



**SETHU INSTITUTE OF TECHNOLOGY, PULLOOR,
KARIAPATTI – 626 115**

**MINUTES OF EIGHTH MEETING FOR THE BOARD OF STUDIES IN THE
DEPARTMENT OF MECHANICAL ENGINEERING HELD ON 05/09/2020.**

The Eighth Meeting of the Board of Studies in the Department of Mechanical Engineering was held at 10.45 AM on **05/09/2020** at Seminar Hall of Mechanical Engineering Department through Google meet, Sethu Institute of Technology, Pulloor, Kariapatti.

The following members were present through ONLINE mode.

Sl. No.	Name of the Members	Designation and Institution	Position
1.	Dr. G. D. Sivakumar	Vice Principal / HOD Mechanical, Sethu Institute of Technology.	Chairman
2.	Dr. D. Jebakani	Associate Professor(CAS), Department of Mechanical Engineering, Government College of Engineering, Tirunelveli, Tamil Nadu - 627007. Ph: 9944253810 Email : jebakani@gcetly.ac.in	University Nominee
3.	Dr. U. Arunachalam	Assistant Professor, University College of Engineering, Anna university Constituent College, Konam, Nagercoil – 629004. Ph: 9443279233 Email : arunachalam_u@yahoo.com	Member- External

4.	Dr. B. Stalin	Assistant Professor & Head I/C, Department of Mechanical Engineering, Anna university Regional campus, Keelakuilkudi, Madurai – 625 019. Ph: 9865264158 Email : stalin1312@gmail.com	Member- External
5.	Mr. G. Rajamurthy	Managing Director, Singai Coirs Pvt. Ltd., Singampunari, Sivaganga District. Ph: 9047093311 Email : globalrajamurthy@gmail.com	Industrial Expert
6.	Mr. A. Kosalram	Senior Design Engineer, Auro Lab, Madurai. Ph: 9962750063 Email :kosalram@aurolab.com	Alumni
7.	Dr. A. Senthil Kumar	Professor	Faculty Member
8.	Dr. C. Kailasanathan	Professor	Faculty Member
9.	Dr. S. Mothilal	Professor	Faculty Member
10.	Dr. R. Murali Kannan	Professor	Faculty Member
11.	Dr. K. Arun Balasubramanian	Professor	Faculty Member
12.	Dr. C. Muthusamy	Professor	Faculty Member
13.	Dr. B. Raja Mohamed Rabi	Professor	Faculty Member
14.	Dr. V. Srinivasa Raman	Professor	Faculty Member
15.	Dr. G. Pitchayya Pillai	Professor	Faculty Member
16.	Dr. A. Anbarasu	Professor	Faculty Member
17.	Mr. G.K. TamilSelvan	Associate Professor	Faculty Member
18.	Dr. I. Vijay Arasu	Associate Professor	Faculty Member
19.	Mr. S. Paramasamy	Associate Professor	Faculty Member
20.	Mr. G. Nagaraj	Associate Professor	Faculty Member
21.	Dr. K. Vinayagar	Associate Professor	Faculty Member

22.	Mr. S. Shaik Mohamed Ferozdheen	Associate Professor	Faculty Member
23.	Dr. N. Premalatha	Associate Professor	Faculty Member
24.	Dr. G. Venkatesan	Associate Professor	Faculty Member
25.	Dr. P. Ganeshan	Associate Professor	Faculty Member
26.	Mr. T. Gangadharan	Assistant Professor (Sr. Gr.)	Faculty Member
27.	Mr. P. R. Rajkumar	Assistant Professor (Sr. Gr.)	Faculty Member
28.	Mr. K.M. Ahamed Sheriff	Assistant Professor (Sr. Gr.)	Faculty Member
29.	Dr. R. Sridhar	Assistant Professor (Sr. Gr.)	Faculty Member
30.	Mr. A. Saravana Kumaar	Assistant Professor (Sr. Gr.)	Faculty Member
31.	Mr. A. Syed Ibrahim	Assistant Professor (Sr. Gr.)	Faculty Member
32.	Mr. S. Shanmugam	Assistant Professor	Faculty Member
33.	Mr. P. Meenatchisundaram	Assistant Professor	Faculty Member
34.	Mr. T.P. Balaji	Assistant Professor	Faculty Member
35.	Dr. R. SelvaBharathi	Assistant Professor	Faculty Member
36.	Mr. V. Ramachandran	Assistant Professor	Faculty Member
37.	Mr. C. Tamilarasan	Assistant Professor	Faculty Member
38.	Dr. B. Muthu Chozha Rajan	Assistant Professor	Faculty Member
39.	Mr. S. Devanand	Assistant Professor	Faculty Member
40.	Mr. A. Shyam Sundar	Assistant Professor	Faculty Member
41.	Mr. K. Sarbudeen	Assistant Professor	Faculty Member
42.	Mr. K. Amirtharaj	Assistant Professor	Faculty Member
43.	Mr. R. Jayaprakash	Assistant Professor	Faculty Member
44.	Mr. M. Jeyaram	Assistant Professor	Faculty Member
45.	Mr. P. Karuppasamy	Assistant Professor	Faculty Member
46.	Mr. R. Balaji	Assistant Professor	Faculty Member
47.	Mr. M. Pasumpon	Assistant Professor	Faculty Member

48.	Mr. S. Saravanan	Assistant Professor	Faculty Member
49.	Mr. R. Seenivasan	Assistant Professor	Faculty Member
50.	Mr. M. Elavarasan	Assistant Professor	Faculty Member
51.	Mr. A. Perumal	Assistant Professor	Faculty Member
52.	Mr. S.A. Sethu Raaman	Assistant Professor	Faculty Member
53.	Mr. J. David Gnanaraj	Assistant Professor	Faculty Member
54.	Mr. R. Kathirvel	Assistant Professor	Faculty Member
55.	Dr. V. Vignesh	Assistant Professor	Faculty Member
56.	Mr. B. Mohmed Fazil	Assistant Professor	Faculty Member
57.	Mr. J. Vairamuthu	Assistant Professor	Faculty Member
58.	Mr. C. Shravan Kumar	Assistant Professor	Faculty Member
59.	Mr. J. Arun Jeeva Nijanthan	Assistant Professor	Faculty Member
60.	Mr. V. Ananda Natarajan	Assistant Professor	Faculty Member

The Chairman welcomed the members and presented the Curriculum and Syllabi of Regulation 2019 for the students admitted from the academic year 2019-20, under Autonomous Regulations for B.E. Mechanical Engineering and M.E.CAD/CAM.

