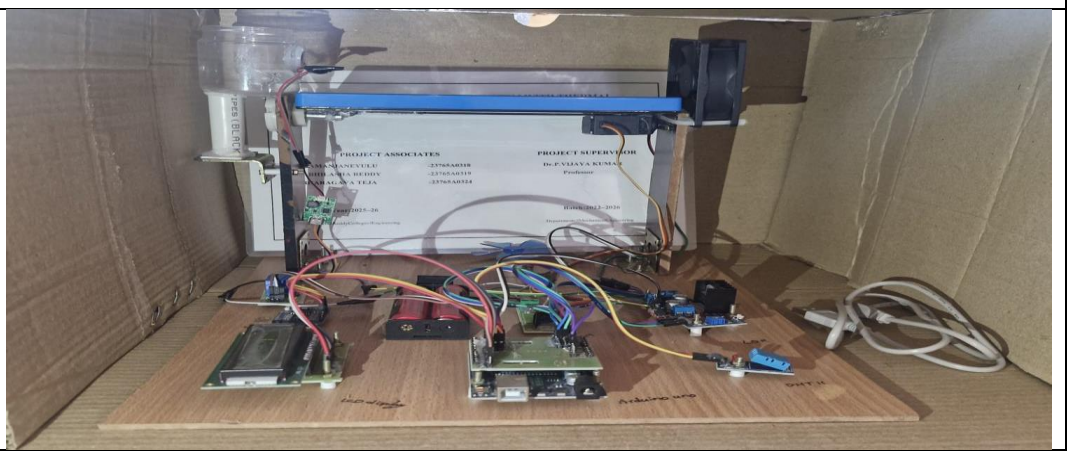
DEPARTMENT OF MECHANICAL ENGINEERING

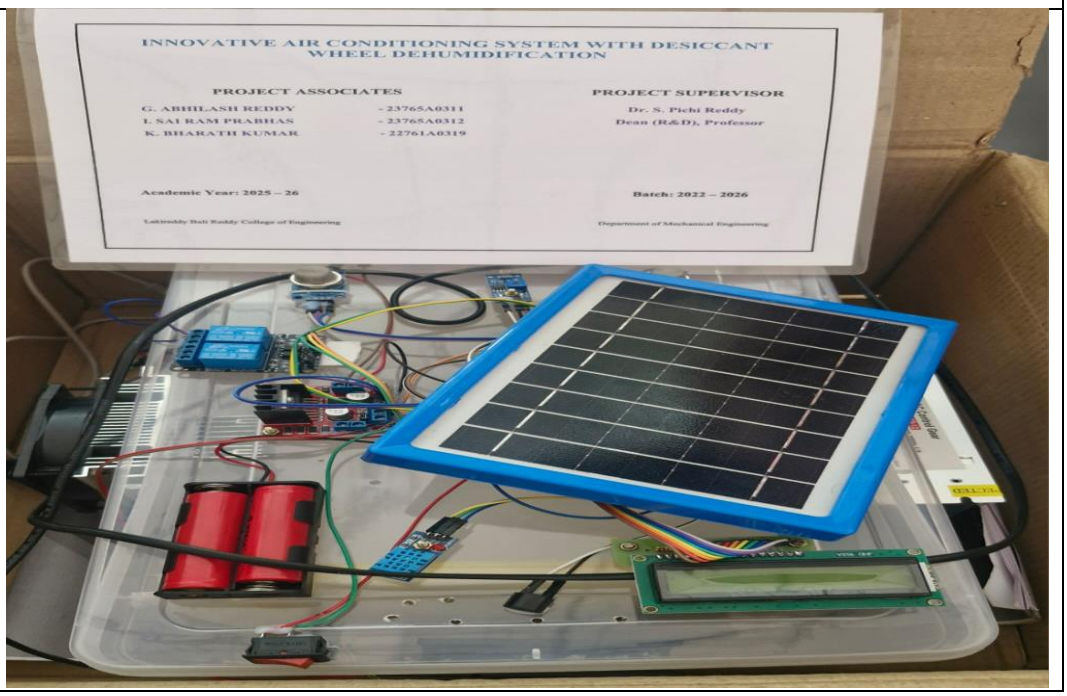
Details of Products/Prototypes/Models developed

