SETHU INSTITUTE OF TECHNOLOGY, PULLOOR, KARIAPATTI – 626 115

MINUTES OF SEVENTH MEETING FOR THE BOARD OF STUDIES IN THE DEPARTMENT OF MECHANICAL ENGINEERING HELD ON 06/09/2019.

The Seventh Meeting of the Board of Studies in the Department of Mechanical Engineering was held at 10.00 AM on **06/09/2019** at Seminar Hall of Mechanical Engineering Department, Sethu Institute of Technology, Pulloor, Kariapatti.

The following members were present.

Sl. No	Name of the Members	Designation and Institution	Position	Signature
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	6/9/19
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	B. Stalin 6/9/19
5.	Mr. G. Rajamurthy	Managing Director, Singai Coirs Pvt. Ltd., Singampunari, Sivaganga District. Ph: 9047093311 Email : globalrajamurthy@gmail.com	Industrial Expert	6/9/19
6.	Mr. A. Kosalram	Senior Design Engineer, Auro Lab, Madurai. Ph: 9962750063 Email :kosalram@aurolab.com	Alumni	6/9/19
7.	Dr. A. Senthil Kumar	Professor		6/9/19
8.	Dr. A.M. Shanawaz	Professor		
9.	Dr. C. Kailasanathan	Professor		
10.	Dr. S. Mothilal	Professor		
11.	Dr. R. Murali Kannan	Professor		
12.	Dr. K. Arun Balasubramanian	Professor		
13.	Dr. C. Muthusamy	Professor		
14.	Dr. B. Raja Mohamed Rabi	Professor		
15.	Dr. V. Srinivasa Raman	Professor		
16.	Dr. G. Pitchayya Pillai	Professor		
17.	Dr. A. Anbarasu	Professor		
18.	Mr. G.K. ThamilSelvan	Associate Professor		
19.	Dr. I. Vijay Arasu	Associate Professor		
20.	Mr. S. Paramasamy	Associate Professor		
21.	Mr. G. Nagaraj	Associate Professor		

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

48.	Mr. M. Pasumpon	Assistant Professor		
49.	Mr. S. Saravanan	Assistant Professor		
50.	Mr. R. Seenivasan	Assistant Professor		
51.	Mr. M. Elavarasan	Assistant Professor		
52.	Mr. A. Perumal	Assistant Professor		
53.	Mr. S.A. SethuRaaman	Assistant Professor		
54.	Mr. J. David Gnanaraj	Assistant Professor		
55.	Mr. R. Kathirvel	Assistant Professor		
56.	Dr. V. Vignesh	Assistant Professor		
57.	Mr. C. Ramaraj	Assistant Professor		
58.	Mr. B. MohmedFazil	Assistant Professor		
59.	Mr. J. Vairamuthu	Assistant Professor		
60.	Mr. C. Shravan Kumar	Assistant Professor		
61.	Mr. J. ArunJeevaNijanthan	Assistant Professor		
62.	Mr. V. Ananda Natarajan	Assistant Professor		

The Chairman welcomed the BoS 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. Improvements to be made in the syllabus under R2015
3. Technology Forecast regarding R2019
4. Stakeholders Feedback regarding R2019
5. Curriculum and syllabus R2019
6. Mapping of Curriculum with Programme Specific Criteria
7. Employability/ Entrepreneurship/ Skill Development

8. Value added courses
9. New introduced courses under R2019.
10. External Examiners and Scrutiny Members
11. 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.

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

Program Educational Objectifies 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 andEthical 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 forsustainable 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.

➢ The BoS members reviewed the Department Vision, Mission statements, PEOs, POs, PSOs and resolved to approve the same without changes.

2. Improvements to be made in the syllabus under R2015

The BoS members reviewed the Curriculum and Syllabi of Regulation 2015 and resolved to approve the same without any changes.

3. Technology Forecast regarding R2019

The Chairman of BoS presented the Technology forecast regarding R2019 in front of BoS members

Sl.No.	Publishers	Content of forecast	Action Taken
1.	Collaborative Automotive R & D (CAR), Government of India.	Electric Mobility Vehicle Tracking and Control System	Introduced in the course "Automobile Engineering"
		Hydroforming	Introduced in the course "Fundamentals of Manufacturing Process"
2.	CII	Automobile Sectors - Impact on Indian Economy	Because of the fast growing of the automobile sector and its impact in Indian economy automobile engineering course is introduced as professional core.
3.	NASA	3D Printing	A chapter is included in the course "Smart Manufacturing"
		Future of Aeronautics	Included in the course "Introduction to aircraft industry and aircraft systems"
4.	Technavio	A key factor driving the growth of the computational fluid dynamics market is the growing need to decrease product development time. Industries are implementing CFD software in their product development system due to the need for technological advancements.	• Professional Elective Course in "CFD" is introduced in the Curriculum. • CFD Practical is introduced in the course "Computational Analysis Laboratory"

Sl.No.	Publishers	Content of forecast	Action Taken
5.	SIEMENS	The Digital Enterprise solution portfolio enables industrial companies of all sizes to implement current and future technologies for the automation and digitalization. Thus, they can tap into the full potential of Industry 4.0 and get ready for the next level of their digital transformation journey.	The chapter "Industry 4.0" is included in the professional core course "Smart Manufacturing"
6.	Global Industry 4.0 Technologies Market Analysis, Trends & Forecast Prediction till 2023 – Market Watch	The "Global Industry 4.0 Technologies Market - 2017-2023" report forecasts that the global Industry 4.0 market* will reach $214B by 2023.	The chapter "Industry 4.0" is included in the professional core course "Smart Manufacturing"

- The BoS members reviewed the technology forecast regarding R2019 and resolved to incorporate the feedback in R2019.