The following points were discussed in the meeting

1. Vision, Mission Statements, Program Educational Objectives, Program Outcomes and Program Specific Outcomes
2. Attainment of POs and PSOs and Gap analysis.
3. Curriculum and Syllabi of Regulation 2019
4. Syllabus updation in core courses of III and IV Semester
5. Percentage of Revision in Syllabus
6. Assessment Questions and Assessment Pattern for Courses
7. Mapping of Curriculum with Programme Specific Criteria
8. External Examiners and Question setters
9. Employability/ Entrepreneurship/ Skill Development
10. M.E.CAD/CAM

1. Vision, Mission Statements, Program Outcomes and Program Specific Outcomes

1.1. The board of studies chairman presented the Department Vision, Mission, PEOs, POs and PSOs of the U.G Programme.

1.2. The BoS member approved the existing vision and mission statement as follows

Department Vision statement

- To promote excellence in education and research in mechanical engineering for the benefits of industry and society.

Mission Statement

1. To provide quality technical educational experience to enable the graduates to become leaders in their chosen profession
2. To educate through modern teaching tools and experiential learning to produce proficient engineer
3. To develop skills in recent technological trends and design software and to facilitate various co-curricular activities to enhance employability and entrepreneurship
4. To establish collaboration with industries for transfer of technical knowledge
5. To promote research activities among faculty members and students
6. To offer beneficial services to the society

1.3. The BoS member approved to modify the PEOs, POs and PSOs as follows

Program Educational Objectives PEOs

After few years of graduation our Mechanical Engineering graduates are expected to:	
PEO I (Core Competency)	Develop technical competency to become professionals with expertise in core areas of mechanical engineering.
PEO II (Life Long Learning)	Practice Life Long Learning to solve real time problems and for career development.
PEO III (Professional and Ethical Skills)	Develop professional skills to meet the global standards with ethical and social responsibility.

Program Outcomes POs

1.	Apply knowledge of mathematics, science, basic engineering, manufacturing, design, thermal and industrial engineering to the solution of complex engineering problems. [Engineering knowledge]
2.	Identify, formulate, research through relevant literature review, and analyze complex mechanical engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and mechanical engineering. [Problem analysis]
3.	Design solutions for complex mechanical engineering problem and design system components that meet the specified needs with appropriate considerations for public health and safety, cultural, societal, and environmental constraints. [Design/ development of solutions]
4.	Conduct investigations of complex mechanical problems in design and analysis of machine elements, mechanisms, thermal systems and to manufacture components and systems using research based knowledge and methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions. [Conduct investigations of complex problems]
5.	Select and apply the latest CAD/CAM/CAE software and sophisticated equipment for modeling and analyzing to predict and solve mechanical engineering problems. [Modern tool usage]
6.	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, cultural issues and consequent responsibilities relevant to professional engineering practice. [The Engineer and Society]
7.	Understand the impact of solutions for mechanical engineering problems in the context of society and environments, and demonstrate the knowledge of and need for sustainable development. [Environment and Sustainability]
8.	Apply ethical principles, and commit to professional ethics and responsibilities and norms of the engineering practice. [Ethics]
9.	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. [Individual and team work]
10.	Communicate effectively on mechanical engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentation, and give and receive clear instructions. [Communication]

11.	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. [Project management and finance]
12.	Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. [Lifelong learning]

Program Specific Outcomes PSOs

- ❖ Apply the concepts of design and manufacturing to solve industrial problems.
- ❖ Apply the knowledge of Mechanical engineering to design solutions, systems and components to meet the needs of Automobile Industry.

2. Attainment of POs and PSOs and Gap analysis

2.1. The board of studies chairman presented the POs and PSOs attainment for the batch 2014-2018, 2015-2019 and 2016-2020 and gap analysis of Program Outcomes.

2.2. The BoS member approved to introduce the course to enhance the PO4, PO6, PO7, PO8, PO11 and PO12 attainment as follows

POs	Course Name
PO 4	<ul style="list-style-type: none"> • Smart Manufacturing • Design and Product Development Project • Computational Analysis Laboratory (ANSYS & CFD) • Creative Thinking & Innovations
PO 6	<ul style="list-style-type: none"> • Seminar on Recent Advances in Mechanical Engineering • Creative Thinking & Innovations
PO 7	<ul style="list-style-type: none"> • Indian Constitution & Essence of Indian Traditional Knowledge
PO 8	<ul style="list-style-type: none"> • Gender Equality
PO 11	<ul style="list-style-type: none"> • Internship
PO 12	<ul style="list-style-type: none"> • Statistical Quality Control (SQC) • Smart Manufacturing & Mechatronics Laboratory

3. Curriculum and Syllabi of Regulation 2019

The Board analyzed the stake holder's feedback regarding curriculum and syllabi under 2019 regulation

3.1. New Course Introduced:

The Board of study member approved the newly introduced courses in V semester

- 19UME302 - Fundamentals of Manufacturing Processes 3 0 2 4
- 19UME401 – Theory of Machines 3 1 0 4

