

 Suresh Angadi Education Foundation's ANGADI INSTITUTE OF TECHNOLOGY AND MANAGEMENT Savagaon Road, Belagavi – 590 009 (Approved by AICTE, New Delhi & Affiliated to Visvesvaraya Technological University, Belagavi) Accredited By NAAC Department of Mechanical Engineering		ME
		NBA
		Criteria -1
		Vision, Mission and PEOs

1.1 State the Vision and Mission of the Institute and Department

A. Institute and Department Vision and Mission Statements:

Institute Vision
To become a premier institute committed to <u>academic excellence</u> and <u>global competence</u> for the <u>holistic development</u> of students.
Key Words: Academic excellence, Global competence and Holistic development:

Institute Mission
M1. Develop <u>competent</u> human resources, adopt <u>outcome based education (OBE)</u> and implement <u>cognitive assessment</u> of students.
M2. Inculcate the traits of <u>global competencies</u> (such as domain expertise, accountability, ethics, problem solving ability, communication skills, leadership qualities and life-long learning) amongst the students.
M3. Nurture and train our students to have <u>domain knowledge</u> , develop the qualities of <u>global professionals</u> and to have <u>social consciousness</u> .

Department Vision
To impart <u>quality education</u> in Mechanical Engineering by developing the <u>core competencies</u> to meet the diverse needs of <u>global challenges</u> .
Keywords: Quality Education, Core Competencies, Global Challenges:

Department Mission
M1. Educate our students with <u>domain knowledge</u> and <u>practical skills</u> by qualified faculty in tune with <u>technological developments</u> .
M2. Adopt <u>student-centric learning techniques</u> to develop <u>analytical</u> and <u>problem-solving skills</u> .
M3. Develop a <u>conducive atmosphere</u> to make students imbibe <u>professional skills</u> to foster leadership traits and <u>lifelong learning</u> .

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B. Appropriateness/Relevance of the Statements

Institute Vision	Department Vision
To become a premier institute committed to <u>academic excellence</u> and <u>global competence</u> for the <u>holistic development</u> of students.	To impart <u>quality education</u> in Mechanical Engineering by developing the <u>core competencies</u> to meet the diverse needs of <u>global challenges</u> .
Keywords: Academic Excellence, Global Competence, Holistic Development	Keyword: Quality Education, Core Competencies, Global Challenges

Department/Institute	Keyword 1 <u>Academic excellence</u>	Keyword 2 <u>Global competence</u>	Keyword 3 <u>Holistic development</u>
Keyword 1 <u>Quality Education</u>	3	2	1
Keyword 2 <u>Core Competencies</u>	2	3	1
Keyword 3 <u>Global Challenges</u>	1	3	1

1R1C (Row1, Column 1 – Quality Education ↔ Academic Excellence):

This mapping is highly relevant and consistent. Quality Education forms the foundation of Academic Excellence by promoting various teaching methodologies, outcome-based learning and continuous assessment. The department focus on delivering quality education directly supports the institute goal to foster academic excellence among the students. Hence, this alignment is rated as strong (3).

1R2C (Quality Education ↔ Global Competence):

This relationship is moderately relevant. Quality Education lays the groundwork for global competence by ensuring that students acquire fundamental knowledge, communication skills and analytical abilities. However, global competence also involves international exposure, cultural adaptability and an understanding of global systems, elements that are not explicitly highlighted in the department vision. Thus, this mapping receives a moderate rating of (2).

1R3C (Quality Education ↔ Holistic Development):

This mapping has low relevance. While Quality Education contributes to cognitive and intellectual development, Holistic Development encompasses a broader spectrum, including emotional, ethical and physical well-being. Since these aspects are only indirectly supported by Quality Education, this mapping is rated as moderately relevant (1).

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2R1C (Core Competencies ↔ Academic Excellence):

This mapping is moderately relevant. Core Competencies such as technical skills, critical thinking and practical application play a significant role in enhancing academic performance. However, Academic Excellence also includes a focus on scholarly research, theoretical depth and academic leadership, which may not be fully addressed by core competencies alone. Therefore, this alignment is rated (2).

