

MECHAZINE

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Department of Mechanical Engineering

VARDHAMAN COLLEGE OF ENGINEERING
SHAMSHABAD, HYDERABAD - 501218

Vision

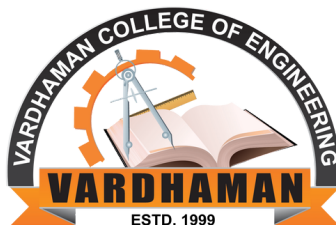
To be a pioneer institute and leader in engineering education to address societal needs through education and practice.

Mission

- To adopt innovative student centric learning methods.
- To enhance professional and entrepreneurial skills through industry institute interaction.
- To train the students to meet the dynamic needs of society.
- To promote research and continuing education.

Quality Policy

We at Vardhaman College of Engineering, endeavor to uphold excellence in all spheres by adopting the best practices in effort and effect.



VARDHAMAN COLLEGE OF ENGINEERING

SHAMSHABAD, HYDERABAD - 501218

Department of Mechanical Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

Our Vision

To be a premier center for producing competent mechanical engineers to cater the ever changing industrial demands and societal needs.

Our Mission

To impart knowledge and skills in basic and applied areas of Mechanical Engineering through innovative learner-centric approach.

To associate with industries and research organizations for gaining real-time practical knowledge.

To facilitate continuous learning based on the dynamic needs of the society.

Program Educational Objectives (PEOs):

PEO1: Graduates make their way to the society with proper scientific and technical knowledge to identify, formulate and solve Mechanical Engineering problems.

PEO2: Graduates adapt to a rapidly changing environment in the areas of Mechanical Engineering and explore a possible profession in industry, academic, research and self-employment opportunities.

PEO3: Graduates excel in a career by their team-working ability and communicate effectively to complete the task with minimal resources.

PEO4: Graduates commit to professional and ethical practices encouraging diversity, continuous improvement, and lifelong learning.

Program Specific Outcomes (PSO's):

PSO1: Demonstrate knowledge in the area of design, analysis and fabrication of mechanical systems.

PSO2: Apply learned concepts and management skills to associate professionally in industry or as an entrepreneur.

CHAIRMAN'S MESSAGE

In an age defined by rapid technological shifts and environmental consciousness, academic institutions must rise as catalysts—not just for learning, but for sustainable innovation and social progress. With this vision, I extend my heartfelt appreciation to the Department of Mechanical Engineering for presenting this new edition of MECHAZINE—a vibrant blend of intellect, creativity, and purpose.

At Vardhaman College of Engineering, we strive to shape engineers who are not just problem-solvers, but pathfinders—those who merge scientific thinking with a sense of social and environmental responsibility. Our classrooms pulse with curiosity, our labs foster discovery, and our community engagements reflect compassion-driven engineering. The green hues of this year's edition echo our commitment to sustainability, renewal, and growth.

A department magazine, in essence, is more than a collection of articles. It is a mirror of ambition, a diary of breakthroughs, and a platform for voices that dare to think differently. It captures not only academic progress but the spirit of a department that never stops evolving.

To the students and faculty: your passion fuels this endeavor. Let MECHAZINE be both a celebration of your achievements and a spark for ideas yet to take shape. May these pages motivate readers to imagine boldly, question deeply, and act meaningfully.

DR T VIJENDAR REDDY
CHAIRMAN



PRINCIPAL'S MESSAGE

It gives me immense pleasure to present MECHAZINE, the annual magazine of the Department of Mechanical Engineering at Vardhaman College of Engineering. This publication is a reflection of the academic spirit, creativity, and commitment that define our department's journey over the past year.

A future driven by sustainability and innovation, Electric Vehicles (EVs) have emerged as a transformative force in the global transportation landscape. This shift towards cleaner mobility demands not only advanced technology but also skilled engineers who can innovate at the intersection of mechanics, electronics, and intelligent systems.

Our curriculum, labs, and project-based learning initiatives are designed to cultivate engineers who understand the complexities of EV systems—ranging from battery technology and thermal management to smart manufacturing and lightweight design. The department's efforts to expose students to emerging technologies, industry practices, and interdisciplinary learning have prepared them to take on challenges that are critical to building a sustainable and energy-efficient future.

At Vardhaman, we are committed to nurturing professionals who are not only technically proficient but also socially conscious and globally competent. I am proud of the department's continued progress in fostering this vision and congratulate the faculty, students, and editorial team for putting together this edition of MECHAZINE.