4. Stakeholders Feedback regarding R2019

The Chairman of BoS presented the Stakeholders feedback regarding R2019 infront of BoS members.

S.No	Stake Holder	Name	Feedback	Remarks
1.	International Faculty	Dr. G. Sivakumar, Lecturer Mechanical Section, IBRA college of technology Sultanate of Oman	Piping design course as professional elective	Included as Professional Elective
			Control engineering as open elective course	"Control System Engineering" is offered by EEE department as an open elective course

S.No	Stake Holder	Name	Feedback	Action Taken
2.	Faculty Member	Dr. U. Arunachalam Assistant professor, University College of Engineering, Nagercoil	**Thermal Engineering:** Rankine cycle chapter should be added in Thermal Engineering course.	Rankine cycle is included in the course "Engineering Thermodynamics" of R2019.
			Elementary treatment about cooling load calculations should be included RSHF, GSHF and ESHF in the topic Air conditioning.	The content added in the course "Engineering Thermodynamics" under the topic of Psychrometry in R2019
			The topic "Performance of I.C Engines" should be added.	Already available in the course "Thermal Engineering Laboratory - I" of R2019
			The course **Heat and Mass Transfer** may be shifted to **Fifth semester** and **Operations Research** may be shifted to **Sixth semester**.	In R2019 curriculum, "Heat and Mass Transfer" course is shifted to 5th semester and "Operation Research" course is shifted to 6th Semester.
			Applied Thermal Engineering: • In Steam turbines, only elementary treatment is enough, as they have been already taught velocity triangles for turbines and pumps in Fluid Mechanics and Machinery.	Updated in the course "Applied Thermal Engineering" of R2019
			• Unit – 4(Hydraulic Pumps), Centrifugal pumps may be added with reciprocating pump under the name of Hydraulic Pumps. • Unit – 5 (Hydraulic Turbines) may be named as Hydraulic Turbines	Updated in the course "Fluid Mechanics and Machinery " of R2019

S.No	Stake Holder	Name	Feedback	Action Taken
3.	Faculty Member	Dr. Kumaresan, PAC 2 Associate Professor, Institute of Energy Studies, Anna University, Chennai.	**Heat and Mass Transfer:** • The following topics can be excluded • Unit 1(Conduction) – Numerical methods topic can be removed off due to lengthy portions. • Unit 4 (Radiation) – Enough to mention Laws of Radiation so Stefan Boltzman Law and Kirchoff's Law can be removed off. • The following topics can be included • Unit 2(Convection) – Introduction to convection Heat transfer enhancement techniques • Unit 3(Phase change heat transfer and heat exchangers) – Introduction to Heat Pipes.	Updated in the course "Heat and Mass Transfer" of R2019
			Engineering Thermodynamics: • Topics can be included in Unit 1(Basic concepts and first law) - Basics of microscopic approach. • Topics can be included in Unit 2(Basic concepts and second law) – Availability. • Reference Book to be included: Y. Cengel and M. Boles, Thermodynamics - An Engineering Approach, Tata McGraw Hill, 7th Edition, 2011.	Updated in the course "Engineering Thermodynamics" of R2019

S.No	Stake Holder	Name	Feedback	Action Taken
		Dr. Kumaresan, – DAC2 Associate Professor, Institute of Energy Studies, Anna University, Chennai.	**Thermal Engineering:** Topic impulse and reaction turbine can be included in Unit 3(Steam nozzle and turbines), after Super saturated flow topic,	Updated in the course "Applied Thermal Engineering" of R2019
			Gas Dynamics and Jet Propulsion: The following topics can be included Unit 4(Jet propulsion) – Ramjet and Scramjet engines Unit 5(Rocket propulsion) – Power and Efficiency calculations, Multi stage rockets.	Updated in the course "Gas Dynamics and Jet Propulsion" of R2019
			Power Plant Engineering: • The following topics can be excluded in Unit 2 – Remove comma between Electrostatic, Precipitator and Unit 5 – Remove Power plant economics. • Unit 1 title should be changed as layout and economics of power plant • The following topics can be included • Unit 1 – Tariff Structures, • Unit 2 (steam power plants) – Supercritical boilers • Unit 5 (Other power plants) – Biomass, Solar PV, wind power plants.	Updated in the course "Power Plant Engineering" of R2019