2R2C (Core Competencies ↔ Global Competence):

This is a highly relevant and consistent mapping. The development of Core Competencies is essential for students to adapt to global professional environments. Skills like problem-solving, teamwork and adaptability directly contribute to Global Competence, making this alignment particularly strong. As a result, it is rated the highest (3).

2R3C (Core Competencies ↔ Holistic Development):

This mapping has low relevance. While Core Competencies contribute to aspects of personal growth such as confidence and independent thinking, they do not fully address the emotional, ethical and social dimensions associated with Holistic Development. Hence, this correlation is considered low relevant and is rated (1).

3R1C (Global Challenges ↔ Academic Excellence):

This mapping has low relevance. Understanding and addressing global challenges often require academic rigor, interdisciplinary research and critical investigation all of which contribute to Academic Excellence. However, the connection is not direct, as academic excellence can also exist without explicit reference to global issues. Therefore, this alignment is rated (1).

3R2C (Global Challenges ↔ Global Competence):

This is a highly relevant mapping. Confronting global challenges such as climate change, sustainability and international cooperation is central to fostering Global Competence. The department emphasis on preparing students to meet global needs aligns well with the institute vision of producing globally competent graduates. Hence, this alignment is rated (3).

3R3C (Global Challenges ↔ Holistic Development):

This mapping has low relevance. While an awareness of global challenges may encourage empathy and responsible citizenship, it does not directly address the broader aspects of Holistic Development, such as ethical behaviour, mental well-being and interpersonal growth. As such, this alignment is considered weak and rated (1).

C. Institute Mission and Department Mission Matrix

Institute Mission	Department Mission
M1. Develop <u>competent human resources</u> , adopt <u>outcome based education (OBE)</u> and implement <u>cognitive assessment</u> of students.	M1. Educate our students with <u>domain knowledge</u> and <u>practical skills</u> by qualified faculty in tune with <u>technological developments</u> .
M2. Inculcate the traits of <u>global competencies</u> (such as domain expertise, accountability, ethics, problem solving ability, communication skills, leadership qualities and life -long learning) amongst the students.	M2. Adopt student-centric learning techniques to develop analytical and problem-solving skills.
M3. Nurture and train our students to have <u>domain knowledge</u> , develop the qualities of <u>global professionals</u> and to have <u>social consciousness</u> for holistic development.	M3. Develop a <u>conducive atmosphere</u> to make students imbibe <u>professional skills</u> to foster leadership traits <u>and lifelong learning</u> .

DEPARTMENT MISSION/ INSTITUTE MISSION	M1	M2	M3
M1	3	3	1
M2	3	2	2
M3	3	1	2

Relevancy of Consistency

1R1C: This alignment demonstrates strong relevance. The department Mission 1 focuses on educating students with domain knowledge and practical skills delivered by qualified faculty, which directly supports the Institute Mission 1 objective of developing competent human resources through outcome-based education (OBE) and cognitive assessment. Both statements emphasize technical competence, updated pedagogy and alignment with technological progress, resulting in a rating of (3).

1R2C: There is also a strong correlation here. While DM1 emphasizes technical education, it implicitly contributes to global competencies such as domain expertise, accountability and professionalism, as mentioned in IM2. The department emphasis on current technological trends enhances student readiness for global work environments, justifying a rating of (3).

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1R3C: This relevance is slightly relevant. While DM1 lays the foundation for domain knowledge, it less directly addresses aspects like social consciousness or holistic development outlined in IM3. Nevertheless, the practical skills and real-world relevance it imparts contribute partially to this broader goal, resulting in a rating of (1).

2R1C: This mapping shows strong alignment Department Mission 2 highlights student-centric learning and the development of analytical and problem-solving abilities. These elements align reasonably well with IM1 focus on OBE and cognitive assessment, although the primary intent of IM1 is more broadly about producing competent graduates. Therefore, a rating of (3) is assigned.

