Mechanical Engineering Departmental Profile

Table of Contents

The Department of Mechanical Engineering is a branch of engineering focused on the design, analysis, manufacturing, and maintenance of mechanical systems. It is one of the broadest and most diverse engineering disciplines, combining principles of physics, mathematics and materials science to solve complex engineering problems. Her's an outline of the key aspects of a typical Department of Mechanical Engineering: -

1. Vision & Mission

Vision

- To be a center of excellence in the field of Mechanical Engineering for providing its students and faculty with opportunities to Excel in Education and Targeted Research Themes in Emerging Areas.

Mission

- Providing students with sound Mechanical Engineering Knowledge, Practices, Skills and training
- Enriching the quality of life of students through Teaching, Research, Internships, Outreach Programs and Symposiums.

➢ Program Outcomes (PO)

PO 1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
PO 2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
PO 3	**Design/Development Of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and

	modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and Sustain ability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.
PO10	**Communication:** Communicate effectively on complex 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 presentations, and give and receive clear instructions.
PO11	**Project Management and Finance:** 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 multi disciplinary environments.
PO12	**Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

➢ Program Specific Outcomes (PSO)

PSO 1	Identify, formulate and analyse complex Mechanical Engineering problems.
PSO 2	Ability to implement the learned principles of Mechanical Engineering to Understand, analyse, evaluate and create more advanced mechanical systems or processes.
PSO 3	Ability to apply Mechanical Engineering Skills and Managerial Skills to Become Entrepreneurs and build the Attitude to innovate.

2. Core Areas of Focus

- **Mechanics:**This is the foundation, dealing with the behavior of objects under forces and motion.
- **Dynamics:**Focuses on the study of forces and their effects on the motion of objects.
- **Thermodynamics:**Deals with heat, work, and energy transfer, crucial for understanding energy conversion and power systems.
- **Materials Science:**Involves understanding the properties, selection, and behavior of materials used in mechanical systems.
- **Design:**The process of creating and developing mechanical systems, components, and products.

3. Education Programs

- **Undergraduate programs**
- Bachelor of technology in Mechanical Engineering (B.Tech in M.E)
- **Graduate programs**
- Masters of Technology in **Refrigeration** & **Air- Conditioning& Advanced Manufacturing systems**
- Ph.D in Mechanical Engineering
- The department also offers Minor degree in Mechanical Engineering

4. Laboratories & Facilities

- The department typically boasts state – of – the – art laboratories:-

Machine Tools Lab

Carpet Area :374.84 Sq.m

IC Engines Lab

Carpet Area :142.88 Sq.m

Refrigeration Lab

Carpet Area : 150.76 Sq.m

CAD Lab

Carpet Area : 105.50 Sq.m

Metrology Lab

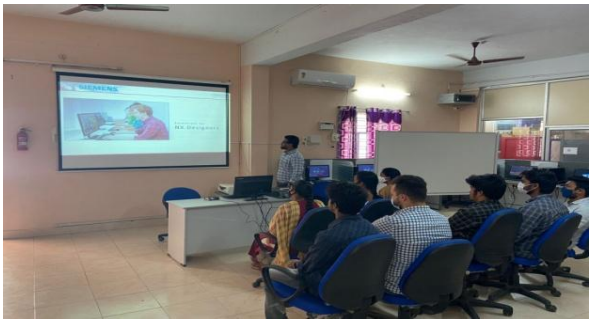
Carpet Area : 77.41 Sq.m

Heat Transfer Lab

Carpet Area : 142.88 Sq.m

Workshop (Carpentry)

Carpet Area : 331 Sq.m

InstrumentationLab Carpet Area : 200 Sq.m	
 Robotics Lab Carpet Area : 150 Sq.m	 Test & Optimization Lab Carpet Area : 150.55 Sq.m
	 Product Design Lab Carpet Area : 250. Sq.m

Advance Manufacturing Lab

Carpet Area : 150.78 Sq.m

Rapid Prototyping Lab

Carpet Area : 200 Sq.m

- Advanced simulation tools software's like**AutoCAD ,Solid Edge, Catia, Star-CD**

5. Research Areas

- Thermal Engineering (I.C.Engines, Refrigeration & Air-Conditioning, Heat Transfer)
- Manufacturing
- Robotics & Automation
- Renewable Energy systems(Wind, solar, etc)
- Some of the previous & Ongoing research Activities by the faculty in the department & Number of Ph.D's Awarded , Research Grant and Publications during the last five years

Project Title	Duration	Funding Agency	Amount Received	Action	Date	Name of the Faculty
Multi- Attribute Decision Models for the Design and Operation of FMS	2 Years	AICTE (R& D) Project	Rs. 2.5 lakhs	Completed	2001-2003	Dr.Smt. G.Prasanthi
Development of a Flexible Domestic SolarDryer	2 Years	Project under Innovative Research Programme, UGC XII Plan	Rs.12683/-	completed	2015-2016	Dr.Smt. G.Prasanthi
Synthesis and Characterization	1 Year	IEIR & D project	Rs.65000/-	Completed	2017-2018	Dr.Smt. G.Prasanthi

