



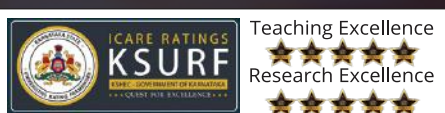
DAYANANDA SAGAR  
UNIVERSITY



Mechanical Vision,  
Artificial Intelligence Precision:  
Building the Future Together!  
**B.Tech. in Mechanical Engineering**  
(Curriculum enriched with Artificial Intelligence & Machine Learning)

**SCHOOL OF ENGINEERING**

Elevating your Technical  
Brilliance for Innovation Ahead!



*A Place to  
Grow, Excel,  
Invent &  
Innovate!*

## About DSU

Dayananda Sagar Institutions founded in the 60's by one such visionary, late Sri Dayananda Sagar committed to take knowledge to the people, transforms today's students into responsible citizens and professional leaders of tomorrow. Dayananda Sagar University created by an Act of the Karnataka State in 2014,

built on this adorable legacy and inspired by its own milestones, meeting the needs of quality higher education in this part of the world. This main campus is thoughtfully planned on 130 acres, with a picturesque site and a blossoming green environment, making it free from city crowds and pollution. Being a completely self-contained campus adjacent to Harohalli (45kms from Bengaluru city), it is equipped with all the modern state-of-the-art infrastructure, creating a conducive environment for progressive experiential learning and transforming you into next-generation innovators, explorers, leaders, and researchers.







*It has become appallingly obvious that our technology has exceeded our humanity.*

## About School of Engineering

Welcome to the cutting-edge realm of engineering excellence at the School of Engineering (SoE), Dayananda Sagar University (DSU). School of Engineering (SoE) at Dayananda Sagar University (DSU) offers provide world-class education and experiential training in engineering, with a focus on innovation across various disciplines such as Computer Science, Artificial Intelligence, Robotics, and more. the unique and multidisciplinary learning here is backed by some of the world's best state-of-the-art infrastructure, job-role based emerging specialisations, innovative pedagogy, contemporary curriculum, multifaceted faculties, strong industry collaborations, and impeccable placements.

It has emerged as the top choice for students who want to become the next- generation technocrats, innovators, developers, and creators. Our advanced and exceptional M.Tech programs are meticulously designed to propel you into the forefront of evolving technologies. It offers specialised majors, allowing students to delve deep into their areas of interest and expertise, whether its in computer science, electronics, or other engineering disciplines. The students are exposed to knowledge beyond their specialisation, which helps broaden their horizons of thought.

## About Mechanical Engineering

At Dayananda Sagar University, the Department of Mechanical Engineering is distinguished by its dynamic curriculum that seamlessly blends emerging technologies like AI and ML, Robotics, and 3D printing. The department's commitment to technological advancement is further exemplified by its partnerships with industry leaders such as Autodesk and Bosch Rexroth in their state-of-the-art innovation labs. This synergy between academia and industry not only enriches the curriculum but also ensures it remains at the forefront of technological relevance and innovation.

The department also boasts a faculty with rich industry and academic experience, bringing a research-oriented approach to their teaching. This combination of practical experience and academic excellence ensures that students receive an education that is both theoretically sound and aligned with current industry trends.

## Program Overview

Welcome to the Department of Mechanical Engineering, where we redefine the boundaries of traditional engineering by seamlessly integrating the latest advancements in Artificial Intelligence (AI) and Machine Learning (ML), Robotics and Automation and 3D printing. Our commitment to excellence is reflected in our unique offerings, exceptional faculty, and unparalleled opportunities for students.

**Curriculum that Transcends Boundaries:** Our curriculum is meticulously crafted to blend classical Mechanical Engineering principles with cutting-edge AI and ML applications. From robotics to smart systems, our students are equipped with the skills needed to thrive in the evolving technological landscape.

### Admission Eligibility Criteria

Pass in PUC / 10+2 examination with Physics and Mathematics as compulsory subjects along with one of the Chemistry / Biotechnology / Biology / Computer Science / Electronics / Technical Vocational subjects and obtained at least 45% marks (40% in case of candidate belonging to SC/ST & OBC category) in the above subjects taken together, of any Board recognized by the respective State Governments / Central Government / Union Territories or any other qualification recognized as equivalent there to.