A.Y.: 2025-26

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Smart Solar Panel System With Thermal Management And Performance Prediction By Using Iot And Machine Learning - Dr PVK
Description (in 200 words)	This project aims at developing an intelligent solar photovoltaic (PV) panel system suitable for integration in green buildings, which enhances power output and thermal management using IoT and Machine Learning algorithms. The system continuously monitors the voltage, current (using INA219 sensor) and temperature (using DHT11 sensor) of the solar panel. When the panel temperature exceeds a preset threshold, a cooling fan is automatically activated. If the temperature continues to rise, a nano mist spray system engages to further cool the panel and maintain its efficiency. The solar panel is mounted on a single-axis tracking system, which uses LDR sensors and a servo motor to automatically align with the sun's position, maximizing sunlight exposure throughout the day. An LCD display shows real-time data such as voltage, current, temperature, and system status. Data collected from the sensors is uploaded to an IoT platform for cloud monitoring. In parallel, Machine Learning algorithms analyse historical and real-time data to predict the solar panel's condition, such as performance degradation, maintenance needs, or potential failures. This intelligent and automated system improves energy efficiency, supports smart decision-making, and promotes sustainable energy solutions in smart buildings.
Register Number and Name of Students	23765A0318- **K RAMANJANEYULU** 23765A0319- **L ABHILASH REDDY** 23765A0324- **P BHARGAVA TEJA**
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Fabrication Of Four Wheeled Electric Buggy For Sustainable Urban Mobility – Dr K Dilip Kumar
Description (in 200 words)	This project aims to design and fabrication of a four-wheeled electric buggy, developed as a compact, energy-efficient prototype aimed at promoting clean urban transportation. In response to the environmental challenges posed by conventional fuel-powered vehicles, this electric buggy offers a zero-emission alternative suitable for short-distance commuting, campus transport, and recreational use. The buggy is powered by a 800 to 1.5 kW Brushless DC (BLDC) hub motor, coupled with a 48V, 60Ah lithium-ion battery pack, offering a driving range of 40–50 km per charge and a top speed of 30–45 km/hr The chassis is constructed from mild steel tubular and square 40X40 sections, optimized for strength and low weight, with an independent suspension setup to provide ride comfort on uneven terrain. The buggy features rack and pinion steering, mechanical drum brakes on front wheels, and an ergonomically designed seating arrangement for single passenger. The overall weight of the vehicle is approximately 150–200 kg.Charging is achieved via a standard 230V AC wall socket, with a full charge time of approximately 5–6 hours, and provisions for solar charging compatibility are also explored. This project delivers practical experience in electric power train integration, vehicle dynamics, control systems, and sustainable design, contributing to the broader goals of green engineering and self-reliant mobility innovation in India.
Register Number and Name of Students	23765A0315 – J SASIDHAR 23765A0302 - A DAVID LIVINGSTON 23765A0317- K DURGA PRASAD
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design and Fabrication of portable hybrid wireless ev charging vehicle – Dr V Dhana Raju
Description (in 200 words)	Increased demand for EVs has resulted in the requirement of an efficient, secure, and sustainable system for EVs. In this regard, this project describes the development and implementation of a wireless EV charger using renewable energy sources. This system is capable of generating electricity from sources such as solar energy and wind energy and transferring them wirelessly to the battery of an EV using the principle of electromagnetic induction.This system comprises the use of renewable energy sources like solar cells and wind mills, followed by conditioning the voltage output, which is fed to the transmitter circuit, generating electromagnetic fields in a receiver coil attached to the EV. This allows wireless power transmission from transmitter to the vehicle through induced currents.The designed prototype has been operated in various conditions to measure its performance. The findings reveal that the model can transfer electrical energy over a short range while keeping the losses at a minimum level. Voltage stability has been maintained, and the charging method was proven to be safe. The use of alternative sources will greatly reduce reliance on traditional energy sources and help minimize ecological effects.In conclusion, the suggested model provides a convenient and environmentally friendly way of powering electric vehicles in the future. This technology does not require wiring, reduces costs, and ensures greater security for users.
Register Number and Name of Students	23765A0331- Sk Galisheed Munna 23765A0304- A Supriya 22761A0301 – A Ashok
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Innovative Air Conditioning System With Desiccant Wheel Dehumidification – Dr S Pichi Reddy
Description (in 200 words)	The increasing demand for indoor thermal comfort has led to higher energy consumption in conventional air conditioning systems. Traditional vapor compression–based air conditioners consume large amounts of electricity and rely on refrigerants that are harmful to the environment. To overcome these limitations, this project presents a Home Air Conditioning System using a Desiccant Wheel, integrated with IoT technology, designed for efficient and eco-friendly cooling. This project presents the development of a desiccant wheel based home air conditioning system integrated with thermoelectric (Peltier) cooling, air purification, and sensor-based monitoring. The system is powered by both AC supply and solar energy with battery backup to ensure uninterrupted operation. A desiccant wheel removes moisture from incoming air, reducing latent heat load, while a Peltier module provides sensible cooling.Air filters are used for particulate removal, and fans ensure continuous airflow. Sensors including LM35 (temperature), DHT11 (humidity), and MQ-series (gas/smell) provide real-time data to a microcontroller (Arduino), which controls operation and displays parameters on a 16×2 LCD. The prototype demonstrates a cost-effective, eco-friendly, and energy-efficient alternative suitable for small rooms and localized cooling applications.
Register Number and Name of Students	23765A0311-G Abhilash Reddy 23765A0312-I Sai Ram Prabhas 22761A0319-K Bharath Kumar
Photographs	

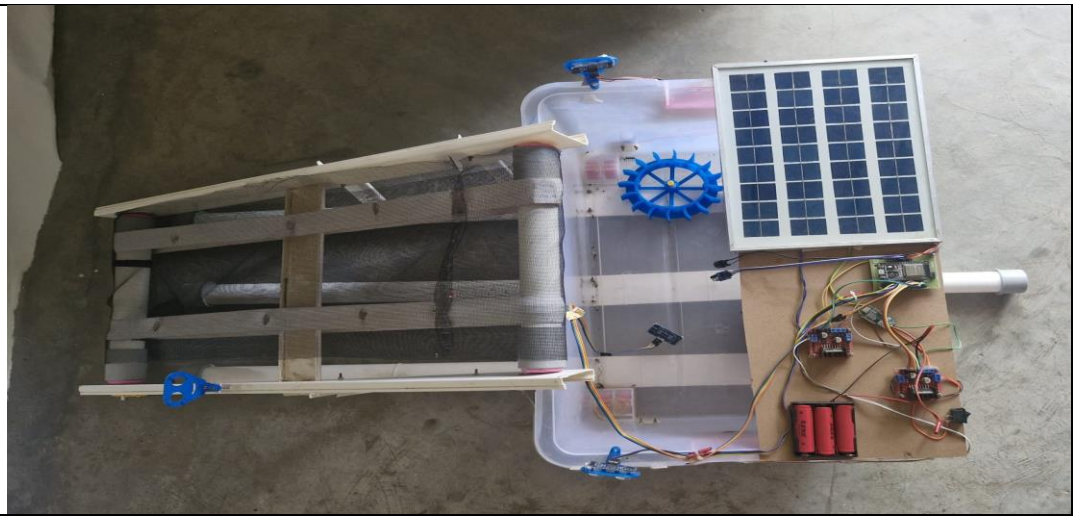
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Devlopment Of Hydrogen-Assisted Petrol-Electric Hybrid System – Dr S Rami Reddy
Description (in 200 words)	The growing concerns over fuel depletion and environmental pollution have encouraged the development of advanced hybrid vehicle technologies. This project presents the design and fabrication of a hydrogen-assisted petrol- electric hybrid system for a two-wheeler application. The primary aim is to enhance fuel efficiency, minimize exhaust emissions, and provide an alternative energy solution by integrating multiple power sources into a single system. In this work, a conventional petrol-based spark ignition engine is modified to incorporate hydrogen gas as a supplementary fuel. Hydrogen is introduced into the intake system, where it mixes with air and petrol, resulting in improved combustion characteristics due to its high flame speed and clean-burning nature. In addition to the internal combustion engine, an electric motor drive is integrated to enable the vehicle to operate in electric mode during low speed conditions or when fuel conservation is required. The developed system is capable of operating in multiple modes, including petrol-only mode, hydrogen-assisted mode, and electric mode, depending on performance requirements and fuel availability. A suitable control mechanism is implemented to ensure seamless switching between these modes without affecting the stability of the vehicle. The fabrication process involves the integration of a hydrogen generation unit, battery system, motor, and necessary control components into the existing vehicle structure. Performance evaluation of the system is carried out based on fuel consumption, emission characteristics, and overall efficiency. The results demonstrate that the addition of hydrogen improves combustion efficiency and reduces pollutants, while the electric drive contributes to energy savings and silent operation. This hybrid system offers a practical and ecofriendly approach to modern transportation by combining conventional and renewable energy sources.
Register Number and Name of Students	23765A0338 – Y Raj Kumar 23765A0305 – B Durga Rao 22761A0307 – Ch Hanu Raghava