3.2. Stakeholders Feedback

S.No	STAKE HOLDER	NAME	FEEDBACK
1.	International Faculty	Dr.G.Sivakumar,Ph.D., Faculty in Mechanical Engineering University of Technology and Applied Sciences, Ibra Sultanate of Oman	<p>Manufacturing Technology</p> <ul style="list-style-type: none"> • The following topics shall be included to meet the industrial needs. • In Module V: Maintenance of various machines in general and lathe machine in detail need to be added. This shall be added in the last module. • Theory portion related to CNC machines and codes shall be added to enhance CNC practical exercises.
2.	International Faculty	Dr. P. Sivakumar Senior Lecture MAHSA University Selangor Malaysia	<p>Manufacturing Technology</p> <ul style="list-style-type: none"> • In Module I: Thermal aspects of machining, cutting fluids, machinability shall be added • CNC machine basic concept and codes must be included as theory content to cultivate the practical skill in CNC exercises
3.	Faculty Member	Dr.A. VALAN ARASU, B.E. (Distn.); M.E.(Distn.); Ph.D.; Postdoc (NUS, Singapore), BOYSCAST Fellow, Professor, Mechanical Engineering, Thiagarajar College of Engineering	<p>Engineering Thermodynamics</p> <ul style="list-style-type: none"> • Add the content in objective Introduction to fluid machineries needs to be added. • In Module II : Content absolute entropy Replace it with Third Law of Thermodynamics • In Module III: Heading May be replaced by Rankine Cycle • In Module IV: Check Is it T-dS relations? • In Module V Psychometric charts, Properties of Atmospheric air are discussed prior to the chart.

S.No	STAKE HOLDER	NAME	FEEDBACK
4.	Faculty Member	Dr.A. Valan Arasu, B.E. (Distn.); M.E.(Distn.); Ph.D.; Postdoc (NUS, Singapore), BOYSCAST Fellow, Professor, Mechanical Engineering, Thiagarajar College of Engineering	<p>Fluid Mechanics and Machinery</p> <ul style="list-style-type: none"> Compressible fluid flow is not included in the syllabus and hence gas tables are not required and shall be removed. In Module IV: Title shall be modified as Hydraulic machines as roto-dynamics machine is a generic term which included both hydraulic and thermal turbo machines. This section shall be revised and divided into two sub sections: first section on centrifugal pump and second section on hydraulic turbines
5.	Faculty Member	Dr. S.C. Vettivel,. (Metallurgy), Department of Mechanical Engineering, Chandigarh College of Engineering & Technology (Degree Wing), Sector 26. (Govt. Institute under Chandigarh	<p>Materials Engineering</p> <ul style="list-style-type: none"> The Course contents are well organized Iron carbon equilibrium diagram, invariant reactions, TTT diagram, CCT diagram, phase transformation, homogeneous and heterogeneous nucleation topics may be considered.
6.	Faculty Member	Dr. S. Suresh, Associate Professor, Department Mechanical Engineering National Institute of Technology, Tiruchirappalli	<p>Applied Thermal Engineering</p> <ul style="list-style-type: none"> In Module I : The following cycles/portions may be added Vapour power cycles - Rankine cycle - Effect of pressure and temperature on Rankine cycle - Reheat cycle - Regenerative cycle, Stirling and Brayton cycles. In Module V: The following cycles may be added Working principles and concept of RSHF, GS HF, ES HF- Cooling Load calculations.
7.	Faculty Member	Dr. S.C. Vettivel,. (Metallurgy), Department of Mechanical Engineering, Chandigarh College of Engineering & Technology (Degree Wing), Sector 26. (Govt. Institute under Chandigarh	<p>Strength of Materials</p> <ul style="list-style-type: none"> The Course contents are well organized 2. Statically Indeterminate Problems, Differential Equation Approach to Torsion Problems may be considered in Torsion

3.2. The BoS member approved to modify the course content based on stakeholder's feedback.

4. Syllabus updation in core courses of III and IV Semester

4.1 Semester – III:

Fundamentals of Manufacturing Processes:

- The BoS member Dr. D. Jebakani suggested to modify the lecture (L) as 45 and practical (P) as 30 hours. Total periods for integrated courses as 75.

Engineering Thermodynamics

- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam suggested to Remove the content “Concept of ideal and real gases” from unit I (Basic Concepts and First Law) because it repeated in UNIT IV (Ideal and Real Gases and Thermodynamic Relations).
- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam suggested to move the content Perpetual-motion machines after the content second law of thermodynamics in Unit II (Second law and Entropy)
- The BoS member Dr. U. Arunachalam suggested to include the content “steam formation” after the properties of pure substances in Unit III (Properties of Steam and Steam Power Cycles)
- The BoS member Dr. U. Arunachalam Suggested to remove the content “dryness fraction, types of steam and internal energy of steam”, is comes under the topic “Properties of steam in unit III” (Properties of Steam and Steam Power Cycles) hence the content may be removed.
- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam appreciated for including the content “Compressibility chart and compressibility factor” in UNIT IV (Ideal and Real gases and Thermodynamic relations), these topics are used to analyze the behavior of real gas.
- The BoS member Dr. D. Jebakani appreciated for including the content “adiabatic saturation- Steam injection” in UNIT V (Psychrometry), based on Technology forecast from the magazine “Steam Humidification in Pharmaceutical Facilities”

Fluid Mechanics and Machinery

- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam suggested to modify the UNIT IV and V as Hydraulic turbine and Hydraulic pumps and include the content based on it.
- The BoS member Dr. D. Jebakani suggested to modify the lecture (L) as 45 and practical (P) as 30 hours.
- The BoS member Dr. U. Arunachalam suggested to include the content “Hydraulic Accumulator” in UNIT V (Hydraulic pumps).