DR J V R RAVEENDRA
PRINCIPAL

HOD'S MESSAGE

It is with great pride and purpose that I present this edition of MECHAZINE the annual magazine of the Department of Mechanical Engineering at Vardhaman College of Engineering.

Mechanical Engineering continues to serve as the bedrock of technological advancement, and its relevance today is amplified by the global transition toward electric mobility, sustainable design, and digital manufacturing. From reimagining powertrains to developing efficient battery systems and thermal management strategies, mechanical engineers are central to the future of Electric Vehicles (EVs) and the broader sustainable mobility ecosystem.

At Vardhaman, our department remains committed to bridging foundational knowledge with real-world applications. We have actively integrated green energy concepts, simulation tools, and interdisciplinary learning into our curriculum—aligning ourselves with national missions like Make in India and Skill India. These efforts are complemented by hands-on labs, industry-linked projects, and research initiatives that encourage our students to address modern challenges with creativity and conviction.

What truly distinguishes us is our academic culture—one that values inquiry over routine, purpose over prestige, and community over competition. Here, we foster not only technical expertise but also character and leadership, preparing our graduates to become responsible innovators and change-makers in a fast-evolving world.

DR P VENKATESHWAR REDDY
HOD, MECH



EDITOR'S MESSAGE

MECHAZINE is more than a departmental magazine—it is a mirror that reflects the vibrant, inclusive, and evolving character of the Department of Mechanical Engineering at Vardhaman College of Engineering. This edition encapsulates the essence of our academic year, showcasing a harmony of technical brilliance, cultural expression, and collective spirit.

This year's theme underscores the growing significance of Electric Vehicles, sustainable engineering practices, and future-ready technologies. Our students and faculty have risen to the occasion, contributing thought-provoking technical articles and research features that explore these domains with clarity and curiosity. These works not only reflect emerging trends in mechanical engineering but also our department's alignment with global sustainability goals and national missions.

Equally enriching are the creative contributions—poetry, essays, artwork, and short stories—presented in reminding us that engineering is not confined to equations and machines alone. It is also about human values, imagination, and the cultural depth that shapes responsible engineers.

This edition proudly includes the voices of our teaching and non-teaching staff, whose insights and reflections add warmth and authenticity to the pages. The magazine also highlights the vibrant activities of NSS, NCC, department-level events, and community outreach programs.

As Chief Editor, I extend my sincere thanks to all contributors, designers, and editorial members who brought this issue to life.

Warm regards,

Mr. Srinivasa Reddy N

Chief Editor

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STAFF

Mr. B. Dhanraj

Ms. U. Pranavi

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Ms. S Anjana Sree

Mr. K. Adithya

Mr. K. Nikhilraj

Mr. K. Sai Kiran

"The Mechanical Core of Modern Mobility: Inside Electric Vehicles"

Electric Vehicles (EVs) are no longer a futuristic concept; they are a growing reality shaping the future of transportation. For mechanical engineers, the evolution of EVs presents both challenges and opportunities. As the world transitions from fossil fuel dependency to sustainable mobility solutions, the understanding of electric propulsion systems, mechanical integration, thermal management, and energy optimization has become vital.

Historical Evolution of Electric Vehicles

The roots of EVs can be traced back to the early 19th century, before internal combustion engines (ICEs) dominated.

- 1830s: Scottish inventor Robert Anderson created a crude electric carriage using non-rechargeable batteries.
- 1870s–1900s: Inventors like Thomas Davenport and Gustave Trouvé improved designs, using rechargeable batteries.
- 1900s: EVs gained popularity, especially in the U.S., where about one-third of vehicles were electric due to their quiet operation and ease of use.
- Decline: With Henry Ford's mass production of the Model T and the discovery of cheap oil, ICE vehicles became dominant.

Mechanical limitations of early EVs—such as low energy density, poor range, and heavy batteries—contributed to their fall in the early 20th century.