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design, Fabrication And Performance Evaluation Of A Solar Powered Desalination System Integrated With Activated Charcoal Filtration – B Kamala Priya
Description (in 200 words)	The increasing demand for clean drinking water and the shortage of freshwater sources have created the need for effective desalination methods. Solar power desalination systems are used in remote areas for small scale water production, and in disaster relief. The solar power desalination systems have two major types of technologies that are used around the world for desalination can be broadly classified as either thermal or semi permeable membrane. This project focuses on a solar power desalination system by using activated charcoal for water purification. The system uses solar energy as the main power source, making it economical and environmentally friendly. Saline or brackish water is collected in a sump and transferred to a measuring tank with the help of a suction motor.The stored water is heated in a boiler using an induction heater to produce steam. The generated steam passes through a condenser pipe, where it is cooled by water spraying and converted into distilled water. The condensed water is collected and filtered using activated charcoal to improve the water quality by removing impurities, odor, and unwanted minerals. The final purified water is collected in a storage tank. This system reduces dependence on conventional energy sources and provides a simple and low-cost solution for producing safe drinking water.
Register Number and Name of Students	23765A0325- P Hemanth Kumar 23765A0328- R Sai Sri Charan 22761A0302- B Vishnu Vardhan

Photographs	

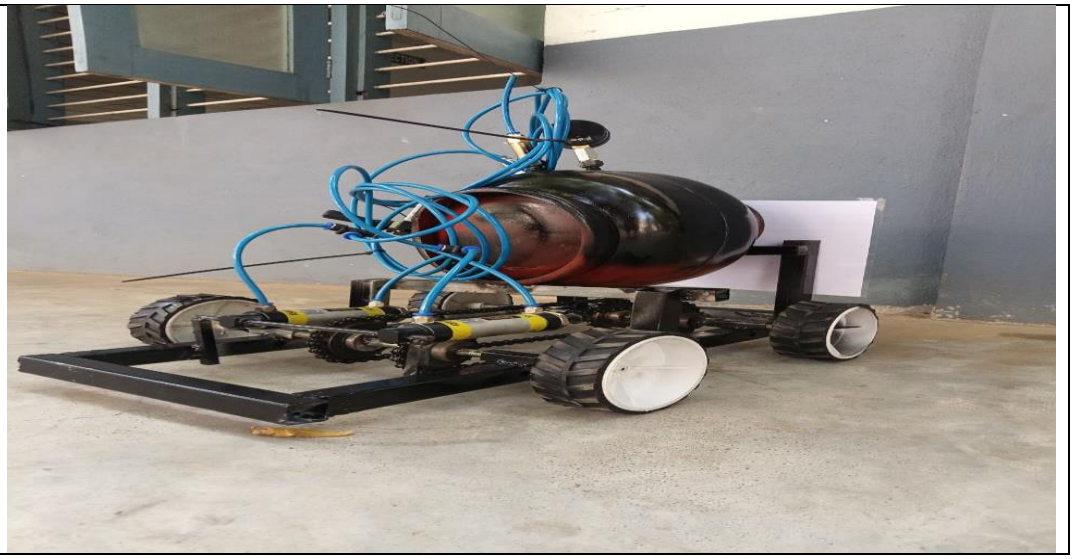
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Fabrication Of A Semi-Automatic Canal Garbage Cleaning Machine – Dr M B S Sreekara Reddy
Description (in 200 words)	This project presents the design and implementation of a Waste Collecting Robot using Arduino, capable of operating in both autonomous and manual modes. The primary goal is to automate waste collection in both indoor and outdoor environments, reducing human involvement and promoting cleanliness in public spaces. In autonomous mode, the robot uses the HC-SR04 ultrasonic sensor to detect obstacles in its path and navigate accordingly. This allows the robot to move without human intervention, avoiding collisions while scanning for waste items. The waste is collected using a simple pickup mechanism mounted on the robot, simulating real-world garbage collection. For scenarios requiring direct control, the robot includes a Bluetooth module (e.g., HC-05), which allows users to manually operate the robot using a smartphone. This manual mode ensures flexibility, especially in areas where autonomous navigation may not be ideal due to unpredictable terrain or obstructions. Arduino Uno serves as the main controller, managing sensor inputs, motor control, and communication modules.
Register Number and Name of Students	22761A0320- M Sai Prathap Reddy 22761A0311-G Ramesh 22761A0304- B Sudhakar

