of R-24 (Autonomous) Regulations is approved with minor modifications by BoS.

Based on the suggestions given by the members, the Chairman of BOS said that those fruitful suggestions would be incorporated appropriately into the curriculum and syllabi.

BOS resolved to recommend the following to the Academic Council for further approval.

a) Syllabus for core courses of B.E. Mechanical Engineering Programme as enclosed in **Annexure- 1.**

b) List of Professional and Open Elective Courses in the B.E. Mechanical Engineering Programme as enclosed in **Annexure -2.**

The meeting then concluded with a vote of thanks by Mr. Anil Kumar, Assistant Professor/Mech.

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Dr. N. Tamiloli,
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Department of Mechanical Engineering,
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PERI Institute of Technology (Autonomous) Dept. of Mech. Engg.

CHAIRMAN
Board of Studies
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Mannivakkam, Chennai-48

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The proposed solution presented following the BoS meeting is as follows:

1. The external members confirmed that the Engineering Graphics subject in Semester I meets the syllabus requirements through manual drawing with drafting tools and will transition to software from Semester II.
   - ✓ **Engineering Graphics in Semester I will focus on manual & software-based drafting tools drawing recommendations of the Board of Studies members, and is added to the engineering graphics syllabus of Annexure I.**

2. The members verified that open elective courses listed by departments are taken from other departments.
   - ✓ **Open elective courses are listed from all the various departments in Annexure II.**
3. Metrology and Quality Control should be included in the core curriculum, aligning with mechanical engineering norms and standards.
   - ✓ **Following the recommendation of the Board of Studies members, "Metrology and Quality Control" has been included as a professional core paper in the 6th semester, as documented in Annexure III.**
4. The curriculum should include Robotics and Automation, reflecting their significant demand in job opportunities and design engineering.
   - ✓ **Following the recommendation of the Board of Studies members, "Robotics and Automation" has been added as a professional elective in Vertical 3, as listed in Annexure IV.**

5. The inclusion of Gas Dynamics and Jet Propulsion as a core or elective subject is recommended, due to its significance in advanced aero-related fields, master's degrees, and research.
   - ✓ **"Gas Dynamics and Jet Propulsion" has been included as a professional elective in Vertical 7, as recommended by the Board of Studies members, and is documented in Annexure IV.**
6. The BoS suggested including Computational Fluid Dynamics as a core or elective subject, given its importance in aero-related work, master's degrees, and research.
   - ✓ **"Computational Fluid Dynamics" has been included as a professional elective in Vertical 1, as recommended by the Board of Studies members, and is documented in Annexure IV.**
7. The members recommended including Mechatronics in the curriculum, either as a core or elective subject, due to its high demand in job opportunities, design engineering, and future scope.
   - ✓ **Following the recommendation of the Board of Studies members, "Mechatronics" has been included as a professional elective paper documented in Annexure IV.**
8. It is suggested that the lab subjects (AUTOCAD Lab, Solid Work Lab, CATIA Lab, ANSYS Lab and CAD/CAM Lab) be renamed to reflect their practical applications in Annexure III.

- **The laboratory name has been change:-**
  - **AUTOCAD Lab- Computer-Aided Design Laboratory(2nd Semester)**
  - **Solid work Lab- Solid work Lab(3rd Semester)**
  - **CAD/CAM Lab- Design & Manufacturing Lab(4th Semester)**
  - **CATIA Lab- Product Design Lab(5th Semester)**
  - **ANSYS Lab- Engineering Analysis Lab(6th Semester)**

9. It is recommended that milling-related exercises be added to the CAD/CAM Laboratory, complementing the current lathe exercises.
   - ✓ **A milling experiment has been incorporated into the CAD/CAM Laboratory.**
10. The members suggested considering foreign language inclusion, if applicable, instead of basic science.
    - ✓ **As per the suggestion, we are working on it and will consider it as an additional course, which will be useful for students.**

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11. The professional elective curriculum should feature Hydraulics and Pneumatics and Design of Jigs and Fixtures, reflecting their significance in job opportunities and design and manufacturing engineering applications.