S.No	Stake Holder	Name	Feedback	Action Taken
4.	Industry Member	Dr. Parthasarathi, Senior Research Scientist, IGCAR, Chennai	**Manufacturing Technology – I:** 3-D Printing and Additive Manufacturing content to be included.	Included in the course "Smart Manufacturing"
			Engineering Mechanics: Reference book of Meriam Kraige or S. Timshenko should be added.	Updated in the Syllabus
			Engineering Materials and Metallurgy: • Glasses, Metallic Glasses content to be included. • Reference book to be included • Mechanical metallurgy by George E. Dieter • Engineering Materials by Ashby	Updated in the course "Materials Engineering" of R2019
			Design of Machine Elements: Design of Leaf spring, Half leaf spring content to be included.	In the course "Design of Machine Element", Unit IV the topic design of various types of springs includes Leaf spring and Half leaf spring.
			Belleville spring content to be included.	Non availability of data in PSG design data book (prescribed by Anna university)
			Professional Ethics: • Workplace sexual harassment awareness for women content to be included.	"Gender Equality" - new course is introduced in the R2019 as a Mandatory course
			Automobile Engineering: • Reference book by Crouse and Anglin should be included.	Updated in the Syllabus

S.No	Stake Holder	Name	Feedback	Action Taken
			Industrial Tribology: • Reference book by IM Hutchings and Prasant Sahoo should be included.	Updated in the Syllabus
			Nuclear Engineering: • Reference book by Samuel Glasstone Volume 1 and 2 should be included.	Updated in the Syllabus
			Engineering Practices Laboratory: • Basic welding content to be included.	Basic welding is included in the course "Engineering Practices Laboratory" of R2019
			• **Tribological testing** and **NDT techniques** may be included as a **one credit course.** • Insist the students to present their project work in National and International level competitions.	Included in the curriculum R2019 as Professional Elective courses • Industrial Tribology • Non Destructive testing (NDT)
5.	Industry Member	Mr. C. Jaikumar, ~ PAC 3 Managing Director 3-D Makers	• Additive Manufacturing lab may be included to get practical knowledge.	Included in Smart manufacturing and Mechatronics Laboratory
			• Student should be given training in industrial type CNC machine to get real time exposure.	Separate credit is allotted for Internship and Certification courses
6.	Industry Member	Dr. M. Mahendran, ✓ PAC 4 Staff Engineer, GE Aviation	• Additive Manufacturing may be added as a professional elective	Included as a Professional Elective in R2019
			• Thermal Turbo machines may be included as a professional elective. Even though it is the part of fluid mechanics course, he suggested to include it as separate course in R2019 will provide the knowledge of axial and radial machine design.	Included as a Professional Elective in R2019

S.No	Stake Holder	Name	Feedback	Action Taken
7.	Industry Member	Dr. Paul Murugan, Scientist, ISRO, Trivandrum	The following courses to be included in the upcoming curriculum • 3-D Printing or Additive Manufacturing • Pressure Vessel Design • Advanced joining techniques like friction stir welding • Flow forming techniques • Hot isostatic process • Torquing methods and fasteners manufacturing • Design with additive manufacturing method • Aero propulsion and structures basics • Finite element techniques with MATLAB • Composite pressure vessel tech • Advanced materials piezo electric and smart materials basics • Structures handling and transportation design methods.	The following courses are included in the Curriculum R2019: • Additive manufacturing • Design of aircraft structures • Flow forming techniques may be given as an One credit course
8.	Alumni Member	Mr. S. Shanmuga Narayanan, Design Engineer, MWC Chennai	The following new courses may be included in the upcoming curriculum. **Suggestion for New course:** Practical for Finite Element Analysis	Included in the course "Computational Analysis Laboratory"
			Geometric Dimensioning and Tolerance	Included in the course "CAD Laboratory"
			CNC software programming	Included in the course "Smart Manufacturing Laboratory"

S.No	Stake Holder	Name	Feedback	Action Taken
			CMM software programming	Included in the course "Measurement and Instrumentation" of R2019.
			The following topics may be included in the curriculum R2019 Strength and Durability analysis	Included in the course "Computational Analysis Laboratory"
			Surface Design	Included in the course "Industrial Tribology"
			Top Down Assembly Design	Included in the course "CAD Laboratory"
			Solid Modeling	Included in the course "CAD Laboratory"
			Drafting	Included in the course "Computer Aided Drafting Laboratory"

- The BoS members reviewed the stakeholders feedback and resolved to incorporate remarks given by DAB members in the curriculum and syllabus of R2019.

5. Curriculum and Syllabi of Regulation 2019

The Chairman of BoS presented the drafted curriculum and syllabus under Regulation 2019 which is designed based on the AICTE model curriculum, Technology Forecast, Stakeholders feedback and Reputed Institutions curriculum.

The following are the suggestions given by the BoS members regarding curriculum and syllabus of R2019.

5.1. Semester – I:

Engineering Graphics:

- The BoS member Dr. U. Arunachalam suggested the syllabus content in the course "Engineering Graphics"may be modified as "axis inclined to any one plane" instead of "axis is parallel, perpendicular and inclined to one plane".

Based on the above suggestion, the BoS members resolved to revise the syllabus by incorporating the content "axis inclined to any one plane" instead of "axis is parallel, perpendicular and inclined to one plane" in the course "Engineering Graphics".