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design and development of prototype of an electric seaglider passenger vehicle – S Srinivas Reddy (T808)
Description (in 200 words)	The objective of the current project involves designing and developing a prototype sea glider vehicle, a new generation passenger vehicle based on the Wing-in-Ground (WIG) principle. Sea gliders provide higher aerodynamic efficiency and lower drag due to their ability to fly at the height close to the water surface. A prototype sea glider passenger vehicle is developed using lightweight composite construction. Emphasis is put on optimal hull hydrodynamics and optimal profiling of wings. Electric engines running on battery power are used to provide low carbon footprint transportation and low operational cost. An advanced system of controls and onboard sensors are included to stabilize the craft within ground effect zone. Various computational simulations and experiments are carried out to assess such performance indicators as lift-to-drag ratio, stability characteristics, and energy consumption in different flight modes. Results show that prototype provides for faster travel than a normal marine vessel as well as significantly lower energy consumption than typical aircrafts. At the same time, it is noted that the prototype provides high passenger safety and comfort. The data shows that sea glider vehicles have a good potential to revolutionize coastal transport by providing faster, safer, and more efficient way of traveling. Further research should involve developing technologies for increasing energy storage capacity and improving material properties.
Register Number and Name of Students	23765A0337- U Abhinav 23765A0308- D Chinna Babu 23765A0314- J Hanuma Naik

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Fabrication Of Air Powered Car – S Uma Maheswara Reddy
Description (in 200 words)	This project aims that as the global transport sector faces rising fossil fuel costs and urgent environmental mandates to reduce greenhouse gas emissions, Compressed Air Vehicles (CAVs) emerge as a promising zero-pollution alternative. This technology utilizes high pressure atmospheric air stored in carbon-fiber tanks to drive a pneumatic motor, effectively replacing the internal combustion engine with a system that emits only cold, filtered air. This study reviews the core mechanical principles of CAVs— specifically the expansion of compressed air to generate motion—and evaluates major prototype developments. While CAVs offer significant advantages in manufacturing costs, low maintenance requirements, and rapid refueling times (2–3 minutes), they face technical barriers including low energy density and thermodynamic inefficiencies during air expansion. The findings suggest that while highspeed highway performance remains limited, air-powered technology holds substantial potential for lightweight urban utility vehicles and hybrid pneumatic-electric systems.
Register Number and Name of Students	23765A0320-M Harish 22761A0315-K Sameera 22761A0316-K Naga Durga

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Analysis Of A 3d Printed Auxetic Airless Tyre With Integrated Cooling Channels For Electric Two-Wheelers- V Sankar Rao
Description (in 200 words)	This project presents the design and analysis of a 3D printed auxetic airless tyre with integrated cooling channels for electric two-wheelers.The auxetic lattice structure improves load distribution and shock absorption.Cooling channels enhance heat dissipation and reduce thermal degradation.The tyre is modeled using CAD tools and analyzed using ANSYS.The results demonstrate improved structural performance and thermal efficiency compared to conventional tyres.
Register Number and Name of Students	23765A0327-R Lokesh 23765A0334-Sk Zaheer Hussain 22761A0313- K Eswar Kumar
Photographs	

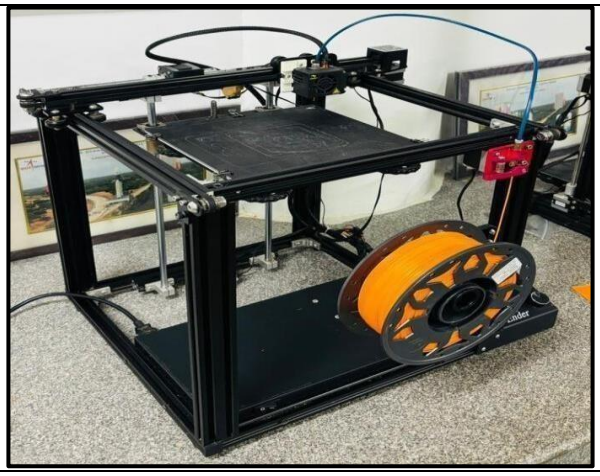
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Performance Evaluation And Develoment Of A Solar-Powered Grass Cutter With Solar Tracking And Bluetooth-Controlled By Using Arduino – K V Viswanath
Description (in 200 words)	The project mainly focuses on the performance evaluation and development of an efficient and eco-friendly solar-powered grass cutter fitted with solar tracking, Bluetooth control, and Arduino-based automation. The mechanical structure was designed and simulated using CATIA V5, consisting of the chassis, blade housing, wheel assembly. For maximum sunlight reception, a solar panel with an automatic solar-tracking system is embodied, thereby increasing the overall charging efficiency. The captured solar energy is stored in a rechargeable battery through an integrated charging port, which also allows for external charging. The performed engineering calculation estimated the battery capacity, solar panel rating, and the motor load; hence, the system requires calculated charging time and calculated working duration under normal operating conditions. This grass cutter is wirelessly operated through Bluetooth using a smartphone, with consideration for safety in remote handling. An Arduino microcontroller processes all user commands and controls the drive system via a motor driver module. Adjustment of a cutting blade has been designed to select multiple cutting heights as per the user requirement. Calculation for power consumption, battery sizing, and blade RPM has been performed in detail to validate the performance and efficiency of the system. Low-maintenance, and user-friendly solution for domestic and small-scale lawn maintenance applications.
Register Number and Name of Students	23765A0333-Sk Nazeer Basha 23765A0313-J Nagendra Babu 22761A0305-B Hemanth Babu
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Smart Vehicle Air Monitoring System (Iot Based Intelligent Cabin Monitoring Using ML) – Dr P Vijay Kumar