Resurgence and Development in the 21st Century

Several factors led to the re-emergence of EVs:

- Oil crises and climate change awareness
- Technological advancement in batteries (especially Lithium-ion)
- Government policies and subsidies
- Entry of companies like Tesla, Nissan, and BYD

Key Mechanical Developments in Modern EVs

- **Lightweight Structures:**
 - Use of aluminum alloys, carbon fiber composites, and advanced high-strength steel.
 - Focus on weight reduction to improve power-to-weight ratio and extend driving range.
- **Powertrain Engineering:**
 - Simplified systems: Electric motors replace complex IC engines.
 - Use of single-speed transmission in most EVs due to flat torque curves of electric motors.
 - Integration of regenerative braking systems to convert kinetic energy into electrical energy.
- **Thermal Management:**
 - Essential for battery performance and safety.
 - Use of coolant loops, heat pipes, phase change materials, and active cooling fans.
- **Chassis and Suspension Adaptations:**
 - Battery packs mounted on the floor (skateboard chassis design) for a low center of gravity.
 - Modified suspension systems to accommodate increased weight due to batteries.
- **Aerodynamics:**
 - Smooth underbodies and optimized exteriors to reduce drag and improve efficiency.

"EVs PROVE THAT SILENCE CAN BE MORE POWERFUL THAN NOISE."

Multidisciplinary Design and Innovation

EVs require an integration of:

- Mechanical Design (chassis, braking, thermal systems)
- Electrical Engineering (motors, battery management)
- Software (control systems, navigation)

Advanced Simulation and Modeling

Tools like ANSYS, MATLAB/Simulink, and SolidWorks are used for:

- Motor simulation
- Thermal analysis
- Structural integrity under crash and fatigue conditions

Latest Developments in EV Technology

1. Battery Innovations

- Solid-state batteries: Higher energy density and safety.
- Silicon anodes and lithium-sulfur batteries under research.
- Faster charging (80% in under 10 minutes) and longer range.

2. Power Electronics

- Use of Silicon Carbide (SiC) and Gallium Nitride (GaN) semiconductors for lighter and more efficient inverters.

3. Vehicle-to-Grid (V2G) Technology

- EVs act as mobile energy storage, feeding power back to the grid.