5.2. Semester – II:

Introduction to Mechanical Engineering:

- The BoS member Dr. B. Stalin suggested to design the syllabus content based on Design, Thermal, Manufacturing and Industrial Engineering Domain.
- The BoS member Mr. G. Rajamurthy noted that the course title "Introduction to Mechanical Engineering" and the Unit – 1 title are same and hence the Unit -1 title may be modified.

Based on the above suggestion the BoS members resolved to revise the syllabus according to domain of mechanical engineering and change the title for Unit – 1 as "Elements of Mechanical Engineering".

5.3. Semester – IV:

- The BoS member Dr. U. Arunachalam suggested to modify the course "Thermal Engineering Laboratory" as "I.C. Engine Lab" in 4th Semester and "Heat and Mass Transfer Lab" in 5thSemester.

Based on the above suggestion the BoS members resolved to modify the course name based on thermal domain - "I.C. Engine Lab" as "Thermal Engineering Laboratory – I" and "Heat and Mass Transfer Lab" as "Thermal Engineering Laboratory – II".

5.4. Semester – VII:

- The BoS member Dr.D.Jebakani suggested that in the course "Project Management and Finance" the syllabus is vast.

Based on the above suggestions the BoS members resolved to retain the same content in the course "Project Management and Finance" because of the necessity of project management skill in industry.

5.5. Professional Elective:

- The BoS member Dr. D. Jebakani suggested that remove the course "Design of Jigs, Fixtures & Press Tools" from professional elective.

Based on the above suggestion the BoS members resolved that the course "Design of Jigs, Fixtures & Press Tools" is vital for mechanical engineering and hence it is decided to retain the course as professional elective.

6. Mapping of Curriculum with Programme Specific Criteria

- The Chairman presented the Mapping of curriculum and syllabi of Regulation 2019 with programme specific criteria to all the members of BoS.

The BoS reviewed and resolved to approve the course mapping with Program Specific Criteria (PSC) as given in the Annexure-1.

7. Employability/ Entrepreneurship/ Skill Development

- The Chairman presented the courses focusing on Employability, Entrepreneurship/ Skill Development in R2019 Curriculum and syllabus.

The BoS members reviewed and resolved to approve the coursesfocusing on Employability, Entrepreneurship and Skill Development in R2019 Curriculum and syllabus as given in the Annexure-3.

8. Value Added Courses

- The Chairman presented the Value Added Courses.

The BoS members reviewed and resolved to approve the following Value Added Courses to be offered to the students to enhance their skills.

1. Computational Fluid Dynamics (CFD)
2. CATIA
3. 3D – Printing
4. Six Sigma

9. New Courses

The Chairman presented the new Professional core, Laboratories, Professional Electives and Integrated courses introduced in R 2019 curriculum.

The BoS members reviewed and resolved to approve the following new courses to be introduced in the curriculum R2019.

New course Introduced:

1. Introduction to Mechanical Engineering

New Professional core courses:

1. Automobile Engineering
2. Smart manufacturing

New Professional Laboratory courses:

1. CAD Laboratory
2. Mechatronics and Smart manufacturing Laboratory

New Integrated courses:

1. Fluid Mechanics and machinery
2. Measurement and Instrumentation

New Professional core courses:

1. Non Destructive Testing (NDT)
2. Statistical Quality Control
3. Additive Manufacturing
4. Thermal Turbo machines
5. Piping Design

10. External Examiners and Scrutiny Members

- The Chairperson presented the Panel of Faculty members for Valuation to all the members of BoS.
- The BoS members reviewed and resolved to approve the end semester External Examiners and Scrutiny Members as given in the Annexure – 2.

11. M.E.CAD/CAM

The M.E. CAD/CAM Head of the department presented the drafted curriculum and syllabus under regulation 2019 for M.E CAD/CAM based on the AICTE model curriculum, Technology forecast, Stakeholder's feedback and reputed Institutions curriculum.

Based on the suggestions given by the members, the following resolutions are made:

11.1 The BoS resolved to approve the curriculum of M.E. CAD/CAM.

11.2. The BOS resolved the number of theory papers in I and III semester reduced to 4 subject instead of 5 subject.

11.3. The BOS resolved the number of theory papers in II semester reduced to 3 subject instead of 5 subject.

11.4. The BoS members reviewed and resolved to approve the following New Courses to be included in the curriculum R2019 based on Stakeholders feedback.

New Professional core courses:

1. Advanced Finite Element Analysis
2. Computer Application and Design

New Professional Laboratory courses:

1. CAD Laboratory
2. Computer Aided Engineering Laboratory
3. CAM Laboratory
4. Advanced Analysis and Simulation Laboratory
5. Mini Project with Seminar

New Professional Elective courses:

1. Integrated Product Design and Process Development
2. Competitive Manufacturing Systems
3. Additive Manufacturing
4. Integrated Mechanical Design

New Open Elective course:

1. Industrial Safety

New Mandatory Credit Course:

1. Research Methodology and IPR

New Audit Course:

1. Pedagogy Studies
2. English for Research paper writing

- The Chairperson thanked the members for their contribution and valuable suggestions given by them in various aspects under Autonomous Regulations 2019.