Description (in 200 words)	This project presents a smart, IOT-enabled system that uses low-cost sensors to measure environmental data (like gases, temperature, and humidity) in real-time. This data is sent to the cloud where a Machine Learning model analyzes it to classify and predict air quality hazards. When the system forecasts poor air quality, it sends instant alerts via message. The solution is cost-effective and scalable for use in various locations, including vehicles, to improve public health and safety.
Register Number and Name of Students	23765A0364-P INDRA BABU 23765A0369-S PRAVEEN KUMAR 22761A0332-Sk NAYAB RASOOL
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Fabrication Of 6 DOF Robotic Arm With Additive Manufacturing System For Intricate Structures-Dr K Murahari
Description (in 200 words)	Processes such as casting, forging, and machining have inherent drawbacks including high costs, waste of materials, and difficulty in creating complex geometries. Additive manufacturing or 3D printing eliminates these problems using layer-by-layer construction; however, existing methods can only work with plastic and are restricted to three axes. These limitations make it difficult to print complex and non-flat geometries while also leading to poor interlayer bonding and lower efficiency. In order to tackle these problems, this project discusses the design and development of an additive manufacturing system that utilizes a 6-DOF robotic arm. It employs a multi-axis robotic arm that includes an ESP 32 ,Arduino Mega microcontroller, RAMPS 1.4 electronics, Servo motors and stepper motors. It also utilizes a nozzle extrusion process.
Register Number and Name of Students	23765A0347-G Shanmukha Rao 23765A0341- A Koti Nagu 22761A0333-P Srinivas

Photographs	

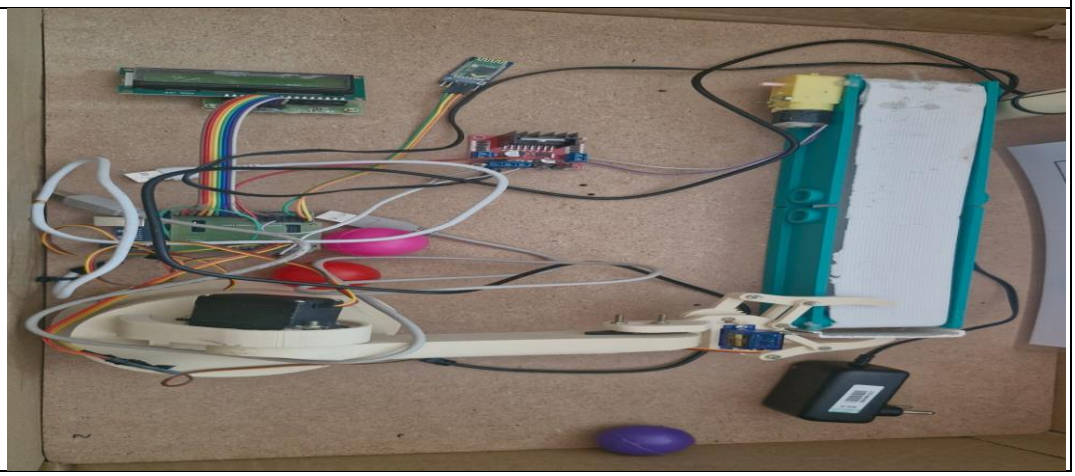
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Development & Performance Analysis of a Cost-Effective Fused Deposition Modeling (FDM) 3D Printer using Polylactic Acid (PLA)-J Subba Reddy
Description (in 200 words)	Fused Deposition Modeling (FDM) is an additive manufacturing technique in which components are produced layer by layer using thermoplastic materials such as Polylactic Acid (PLA). Due to its ease of processing, low cost, and environmentally friendly nature, PLA is widely used for prototyping and educational purposes. This project focuses on the development of a cost-effective FDM 3D printer suitable for academic and small-scale applications. The system is designed with the objective of achieving reliable performance while maintaining simplicity and affordability. The overall process includes design of components, preparation of digital models, and fabrication of test specimens using appropriate printing parameters. The developed printer is capable of producing components with acceptable dimensional accuracy and consistent layer formation. The study highlights the importance of proper material selection, parameter settings, and system configuration in achieving good print quality. Overall, the project demonstrates that a low-cost FDM 3D printer can be effectively developed for basic prototyping and educational use, making additive manufacturing more accessible.
Register Number and Name of Students	23765A0355-M Gokul Manikantha 23765A0354-M Kiran Kumar 23765A0344-Ch Tarun
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	AI Enabled Speech Recognition Drone – Dr A Nageswara Rao
Description (in 200 words)	Drones are widely used in surveillance, disaster management, agriculture, and military applications. Conventional drone control systems rely on remote controllers or smartphones, requiring continuous manual operation and limiting accessibility. In this project, a fully offline AI-enabled speech recognition system is integrated with a drone to enable hands-free, voice-based control without any internet dependency.The proposed system utilizes offline speech recognition models (VOSK , Kaldi Recogniser) for real-time speech-to-command conversion and the LiteWing SDK for low-level drone flight control. At startup, the user selects the preferred language (English or Telugu), and all subsequent commands are recognized and executed in the selected language. The system supports essential drone operations such as motor arming, takeoff, landing, directional movement (forward, backward, left, right), altitude control, and emergency stop.By operating entirely offline, the system improves reliability, reduces latency, enhances data privacy, and enables deployment in remote or network-restricted environments. Experimental testing demonstrates stable command recognition, responsive control, and safe motor and flight behavior under different operating conditions.
Register Number and Name of Students	23765A0361-P Charan 23765A0360-N Dileep Kumar 23765A0363-P Karthik
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Fabrication And IoT-Based Monitoring Of A Thermoelectric Cooling Module-Dr P Ravindra Kumar
Description (in 200 words)	This project focuses on the fabrication and IoT-based monitoring of a thermoelectric (TEM) cooling system for compact and energy-efficient localized cooling. The system uses Peltier modules to achieve cooling and integrates IoT technology for real-time

	monitoring and intelligent control.The system operates in two modes: Automatic Mode and Manual Mode. In Automatic Mode, temperature is continuously monitored and the cooling module is controlled based on predefined thresholds. In Manual Mode, users can remotely operate the system using a Bluetooth-enabled mobile application.An ESP32 microcontroller is used for data processing and communication. Additional sensors such as gas, dust, and vibration sensors enhance safety and environmental monitoring. Alerts are provided through a buzzer when abnormal conditions are detected.Experimental results show a temperature reduction from 30.5°C to 28.7°C (1.8°C drop in 7 minutes), with low power consumption (~0.1–0.2 W), demonstrating efficient performance.This system offers a cost-effective, portable, and smart cooling solution suitable for indoor and localized applications.
Register Number and Name of Students	23765A0348-G Sai Teja 23765A0367-R Pramodh 22761A0328-P Siva Naga Raju
Photographs	