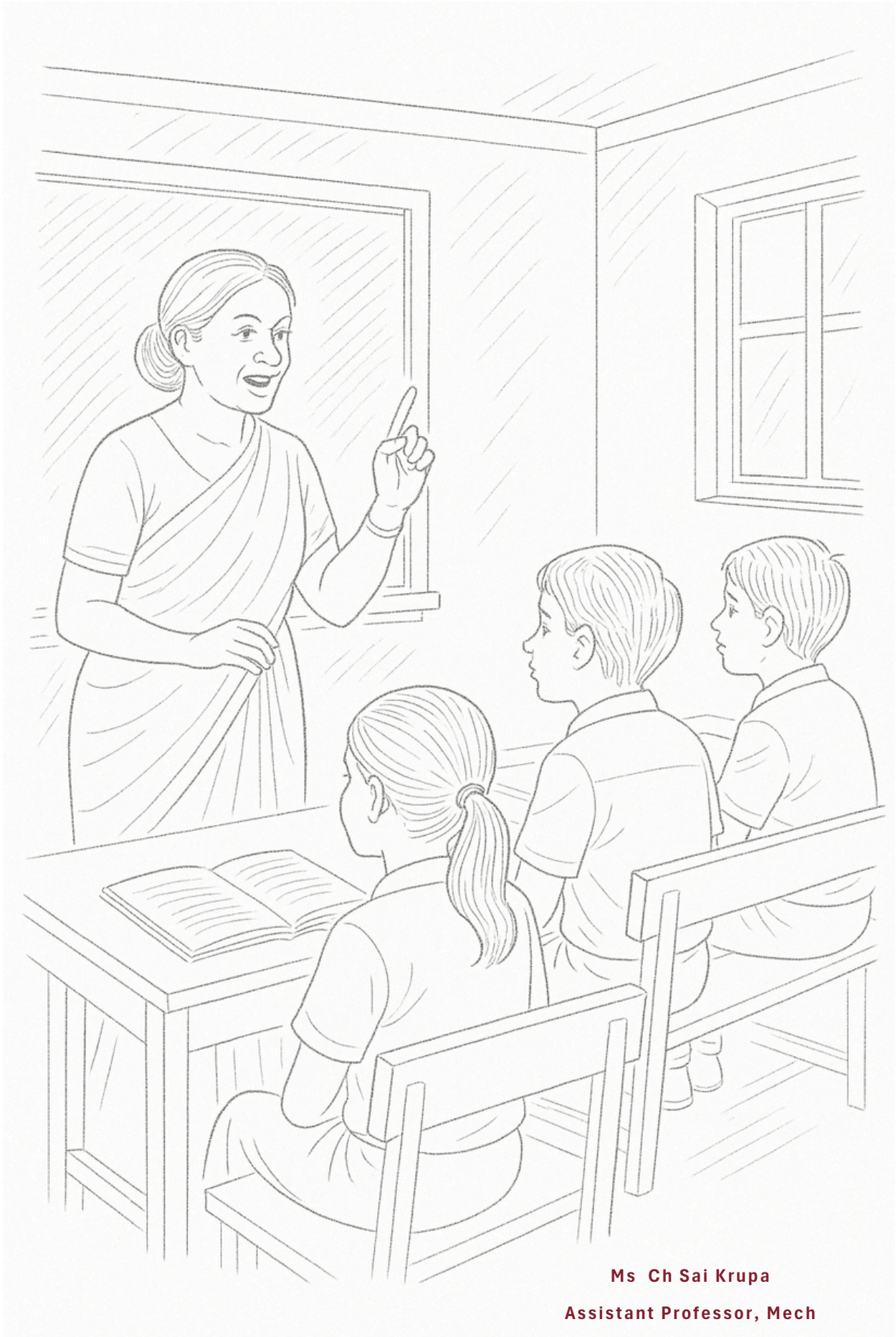
4. Autonomous and Connected EVs

- Mechanical systems are being integrated with AI and IoT.
- Advanced sensor integration, drive-by-wire systems, and over-the-air updates.

5. Wireless Charging and Swappable Batteries

- Emerging as practical solutions to overcome range anxiety and charging time

Dr K Deepak
Professor, Mech



Ms Ch Sai Krupa
Assistant Professor, Mech

"ART BEGINS WHERE WORDS END — WITH A BRUSHSTROKE."

Microsoft Office Tools and Their Usage in Report Development and LaTeX — Empowering Your Document Workflow

“Tools shape our work; knowing how to use them shapes our success.”

In today’s academic, professional, and creative worlds, creating polished, clear, and well-structured reports is a key skill. Whether you’re a student preparing a research report, an engineer documenting a project, or a business professional drafting proposals, the right tools can make all the difference. Microsoft Office, a suite of versatile applications, stands out as one of the most popular and powerful solutions for report development. Additionally, for users who need high-quality typesetting for complex documents, LaTeX offers unmatched precision and control. This article breaks down how Microsoft Office tools streamline report creation, their strengths, and how LaTeX complements this workflow—helping you craft documents that stand out.

Microsoft Office Suite: Your All-in-One Report Companion

Microsoft Office is a comprehensive suite that includes several tools designed to handle different aspects of document preparation and presentation. Key among these for report development are:

1. Microsoft Word — The Core Word Processor

- Purpose: Ideal for writing, formatting, and editing reports.
- Features:
 - Rich text formatting, styles, and templates for consistent document design.
 - In-built tools for references like citations, footnotes, bibliography, and table of contents.
 - Collaboration features for tracking changes and comments.
 - Support for inserting tables, charts, images, and SmartArt for effective data representation.
- Usage Tip: Use Styles (Heading 1, Heading 2, etc.) to maintain structure and generate automatic tables of contents, essential for long reports.

2. Microsoft Excel — Data Analysis & Visualization

- Purpose: To organize numerical data, perform calculations, and create charts.
- Features:
 - Powerful formulas and functions for data processing.
 - PivotTables to summarize and analyze complex datasets.
 - Variety of chart types to visually communicate trends and comparisons.
- Usage Tip: Embed Excel charts and tables directly into Word reports to keep data live and editable.

3. Microsoft PowerPoint — Presenting Your Findings

- Purpose: Create compelling presentations to summarize report highlights.
- Features:
 - Slide templates, animations, and multimedia integration.
 - Notes and handouts to support oral presentations.
- Usage Tip: Use PowerPoint's Export to PDF for easy sharing of presentation decks.

4. Microsoft OneNote — Organizing Research & Ideas

- Purpose: Capture notes, research snippets, and brainstorm ideas.
- Features:
 - Flexible note-taking with typed text, handwriting, images, and audio.
 - Tagging and search to keep track of important points.
- Usage Tip: Use OneNote to collect references, then export to Word when drafting your report.

Using Microsoft Office for Report Development: Best Practices

- Start with a Template: Use pre-designed report templates in Word to maintain professional standards.
- Consistent Formatting: Use Styles to ensure uniform headings, subheadings, and body text.