2R2C: This mapping shows moderately alignment. DM2 directly supports IM2 by fostering critical skills such as problem-solving and analytical thinking core components of global competencies. By encouraging active and reflective learning practices, the department clearly upholds the institute mission, meriting a rating of (2).

2R3C: Here, the alignment is also moderately. Developing analytical and problem-solving skills equips students with professional competence needed in a global context, which in turn supports holistic development and awareness of societal responsibilities. Thus, a rating of (2) is appropriate.

3R1C: This pairing is highly relevant. Department Mission 3 speaks to the creation of a conducive environment that fosters professional skills, leadership and lifelong learning. These outcomes strongly reinforce IM1 goals of developing competent individuals via cognitive growth and educational quality. Hence, this cell is rated (3).

3R2C: Here, the alignment is slightly mapped, While DM3 supports leadership and lifelong learning, which are listed in IM2, and it places less emphasis on other global competencies such as ethics and communication skills. For this reason, the mapping earns a rating of (1).

3R3C: Here, the alignment is also moderately. DM3 directly supports IM3 focus on global professionalism and holistic development. Through the development of leadership traits, professionalism and lifelong learning habits, the department ensures that students are not only technically sound but also socially and ethically aware. Therefore, this match is rated (2).

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1.2 State the Program Educational Objectives (PEOs)

The PEOs of the program are as follows:

The Graduates will be able to:

- PEO1.** Apply the fundamentals of mathematics, science and mechanical engineering concepts to analyse, formulate, and solve complex engineering problems in industries, research and academia.
- PEO2.** Demonstrate the ability to design and develop efficient, reliable and innovative mechanical systems that are environmentally sustainable, socially responsible and aligned with industry standards.
- PEO3.** Employ modern engineering tools, techniques and emerging technologies in collaborating multidisciplinary domains to address industrial and societal challenges.
- PEO4.** Exhibit ethical values, effective communication, resilience and leadership qualities while pursuing a professional career contributing to Sustainable Development Goals (SDGs) and social well-being.
- PEO5.** Understand the efficacy of lifelong learning, and develop managerial and entrepreneurial abilities to become competent professionals and industry leaders at a global level.

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1.3 Indicate where and how the Vision, Mission and PEOs are published and disseminated among stakeholders

The Vision, Mission and PEO statements are published and disseminated through:

- Department webpage: <https://mech.aitmbgm.ac.in/>
- HOD Cabin
- Staff Rooms
- Notice Boards of the department
- Department Laboratories
- Department Corridor
- Bluebooks (assessment books)
- Lab Manuals
- Brochures
- College Diary
- Class Rooms
- Department E magazine
- Course file
- Seminar/Project/Internship Reports.

In addition to this, Vision, Mission and PEOs are disseminated to internal and external stakeholders of the programmes through Faculty meetings, Parent meetings, Alumni meets etc.

List of Stake Holders

Internal:

1. Students
2. Faculty
3. Supporting Staff
4. Management



5. Governing Board Members

External:

1. Alumni
2. Parents
3. Industry/employer
4. Affiliating University
5. Academia

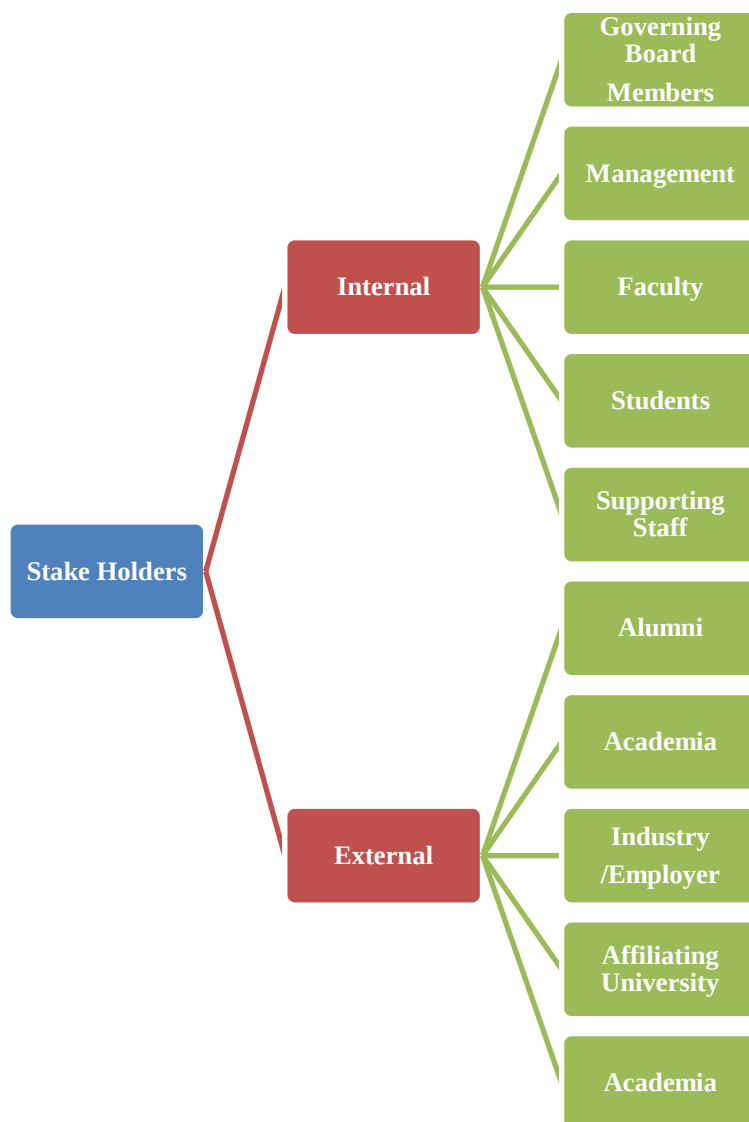


Figure 1.3 List of stakeholders

Process of dissemination of Vision, Mission statements, and PEO statements

1. The PAC will approve the Vision and Mission statements, as well as the Program Educational Objectives (PEO) statements.

2. The Head of the Department will communicate the approved Vision, Mission, and PEO statements to the Head of the Institution and Management.
3. Once approved by the PAC, Department, and Management, the program owner will organize a meeting with course owners in consultation with the NBA coordinator and Head of the Department.
4. The program owner, along with the Heads of Departments and faculty members, will discuss and disseminate the Vision, Mission, and PEOs among stakeholders through various platforms, including the Institute website, prospectus, E-newsletter, classrooms, laboratories, HOD Chamber, and seminar hall, as well as other prominent locations within the Institute.

1.4 State the process for defining the Vision and Mission of the Department, and PEOs of the program

The process followed for phrasing the Vision and Mission Statements of the department is depicted in Fig.1.4.1