Dr. G.D. Sivakumar
Chairperson
Board of Studies
Mechanical Engineering
Sethu Institute of Technology
Kariapatti - 626 115

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. ThamilSelvan	Associate Professor	Faculty Member
18.	Dr. I. Vijay Arasu	Associate Professor	Faculty Member
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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
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41.	Mr. K. Sarbudeen	Assistant Professor	Faculty Member
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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 Objectifies 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]**
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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	• Smart Manufacturing • Design and Product Development Project • Computational Analysis Laboratory (ANSYS & CFD) • Creative Thinking & Innovations
PO 6	• Seminar on Recent Advances in Mechanical Engineering • Creative Thinking & Innovations
PO 7	• Indian Constitution & Essence of Indian Traditional Knowledge
PO 8	• Gender Equality
PO 11	• Internship
PO 12	• 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	**Manufacturing Technology** • 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	**Manufacturing Technology** • **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	**Engineering Thermodynamics** • 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	**Fluid Mechanics and Machinery** • 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	**Materials Engineering** • 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	**Applied Thermal Engineering** • **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, GSHF, ESHF- 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	**Strength of Materials** • 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 toRemove the content "Concept of ideal and real gases" from unit I (Basic Concepts and First Law) because it repeated in UNIT IV (Ideal and RealGases 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 tomodify 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 Curriculumand 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

Chairman

Chairperson
Board of Studies
Mechanical Engineering
Sethu Institute of Technology
Kariapatti - 626 115

SETHU INSTITUTE OF TECHNOLOGY, PULLOOR, KARIAPATTI – 626 115

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
10.	Dr. C. Kailasanathan	Professor	Faculty Member
11.	Dr. R. Murali Kannan	Professor	Faculty Member
12.	Dr. K. Arun Balasubramanian	Professor	Faculty Member
13.	Dr. C. Muthusamy	Professor	Faculty Member
14.	Dr. B. Raja Mohamed Rabi	Professor	Faculty Member
15.	Mr. G.K. ThamilSelvan	Associate Professor	Faculty Member
16.	Dr. I. Vijay Arasu	Associate Professor	Faculty Member
17.	Mr. S. Paramasamy	Associate Professor	Faculty Member
18.	Mr. G. Nagaraj	Associate Professor	Faculty Member
19.	Dr. K. Vinayagar	Associate Professor	Faculty Member
20.	Dr. G. Venkatesan	Associate Professor	Faculty Member
21.	Dr. P. Ganeshan	Associate Professor	Faculty Member
22.	Mr. T. Gangadharan	Assistant Professor (Sr. Gr.)	Faculty Member
23.	Mr. P. R. Rajkumar	Assistant Professor (Sr. Gr.)	Faculty Member

24.	Mr. K.M. Ahamed Sheriff	Assistant Professor (Sr. Gr.)	Faculty Member
25.	Dr. A. Saravana Kumaar	Assistant Professor (Sr. Gr.)	Faculty Member
26.	Mr. A. Syed Ibrahim	Assistant Professor (Sr. Gr.)	Faculty Member
27.	Mr. S. Shanmugam	Assistant Professor	Faculty Member
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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
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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

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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]**
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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	• Smart Manufacturing • Design and Product Development Project

	• Computational Analysis Laboratory (ANSYS & CFD) • Creative Thinking & Innovations • Object Oriented Python Programming
PO 6	• Seminar on Recent Advances in Mechanical Engineering • Creative Thinking & Innovations
PO 7	• Indian Constitution & Essence of Indian Traditional Knowledge
PO 8	• Gender Equality
PO 11	• Internship
PO 12	• 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	**Heat and Mass Transfer** • 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)	**Power Plant Technology** • In Unit III: Indian Nuclear power programme topic should be included to make awareness among the student in nuclear field.
3.			**Advanced I.C. Engines** **In Unit V:** Include the topic SCR technology

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
	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

7. 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

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)

Sl. No.	Course code	Course Name
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

Dr. C. MUTHUSAMY, M.E., Ph.D.,
HEAD OF THE DEPARTMENT
Department of Mechanical Engineering
Sethu Institute of Technology
Pulloor, Kariapatti (TK),
Virudhunagar District-626 115.

Dean – Mechanical
Mechanical Engineering

SETHU INSTITUTE OF TECHNOLOGY, PULLOOR, KARIAPATTI – 626 115

MINUTES OF MEETING FOR THE BOARD OF STUDIES IN THE DEPARTMENT OF MECHANICAL ENGINEERING HELD ON 05.05.2022.

The Meeting of the Board of Studies in the Department of Mechanical Engineering was held at 10.30 AM on **05.05.2022** at Seminar Hall of Mechanical Engineering Department in Sethu Institute of Technology, Pulloor, Kariapatti.

The following members were present.

