

MECHANICAL ENGINEERING DEPARTMENT



**VNR VIGNANA JYOTHI
INSTITUTE OF
ENGINEERING AND
TECHNOLOGY**
www.vnrvjiet.ac.in



AICTE Approved, UGC
Autonomous, JNTUH Affiliated,
UGC "College
with Potential for Excellence"
Accredited by NAAC with
"A++" grade
B.Tech & M.Tech (AMS)
Accredited by NBA
NIRF 2023: Rank Band:101-150
(Engg.)
QS I-GAUGE "DIAMOND" Rated
ISO 9001:2015 Certified
JNTUH Recognised Research
Center

Welcome

The department began its journey in the year 1995. The department is committed to the well being and all-round development of its students and faculty. The department runs *one* Under Graduate programme B.Tech (Mechanical Engineering) and *two* Masters Programmes M.Tech in Advanced Manufacturing Systems and CAD/CAM. The department has a faculty strength of **38** out of which **24** are doctorates in diversified specializations from IITs, NITs and State universities and **14** are pursuing Ph.D.

The focus of our curriculum is to promote technical competence, problem solving skills and innovation of new technologies. The department offers a wide spectrum of optional courses to students to pursue their interests. The syllabi are periodically updated for introducing new technological developments as required by the industry.

We have state of the art labs, research and computational facilities and a wide range of software to support academic programs. Faculty members of the department have executed externally funded research projects in Joining Technologies, Characterization of Bone and Biomaterials, Computational Thermodynamics of Materials, Machining of Super Alloys, Biofuels etc. We also offer consultancy services in Rapid Prototyping, Composite Materials, Joining Technologies, and Process Optimization areas.

Our graduate and undergraduate students are encouraged to undertake various research projects in Rapid Prototyping, Digital Manufacturing, Joining Technologies, Composite Materials, Material Characterization, Solar Energy Applications, Automation and Robotics, Machine Learning Applications etc. Our students also get an exposure to emerging technological developments as members of various professional societies like ASME student chapter and through internships, industrial visits, expert lectures, collaborative projects and participation in conferences, workshops and competitive events.

Dr. B. Satyanarayana
Professor & Head of the Department

Infrastructure

Numerous labs and facilities are set up to cater to the academic and research needs of Advanced Manufacturing Systems program in the department like CAD/CAM, CAE, Automation & Robotics, Manufacturing and Simulation, Machine Tools and Measurements, Digital Manufacturing, CNC shop, Metallurgy Materials Engineering, Workshop, Composite Materials, Joining Technology, and solar energy materials.



CAM LAB



CAD LAB



CNC LAB



AUTOMATION & ROBOTICS LAB



MANUFACTURING LAB

Faculty

Dr. B. Satyanarayana has executed a research project titled “Optimization of controllable turning parameters for High-Speed Dry Machining of Super Alloys by measurement of Tool Wear” by the research grant of Rs.3,50,000/- sanctioned by UGC during the period 2014-16.

Dr. G. Srinivasa Gupta has completed a research project titled “Development of Procedures for Computation of Titanium - Vanadium Binary Alloy System using Cluster Variation Method” by the research grant of worth Rs.9.32 lakhs sanctioned by AR&DB (DRDO) during the period 2014-17.

Dr. B. V. R. Ravi Kumar has executed 2 research projects of total worth Rs. 25, 61,000/- funded by AICTE and DRDO (CARS) and received a research grant of Rs. 7, 84,314/- sanctioned by AICTE in 2020 to conduct research in the area of Friction Stir Welding. He has guided three Ph.D. scholars and one scholar is pursuing Ph.D. under his guidance.

Dr.E.V.Ramana has executed a research project titled “Data Mining Comparative Study of Data Mining Tools for Knowledge Extraction, Process Control and Quality Improvement of Injection Molding” by the research grant of Rs.2, 40,000/- sanctioned by UGC during the period 2015-17. His research interests are Automation & Robotics and Predictive Analytics in Manufacturing.

Dr. Y. Shivraj Narayan, received UGC travel grant thrice for presenting research papers in ASME 2013 and 2015 IMECE, TMS 2018 conferences at USA. He organized an AICTE sponsored international conference on Sustainable Development in Mechanical Engineering (SDME 2020) and ATAL online FDP on 3D Printing and Design (2021). His research interests are Additive Manufacturing and Micromachining.

Dr. Ajay Kumar has executed a research project on “Development of Micro-nano Structures for Solar Distillation” worth Rs.2.85 lakhs funded by TEQIP-III. He is currently working on DST project titled “Development of hierarchical structures for solar desalination” worth Rs.40.73 lakhs. He received the innovative scientific research and dedicated teaching professional award from the Indian Society of Mechanical Engineering. He is also on the review board of prestigious journals from Elsevier, Springer, Taylor and Francis, etc.