of Biodegradable composites by Bio-degradable composites as an alternative materials in High Tunnel Agricultural Applications‖ as Co-investigator						
Nano particle enhanced phase change material micro Capsules/ Fibers for Advanced energy storage and allied applications	2Years	DST-SERB	Rs 37,83,000/-	Sanctioned	02nd Nov. 2018	Dr. K. Hemachandra Reddy
Design and Development of solar Dish concentrator With Thermal Storage Options for Electricity Generation	3Years	DST-MES Sponsored Project	Rs. 53,35,000/-	Sanctioned	02nd June 2017	Dr. K. Hemachandra Reddy
Rocker Bogie Mechanized vehicle for metal , Obstacle Detector and Medicine Transporter in Defense Service Operated by Solar Energy	3Years	DST-SERB	Rs 11,9,750/-	Ongoing	08th May. 2023	Dr. K. Kalyani Radha & Dr. B. Om Prakash
CFD Analysis and Experimental Validation of Heat flow around spherical Spheres filled with phase change energy storage materials	3Years	DST-SERB	Rs. 37,52,232/-	Ongoing	03rd Feb 2023	Dr. B. Om Prakash
Experimental	1 Year	JNTUA	Rs. 1,00,000	Ongoing	18th	Dr. D. R

Investigation in determining the optimum conditions of Diesel nitro methane-methanol blends for better performance of internal combustion engines					July, 2023	Srinivasan

- Patents :- 04
- Books/Book Chapters: 06

- Ph.D's awarded: 63
- Research Scholars :
- Full Time : 02
- Part Time : 35
- No.of Research Grants : 07
- Research Seed Grant: 2 Lakhs
- R&D Funding: 85.5 Lakhs

6. Faculty & Staff

The department usually comprised of Faculty members who are experts in various subfields of Mechanical Engineering. The faculty includes:-

- Professors:- 06
- Associate Professors:- 01
- Assistant Professors:- 18 (2 Regular & 16 Contractual)

- **State Awards Received by the Faculty**

Faculty Name	Award Name	Received in the Year
Prof.K.Hemachandra Reddy	State Best Teacher Award by Govt. Of AP	2011
Prof.B.Durga Prasad	State Best Teacher Award by Govt. Of AP	2017
Dr.Smt.G.Prasanthi	State Best University Teacher Award	2018
Dr. M.L.S. Deva Kumar	State Best Teacher Award by Govt. Of AP	2022

7. Industry collaboration

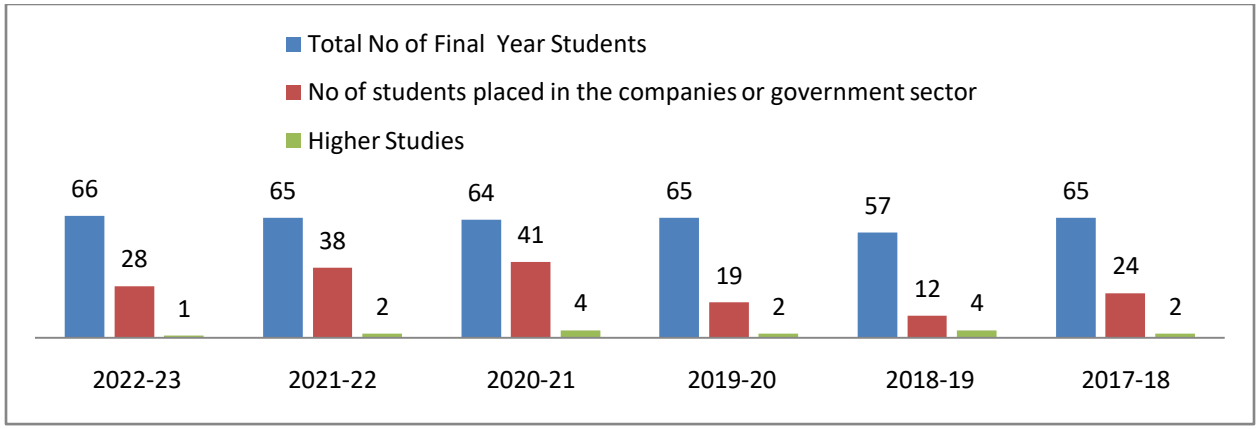
- The Department of Mechanical Engineering have collaboration with siemens & Kia which offers internships, and research projects.
- Students often gain practical experience through these partnerships, which can help to secure employment after graduation.

8. Student Activities & Professional Development

- Mechanical Engineering Student Association (MESA)
- DYNAMECHS (A student Technical Symposium)
- Student clubs
- Engineering design competitions
- Students are encouraged to attend conferences, workshops, and seminars, gaining exposure to the latest technological advancements and industry trends

NSS ACTIVITIES			
Students Association			
DYNAMECHS' Students Symposium			

9. Placements & Higher studies



❖ Gold Medals

S.No.	Academic Year	No.of Gold Medals
1	2016-17	3
2	2017-18	3
3	2018-19	6
4	2019-20	6
5	2020-21	4
6	2021-22	5
8	2023-24	3

10. Career opportunities

Graduates of Mechanical Engineering program can pursue careers in various fields

- Aero space & Defense
- Automotive & Transportation
- Robotics & Automation
- Energy (Renewable and Traditional sources)
- Manufacturing (Both traditional & Advance Manufacturing)
- Consulting & Research
- Biomedical Engineering
- Product Design & Development

11. Accreditation

S.No.	Programme	Year
1 (U.G)	**B. Tech in MECH**	**Accredited by NBA in 2005 for 3 years**
		Accredited by NBA in 2013 for 2 years **Accredited by NBA in 2017 for 2 years** **Accredited by NBA in 2021 for 2 years** **Accredited by NAAC A Grade in 2024 for 5 years**

12. Alumni Network

The Department likely has a strong Alumni network that helps current students with mentorship, job placement, and networking opportunities in the mechanical engineering field.

Some of the prominent alumni:-