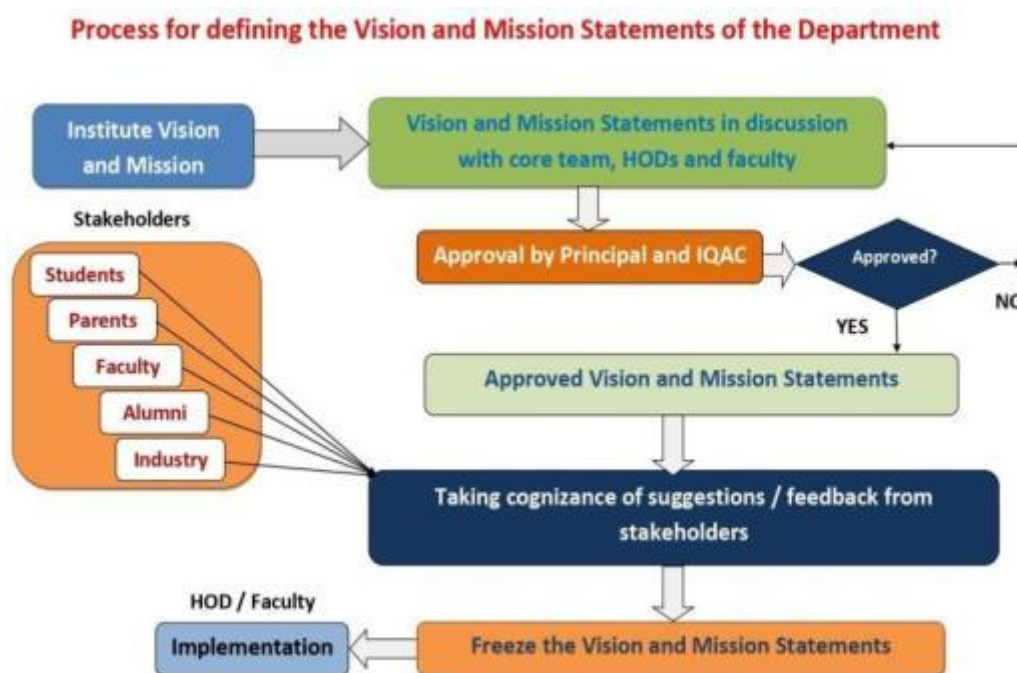


Fig.1.4.1: Process for defining the Vision and Mission Statements of the Department.

In the department core team, the HOD elucidated the philosophy in articulating the Institute Vision and Mission statements. In tune with these statements, the department core team discussed the program philosophy in formulating the department Vision and Mission statements. The department core team discussed and collected the views of all the members, and came up with a few tentative Vision statements. After detailed discussion, the department core team zeroed in on a Vision statement. Based on the identified keywords of the Vision statement, the Mission statements

correlating with each keyword are articulated. After elaborate discussions in the department parleys, the Vision and Mission statements are formulated and then forwarded to the Internal and External stakeholders of the Institute. Taking cognizance of the views of the stakeholders, necessary modifications are carried out, and the whole process as depicted in Fig.1.4.1 is repeated. Once the Vision and Mission statements of the department are finalized, the HOD and Faculty of the department are given the responsibility for further implementation and execution as per the directions of the principal.

The process followed for defining the Program Educational Objectives (PEOs)

Our program PEOs are broad statements that describe the career and professional accomplishments that the program is preparing our graduates to achieve. The PEOs are consistent with the mission statements of the department. The flowchart for articulating the PEOs of the program is depicted in Fig. 1.4.2.