    ✓ **"Hydraulics and Pneumatics and Design of Jigs and Fixtures" is included in the professional elective in (vertical 3). Knowledge of Hydraulics and Pneumatics, as well as the Design of Jigs and Fixtures, can significantly enhance job prospects for students in the fields of mechanical engineering, manufacturing engineering, and related industries.**

12. All members expressed satisfaction with the subject content prepared by internal subject experts. (Annexure 6)

- **The subject content developed by the internal subject experts received unanimous approval and satisfaction from all members, indicating that the content is:**
    - **Relevant**
    - **Comprehensive**
    - **Well-structured**
    - **Aligns with the curriculum goals**

This suggests a positive consensus on the quality and effectiveness of the subject content.

13. The subject 'Introduction (Basics) to Mechanical Engineering Profession' should be renamed, as it is recommended that the title not begin with the word 'Introduction'. (Annexure 3)

    ✓ **The subject title 'Introduction to Mechanical Engineering Profession' has been revised to 'Basics of Mechanical Engineering Profession'.**

14. They suggested changing the category of Introduction to Mechanical Engineering Profession from engineering science to core. (Annexure 3)

    ✓ **The subject 'Introduction to Mechanical Engineering Profession' has been reclassified from Engineering Science to Professional Core.**

15. They recommended reducing the total credit to 160-165.

There may not be an option to change the credit because:

- ✓ **The curriculum is already optimized.**
- ✓ **Accreditation requirements are strict.**
- ✓ **Industry standards are clear.**
- ✓ **Program length and structure are fixed.**
- ✓ **No room for additional credits without compromising quality.**

16. The external members suggested reducing the number of units to 5.

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The extension from 5 units to 6 units was done for several reasons:

- ✓ **Depth of knowledge:** To provide students with a more comprehensive understanding of the subject matter.
- ✓ **Industry requirements:** To meet industry standards and expectations for a more extensive coverage of topics.
- ✓ **Curriculum enhancement:** To enrich the curriculum and provide a more robust learning experience.
- ✓ **Accreditation requirements:** To meet accreditation standards that require a minimum number of units for a specific subject for mapping the CO, PO outcome.
- ✓ **Student benefit:** To give students a more detailed and nuanced understanding of the subject, preparing them better for their future careers.

17. It is recommended that Turbo Machine be offered as an elective paper.
    - ✓ **"Turbo Machine" has been included as a professional elective in Vertical 3, as recommended by the Board of Studies members, and is documented in Annexure IV.**

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CHAIRMAN
Board of Studies
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ANNEXTURE-3

PERI Institute of Technology

Department of Mechanical Engineering

Courses Curriculum

Semester	Theory Subjects						LAB INTEGRATED COURSE		Practical Subjects				Mandatory Audit Courses		Credits
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
I	Professional English-I (2) HS	Engineering Mathematics-I (4) BS	Basic of Mechanical Engineering Profession (3) PC	Fundamentals of Computers (3) ES	Engineering Graphics and Design (4) ES	Personal and Professional Competencies for Engineering (IIS) (2)	Materials Physics (4) BS		English Lab (1) HS	Computer Practice Lab (2) ES					25
II	Professional English -II (2) HS	Basics of Electrical & Electronics Engineering (4) ES	Tamil and Technology (1) EEC	Engineering Mechanics (3) ES			Engineering Mathematics-II (4) BS	Engineering Chemistry (4) BS	IDEA Lab Workshop (2) ES	Computer-Aided Design Laboratory (2) ES				Environmental Sciences and Engineering (2) BS	24
III	Transforms and Partial Differential Equations (4) BS	Manufacturing Process (3) PC	Kinematics of Machinery (3) PC	Engineering Thermodynamics (3) PC	Materials Science (3) PC	Open Elective I (3) (OE)			Manufacturing Process Laboratory (2) PC	Solid work Lab (2) PC			Life Skill-I MC	MC-I-Indian Constitution MC	23
IV	Fluid Mechanics and Machinery (4) ES	Strength of Materials (3) PC	Dynamics of Machinery (3) PC	Professional Elective-I (3) PE	Science Manufacturing and fabrication (2) BS	Open Elective II (3) (OE)			Strength of Material & Fluid Mechanics Lab (2) PC	Design & Manufacturing Lab(CAAD/CAM Lab) (2) ES			Life Skill-II MC	MC-II-Social Services MC	22
V	Design of Transmission System (3) PC	Design for Manufacturing & Assembly (3) PC	Heat & Mass Transfer (4) PC	Professional Elective-II (Welding Technology) (3) PE		Open Elective III (Fire Engineering & Protection) (3) OE	Automobile Engineering(4) PC		HMT & Thermal Lab (2) PC	Product Design Lab (CATIA) (2)PC		Quantitative Aptitude-I / GRE TOFEL-I	Life Skill-III MC	MC-III-Essence of Indian Traditional Knowledge and Science MC	24
VI	Finite Element Analysis (4) PC	Manufacturing Automation (3) PC	Metrology & Quality Control Engineering (3) PC	Professional Elective-III (Energy Conservation & Management) (3) PE	Oil and Gas Piping Engineering (2) PC	Open Elective IV (Supply & chain Management (3) (OE)	Mechanical, Electrical, and Plumbing Engineering (4) ES		Engineering Analysis Lab (ANSYS) (2) PC	Innovative Project Lab for Mechanical Engineers (2) EEC		Quantitative Aptitude-II / GRE TOFEL-II	Life Skill-IV MC	Behavioral Science and Physcology MC	26
VII	Professional Elective-IV (3)PE	Additive Manufacturing (3D Printing (3) PC								Internship (4) EEC					10
VIII	Management Course-I (POM) (3) HS	Management Course-II Human Values and Ethics (3) HS	Project Work (7) +Internship (3)												16
															170