#### VERSATILITY IN COURSES

Specialization: AI and ML in Mechanical Engineering.  
Broad spectrum of elective baskets: Robotics, Automation, and Additive Manufacturing:  
**VERSATILITY IN COURSES**

#### INNOVATION LAB SUPPORTED MINI/MAJOR PROJECTS

Mini/Major Projects with AUTODESK and BOSCH REXROTH.  
Explore Generative Design, Manufacturing, PLC, and Industry 4.0 innovations.  
**PROJECT WORK - MINI/MAJOR**

#### VALUE ADDITION COURSES

Cutting-edge certification courses tailored to meet the industrial demands and market requirements, offered by industry leaders.  
**VALUE ADDITION COURSES**

#### FORUM-BASED ACTIVITIES

Dynamic Forum Activities: SAE EFFICYCLE, TIFAN, BAJA, GO KART featuring design and build projects, case competitions, and hackathons.  
**STUDENT FORUM-BASED ACTIVITIES**

# Specialised Electives

- > Artificial Intelligence and Machine learning
- > Robotics and Automation
- > Additive Manufacturing

## Specialised Courses

- › Courses like Robotics and Automation, Computer Vision, and AI for Sustainable Energy Systems demonstrate how AI and ML can be applied in specific mechanical engineering contexts
- › Deep Learning and Natural Language Processing provide insights into more complex areas of AI, preparing students for high-tech industries.
- › Capstone Project, A significant feature of the curriculum, allowing students to integrate their mechanical engineering knowledge with AI and ML techniques to solve real-world problems

## Artificial Intelligence and Machine Learning (AI/ML)

AI/ML focuses on creating systems that can learn, adapt, and make decisions, emphasizing advancements in algorithms, neural networks, and data analytics to simulate intelligent behavior in machines.

### Key Focus Areas

**Natural Language Processing (NLP):** Developing AI systems that understand, interpret, and generate human language in a meaningful way.

**Predictive Analytics:** Using statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data.

**Reinforcement Learning:** An area of machine learning focused on making decisions and learning through trial and error, often used in robotics, gaming, and navigation.



## Robotics and Automation

This field concentrates on designing, constructing, and operating robots and automated systems, with key areas including human-robot interaction, autonomous navigation, and the integration of AI for improved efficiency and precision.

### Key Focus Areas

**Human-Robot Interaction:** Improving the ways in which robots and humans communicate and collaborate, ensuring safety, efficiency, and ease of use.

**Autonomous Navigation:** Developing robots that can move and navigate independently in various environments, including urban settings, industrial spaces, and unstructured terrains.

**Robotic Process Automation (RPA):** Using software robots or AI to automate highly repetitive and routine tasks traditionally performed by humans.



## Additive Manufacturing

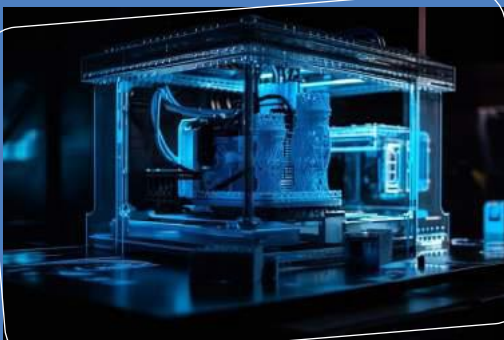
Additive Manufacturing, commonly known as 3D printing, revolves around creating objects by layering materials. It emphasizes customization, complex geometry, and material innovations, significantly impacting prototyping, tooling, and direct part production.

### Key Focus Areas

**Material Science:** Innovating and developing new materials suitable for 3D printing, including polymers, metals, and composites.

**Precision and Quality Control:** Enhancing the accuracy, resolution, and consistency of 3D printed products, ensuring they meet specific standards and requirements.

**Customization and Complex Geometries:** Exploiting the capability of additive manufacturing to create complex and customized products that are difficult or impossible to produce with traditional manufacturing methods.





## Electives

We offer following specialisation based on emerging technology and current industry demands

### 3D Printing

3D Printing, also known as additive manufacturing, revolutionizes traditional manufacturing processes by building objects layer by layer using digital models. In mechanical engineering, this specialization focuses on harnessing the capabilities of 3D printing technologies to create intricate and customized components, prototypes, and even finished products.

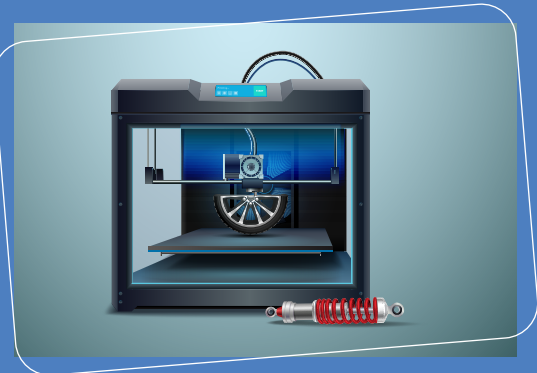
#### Key Focus Areas

**Design Freedom:** The technology allows for the creation of intricate and complex geometries that may be difficult or impossible to achieve with traditional manufacturing methods.

