AMET

ACADEMY OF MARITIME EDUCATION AND TRAINING

DEEMED TO BE UNIVERSITY

(Under Section 3 of UGC Act 1956)

DEPARTMENT OF MECHANICAL ENGINEERING

M.E - Thermal and Fluid Engineering

Curriculum & Syllabi

OUTCOME BASED EDUCATION SYSTEM

(For the Batches Admitted from Academic Year 2021-2022)

VISION AND MISSION OF THE INSTITUTION

VISION

To sustain identity as a World Class Leader in Maritime Education and empower learners with wholesome knowledge through progressive innovation in training, research and development which will render students a unique learning experience and a transformation impact on the Global Society.

MISSION

AMET will strive continuously to

- Impart value-based higher education and technical knowledge with uncompromising strides of an outstanding quality.
- Emerge as a Centre of Excellence inculcating skill development in recent technologies in accordance with industrial trends.
- Create World class research capabilities on par with the finest in the world and broaden student's horizons beyond classroom education.
- Nurture talent and entrepreneurship to enable all round personality development among students.
- Empower students across socio economic strata
- Make a positive difference to society through technical education.

VISION AND MISSION OF THE DEPARTMENT

VISION

To develop emerging professionals through innovative Teaching Learning and Research in Marine based Mechanical Engineering for ever-changing societal needs with credibility, integrity and ethical standards.

MISSION

The Vision of the Department is accomplished by the following mission statements

- Produce job ready Engineers in the field of design, manufacturing, thermal engineering by imparting basic sciences and engineering knowledge.
- Inspire students to pursue higher education in marine/mechanical related fields.
- Nurture students with creativeness, innovativeness, and entrepreneurship skills to meet the needs of the requirements of the industry.
- Establish high quality teaching and research environment to offer state-of-art under graduate, post graduate and doctoral programs.
- Transform the students to be technically competent, responsible and dedicated mechanical engineers who would contribute to the society through their acquired knowledge

Program Educational Objectives (PEO's)

The program educational Objectives of Master's in Thermal and Fluid Engineering is to facilitate the students to:

PEO 1: To train students with good scientific and engineering knowledge so as to comprehend, analyze, design and create novel products and solutions for the real life problems.

PEO 2: To inculcate students in professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach and social values by developing the ability to relate thermal and fluid engineering issues to broader social context

PEO 3: To impart students with in depth knowledge to excel in research and development and to succeed in engineering profession and the life-long learning needed for a successful professional career.

Program Outcomes (PO's)

PO1: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational and personal) from different perspectives.

PO2: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3: Elicit views of others, mediate disagreements and help reach conclusion in group settings.

PO4: Demonstrate empathetic social concern and equity centered national development, and ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5: Recognize different value system including your own, understand the moral dimensions of your decisions and accept responsibility from them.

PO6 Understand the issues of environmental contexts and sustainable development.

PO7 Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

Program Specific Objectives (PSOs)

PSO1 Ability to develop and implement new thoughts on fluid dynamics and development with the help of modern computer assisted tools.

PSO2 Ability to apply engineering knowledge, design and analysis tools in various problems to resolve issues with the domains of thermal Engineering.

PSO3 Work professionally in research and development, industry or become an entrepreneur by applying thermal and fluid oriented practices**.**

DEPARTMENT OF MECHANICAL ENGINEERING

CURRICULUM FOR M.E – THERMAL AND FLUID ENGINEERING

SEMESTER I

S. No	Course Category	Course Code	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	Professional Core	PEMC101	Advanced Thermodynamics	4	3	1	0	4
2.	Professional Core	PEMC102	Advanced Fluid Mechanics	4	3	1	0	3
3.	Professional Core	PEMC103	Research Methodology and IPR	3	3	0	0	3
4.	Professional Elective		PEC - I	3	3	0	0	3
5.	Professional Elective		PEC - II	3	3	0	0	3
6.	Mandatory Course		Audit Course - I	2	2	0	0	0
PRACTICAL								
7.	Professional Core	PEMC1PA	Fluid Mechanics Laboratory	2	0	0	2	1
8.	Professional Core	PEMC1PB	Internal Combustion Engine Laboratory	2	0	0	2	1
			TOTAL	**23**	**17**	**2**	**4**	**18**

L- Lecture; T-Tutorial; P-Practical; C-Credit

SEMESTER II

S. No	Course Category	Course Code	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	Professional Core	PEMC201	Advanced Heat Transfer	4	3	1	0	4
2.	Professional Core	PEMC202	Computational Fluid Dynamics	3	3	0	0	3
3.	Professional Elective		PEC - III	3	3	0	0	3
4.	Professional Elective		PEC - IV	3	3	0	0	3
5.	Open Elective		OEC - I	3	3	0	0	3
6.	Mandatory Course		Audit Course - II	2	2	0	0	0
PRACTICAL								
7.	Professional Core	PEMC2PA	Computational Fluid Dynamics Laboratory	2	0	0	2	1
8.	Professional Core	PEMC2PB	Advanced Refrigeration and Air - Conditioning Laboratory	2	0	0	2	1
			TOTAL	**22**	**17**	**1**	**4**	**18**