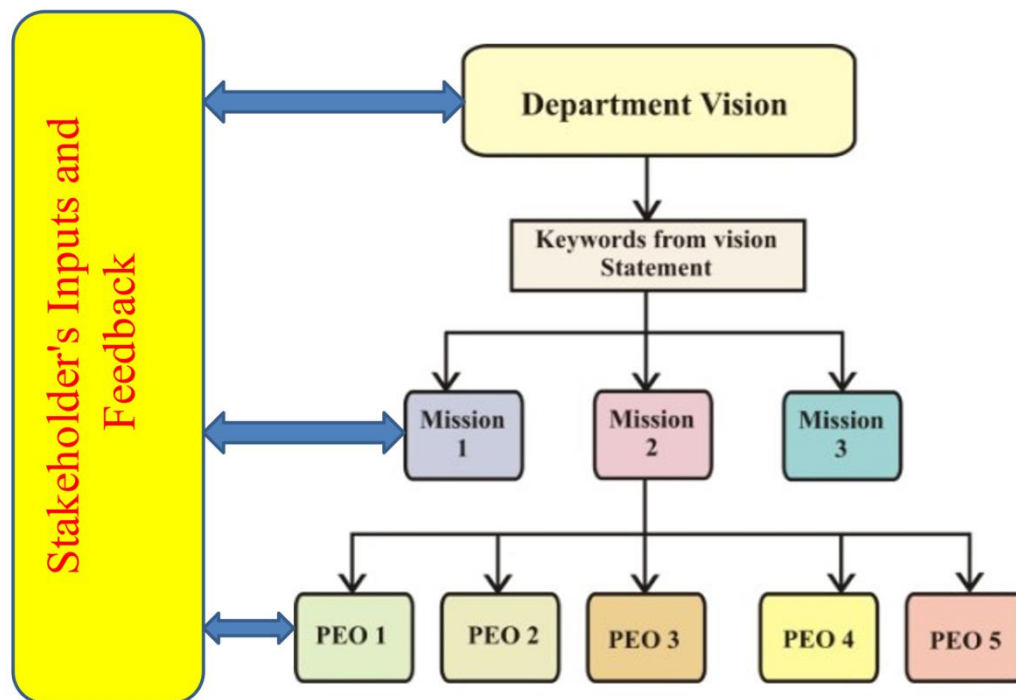


Fig.1.4.2: The articulation flowchart for PEOs.

Based on the above articulation flowchart, the process for defining the program PEOs is formulated and is shown in Fig. 1.4.3.



Department of Mechanical Engineering

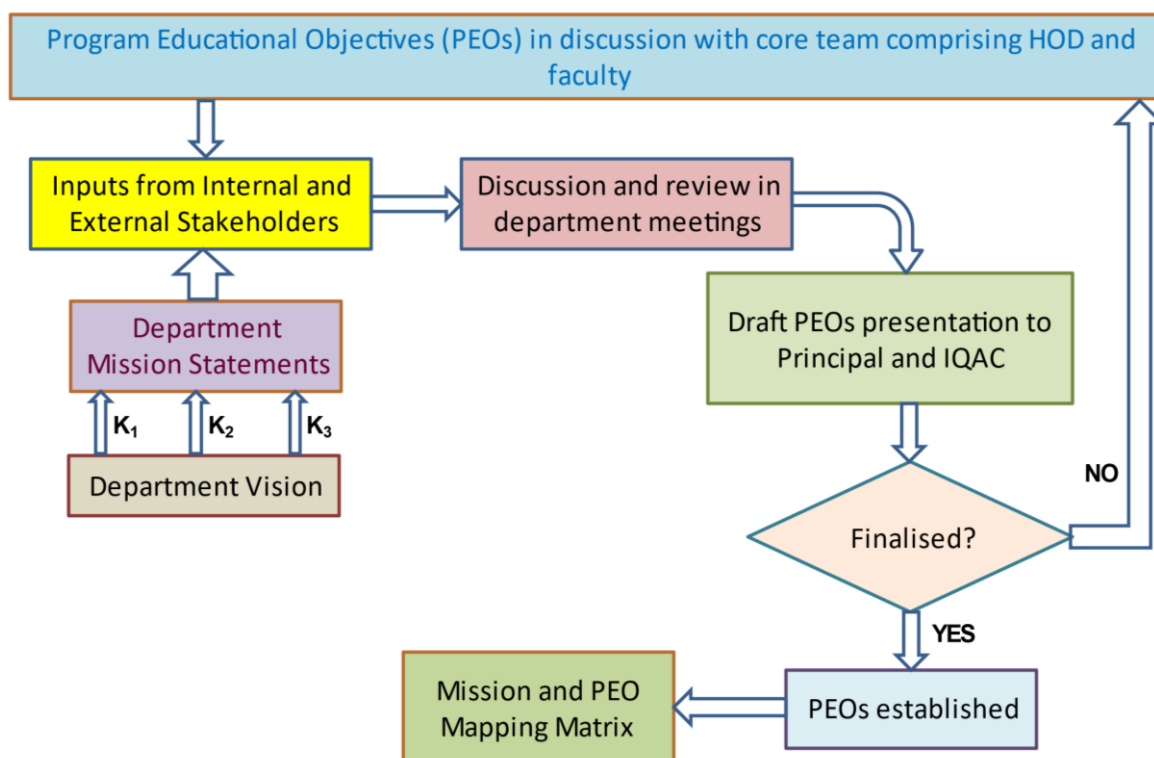


Fig.1.4.3: Process for defining the Program PEOs.