Materials Engineering

- The BoS member Dr. D. Jebakani appreciated the content in material engineering course.

4.2 Semester – IV:

Applied Thermal Engineering

- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam Suggested to add the content “Brayton with Reheat and Regenerative cycle” and remove the content “Rankine cycle” in UNIT I (Gas Power Cycles) because it already cover in the course “Engineering Thermodynamics” UNIT III (Properties of Steam and Steam power cycles)
- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam Suggested to add the content “Performance and Heat balance Analysis” and remove the content “Cetane number, Octane Number, Knocking and Detonation, Scavenging”, are fuel properties which are not relevant to the content in UNIT II (Internal Combustion Engines).
- The BoS member Dr. D. Jebakani and Dr. U. Arunachalam suggested to add the content “GSHF ESHF RSHF calculations” in UNIT V (Refrigeration and Air Conditioning)

Manufacturing Technology

- The BoS member Dr. D. Jebakani suggested to modify the lecture (L) as 45 and practical (P) as 30 hours since it is a integrated course.
- The BoS member Dr. U. Arunachalam suggested to modify the content as “jigs and Fixture” instead of Fixture and Jigs in UNIT III (Reciprocating Machines, Drilling Machines)

Automobile Engineering

- The BoS member Dr. U. Arunachalam suggested to include the content “recent advances in Automobile Engineering, emission norms and emission control techniques” in UNIT IV (Alternate Fuels and Emission Control)
- The BoS member Dr. D. Jebakani appreciated for including the new technologies Smart Vehicles in UNIT V (Smart Vehicles).

5. Percentage of Revision in Syllabus

Academic Year 2020-21			Details of Change in Syllabus		
S. No.	Course Code	Course Name	Changes		Percentage of change
			Removed (if Any unitwise)	Added (if Any unitwise)	
1.	19UME303	Engineering Thermodynamics	10%	15%	25%
2.	19UME304	Fluid Mechanics and Machinery	10%	15%	25%
3.	19UME306	Materials Engineering	-	5%	5%
4.	19UME402	Applied Thermal Engineering	5%	15%	20%
5.	19UME403	Manufacturing Technology		5%	5%
6.	19UME405	Automobile Engineering		5%	5%
Total Percentage of change					Sum of % of Change = 85%
Percentage of revision in syllabus = Total Percentage of change / Total No of courses in which the syllabus revision is made					= 85 / 6 = 14.17%

6. Assessment Questions and Assessment Pattern for Courses

- The Faculty members presented the assessment questions and assessment pattern for 3rd and 4th semester core course to all the members of BOS and the board approved the same.

7. Mapping of Curriculum with Programme Specific Criteria

- The Chairperson presented the Mapping of curriculum and syllabi of Regulation 2019 with programme specific criteria to all the members of BOS and the board approved the same.

Programme Specific Criteria	Course Name
To apply principles of engineering, basic science, and mathematics. (including multivariate calculus and differential equations)	Engineering Graphics
	Engineering Physics
	Engineering Chemistry
	Engineering Mathematics I
	Calculus, Fourier Series and Numerical Methods for Mechanical Engineering
	Material Physics
	Environmental Science
	Probability, Statistics and Partial Differential Equations for Mechanical Engineering
	Fundamentals of Manufacturing Processes

Programme Specific Criteria	Course Name
	Materials Engineering
	Engineering Mechanics
	Introduction to Mechanical Engineering
	Manufacturing Technology
	Measurements and Instrumentation
To model, analyze, design, and realize physical systems, components or processes	Fluid Mechanics and Machinery
	Kinematics of Machinery
	Mechanics of Materials
	Dynamics of Machinery
	Design of Machine Elements
	Design of Transmission Systems
	Finite Element Analysis
To prepare students to work professionally in either thermal or mechanical systems while requiring topics in each area.	Engineering Thermodynamics
	Applied Thermal Engineering
	Automobile Engineering
	Applied Hydraulics and Pneumatics
	Heat and Mass Transfer
	Operations Research
	Design and Product Development Project
	Project Management and Finance
	Mechatronics
	Project Work
	Gas Dynamics and Jet Propulsion
	Unconventional Machining Processes
	Process Planning and Cost Estimation
	Maintenance Engineering

8. External Examiners and Scrutiny Members

- The Chairperson presented the Panel of Evaluators and Question Paper Setters for Valuation for approval.
- The BoS members reviewed and approved the end semester External Examiners and Scrutiny Members for R2019.

9. Employability/ Entrepreneurship/ Skill Development

- The BoS members reviewed and approved the courses with focus on Employability, Entrepreneurship/ Skill Development in R2019 Curriculum and syllabus as follows

9.1 Courses with focus on Employability

Sl. No.	Course code	Course Name
1.	19UME302	Fundamentals of Manufacturing Processes
2.	19UME304	Fluid Mechanics and Machinery
3.	19UME306	Materials Engineering
4.	19UME401	Theory of Machines
5.	19UME402	Applied Thermal Engineering
6.	19UME403	Manufacturing Technology
7.	19UME404	Mechanics of Materials
8.	19UME405	Automobile Engineering
9.	19UME501	Heat and Mass Transfer
10.	19UME502	Design of Machine Elements
11.	19UME504	Measurements and Instrumentation
12.	19UME508	CAD Laboratory
13.	19UME601	Design of Transmission Systems
14.	19UME602	Finite Element Analysis
15.	19UME603	Operations Research
16.	19UME604	Mechatronics
17.	19UME702	Smart Manufacturing
18.	19UME902	Gas Dynamics and Jet Propulsion
19.	19UME903	Applied Hydraulics and pneumatics
20.	19UME906	Quality Control and Reliability Engineering
21.	19UME909	Power Plant Technology
22.	19UME910	Unconventional Machining Processes
23.	19UME915	Refrigeration and Air conditioning
24.	19UME918	Maintenance Engineering
25.	19UME919	Production Planning and Control
26.	19UME921	Advanced I.C. Engines
27.	19UME925	Industrial Robotics
28.	19UME926	Introduction to aircraft industry and aircraft systems
29.	19UME928	Non Destructive Testing (NDT)