L- Lecture; T-Tutorial; P-Practical; C-Credit

SEMESTER III

S. No	Course Category	Course Code	Course Title	Contact Hours	L	T	P	C
THEORY								
1	Professional Elective		Professional Elective – V	3	3	0	0	3
2	Professional Elective		Professional Elective – VI	3	3	0	0	3
PRACTICALS								
3	PROJECT	PEMC3PA	Dissertation Phase - I	20	-	-	20	10
4	Internship	PEMC3PB	Internship	-	-	-	-	2
			TOTAL	**26**	**6**	**0**	**20**	**18**

SEMESTER IV

S. No	Course Category	Course Code	Course Title	Contact Hours	L	T	P	C
PRACTICALS								
1.	PROJECT	PEMC4PA	Dissertation Phase - II	32	0	0	32	16
			TOTAL	**32**	**0**	**0**	**32**	**16**

List of Audit Courses

S. No	Course Name	Course Code
1	English for Research Paper Writing	PEMCA01
2	Disaster Management	PEMCA02
3	Sanskrit for Technical Knowledge	PEMCA03
4	Value Education	PEMCA04
5	Constitution of India	PEMCA05
6	Pedagogy Studies	PEMCA06
7	Stress Management by Yoga	PEMCA07
8	Personality Development through Life Enlightenment Skills.	PEMCA08

List of Professional Elective Courses (PECs) offered by the Department

Sl. No.	Course Code	Title of the PEC	Contact Hours	L	T	P	C
PEC1							
1	PEMCE01	Finite Element analysis in Engineering Problems	3	3	0	0	3
2	PEMCE02	Gas Dynamics	3	3	0	0	3
3	PEMCE03	Advanced Internal Combustion Engines	3	3	0	0	3
4	PEMCE04	SWAYAM/MOOCs Course	3	3	0	0	3
PEC2							
1	PEMCE05	Fuels and Combustion	3	3	0	0	3
2	PEMCE06	Design and Analysis of turbo machines	3	3	0	0	3
3	PEMCE07	Energy conservation and Waste Heat recovery system	3	3	0	0	3
4	PEMCE08	SWAYAM/MOOCs Course	3	3	0	0	3
PEC3							
1	PEMCE09	Introduction to Multiphase Flow	3	3	0	0	3
2	PEMCE10	Fans, Blowers and Compressors	3	3	0	0	3
3	PEMCE11	Boundary Layer Theory and Turbulence	3	3	0	0	3
4	PEMCE12	SWAYAM/MOOCs Course	3	3	0	0	3
PEC4							
1	PEMCE13	Cryogenic Engineering	3	3	0	0	3
2	PEMCE14	Refrigeration Machinery and Components	3	3	0	0	3
3	PEMCE15	Design of Thermal systems	3	3	0	0	3
4	PEMCE16	SWAYAM/MOOCs Course	3	3	0	0	3

PEC5							
1	PEMCE17	Advanced power plant Engineering	3	3	0	0	3
2	PEMCE18	Design of Heat Exchangers	3	3	0	0	3
3	PEMCE19	Advanced Thermal Storage Technologies	3	3	0	0	3
4	PEMCE20	SWAYAM/MOOCs Course	3	3	0	0	3
PEC6							
1	PEMCE21	Fluid Power Control	3	3	0	0	3
2	PEMCE22	Fluid Transportation Systems	3	3	0	0	3
3	PEMCE23	High performance and parallel computing applications	3	3	0	0	3
4	PEMCE24	SWAYAM/MOOCs Course	3	3	0	0	3

List of Open Elective Courses (OECs) offered by the Department

Sl. No.	Course Code	Title of the OEC1	Contact Hours	L	T	P	C
1	PEMCO01	Energy Resources	3	3	0	0	3
2	PEMCO02	Industrial Robotics	3	3	0	0	3
3	PEMCO03	Industrial Automation	3	3	0	0	3
4	PEMCO04	Internet of Things (IOT)	3	3	0	0	3

CREDIT SHARE

Semester	Contact Hours	Lecture	Tutorial	Practical	Credits
Semester 1	**23**	**17**	**2**	**4**	**18**
Semester 2	**22**	**17**	**1**	**4**	**18**
Semester 3	**26**	**6**	**0**	**20**	18
Semester 4	**32**	**0**	**0**	**32**	**16**
TOTAL	**103**	**40**	**3**	**60**	**70**

Professional Core	Professional Elective	Open Elective	Project /Internship	Total
21	**18**	**3**	**28**	**70**