With inputs from the vision and mission statements of the department, the HOD outlined the purpose and guidelines in formulating the PEOs of the program to the department core team. Following this, the department core team formulated the draft PEOs. The formulated PEOs are then communicated to the internal and external stakeholders of the department. After elaborate discussions and reviews in the department meetings, the draft PEOs are presented to the Principal and IQAC. Taking cognizance of their views, the necessary modifications are carried out, and the whole process as depicted in Fig.1.4.3 is repeated. Once the PEOs are established, the further processes of mapping and implementation are carried out.

1.5 Establish consistency of PEOs with Mission of the Department

Graduates will be able to;

- PEO1.** Apply the fundamentals of mathematics, science and mechanical engineering concepts to analyse, formulate, and solve complex engineering problems in industries, research and academia.
- PEO2.** Demonstrate the ability to design and develop efficient, reliable and innovative mechanical systems that are environmentally sustainable, socially responsible and aligned with industry standards.
- PEO3.** Employ modern engineering tools, techniques and emerging technologies in collaborating multidisciplinary domains to address industrial and societal challenges.
- PEO4.** Exhibit ethical values, effective communication, resilience and leadership qualities while pursuing a professional career contributing to Sustainable Development Goals (SDGs) and social well-being.
- PEO5.** Understand the efficacy of lifelong learning, and develop managerial and entrepreneurial abilities to become competent professionals and industry leaders at a global level.

- M1.** Educate our students with domain knowledge and practical skills by qualified faculty in tune with technological developments.
- M2.** Adopt student-centric learning techniques to develop analytical and problem-solving skills.
- M3.** Develop a conducive atmosphere to make students imbibe professional skills to foster leadership traits and lifelong learning.

Mapping of PEOs with Department Mission

Mission/PEOs	PEO1	PEO2	PEO3	PEO5	PEO5
M1	3	3	3	2	2

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M2	3	3	3	2	2
M3	2	2	2	3	3

Relevancy of Consistency

1R1C: Alignment of M1 with PEO1

Mission statement M1 emphasizes imparting a strong foundation in domain-specific knowledge and practical skills, supported by well-qualified faculty and advanced infrastructure. This directly aligns with PEO1, which aims to prepare graduates with a good knowledge in core and interdisciplinary areas of mechanical engineering. Through a structured curriculum, interactive pedagogies (brainstorming sessions, case studies, flipped classrooms, interactive learning system and laboratory sessions, etc.,) students are equipped to comprehend and apply engineering principles.

1R2C: Alignment of M1 with PEO2

M1 focus on practical skill development significantly supports PEO2, which targets the ability to analyze and address engineering problems. By incorporating real-world projects, industry-aligned experiments, and hands-on learning modules into the curriculum, students are trained to assess technical needs, interpret specifications, and provide effective mechanical solutions. This outcome is further enhanced by promoting project-based learning and the integration of critical thinking methodologies, allowing students to apply theoretical knowledge to solve complex, application-driven challenges.

1R3C: Alignment of M1 with PEO3

Although M1 primarily emphasizes foundational and practical competencies, it contributes meaningfully to PEO3 by fostering the confidence and technical readiness necessary for students to transition into professional roles across industry, research, or academia. The mission facilitates the development of teamwork, basic leadership, and self-directed learning skills through collaborative labs and technical activities. While socio-technological and cultural aspects are not the core focus of M1, the technical competence established under this mission provides a vital base for sustained career growth and entrepreneurial pursuits.

1R4C: Alignment of M1 with PEO4

M1 indirectly aligns with PEO4 by offering an environment where technical knowledge and skill acquisition serve as a foundation for ethical and professional development. By engaging students in cooperative projects, practical demonstrations, and industry-relevant assignments, M1 fosters soft skills such as communication, discipline, and team coordination. Although the mission does not

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explicitly emphasize leadership and ethical behavior, the structured learning it promotes enables students to gradually develop these competencies through experiential learning and professional exposure.