9.2 Courses with focus on Entrepreneurship

Sl. No.	Course code	Course Name
1.	19UME508	CAD Laboratory
2.	19UME607	Product Development Project
3.	19UME608	Computational Analysis Laboratory (ANSYS & CFD)
4.	19UME701	Project Management and Finance
5.	19UME707	Summer Internship

6.	19UME801	Project Work
7.	19UME917	Entrepreneurship Development

Courses with focus on Skill Development

Sl. No.	Course code	Course Name
1.	19UME109	Engineering Graphics
2.	19UME111	Engineering Practice Laboratory
3.	19UME211	Computer Aided Drafting and Modeling Laboratory.
4.	19UME307	Seminar
5.	19UME407	Thermal Engineering Laboratory - I
6.	19UME408	Design Laboratory
7.	19UME504	Measurements and Instrumentation
8.	19UME508	Thermal Engineering Laboratory - II
9.	19UME603	Operation Research
10.	19UME607	Product Development Project
11.	19UME608	CAD/CAM Laboratory
12.	19UME609	Smart Manufacturing & Mechatronics Laboratory
13.	19UME707	Summer Internship
14.	19UME708	Computational Analysis Laboratory (ANSYS & CFD)
15.	19UME801	Project Work
16.	19UME905	Computational Fluid Dynamics

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Chairman
Chairperson
Board of Studies
Mechanical Engineering
Sethu Institute of Technology
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MINUTES OF NINTH MEETING FOR THE BOARD OF STUDIES IN THE DEPARTMENT OF MECHANICAL ENGINEERING HELD ON 19/08/2021.

The Ninth Meeting of the Board of Studies in the Department of Mechanical Engineering was held at 11.00 AM on **19/08/2021** at Seminar Hall of Mechanical Engineering Department through Google meet, Sethu Institute of Technology, Pulloor, Kariapatti.

The following members were present.

Sl. No	Name of the Members	Designation and Institution	Position
1.	Dr. C. Muthusamy	HOD Mechanical, Sethu Institute of Technology	Chairman
2.	Dr. D. Jebakani	Associate Professor(CAS), Department of Mechanical Engineering, Government College of Engineering, Tirunelveli, Tamil Nadu - 627007. Ph: 9944253810 Email : jebakani@gcetly.ac.in	University Nominee
3.	Dr. U. Arunachalam	Assistant Professor, University College of Engineering, Anna university Constituent College, Konam, Nagercoil – 629004. Ph: 9443279233 Email : arunachalam_u@yahoo.com	Member- External
4.	Dr. B. Stalin	Assistant Professor & Head I/C, Department of Mechanical Engineering, Anna university Regional campus, Keelakuilkudi, Madurai – 625 019. Ph: 9865264158 Email : stalin1312@gmail.com	Member- External

5.	Mr. G. Rajamurthy	Managing Director, Singai Coirs Pvt. Ltd., Singampunari, Sivaganga District. Ph: 9047093311 Email : globalrajamurthy@gmail.com	Industrial Expert
6.	Mr. A. Kosalram	Senior Design Engineer, Auro Lab, Madurai. Ph: 9962750063 Email :kosalram@aurolab.com	Alumni
7.	Dr.S. Sivaranjani	HoD-Information Technology Sethu Institute of technology Kariapatti Ph : 9150725908 Email : hodit@sethu.ac.in	Expert Member
8.	Dr. A. Senthil Kumar	Professor	Faculty Member
9.	Dr. G. D. Sivakumar	Professor	Faculty Member
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40.	Mr. S.A. Sethu Raaman	Assistant Professor	Faculty Member
41.	Mr. J. David Gnanaraj	Assistant Professor	Faculty Member
42.	Dr. V. Vignesh	Assistant Professor	Faculty Member
43.	Mr. B. Mohmed Fazil	Assistant Professor	Faculty Member
44.	Mr. J. Vairamuthu	Assistant Professor	Faculty Member
45.	Mr. C. Shravan Kumar	Assistant Professor	Faculty Member
46.	Mr. J. Arun Jeeva Nijanthan	Assistant Professor	Faculty Member
47.	Mr. V. Ananda Natarajan	Assistant Professor	Faculty Member

The Chairman welcomed the members and presented the Curriculum and Syllabi of Regulation 2019 for the students admitted from the academic year 2019-20, under Autonomous Regulations for B.E. Mechanical Engineering and M.E.CAD/CAM.

The following points were discussed in the meeting

1. Vision, Mission Statements, Program Educational Objectives, Program Outcomes and Program Specific Outcomes
2. Attainment of POs and PSOs and Gap analysis.
3. Curriculum and Syllabi of Regulation 2019
4. Syllabus updation in core courses of V and VI Semester
5. Mapping of Curriculum with Programme Specific Criteria
6. Employability/ Entrepreneurship/ Skill Development
7. M.E.CAD/CAM

1. Vision, Mission Statements, Program Outcomes and Program Specific Outcomes

- 1.1. The board of studies chairman presented the Department Vision, Mission, PEOs, POs and PSOs of the U.G Programme.
- 1.2. The BoS member approved the existing vision and mission statement as follows

Department Vision statement

- To promote excellence in education and research in mechanical engineering for the benefits of industry and society.