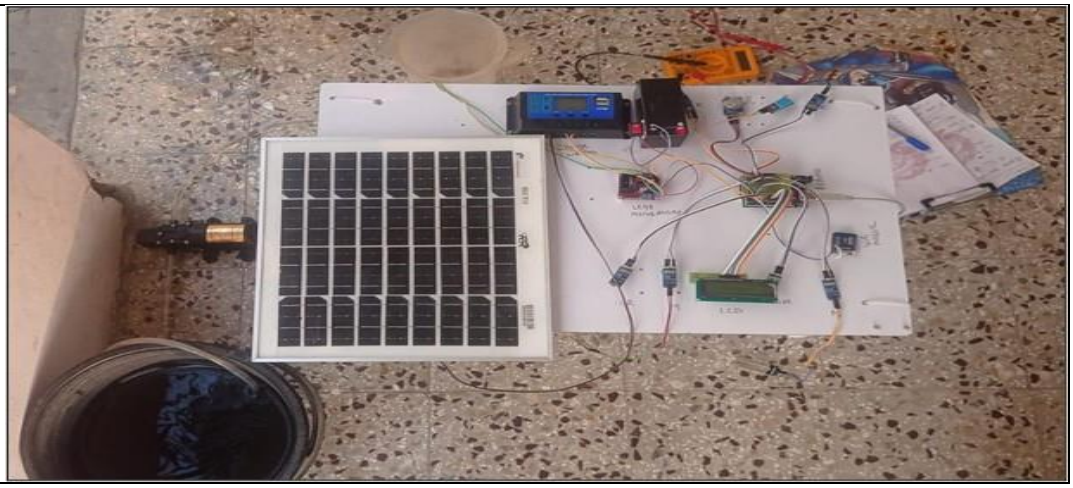
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	AI Powered Vibration Based Fault Detection In Diesel Engine – Dr Ch Siva Sankar Babu
Description (in 200 words)	The project titled **AI-Powered Vibration-Based Fault Detection in Diesel Engine** presents an innovative diagnostic system that integrates machine learning and sensor fusion to enhance industrial maintenance. Modern engine systems require early fault detection to ensure safety, improve performance, and prevent catastrophic failures. This project addresses the limitations of traditional manual inspections and rule-based diagnostics by proposing an intelligent, real-time monitoring solution. The system leverages high-frequency sensor data, including temperature, pressure, vibration, and acoustic signals, to train predictive models capable of identifying subtle mechanical anomalies. By utilizing advanced algorithms such as Neural Networks, Support Vector Machines (SVM), and Decision Trees, the AI system can recognize complex patterns and deviations that indicate potential faults before they lead to downtime. The integration of data-driven approaches allows for a transition from reactive to predictive maintenance strategies. The final system aims to enhance engine reliability and operational efficiency across various sectors, including automotive, aerospace, and manufacturing, providing a scalable and cost-effective solution for complex engine health management.
Register Number and	23765A0379-V Hemanth Kumar 23765A0339-A Pujith Charan 22761A0339-V Kishore Karthik

Name of Students	
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design and Fabrication of Four-wheeled Electric Buggy for Sustainable Urban Mobility - Dr K Dilip Kumar
Description (in 200 words)	This project aims to design and fabrication of a four-wheeled electric buggy, developed as a compact, energy-efficient prototype aimed at promoting clean urban transportation. In response to the environmental challenges posed by conventional fuel-powered vehicles, this electric buggy offers a zero-emission alternative suitable for short-distance commuting, campus transport, and recreational use. The buggy is powered by a 800 to 1.5 kW Brushless DC (BLDC) hub motor, coupled with a 48V, 60Ah lithium-ion battery pack, offering a driving range of 40–50 km per charge and a top speed of 30–45 km/hr The chassis is constructed from mild steel tubular and square 40X40 sections, optimized for strength and low weight, with an independent suspension setup to provide ride comfort on uneven terrain. The buggy features rack and pinion steering, mechanical drum brakes on front wheels, and an ergonomically designed seating arrangement for single passenger. The overall weight of the vehicle is approximately 150–200 kg.Charging is achieved via a standard 230V AC wall socket, with a full charge time of approximately 5–6 hours, and provisions for solar charging compatibility are also explored. This project delivers practical experience in electric power train integration, vehicle dynamics, control systems, and sustainable design, contributing to the broader goals of green engineering and self-reliant mobility innovation in India.
Register Number and Name of Students	23765A0353-M V Durga Prasad 23765A0352- L Narendra 23765A0346- D Sarath Kumar