CATEGORY	I	II	III	IV	V	VI	VII	VIII	Credits	(%)	As Per AICTE
BS	8	8	4	2	-	-	-	-	22	13.095	29
HS	5	3	-	-	-	-	-	6	14	7.738	12
ES	9	6	-	-	-	4	-	-	19	11.309	27
PC	3	5	16	14	18	14	3	-	73	43.452	58
PE	-	-	-	3	3	3	3	-	12	7.140	9
EEC/ Project Work / Internship	-	-	-	-	-	2	4	10	16	10.123	16
OE	-	-	3	3	3	3	-	-	12	7.142	9
Non- Credit*/ (Mandatory)	-	2	-	-	-	-	-	-	2	0.010	0
TOTAL	25	24	23	22	24	26	10	16	170	100.0	160

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Annexure- IV

ANNEXTURE-4

Department of Mechanical Engineering

VERTICALS/PROFESSIONAL ELECTIVES

Verticals / Professional Electives		Dept. Verticals/Professional Electives-MECH						Diversified /Professional Electives	
Vertical 1	**Vertical 2**	**Vertical 3**	**Vertical 4**	**Vertical 5**	**Vertical 6**	**Vertical 7**	**Vertical 8**	**Vertical 9**	**Vertical 10**
Computational Engineering	**Logistics And Supply Chain Management**	**Robotics And Automation**	**Product Design**	**Digital Manufacturing**	**Energy Technology**	**Process Equipment And Piping Design**	**Modern Mobility Systems**	**Diversified Courses Group I**	**Diversified Courses Group II**
Machine Learning for Intelligent Systems	Reliability and Maintenance Engineering	Drone Technologies	**Design of Jigs and fixtures**	**Digital Manufacturing and IoT**	Measurement and control for energy system	**Gas Dynamics & Jet Propulsion**	Automotive Materials, Components, Design & Testing	Measurements and Controls	Precision Manufacturing
CAD and CAE	Warehousing Automation	**Turbo Machine**	Computer Aided Design	**Lean Manufacturing**	Energy conservation And waste heat recovery	Failure Analysis and NDT Techniques	Conventional and Futuristic Vehicle Technology	Process Planning and Cost Estimation	Turbo Machines -
Numerical heat transfer	Operations Management	**Robotics**	Geometric Dimensioning and Tolerancing	Advanced Machining Processes	Renewable sources of Energy	Material Handling and solid processing Equipment	Renewable Powered Off Highway Vehicles and Emission Control Technology	Composite Materials and Mechanics	Non-traditional Machining Processes
Computational Fluid Dynamics	Material Handling Equipment, Repair and Maintenance	**Mechatronics**	Design of Experiments	Green Manufacturing Design and Practices	Hybrid and Electrical Vehicles	Rotating Machinery Design	Vehicle Health Monitoring, Maintenance and Safety	Electrical Drives and Control	Industrial Safety
Computational Bio-Mechanics	**Supply chain and Logistics Management**	Sensors and Instrumentation	Design with Advanced materials	**Digital Twin & Industry 4.0**	Introduction to Power Plant Engineering	Thermal and Fired Equipment design	CAE and CFD Approach in Future Mobility	Refrigeration and Air Conditioning	Composite Materials and Mechanics
Advanced Statistics and Data Analytics	Production Planning and Control	**Hydraulics and Pneumatics**	Process planning and cost estimation	IOT for Mechanical Operation	Refrigeration and Air conditioning	Industrial Layout Design and Safety	Hybrid and Electric Vehicle Technology	Dynamics of Ground Vehicles	Industrial safety
Noise Acoustics and Vibration	Operations Research	Smart Mobility and Intelligent Vehicles	Product Life Cycle Management	Electronics Manufacturing technology	Advanced energy storage technologies	Design Codes and Standards	Thermal Management of Batteries and Fuel Cells	Casting and Welding Processes	Thermal Power Engineering