Mission Statement

1. To provide quality technical educational experience to enable the graduates to become leaders in their chosen profession
2. To educate through modern teaching tools and experiential learning to produce proficient engineer
3. To develop skills in recent technological trends and design software and to facilitate various co-curricular activities to enhance employability and entrepreneurship
4. To establish collaboration with industries for transfer of technical knowledge
5. To promote research activities among faculty members and students
6. To offer beneficial services to the society

- 1.3. The BoS member approved the existing PEOs, POs and PSOs as follows

Program Educational Objectives PEOs

After few years of graduation our Mechanical Engineering graduates are expected to:	
PEO I (Core Competency)	Develop technical competency to become professionals with expertise in core areas of mechanical engineering.
PEO II (Life Long Learning)	Practice Life Long Learning to solve real time problems and for career development.
PEO III (Professional and Ethical Skills)	Develop professional skills to meet the global standards with ethical and social responsibility.

Program Outcomes POs

1.	Apply knowledge of mathematics, science, basic engineering, manufacturing, design, thermal and industrial engineering to the solution of complex engineering problems. [Engineering knowledge]
2.	Identify, formulate, research through relevant literature review, and analyze complex mechanical engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and mechanical engineering. [Problem analysis]
3.	Design solutions for complex mechanical engineering problem and design system components that meet the specified needs with appropriate considerations for public health and safety, cultural, societal, and environmental constraints. [Design/ development of solutions]
4.	Conduct investigations of complex mechanical problems in design and analysis of machine elements, mechanisms, thermal systems and to manufacture components and systems using research based knowledge and methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions. [Conduct investigations of complex problems]
5.	Select and apply the latest CAD/CAM/CAE software and sophisticated equipment for modeling and analyzing to predict and solve mechanical engineering problems. [Modern tool usage]
6.	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, cultural issues and consequent responsibilities relevant to professional engineering practice. [The Engineer and Society]

7.	Understand the impact of solutions for mechanical engineering problems in the context of society and environments, and demonstrate the knowledge of and need for sustainable development. [Environment and Sustainability]
8.	Apply ethical principles, and commit to professional ethics and responsibilities and norms of the engineering practice. [Ethics]
9.	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. [Individual and team work]
10.	Communicate effectively on mechanical engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentation, and give and receive clear instructions. [Communication]
11.	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. [Project management and finance]
12.	Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. [Lifelong learning]

Program Specific Outcomes PSOs

- ❖ Apply the concepts of design and manufacturing to solve industrial problems.
- ❖ Apply the knowledge of Mechanical engineering to design solutions, systems and components to meet the needs of Automobile Industry.

2. Attainment of POs and PSOs and Gap analysis

2.1. The board of studies chairman presented the POs and PSOs attainment for the batch 2014-2018, 2015-2019 and 2016-2020 and gap analysis of Program Outcomes.

2.2. The BoS member approved the following courses to enhance the PO4, PO6, PO7, PO8, PO11 and PO12 attainment as follows

POs	Course Name
PO 4	<ul style="list-style-type: none"> • Smart Manufacturing • Design and Product Development Project

	<ul style="list-style-type: none"> • Computational Analysis Laboratory (ANSYS & CFD) • Creative Thinking & Innovations • Object Oriented Python Programming
PO 6	<ul style="list-style-type: none"> • Seminar on Recent Advances in Mechanical Engineering • Creative Thinking & Innovations
PO 7	<ul style="list-style-type: none"> • Indian Constitution & Essence of Indian Traditional Knowledge
PO 8	<ul style="list-style-type: none"> • Gender Equality
PO 11	<ul style="list-style-type: none"> • Internship
PO 12	<ul style="list-style-type: none"> • Statistical Quality Control (SQC) • Smart Manufacturing & Mechatronics Laboratory

3. Curriculum and Syllabi of Regulation 2019

3.1. New Course Introduced :

The Board of study member approved the newly introduced courses

- 19UME503 - Object Oriented Python programming
- 19UME507 - Creative Thinking & Innovations
- 19UME602 - Smart Manufacturing
- 19UME609 - Smart Manufacturing & Mechatronics Laboratory

3.2. Stakeholders Feedback

The Board analyzed the stake holder's feedback regarding curriculum and syllabi under 2019 regulation

S.No	STAKE HOLDER	NAME	FEEDBACK
1.	Faculty Member	Dr.N. Govindha Rasu Associate professor Department of Automotive Engineering School of Mechanical Engineering (SMEC) Vellore Institute of technology	<p>Heat and Mass Transfer</p> <ul style="list-style-type: none"> • In UNIT II: The content Introduction to boiling and condensation may be added. • In UNIT III: The content “effectiveness method” may be include in heat exchanger.

S.No	STAKE HOLDER	NAME	FEEDBACK
2.		Vellore (VIT)	<p>Power Plant Technology</p> <ul style="list-style-type: none"> • In Unit III: Indian Nuclear power programme topic should be included to make awareness among the student in nuclear field.
3.			<p>Advanced I.C. Engines</p> <p>In Unit V: Include the topic SCR technology</p>

3.3. The BoS member approved to modify the course content based on stakeholder's feedback.

4. Syllabus updation in core courses of V and VI Semester

4.1 Semester – V:

Heat and Mass Transfer:

- The BoS member Dr. U. Arunachalam suggested to include 'Semi-Infinite and Infinite Solids' in the Lumped analysis in UNIT-I (Conduction).
- The BoS member Dr. U. Arunachalam suggested to move the topic dimensional analysis to the end in UNIT II (Convection).
- The BoS member Dr. U. Arunachalam suggested to mention the topic over - all heat transfer coefficient as qualitative or quantitative otherwise modify the topic as "determination of overall heat transfer coefficient" in UNIT IV (Phase Change Heat Transfer and Heat Exchangers)

Design of Machine Elements

- The BoS member Dr. D. Jebakani appreciate for including Shigley as one of the Text book.
- The BoS member Dr. U. Arunachalam suggested to provide the detailed content in all the units so that examiner can understand the depth of the syllabus and it will be useful for taking appropriate question.
- The BoS member Dr. U. Arunachalam suggested to include either the cotter or knuckle joint before coupling, because the drawback in joints can be overcome by coupling in UNIT II (Design of Shafts, Keys and couplings).