Photographs	

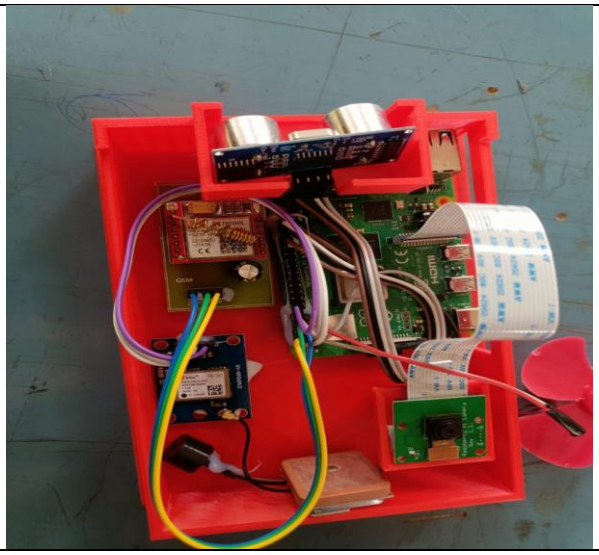
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	IoT Enabled Solar Water Pump For Agriculture Purpose – K V Viswanath
Description (in 200 words)	The project works to create a solar irrigation system which uses automatic operations through Arduino technology to enhance agricultural field water management. A soil moisture sensor continuously checks soil moisture levels and the Arduino controller uses this information to operate the water pump. The pump activates when the soil reaches a dry state and it deactivates after sufficient moisture has been achieved. The system operates completely on solar power because the solar panel charges the battery through a charge controller system. The system uses stored energy to power both the pump and electronic parts which allows operation to continue during periods of low sunlight and nighttime. The system provides a complete solution which uses solar power to eliminate manual irrigation needs while decreasing water waste through its cost-effective energy-efficient design for rural farming needs. The system provides a straightforward operation which delivers dependable performance while maintaining environmental safety, and it can be expanded to handle larger farming areas, making it suitable for current sustainable farming practices.
Register Number and Name of Students	23765A0357-Md Sadiq 22761A0334-Syed Galib Shahid 22761A0329-P Venkateswara Reddy

Photographs	

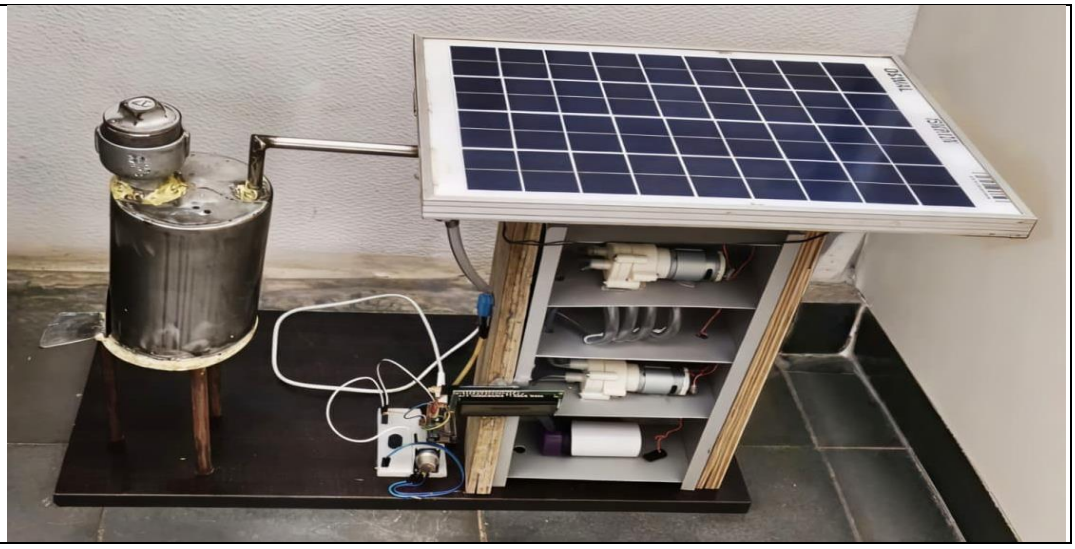
Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	IoT-Enabled Safety System for Tractor Rotavator Operation – Dr V Dhana Raju
Description (in 200 words)	The aim of this project is to develop an IoT-based safety system that protects humans from injury by preventing unauthorized entry into the hazardous operation area of the rotavator. We selected an ESP32 microcontroller for its powerful processing capability, wireless communication, Bluetooth, and low power consumption. Ultrasonic proximity sensors are fixed on the rotavator to monitor the distance between the rotating blades and the nearby person at all times. To enhance the accuracy of object detection and situational awareness, an ESP32 camera module is used for continuous visual surveillance to verify the detected object. The ESP32 microcontroller processes this information to identify when the distances are below the safe limit. When a person is detected within the danger zone, the system quickly initiates a wireless mechanical disengagement system that separates the rotavator from the tractor's power take-off shaft, halting the rotavator's blades while the tractor engine continues to run. At the same time, audio and visual warnings are triggered to alert the operator. This accomplishment is made possible by the application of low-power wireless communication protocols. The integrated IoT safety system described in this research work significantly improves the safety of the operator as well as bystanders, reducing the chances of an accident occurring. This research work promotes the development of smart, connected, and compliant agricultural equipment.
Register Number and Name of Students	23765A0371-T Rakesh 23765A0370-S Teja Sai 23765A0359-M Karthik