PSIT Institute of Technology (Autonomous) Dept. of Mech Engg

Department of Mechanical Engineering

VERTICALS/PROFESSIONAL ELECTIVES

Verticals / Professional Electives		Dept. Verticals/Professional Electives-MECH						Diversified /Professional Electives	
Vertical 1	**Vertical 2**	**Vertical 3**	**Vertical 4**	**Vertical 5**	**Vertical 6**	**Vertical 7**	**Vertical 8**	**Vertical 9**	**Vertical 10**
Computational Engineering	**Logistics And Supply Chain Management**	**Robotics And Automation**	**Product Design**	**Digital Manufacturing**	**Energy Technology**	**Process Equipment And Piping Design**	**Modern Mobility Systems**	**Diversified Courses Group I**	**Diversified Courses Group II**
Machine Learning for Intelligent Systems	Reliability and Maintenance Engineering	Drone Technologies	**Design of Jigs and fixtures**	**Digital Manufacturing and IoT**	Measurement and control for energy system	**Gas Dynamics & Jet Propulsion**	Automotive Materials, Components, Design & Testing	Measurements and Controls	Precision Manufacturing
CAD and CAE	Warehousing Automation	**Turbo Machine**	Computer Aided Design	**Lean Manufacturing**	Energy conservation And waste heat recovery	Failure Analysis and NDT Techniques	Conventional and Futuristic Vehicle Technology	Process Planning and Cost Estimation	Turbo Machines -
Numerical heat transfer	Operations Management	**Robotics**	Geometric Dimensioning and Tolerancing	Advanced Machining Processes	Renewable sources of Energy	Material Handling and solid processing Equipment	Renewable Powered Off Highway Vehicles and Emission Control Technology	Composite Materials and Mechanics	Non-traditional Machining Processes
Computational Fluid Dynamics	Material Handling Equipment, Repair and Maintenance	Embedded Systems and Programming	Design of Experiments	Green Manufacturing Design and Practices	Hybrid and Electrical Vehicles	Rotating Machinery Design	Vehicle Health Monitoring, Maintenance and Safety	Electrical Drives and Control	Industrial Safety
Computational Bio-Mechanics	**Supply chain and Logistics Management**	Sensors and Instrumentation	Design with Advanced materials	**Digital Twin & Industry 4.0**	Introduction to Power Plant Engineering	Thermal and Fired Equipment design	CAE and CFD Approach in Future Mobility	Refrigeration and Air Conditioning	Composite Materials and Mechanics
Advanced Statistics and Data Analytics	Production Planning and Control	**Hydraulics and Pneumatics**	Process planning and cost estimation	IOT for Mechanical Operation	Refrigeration and Air conditioning	Industrial Layout Design and Safety	Hybrid and Electric Vehicle Technology	Dynamics of Ground Vehicles	Industrial safety
Noise Acoustics and Vibration	Operations Research	Smart Mobility and Intelligent Vehicles	Product Life Cycle Management	Electronics Manufacturing technology	Advanced energy storage technologies	Design Codes and Standards	Thermal Management of Batteries and Fuel Cells	Casting and Welding Processes	Thermal Power Engineering