- The BoS member Dr. U. Arunachalam suggested to move the topic “temporary before permanent joints” in UNIT III (Design of Temporary and Permanent Joints).
- The BoS member Dr. U. Arunachalam suggested to mention the types of spring like Leaf spring etc., in the topic design of various types of springs in UNIT IV (Design of Springs and Flywheels)

Object Oriented Python Programming

- The expert member Dr.Sivaranjani, HoD-IT reviewed and recommended the syllabus.

Measurements and Instrumentation

- The BoS member Dr. U. Arunachalam suggested to elaborate the content pressure measurement types in detail in UNIT IV (Measurement of mechanical parameters) and to add Sensors, Transducers, Data acquisition system, Machine vision in detail.

4.2 Semester – VI:

Operations Research

- The BoS member Dr. Jebakani, Dr. B. Stalin and Dean Mechanical Dr. G. D. Sivakumar suggested to include the topic “Queuing theory, Monte-Carlo Technique, Uses of Simulation” since it is essential for Competitive Exams in UNIT V (Game theory and simulation). The topics – Balanced and unbalanced TP and Formulation solving may be included in UNIT – II.

4.3 Professional Electives:

Unconventional Machining Processes

- The BoS member Dr. U. Arunachalam, Dr. Jebakani, Dr. B. Stalin suggested to modify the title as “Nano and Micro finishing process” in UNIT V (Nano Finishing Processes)
- The BoS member Dr. U. Arunachalam, Dr. Jebakani, Dr. B. Stalin suggested to give proper course material to student because it was difficult to understand from student point of view in UNIT V (Nano Finishing Processes).

Applied Hydraulics and Pneumatics

- The BoS member Dr. Jebakani suggested to rearrange the syllabus in following order Basic concepts of Hydraulics and pneumatics, Fluidic concepts, Components, Deign of hydraulic circuit and pneumatics for specific applications.

Power Plant Technology

- The BoS member Dr. U. Arunachalam and Dr. B. Stalin Suggested to modify the title as “Basics of Power Plants” in UNIT I (Basics of coal based thermal power plants) and to add the topics “Coal handling, storage, open and closed cycles in MHD power plant” in Unit – I.
- The BoS member Dr. U. Arunachalam and Dr. B. Stalin Suggested to add the contents “FBC Boiler, steam turbines in Unit- II and “Economics of Power Plant” in Unit – V.

5. Percentage of Revision in Syllabus

Academic Year 2020-21			Details of Change in Syllabus		
S.No	Course Code	Course Name	Changes		Percentage of change
			Removed (if Any unitwise)	Added (if Any unitwise)	
1.	19UME501	Heat and Mass Transfer	10%	15%	25%
2.	19UME504	Measurements and Instrumentation (INTEGRATED)	-	45%	45%
3.	19UME603	Operation Research	-	20%	20%
4.	19UME909	Power Plant Technology	-	40%	40%
5.	19UME903	Applied Hydraulics and Pneumatics	-	10%	10%
6.	19UME502	Design of Machine Elements	-	10%	10%
Total Percentage of change					Sum of % of Change = 150%
Percentage of revision in syllabus = Total Percentage of change /Total No of courses in which the syllabus revision is made					= 6 / 56 = 10.71%

6. Mapping of Curriculum with Programme Specific Criteria

- The Chairperson presented the Mapping of curriculum and syllabi of Regulation 2019 with programme specific criteria to all the members of BOS and the board approved the same.

Programme Specific Criteria	Course Name
To apply principles of engineering, basic science, and mathematics. (including multivariate calculus and differential equations)	Engineering Graphics
	Engineering Physics
	Engineering Chemistry
	Engineering Mathematics I
	Calculus, Fourier Series and Numerical Methods for Mechanical Engineering
	Material Physics
	Environmental Science
	Probability, Statistics and Partial Differential Equations for Mechanical Engineering
	Fundamentals of Manufacturing Processes
	Materials Engineering
	Engineering Mechanics
	Introduction to Mechanical Engineering
	Manufacturing Technology
Measurements and Instrumentation	
To model, analyze, design, and realize physical systems, components or processes	Fluid Mechanics and Machinery
	Theory of Machines
	Mechanics of Materials
	Design of Machine Elements
	Design of Transmission Systems
To prepare students to work professionally in either thermal or mechanical systems while requiring topics in each area.	Finite Element Analysis
	Engineering Thermodynamics
	Applied Thermal Engineering
	Automobile Engineering
	Applied Hydraulics and Pneumatics
	Heat and Mass Transfer
	Operations Research
	Design and Product Development Project
	Project Management and Finance
	Mechatronics
	Project Work
	Gas Dynamics and Jet Propulsion
	Unconventional Machining Processes
Process Planning and Cost Estimation	
Maintenance Engineering	

7. Employability/ Entrepreneurship/ Skill Development

The BoS members reviewed and approved the courses with focus on Employability, Entrepreneurship/ Skill Development in R2019 Curriculum of B.E. Mechanical Engineering and R2021 Curriculum of M.E – CAD/CAM.