Sl. No.	Name	Designation	Status
1.	Dr. C. Muthusamy	Professor & Head / Department of Mechanical Engineering Sethu Institute of Technology.	Chairperson
2.	Dr. K Lingadurai	Professor & Dean Anna University Madurai Regional campus, Madurai.	University Nominee
3.	Dr. N. Govindha Rasu	Associate Professor Department of Automotive Engineering, Vellore Institute of Technology, (VIT) Vellore.	Member External
4.	Dr. S. Suresh Kumar	Associate Professor Department of Mechanical Engineering, Kalasalingam Academy of Research and Education, Krishnankovil.	Member External
5.	Dr. U. Arunachalam	Assistant Professor, University College of Engineering, Anna university Constituent College, Konam, Nagercoil.	Member External
6.	Dr. B. Stalin	Assistant Professor & HoD i/c, Department of Mechanical Engineering, Anna University Regional Campus, Keelakuilkudi, Madurai .	Member External

Sl. No.	Name	Designation	Status
7.	Mr. G. Rajamurthy	Managing Director, Singai Coirs Pvt. Ltd., Singampunari, Sivaganga District.	Industrial Expert
8.	Dr.Parvathi	HoD-CSE Sethu Institute of technology Kariapatti Ph : 9566956219 Email : hodcse@sethu.ac.in	Invited Member
9.	Dr. T. Rajkumar	Assistant professor Department of Mechanical Engineering K.Ramakrishnan college of Technology Samayapuram, Trichy	Alumni
10.	Dr. A. Senthil Kumar	Professor	Faculty Member
11.	Dr. G.D. Sivakumar	Professor & Dean Mechanical	Faculty Member
12.	Dr. C. Kailasanathan	Professor & PG Head M.E (CAD/CAM)	Faculty Member
13.	Dr. R. MuraliKannan	Professor	Faculty Member
14.	Dr. K. Arun Balasubramanian	Professor	Faculty Member
15.	Dr. I. Vijay Arasu	Associate Professor	Faculty Member
16.	Dr. G. Nagaraj	Associate Professor	Faculty Member
17.	Dr. G. Venkatesan	Associate Professor	Faculty Member
18.	Dr. A. Saravana Kumaar	Associate Professor	Faculty Member
19.	Mr. G.K. Thamil Selvan	Associate Professor	Faculty Member
20.	Mr. S. Paramasamy	Associate Professor	Faculty Member
21.	Dr. P. R. Rajkumar	Assistant Professor	Faculty Member
22.	Dr. B. Muthu Chozha Rajan	Assistant Professor	Faculty Member
23.	Dr. V. Vignesh	Assistant Professor	Faculty Member
24.	Dr. A. Perumal	Assistant Professor	Faculty Member
25.	Mr. T. Gangadharan	Assistant Professor	Faculty Member
26.	Mr. K.M. Ahamed Sheriff	Assistant Professor	Faculty Member

Sl. No.	Name	Designation	Status
27.	Mr. S. Shanmugam	Assistant Professor	Faculty Member
28.	Mr. P. Meenatchi sundaram	Assistant Professor	Faculty Member
29.	Mr. T.P. Balaji	Assistant Professor	Faculty Member
30.	Mr. V. Ramachandran	Assistant Professor	Faculty Member
31.	Mr. C. Tamilarasan	Assistant Professor	Faculty Member
32.	Mr. S. Devanand	Assistant Professor	Faculty Member
33.	Mr. K. Amirtharaj	Assistant Professor	Faculty Member
34.	Mr. R. Jayaprakash	Assistant Professor	Faculty Member
35.	Mr. P. Karuppasamy	Assistant Professor	Faculty Member
36.	Mr. S. Saravanan	Assistant Professor	Faculty Member
37.	Mr. S.A. SethuRaaman	Assistant Professor	Faculty Member
38.	Mr. J. David Gnanaraj	Assistant Professor	Faculty Member
39.	Mr. J. Vairamuthu	Assistant Professor	Faculty Member
40.	Mr. J. Arul JeevaNijanthan	Assistant Professor	Faculty Member
41.	Mr. V. Ananda Natarajan	Assistant Professor	Faculty Member
42.	Mr. R. Seenivasan	Assistant Professor	Faculty Member
43.	Mr. B. Rajesh Kannan	Assistant Professor	Faculty Member
44.	Mr. S. Balaji	Assistant Professor	Faculty Member
45.	Mr. V. Sundara Mahalingam	Assistant Professor	Faculty Member
46.	Mr. M. Vimalkumar	Assistant Professor	Faculty Member

The Chairman welcomed the members and presented the Curriculum and Syllabi for VII Semester and VIII Semester of Regulation 2019 for the students admitted from the academic year 2019-20, and Regulation 2021 for the students admitted from the academic year 2021-22 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 of core courses in VII and VIII Semester
5. Curriculum and Syllabi of Regulation 2021
6. Mapping of Curriculum with Programme Specific Criteria
7. Employability/ Entrepreneurship/ Skill Development
8. 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 Objectifies 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

- Design, model and analyse mechanical systems and components using computer aided technologies.
- Formulate, analyze and provide the solution to thermal engineering related problems with regards to environment and society.
- Acquire the profession in industries through the intellectual knowledge of mechanical engineering and team work.