**Prototyping Efficiency:** Engineers can rapidly iterate and test designs, leading to reduced development time and improved product iteration.

**Material Innovation:** 3D printing has led to advances in materials, such as metal alloys, polymers, ceramics, and composites, expanding the range of possibilities for manufacturing.

**Customization:** With 3D printing, tailored products can be produced more feasibly, facilitating a shift towards personalized manufacturing to meet specific needs.



### Robotics

It is an interdisciplinary field that intersects mechanical engineering, electronics, and computer science. In the realm of mechanical engineering, this specialization focuses on developing and implementing robotic systems tailored for diverse applications, from industrial automation to healthcare and beyond.

#### Key Focus Areas

**Mechanical Design:** Creating robust and efficient mechanical structures for robotic systems.

**Automation:** Developing systems capable of autonomous or semi-autonomous task execution.

**Sensor Integration:** Incorporating sensors to enable perception and decision-making capabilities.

**Human-Robot Interaction:** Designing robots that can safely and effectively collaborate with humans.



### Hybrid & Electric Vehicles

The growing emphasis on sustainable transportation has spurred a notable increase in the advancement of Hybrid & Electric Vehicles (HEVs). This specialized field within mechanical engineering centers on the creation, enhancement, and optimization of vehicles that integrate electric power systems with traditional internal combustion engines to boost efficiency and minimize environmental impact.

### Key Focus Areas

**Powertrain Integration:** Creating seamless systems that merge electric and internal combustion powertrains for optimal performance.

**Energy Storage:** Enhancing battery technologies to improve energy density and efficiency

**Vehicle Dynamics:** Adapting vehicle dynamics to accommodate the unique characteristics of electric drive trains.

**Sustainability:** Playing a role in reducing greenhouse gas emissions and decreasing reliance on fossil fuels.



*Autodesk and Bosch  
Rexroth Innovation centres*



## Innovation Labs Set up In the Campus with Assistance from



**100+**  
EXPERTS ENGAGED

**1000+**  
APPLICATIONS

**125+**  
JOBS CREATED

**25+**  
PARTNERS

### Student Projects

Students from the Mechanical Engineering Department have not only actively participated in various clubs, such as the Society of Automotive Engineers (SAE), the Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE), and a Robotics club, but they have also achieved remarkable success by winning several awards at national levels. This notable accomplishment underscores their dedication, skill, and excellence in their respective fields, greatly contributing to the prestige of their department.



Students securing  
First Prize in  
TIFAN —SAE at  
National Level

Our Department students have bagged First runner up and 2nd runner up positions in the National level Design and Innovation Clinic organized by Central Manufacturing and Technology Institute, Govt of India (CMTI). Design & Innovation Clinic is aimed at inspiring young minds to nurture scientific and engineering temperament to build a better India.

The details of the winners are as follows...



1) Vikram Manivannan, Faisal Ali, Derin C John-  
1st Runner up

Project Title: Heavy load self stabilizing cargo bed  
Guide: Prof Sudhadeepthi

2) Maheshchandra S, Bharath Yadav B R,  
Abhishek B M, Bharath M -2nd Runner up  
Project Title: Design and Fabrication of corn sheller  
machine  
Guide: Prof Bharath Shekar

# Career BOOOM in Mechanical Engineering? (Industry Insights)

## Job Growth

According to the U.S. Bureau of Labor Statistics (BLS), employment of mechanical engineers was projected to grow 5 percent from 2020 to 2030, about as fast as the average for all occupations.

## Advanced Manufacturing and Industry 4.0

The rise of smart factories and the fourth industrial revolution (Industry 4.0) is creating a demand for mechanical engineers with expertise in automation, robotics, additive manufacturing (3D printing), and the integration of cyber-physical systems.

## Renewable Energy

With a global focus on sustainability, there is a growing demand for mechanical engineers in the renewable energy sector. This includes designing and optimizing wind turbines, solar panels, and energy storage systems.

## Autonomous Vehicles

The development of autonomous and electric vehicles requires mechanical engineers to work on designing efficient propulsion systems, lightweight materials, and advanced safety features.