Courses which focus on Employability/ Entrepreneurship/ Skill Development in M.E - CAD / CAM

Sl. No.	Course code	Course Name	Category
1	21PCD101	Computer Applications in Design	Entrepreneurship
2	21PCD102	Advanced Finite Element Analysis	Entrepreneurship/Employability
3	21PCD103	CAD Laboratory	Entrepreneurship/Employability
4	21PCD104	Computer Aided Engineering Laboratory	Entrepreneurship
5	21PCD201	Design For Sustainability	Employability/Entrepreneurship
6	21PCD202	Applied Materials Engineering	Employability/Entrepreneurship
7	21PCD203	INDUSTRY 4.0	Employability/Entrepreneurship
8	21PCD204	Product Design and Lifecycle Management	Employability
9	21PCD205	Advanced Simulation and Analysis Laboratory	Employability
10	21PCD206	Term Paper with Seminar	Skill development
11	21PCD503	Design of Hydraulic and Pneumatic Systems	Entrepreneurship
12	21PGM701	Research Methodology and IPR	Skill development
13	21PGM801	Pedagogy Studies (Audit course)	Skill development
14	21PGM802	English for Research Paper Writing (Audit course)	Skill development

Courses which focus on Employability/ Entrepreneurship/ Skill Development in B.E – Mechanical Engg.

7.1 Courses with focus on Employability

Sl. No.	Course code	Course Name
1.	19UCS110	Problem Solving and Python Programming Laboratory
2.	19UGS113	Basic Science Laboratory
3.	19UME211	Computer Aided Drafting and Modeling Laboratory.
4.	19UME302	Fundamentals of Manufacturing Processes
5.	19UME303	Engineering Thermodynamics
6.	19UME304	Fluid Mechanics and Machinery
7.	19UME305	Engineering Mechanics
8.	19UME306	Materials Engineering
9.	19UME307	Seminar
10.	19UME401	Theory of Machines
11.	19UME402	Applied Thermal Engineering
12.	19UME403	Manufacturing Technology
13.	19UME404	Mechanics of Materials
14.	19UME405	Automobile Engineering
15.	19UME505	Creative Thinking & Innovations
16.	19UME408	Design Laboratory
17.	19UME409	Thermal Engineering Laboratory - I
18.	19UME501	Heat and Mass Transfer
19.	19UME502	Design of Machine Elements
20.	19UME504	Measurements and Instrumentation

21.	19UME509	Thermal Engineering Laboratory - II
22.	19UME601	Design of Transmission Systems
23.	19UME602	Smart Manufacturing
24.	19UME603	Operations Research
25.	19UME604	Mechatronics
26.	19UME607	Product Development Project
27.	19UME608	CAD Laboratory
28.	19UME609	Smart Manufacturing & Mechatronics Laboratory
29.	19UME702	Finite Element Analysis
30.	19UME708	Computational Analysis Laboratory (ANSYS & CFD)
31.	19UGS632	Soft Skill and Communications Laboratory
32.	19UME701	Project Management and Finance
33.	19UGM731	Professional Ethics & Human values (Mandatory)
34.	19UME801	Project Work
35.	19UME902	Gas Dynamics and Jet Propulsion
36.	19UME903	Applied Hydraulics and pneumatics
37.	19UME905	Computational Fluid Dynamics
38.	19UME906	Quality Control and Reliability Engineering
39.	19UME909	Power Plant Technology
40.	19UME910	Unconventional Machining Processes
41.	19UME912	Process Planning and Cost Estimation
42.	19UME915	Refrigeration and Air conditioning
43.	19UME918	Maintenance Engineering
44.	19UME919	Production Planning and Control
45.	19UME921	Advanced I.C. Engines
46.	19UME925	Industrial Robotics
47.	19UME926	Introduction to aircraft industry and aircraft systems
48.	19UME928	Non Destructive Testing (NDT)

7.2 Courses with focus on Entrepreneurship

Sl. No.	Course code	Course Name
1.	19UME111	Engineering Practice Laboratory
2.	19UEE226	Basic Electrical and Electronics Engineering
3.	19UME211	Computer Aided Drafting and Modeling Laboratory
4.	19UME302	Fundamentals of Manufacturing Processes
5.	19UME403	Manufacturing Technology
6.	19UME405	Automobile Engineering
7.	19UME408	Design Laboratory
8.	19UME607	Product Development Project
9.	19UME608	CAD Laboratory
10.	19UME609	Smart Manufacturing & Mechatronics Laboratory
11.	19UME707	Summer Internship
12.	19UME708	Computational Analysis Laboratory (ANSYS & CFD)
13.	19UME801	Project Work

7.3 Courses with focus on Skill Development

Sl. No.	Course code	Course Name
1.	19UME109	Engineering Graphics
2.	19UGM131	Induction Programme
3.	19UME111	Engineering Practice Laboratory
4.	19UEN201	Communication Skills for Professionals
5.	19UEE226	Basic Electrical and Electronics Engineering
6.	19UME211	Computer Aided Drafting and Modeling Laboratory.
7.	19UME302	Fundamentals of Manufacturing Processes
8.	19UME307	Seminar
9.	19UME405	Automobile Engineering
10.	19UME407	Thermal Engineering Laboratory - I
11.	19UME408	Design Laboratory
12.	19UME502	Design of Machine Elements
13.	19UGS531	Interpersonal Skill Laboratory
14.	19UME603	Operations Research
15.	19UME607	Product Development Project
16.	19UME608	CAD Laboratory
17.	19UME609	Smart Manufacturing & Mechatronics Laboratory
18.	19UGS632	Soft Skill and Communications Laboratory
19.	19UME707	Summer Internship
20.	19UME708	Computational Analysis Laboratory (ANSYS & CFD)
21.	19UME801	Project Work
22.	19UME903	Applied Hydraulics and pneumatics
23.	19UME915	Refrigeration and Air conditioning
24.	19UME918	Maintenance Engineering

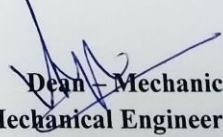
8. M.E.CAD/CAM

- The Members of BoS thoroughly discussed about the curriculum and Syllabi for M.E. CAD/CAM. They prescribed that there is no change in the curriculum 2019 and they recommended to follow the curriculum and syllabi of regulation 2019. The members of BoS has reviewed and accepted.


Chairman

Board of Studies

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