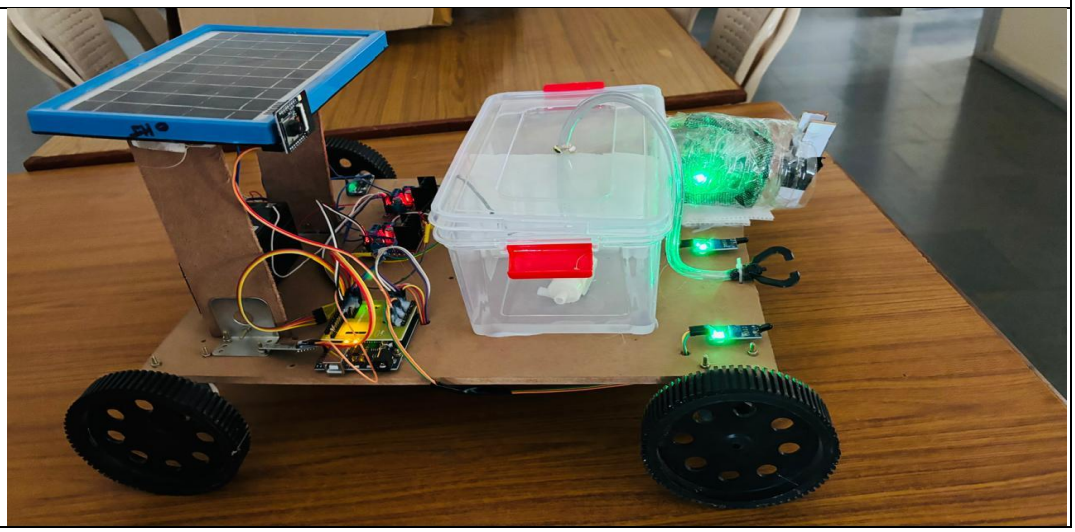
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Design And Development Of Raspberry Pi Based Adas & Dms For 2 Wheelers – Dr A Nageswara Rao
Description (in 200 words)	The growing use of two-wheelers has led to more road accidents because of limited safety features, rider fatigue, distraction, and poor situational awareness. This project aims to design and develop a Raspberry Pi-based Advanced Driver Assistance System (ADAS) and Driver Monitoring System (DMS) for two-wheelers to improve rider safety and reduce the risk of accidents. The proposed system uses a Raspberry Pi as the main controller, combining a camera and sensors to monitor both the road environment and the rider's condition in real time. The ADAS module performs functions like obstacle detection, lane monitoring, and collision warning. Meanwhile, the Driver Monitoring System analyzes facial features to spot drowsiness, distraction, and abnormal head movements. It uses computer vision techniques for precise detection and decision-making. When unsafe conditions are identified, the system gives audio and visual alerts to warn the rider and allow for timely corrective action. The overall design is compact, low-cost, and energy efficient, which makes it practical for use on two-wheelers. The results show that the proposed system greatly enhances rider awareness and safety. This project demonstrates how embedded systems and smart monitoring can create affordable and effective safety solutions for two-wheeler vehicles.
Register Number and Name of Students	23765A0376-V Abhinav 23765A0377-Y Mukhesh 22761A0327-N Vinay

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Solar Powered IoT-Monitored Biochar and Syngas Production from Agricultural Waste (AGRO-CHAR) – Dr B Sudheer Kumar
Description (in 200 words)	India generates more than 500 million tonnes of agricultural residues each year and more than 92 million tonnes of crop residues like rice straw, wheat husk, sugarcane bagasse and cotton stalk are burnt or left open. One of the biggest sources of air pollution, greenhouse gas and land degradation. Agro-Char provides a novel, clean, decentralized solution by introducing a solar powered, IoT enabled pyrolysis technology for biochar and syngas production from crop residues. Agro-Char harnesses solar thermal power to drive a micro pyrolysis chamber, no fossil fuels and minimal zero emissions so that it may be implemented off-grid. With IoT sensor-based technology, Synbotic has the ability to fine-tune critical parameters in real-time. Not only does it increase soil fertility, water conservation and carbon sequestration through the biochar it produces, but its syngas can also substitute for LPG or diesel fuel in these rural communities. Agro-Char is easily scalable from small farms to village-sized implementations, generating local employment and income. The project is associated with targets like Swachh Bharat, the National Bio-Energy Mission and India's 2070 Net Zero Carbon goal and hence represents a paradigm shift to circular rural ecosystems and regenerative agriculture.
Register Number and Name of Students	23765A0362-P Sandhya 23765A0366-P Kiran 22761A0322-M Gowtham

Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Fire Fighting Robot With Dual Mode Operation And Real-Time Video – K Venkateswara Reddy
Description (in 200 words)	This project presents a fire-fighting robot designed to improve safety and reduce human involvement during fire emergencies. The robot operates in both automatic and manual modes, using flame and smoke sensors to detect fire and navigate toward it, while also allowing remote control via Bluetooth. An ESP32 microcontroller manages the system, and an ESP32-CAM provides real-time video monitoring for better decision-making. The robot is equipped with multiple extinguishing methods such as water, CO_2, and foam to handle different types of fires. Overall, the system offers a cost-effective, reliable, and efficient solution for fire safety in hazardous environments.
Register Number and Name of Students	23765A0350-K Chandra Sekhar 23765A0343-B Hemanth Nagendra 23765A0349-G Hemanth
Photographs	

Department Name	Mechanical Engineering
Academic Year	2025-26
Name of the Product	Smart Electric Bike With Real Time Battery Thermal Monitoring And Anti Theft Features – J Subba Reddy
Description (in 200 words)	The rapid growth of electric vehicles (EVs) has increased the need for advanced security and intelligent safety systems. This project presents a Fingerprint and OTP-Based Secure EV Vehicle System using the ESP32 microcontroller, designed to enhance vehicle security and accident prevention. The system incorporates a biometric fingerprint sensor as the primary authentication method. The vehicle can only be accessed when the registered fingerprint is verified. After successful fingerprint authentication, a One-Time Password (OTP) is generated and sent to the vehicle owner via Telegram notification, adding a second layer of security. The vehicle starts only after correct OTP verification, ensuring protection against unauthorized access. For safety, an ultrasonic sensor is used to detect obstacles in real-time. If an obstacle is detected within a predefined distance, the system automatically stops the vehicle using a relay mechanism, preventing collisions. A buzzer provides immediate alerts, while an LCD display shows system status such as authentication results, OTP prompts, and obstacle warnings. The integration of ESP32, fingerprint authentication, IoT-based OTP verification, and obstacle detection creates a reliable, secure, and intelligent EV system. This project aims to improve vehicle security, reduce theft, and enhance road safety through automation and real-time monitoring.
Register Number and Name of Students	23765A0340-A Parvatheesam 23765A0358-Md Ahmed 22761A0326-M Johith
Photographs	

Project In-charge

Kamala Priya B

HoD

Dr M B S Sreekara Reddy