## Internet of Things (IoT) in Mechanical Systems

The integration of IoT in mechanical systems is on the rise. Mechanical engineers are involved in developing intelligent and connected devices, optimizing equipment performance, and implementing predictive maintenance strategies.

## Nanotechnology

In materials science and engineering, nanotechnology is growing. Mechanical engineers contribute to designing and developing nanomaterials for applications in various industries, including electronics, medicine, and manufacturing.



## Department Placement



### Placement Record

Highest Salary - International

**27 Lakhs Per Annum**

Highest Salary - National

**11 Lakhs Per Annum**

Average Salary - National

**06 Lakhs Per Annum**

### Job Prospects for Mechanical Engineers

There is tremendous scope for mechanical engineers in automobile engineering, aeronautical, steel, power, heavy engineering, manufacturing, mining, petroleum and cement industries besides process industries and defence. Now-a-days they are also required in the environmental and biomedical fields. There are exciting times ahead for mechanical engineers as transport technologies like Hyperloop, electric vehicles, flying cars, drone technologies, an intelligent system like robots and additive manufacturing including 3D printing are gaining importance.

A beginner in Mechanical Engineering can opt for various job openings such as:

#### Design Engineer

Job Profile: Design Engineers are responsible for creating detailed designs and plans for mechanical systems, components, or products. They use computer-aided design (CAD) software to develop prototypes and ensure that the design meets engineering principles and specifications



### **CAE Analyst (Computer-Aided Engineering)**

Job Profile: CAE Analysts use computer simulations and modelling techniques to analyze and optimize mechanical designs.

### **Manufacturing Engineer**

Job Profile: Manufacturing Engineers focus on optimizing production processes and ensuring efficient and cost-effective manufacturing. They work to improve product quality, reduce production costs, and implement lean manufacturing principles.

### **Quality Assurance Engineer**

Job Profile: Quality Assurance Engineers are responsible for maintaining and improving product quality. They develop and implement quality control procedures, conduct inspections, and work to identify and resolve issues in the manufacturing process.

### **Maintenance Engineer**

Job Profile: Maintenance Engineers oversee the upkeep of mechanical systems and equipment. They develop maintenance schedules, troubleshoot issues, and perform preventive maintenance to ensure the reliability and longevity of machinery.

### **Safety Engineer**

Job Profile: Safety Engineers focus on ensuring workplace safety in manufacturing and industrial settings. They assess potential hazards, develop safety protocols, and implement measures to prevent accidents and injuries.

### **Production Planner**

Job Profile: Production Planners coordinate and schedule the manufacturing processes. They analyze production specifications, capacity, and resource availability to create production schedules that meet demand and optimize efficiency.

### **Project Engineer**

Job Profile: Project Engineers manage engineering projects from conception to completion. They coordinate project teams, develop project plans, monitor progress, and ensure that projects are completed on time and within budget.

### **R&D Engineer (Research & Development)**

Job Profile: R&D Engineers work on innovative projects to develop new products or improve existing ones. They conduct research, design experiments, and collaborate with cross-functional teams to bring new ideas to fruition.

### **Automation Engineer**

Job Profile: Automation Engineers design and implement automated systems to streamline manufacturing processes. They work with robotics, control systems, and programmable logic controllers (PLCs) to enhance efficiency and reduce manual labor.



## Career & Placements

The Training & Placement Centre (TPC) plays a vital role in making Dayananda Sagar University (DSU) the most favourite destination for many national and international companies to recruit fresh talent every year. The training & placement is the centralised activities for all Dayananda Sagar Group of Institutions.

Therefore, there is a humongous opportunity for students of DSU to get placements in various companies. More emphasis is on institute-industry interaction, pre-training learning initiatives, participating in industrial exhibitions, distinguished lectures by eminent speakers from industries, preplacement talks, written tests, group discussions, alumni activities and so forth. The TPC ensures smooth functioning of the placement activities in the campus and they get placed in the best of both national and international companies.

*Our Centralized Training & Placement Cell Shaping you to Work with the Top !*

### Top Recruiters





## Glimpse of DSU Main Campus at Harohalli



**DSU Main Campus:** Devarakagalahalli, Harohalli, Kanakapura Road, Bengaluru – 562 112

**Admissions Helpline Nos:** ☎ 080 4646 1800 📞 +91 636 688 5507

🌐 [www.dsu.edu.in](http://www.dsu.edu.in) ✉ [admissions@dsu.edu.in](mailto:admissions@dsu.edu.in)