2. Attainment of POs and PSOs and Gap analysis

2.1. The board of studies chairman presented the methodology of POs and PSOs attainment

2.2. The BoS member approved the following courses to enhance the PO3 and PO4

attainment as follows

POs	Course Name
PO 3	• Computational Analysis Laboratory (ANSYS & CFD) • Machine learning
PO 4	• Statistical quality control • Machine learning • Kinematics of machinery • Dynamics of machinery

3. Curriculum and Syllabi of Regulation 2019

3.1. **New Course Introduced :**

The Board of study member approved the newly introduced courses

- 19UME708 - Computational Analysis Laboratory (ANSYS & CFD)
- 19UGM731 - Professional Ethics & Human values (Mandatory)
- 19UME707 - Summer Internship
- 19UME933 - Machine Learning
- 19UME929 - Statistical Quality Control (SQC) as elective

3.2. **Stakeholders Feedback**

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

S.No	STAKE HOLDER	NAME&DESIGNATION	FEEDBACK
1.	Industry Member	Mr.G.Dhanasekar, AGM, JBM Auto Limited Chennai	**Industrial Robotics** In unit 3,types of sensors may be removed, In unit 5 the title may be change as Industrial applications and robot economics.

S.No	STAKE HOLDER	NAME&DESIGNATION	FEEDBACK
2.	Industry Member	Mr.G.Dhanasekar, AGM, JBM Auto Limited Chennai	**Smart Manufacturing** In the first unit, IOT Vs IIOT and Applications of IIOT may be included in unit-1
3.	Industry Member	Mr.Duraibabu AGM-Operations Rajsriya Automotive Industries(P)Ltd Chennai	**Fundamentals of Manufacturing process** The topics powder forging and powder extrusion may be included and composite moulding may be removed.

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

4. Syllabus updation in core courses of VII and VIII Semester

Regulation 2019

Semester – VII:

19UME708 Computational Analysis lab

- Dr.Arunachalam suggested that in the subject 19UME708 Computational Analysis lab, the credits may be increased to 2 instead of 1.5 and total periods may increase to 3 to 4 periods. Also the experiment 3 and 6 can be removed from the syllabus.
- Stress analysis of fixed ends beam.
- Mode frequency analysis of cantilever beams

19UME933 Machine Learning

- Dr.Govindaraju suggested that in the subject 15UME933 - Machine Learning, the content basics of python programming can be removed and add practical classes for python programming included in each unit.

Total Credit

- Dr.Arunachalam suggested that total credits of R2019 should be rounded off to either 178 or 179 instead of 178.5.

Regulation 2021

- Dr.Lingadurai suggested that domain wise electives may be given to students instead of listing semester wise electives in R2021. Also suggested to include content beyond syllabus in each theory and practical subjects.

- Dr.Arunachalam and Dr.Lingadurai suggested that the subject KOM can be shifted to 3rd semester, DOM to 4th semester
- Dr.Arunachalam and Dr.Lingadurai suggested that the subject Design of machine elements to be kept in 5th semester and Measurements and instrumentation in 4th semester

21UME204 Engineering materials and metallurgy

- Dr.Lingadurai suggested that in 21UME204 Engineering materials and metallurgy subject, the content introduction to material physics can be included in first unit.

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.	19UME925	Industrial Robotics	5%	-	5%
2.	19UME602	Smart Manufacturing	-	5%	5%
3.	19UME302	Fundamentals of Manufacturing process	5%	-	5%
Total Percentage of change					Sum of % of Change = 15%
Percentage of revision in syllabus = Total Percentage of change /Total No of courses in which the syllabus revision is made					= 3 / 56 = **5.35%**

6. Mapping of Curriculum with Programme Specific Criteria

- The Chairperson presented the Mapping of curriculum and syllabi of Regulation 2019 and R2021 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
	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

7. Employability/ Entrepreneurship/ Skill Development

- The BoS members reviewed and approved the courses with focus on Employability, Entrepreneurship/ Skill Development in R2019 & R2021 Curriculum and syllabus as follows

7.1 **Courses with focus on Employability**

Sl. No.	Course Name
1.	Problem Solving and Python Programming Laboratory
2.	Computer Aided Drafting and Modeling Laboratory.
3.	Fundamentals of Manufacturing Processes
4.	Fluid Mechanics and Machinery
5.	Engineering Mechanics
6.	Materials Engineering
7.	Theory of Machines
8.	Applied Thermal Engineering
9.	Manufacturing Technology
10.	Mechanics of Materials
11.	Creative Thinking & Innovations
12.	Design Laboratory
13.	Thermal Engineering Laboratory - I
14.	Heat and Mass Transfer
15.	Design of Machine Elements
16.	Measurements and Instrumentation
17.	Thermal Engineering Laboratory - II
18.	Design of Transmission Systems
19.	Smart Manufacturing
20.	Operations Research
21.	Mechatronics
22.	Product Development Project
23.	CAD Laboratory
24.	Smart Manufacturing & Mechatronics Laboratory
25.	Finite Element Analysis
26.	Computational Analysis Laboratory (ANSYS & CFD)
27.	Soft Skill and Communications Laboratory
28.	Project Management and Finance
29.	Project Work
30.	Applied Hydraulics and pneumatics
31.	Computational Fluid Dynamics
32.	Machine Learning
33.	Refrigeration and Air conditioning
34.	Maintenance Engineering
35.	Production Planning and Control
36.	Industrial Robotics