1R5C: Alignment of M1 with PEO5

M1 supports PEO5 by laying the groundwork for lifelong learning and innovation. Exposure to practical scenarios and emerging engineering technologies during their academic tenure encourages students to continuously upgrade their knowledge and skills. This foundation cultivates a mindset that embraces ongoing professional development and adaptability, preparing students for future leadership roles and technological advancements in mechanical engineering.

2R1C: Alignment of M2 with PEO1

M2's student-centered and analytical approach complements PEO1 by deepening students' understanding of fundamental mechanical engineering concepts. Through techniques such as flipped classrooms, inquiry-based learning and problem-solving tasks, students engage with core topics at a conceptual level. These methods encourage critical thinking and innovation, empowering students to develop reliable, safe, and sustainable engineering designs.

2R2C: Alignment of M2 with PEO2

M2's emphasis on analytical thinking and real-time problem-solving directly supports PEO2. Students participate in complex design challenges and engineering case studies that require them to analyze data, apply theoretical principles and evaluate solutions. This experience strengthens their capacity to meet technical specifications and solve practical engineering problems, thereby enhancing their application-level competency.

2R3C: Alignment of M2 with PEO3

M2 aligns strongly with PEO3 by integrating team-based learning, leadership exercises and interpersonal skill development into the learning process. Students gain experience in collaborative environments that simulate real-world engineering contexts, encouraging responsibility, initiative and leadership. This mission also instills lifelong learning habits and an understanding of socio-technological challenges, essential for sustained success in professional and academic domains.

2R4C: Alignment of M2 with PEO4

M2 directly supports PEO4 by fostering ethical behavior, teamwork and effective communication. Activities such as group projects, technical presentations, and discussions on professional ethics provide students with practical experiences in team dynamics, responsibility sharing and moral

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reasoning. This mission thus plays a vital role in developing future professionals who are not only competent but also socially responsible.

2R5C: Alignment of M2 with PEO5

M2 facilitates PEO5 by cultivating a mindset oriented toward continuous improvement and leadership. Through analytical learning and open-ended problem-solving exercises, students become self-directed learners capable of adapting to technological advancements and global engineering trends. This aligns with the broader aim of producing graduates who are innovative, flexible and poised for leadership in a dynamic professional landscape.

3R1C: Alignment of M3 with PEO1

M3 emphasizes lifelong learning and personal growth, which indirectly supports PEO1 by reinforcing habits of intellectual curiosity and self-improvement. Although it does not directly address technical proficiency, the environment it promotes motivates students to pursue deeper understanding in their core areas, enabling them to stay current with emerging trends in mechanical engineering.

3R2C: Alignment of M3 with PEO2

M3 is moderately aligned with PEO2, as it instills an adaptive learning mindset essential for addressing complex engineering problems over time. While it lacks a direct focus on technical problem-solving, its emphasis on continuous learning and reflective practice enhances the student ability to independently engage with and solve real-world challenges.

3R3C: Alignment of M3 with PEO3

M3 has a strong alignment with PEO3 as it promotes lifelong learning, leadership development, and awareness of global and cultural issues. By encouraging experiential learning and professional growth, M3 equips students with the interpersonal and managerial skills necessary for navigating socio-technological changes, contributing effectively in diverse environments and assuming leadership roles across sectors.

3R4C: Alignment of M3 with PEO4

M3 supports PEO4 by creating a learning ecosystem that emphasizes ethical behavior, collaboration and leadership. Through personal development programs and team activities, students cultivate communication skills, moral responsibility and resilience. These qualities are essential for contributing to society, working within diverse teams and supporting sustainable and inclusive development goals.

3R5C: Alignment of M3 with PEO5

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M3 directly contributes to PEO5 by fostering a culture of lifelong learning, global engagement and entrepreneurial spirit. The mission encourages students to be proactive learners, embrace technological evolution and build capabilities in innovation and professional leadership. This prepares them to become adaptable and visionary engineers capable of meeting the demands of a rapidly changing world.