Dr. N. Kiran Kumar conducts research on composite materials for stealth, plydrop phenomenon, energy-absorbing sandwich structures, and Machine learning applications in manufacturing processes. He received sponsored funding from SERB/DST, DRDO, and TEQIP-III worth of Rs. 61.56 Lakhs. He received an innovative researcher award from the Indian Society of Mechanical Engineers during 2020-21. He published 42 Journal papers and presented research articles at prestigious international conferences. He is a member of various professional bodies, editorial boards, and reviewer of journals from Elsevier, Springer, and MDPI.

Dr. K. Aruna Prabha received UGC travel grant of Rs 2, 33, 285/- for presenting research papers in ASME 2019 IMECE Conference from 8th to 16th November 2019 at Salt Lake City UTAH, USA.

Research and Development

Research areas in the department are broadly classified into:

- Biofuels
- CAD/CAM
- Composite Materials
- Computational Fluid Dynamics
- Additive Manufacturing
- Industrial Engineering and Management
- Machine Learning Applications
- Manufacturing
- Material Characterization
- Predictive Analytics in Manufacturing
- Robotics and Automation
- Solar Energy Applications
- Theoretical and Applied Engineering

Research Activities

Faculty members of the department executed research projects funded by agencies like DRDO, AICTE, UGC and others worth Rs.104.95 lakhs. Currently research projects worth Rs.120.14 lakhs are ongoing. Few of the funded research projects are:

- Comparative study of weld characteristics of IS: 65032A Aluminum alloy by two processes Friction Stir Welding (FSW) and Gas Tungsten Arc Welding (GTAW).
- Experimental study of influences of pulsed current and non-pulsed current Gas Tungsten Arc Welding on 6082 Aluminum alloy weldments.
- Multi scale Mechanical Methods for Characterization of Bone and Biomaterials.
- Development of Titanium-Vanadium materials system using Cluster Variation Method

- Optimization of controllable turning parameters for High-Speed Dry Machining of Super Alloys by measurement of Tool Wear.

Publications

The faculty members of the department have published 169 research papers in reputed International and National Journals and 43 conference papers in the past five years.

Research Facilities in the Department

The department is equipped with a wide range of CAD/CAM software like AutoCAD CATIA, ANSYS, Adams, Mastercam, Inventor, Edgecam, FlexSim, MATLAB, Minitab, Artec Studio, HyperMesh and 235 workstations with latest configuration to cater to the UG and PG programs for design, modeling and analysis of engineering products and research projects. The department possesses the following research facilities:

- 3-D Printers, 3-D scanner for visualization and prototype development of products.
- A center of excellence for Joining Technology is established by the department with necessary infrastructure such as Digital Metallurgical Microscope, Digital Ultrasonic Flaw Detector, and Digital Micro Vickers Hardness Tester along with Thermo-Calc and Mathematica software to conduct advanced research in joining technologies.



3D Printers



Ultrasonic Flaw Detector

- CNC Lathes and CNC Milling machine apart from machine shop to manufacture complex and precise components.
- Automation & Robotics Lab is equipped with Pneumatic and Hydraulic Trainer kits, Industrial PLC and Microprocessor Trainer kits, 6-Axis

Industrial Robot, sensor kits, 5-Axis Industrial Robot Arm Trainer, Electric VVVF Drive System and Robotic Simulation Software and Automation Studio.

- A Centre for Composite Materials is developed to carry out academic and research projects on characterization of composites, sandwich composites, and damage induced composites. A research project on Characterization of Ply Drop Phenomenon for FRP Composites funded by JNTUH/TEQIP-III CRS is completed.
- A high energy absorption structures facility is developed to carry out academic and research projects on solar desalination applications. A research project on solar desalination for nano and micro hierarchical structures funded by JNTUH/TEQIP-III CRS is completed.
- Digital library to support faculty and students to do projects and research by providing access to E-Journals, E-Books, textbooks and project reports.
- UTM Instron (3386) to carry out innovative projects on Biological and Innovative Materials.

Industry Interaction

Mechanical Engineering students at VNRVJIET benefit from experts coming from both industry and Academia. Knowledge sharing sessions are conducted throughout the academic calendar to give students insights into the real-life applications of their subjects in industry.

Industry Visits

Industrial visits are organized for students to give them the platform to know about the innovative practices in industries and share leadership approaches that have led to their success.



Expert Lectures

The department organizes expert lectures by inviting experts from academia, research organizations and Industry like IIIT's, NIT's, JNTUH, OU, DRDO etc. to make students aware of the latest technological advancements and trends in industry. The expert lecturers encourage the students to streamline their learning with industry demands.



Our Prominent Recruiters