7.2 **Courses with focus on Entrepreneurship**

Sl. No.	Course Name
1.	Engineering Practice Laboratory
2.	Basic Electrical and Electronics Engineering
3.	Computer Aided Drafting and Modeling Laboratory.
4.	Fundamentals of Manufacturing Processes
5.	Manufacturing Technology
6.	Automobile Engineering
7.	Design Laboratory
8.	Product Development Project
9.	CAD Laboratory
10.	Smart Manufacturing & Mechatronics Laboratory
11.	Computational Analysis Laboratory (ANSYS & CFD)
12.	Project Work

7.3 **Courses with focus on Skill Development**

Sl. No.	Course Name
1.	Engineering Graphics
2.	Engineering Practice Laboratory
3.	Communication Skills for Professionals
4.	Basic Electrical and Electronics Engineering
5.	Computer Aided Drafting and Modeling Laboratory.
6.	Fundamentals of Manufacturing Processes
7.	Seminar
8.	Thermal Engineering Laboratory - I
9.	Design Laboratory
10.	Interpersonal Skill Laboratory
11.	Product Development Project
12.	CAD Laboratory
13.	Smart Manufacturing & Mechatronics Laboratory
14.	Soft Skill and Communications Laboratory
15.	Summer Internship
16.	Computational Analysis Laboratory (ANSYS & CFD)
17.	Project Work

8. M.E.CAD/CAM

- The Members of BoS thoroughly discussed about the curriculum and Syllabi for M.E. CAD/CAM. The Members discussed the new curriculum and Syllabi for M.E. CAD/CAM followed based on choice based credit system from 2021-2022 batches under autonomous regulation and offered useful suggestion.

Based on the suggestions given by the Members, the following resolutions are made:

8.1 The BOS resolved to approve the Curriculum of M.E.CAD/CAM Full Time.

8.2 The BOS resolved to approve the curriculum components distribution as Programme Core (37.14%), Programme Elective (25.7%), Open Elective (4.29%), Project work (28.57%), and Mandatory credit Course (4.29%)

8.3 The vision and mission and PEOs and POs of PG programme is informed infront of BOS and discussed about mapping of PEOs and POs.

8.4 The BOS resolved the number of theory papers in I semester as 5 and for II semester as 7 and III semester to 4 subjects.

8.5 The BoS resolved to offer 6 Programme Core courses (2 in I SEM, 4 in IInd SEM) (21PCD101-Computer applications in Design, 21PCD102-Advanced Finite Element Analysis in I semester, 21PCD201- Design for Sustainability, 21PCD202-Applied Materials Engineering, 21PCD203-Industry 4.0, 21PCD204- Product Lifecycle Management in IInd semester)

8.6 The BoS resolved to offer18 (1 in I SEM, 2 in II nd SEM and 3 in III rd SEM) Programme Elective courses (21PCD501-Metrology and Non Destructive Testing Systems, 21PCD502-Integrated manufacturing system, 21PCD503- Design of Hydraulic and Pneumatic, 21PCD504-Design of Material Handling Equipments, 21PCD505-Industrial Robotics and Expert Systems, 21PCD506-Lean Manufacturing, 19PCD507-Industrial Safety Management, 21PCD508-Design for Cellular Manufacturing Systems, 21PCD509-Additive Manufacturing, 21PCD510-Mechanical Behavior of Materials, 21PCD511-Composite Materials and Mechanics, 21PCD512- Material testing and characterization, 21PCD513-Electronics Manufacturing, 21PCD514- Quality Concepts in Design,

21PCD515- Design of Hybrid and Electric Vehicles, 21PCD516-Fracture Mechanics, 21PCD517-Artificial Intelligence and its industrial Applications, 21PCD518- Design of Internet of Things)

8.7 The BoS resolved to offer 6 new courses as elective courses (21PCD513-Electronics Manufacturing, 21PCD514- Quality Concepts in Design, 21PCD515- Design of Hybrid and Electric Vehicles, 21PCD516-Fracture Mechanics, 21PCD517-Artificial Intelligence and its industrial Applications, 21PCD518- Design of Internet of Things)

8.8 The BoS resolved to remove the following Programme Elective courses from the 2019 Regulation (19PCD501- Mechatronics in Manufacturing Systems, 19PCD502-Tribology in Design, 19PCD504-Data Communication in CAD/CAM, 19PCD506- Optimization Techniques in Design, 19PCD509-Vibration Analysis and Control, 19PCD511-Advanced Mechanics of Materials, 19PCD513-Advanced Tool Design, 19PCD514-Mechanisms Design and Simulation, 19PCD515-Computational Fluid Dynamics in Manufacturing, 19PCD516-Reliability Engineering Models, 19PCD517-Maintenance Engineering and Management, 19PCD521-Integrated Product Design and Processes Development, 19PCD522-Competitive Manufacturing Systems, 19PCD524- Integrated Mechanical Design,)

8.9 The BOS resolved to introduce six courses as Ph.D Electives which shall also be chosen as electives by the post graduate students (21PCD525-Synthesis and Characterization of Nano materials, 21PCD526-Design and Analysis of Experiments, 21PCD511-Mechanical Behavior of Materials, 21PCD528- Material Testing and Characterization, 21PCD529-Performance Modeling and Analysis of Manufacturing System, 21PCD530-Advanced Optimization Techniques)

8.10 The BoS resolved to approve the syllabus of Regulation 2021

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