MECHANICAL ENGINEERING DEPARTMENT

Estd. 1995

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 Program Accredited by NBA
NIRF 2020: 127th Rank (Engg.)
QS I-GAUGE "DIAMOND" Rated
ISO 9001:2015 Certified
JNTUH Recognised Research Center

Welcome

We started our journey in the year of 1995. The department is committed to 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 faculty strength of **38** out of which **18** are doctorates in diversified specializations from IITs, NITs and State universities and **17** are pursing Ph.D.

The main focus of our curriculum is to promote technical competence, problem solving skills and innovation of new technologies. Department offers wide spectrum of optional courses to students to pursue their interest. 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 wide range of software to support academic programs. Faculty members of the department executed externally funded research projects in Joining Technologies, Characterization of Bone and Biomaterials, Computational Thermodynamics of Materials, Machining of Super Alloys, Bio Fuels 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, competitive events.

Dr. G. Srinivasa Gupta
Professor& Head of the Department

Infrastructure

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

CAM LAB

CAD LAB

CNC LAB

AUTOMATION & ROBOTICS LAB

MANUFACTURING PROCESSES LAB

Faculty

Dr. Satya Prasad Paruchuru executed AICTE sponsored research project under RPS, amounting to Rs.17.52 lakhs on Multi-Scale Mechanical Methods for Characterization of Bone and Biomaterials during the period 2012-16. He received a travel grant of Rs.1.49 lakh for presenting papers at an ASME conference, IMECE-P, in November 2018.

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. 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. 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 guided two Ph.D. scholars and two more scholars are pursing 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.

Dr. Y. Shivraj Narayan, Professor received UGC travel grant thrice for presenting research papers in ASME 2013 and 2015 IMECE, TMS 2018 conferences at USA. He organized AICTE sponsored international conference on Sustainable Development in Mechanical Engineering (SDME 2020).

Dr. Ajay Kumar Kaviti has multi-disciplinary research interests in the areas Mechanics of forming and composite materials, Renewable Energy, Development of materials for solar thermal applications. He published more than 50 Journal papers (13 in SCI indexed journals with high impact factor and 32 in Scopus indexed journals). He has more than 500 citations with 10 h-index, 10 i-10 index. He is also on review board of prestigious journals from Elsevier, Springer, Taylor and Francis, etc.

Dr. N. Kiran Kumar organized three modules of AICTE sponsored Short Term Training Programme on "Advanced Techniques in Modeling and Analysis for Mechanical Engineering (ATMA 2020)".

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:

- Bio Fuels
- CAD/CAM
- Composite Materials
- Computational Fluid Dynamics
- Digital 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 of worth Rs.91.36 lakhs**.** 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

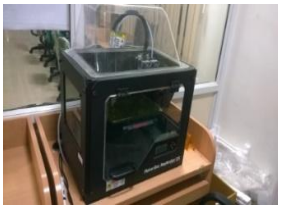
Faculty of the department published 164 research papers in reputed International and National Journals and 56 conference papers for the past five years.

Research Facilities in the Department

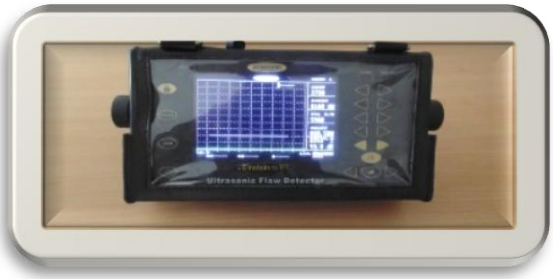
Department is equipped with wide range of CAD/CAM software like AutoCAD CATIA, ANSYS, Adams, Mastercam, Inventor, GibbsCAM, IronCAD**,** Edgecam, FlexSim, AutoMod, MATLAB, Minitab, Artec Studio, HyperMesh and 128 workstations with latest configuration to cater to the UG and PG programs for design, modeling and analysis of engineering products and research projects. 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, Sensor kits, 5-Axis Industrial Robot Arm Trainer, Electric

VVVF Drive System and Robotic Simulation Software and Automation Studio.

- Composite Materials Facility is developed to carry out academic and research projects on characterization of composites, sandwich composites, damage induced composites. A research project on Characterization of Ply Drop Phenomenon for FRP Composites funded by JNTUH/TEQIP-III CRS is under progress.
- 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 under progress.
- Digital library to support faculty and students to do projects and research by providing access to E-Journals, E-Books, text books and project reports.
- An exclusive R&D Lab is equipped with 36 work stations having access to modeling, analysis and simulation software to carry out academic and research projects.
- UTM Instron (3386) to carry out innovative projects on Biological and Innovative Materials.

Industry Interaction

Mechanical Engineering Students at VNRVJIET benefit by 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