- **Automate References:** Leverage Word's citation manager and bibliography tools to manage sources and avoid plagiarism.
- **Integrate Visuals:** Insert Excel charts or PowerPoint graphics to make your report visually engaging.
- **Proofread and Collaborate:** Use Word's spellcheck, grammar suggestions, and track changes for error-free final drafts.

LaTeX: The Power Tool for Complex and Scientific Documents

For reports requiring precise layout, mathematical formulas, or scientific notation, LaTeX is the gold standard typesetting system. Unlike Microsoft Word's WYSIWYG (What You See Is What You Get) interface, LaTeX uses markup language to define document structure and formatting, producing beautifully formatted PDFs.

Why Use LaTeX?

- High-quality typesetting especially for math, algorithms, and technical figures.
- Consistent formatting through document classes and style files.
- Bibliographic management using BibTeX or BibLaTeX.
- Cross-referencing for figures, tables, and sections is automatic and error-free.
- Scalability — great for long theses, scientific papers, and technical manuals.

Combining Microsoft Office and LaTeX: The Best of Both Worlds

- **Draft in Word, Typeset in LaTeX:** Many start by writing drafts or outlines in Word, then move to LaTeX for the final, professional typesetting.
- **Import Excel Data:** Export Excel tables or charts as images or CSV files to include in LaTeX documents.
- **Use Word for Collaborative Edits:** Word's collaboration features make it easy for multiple authors to contribute before final LaTeX formatting.
- **Convert LaTeX to Word:** Tools exist to convert LaTeX documents to Word format for reviewers unfamiliar with LaTeX.

Mr B Venkatesh

Assistant Professor, Mech

"LATEX SHAPES KNOWLEDGE WITH SCIENTIFIC CLARITY."



Ms K Gayatri

Assistant Professor, Mech

"DON'T JUST PAINT — TELL A STORY IN EVERY SHADE."

The Invisible Backbone: A Mechanical Engineer in Every Journey of Life

We live in a world powered by movement—of people, goods, energy, and ideas. Every wheel that turns, every machine that hums, and every structure that stands is a silent testimony to the brilliance of mechanical engineers. Among all engineering disciplines, mechanical engineering is arguably the most versatile and foundational, forming the cornerstone of mobility, industry, and daily life.

From the vehicles we drive to the elevators we ride, from the air-conditioning units we relax under to the machinery that runs factories, a mechanical engineer's touch is everywhere.

"If it moves, it's mechanical."

Mechanical Engineering in the World of Mobility

One of the most impactful contributions of mechanical engineers is in the automobile and transportation sector. They are the minds behind the safe, efficient, and sustainable movement of people and goods.

Roles in Mobility:

1. Automotive Design & Manufacturing
2. Engineers conceptualize and design components like engines, gearboxes, brakes, steering systems, and vehicle frames using advanced CAD software.
3. Thermal Systems and HVAC in Vehicles
4. Ensuring comfort through climate control systems while maximizing energy efficiency is a mechanical engineer's challenge in every modern car, train, or aircraft.
5. Electric Vehicles & Mobility Innovation
6. With the rise of electric mobility, mechanical engineers work with electrical and electronics teams to design battery cooling systems, chassis optimization, and lightweight materials.
7. Aerospace and Railway Engineering
8. From turbine engines to aerodynamic designs in high-speed trains and airplanes, mechanical engineers play a key role in mobility innovation across air, land, and sea.

"EVERY FAILURE BUILDS A BETTER SOLUTION."

“Mobility without mechanical engineering is motion without control.”

Engineering Our Daily Life

Mechanical engineering doesn't stop at mobility—it begins and ends with making life livable.

Household Applications:

- Refrigerators, Air Conditioners, Water Purifiers – Thermodynamics and fluid mechanics at play.
- Kitchen Appliances – Mixers, grinders, washing machines—all engineered for efficiency.
- Home Automation & Robotics – Mechanical systems embedded with electronics to enhance comfort and security.

Public Infrastructure:

- Elevators & Escalators – Mechanisms designed for safety and space optimization.
- Water Supply and Sanitation Systems – Pumps, pressure control, and piping systems.
- Energy Systems – Wind turbines, solar panel structures, and power generation turbines.

“Mechanical engineering is not just a career—it's the engine that powers civilization.”

Industrial Backbone of Manufacturing and Production

In every factory, workshop, or production unit, mechanical engineers lead the way in design, operation, maintenance, and optimization of machines.

Key Areas:

- CNC Machining and Tool Design

Precision components used in vehicles, electronics, and surgical tools are all manufactured using machines developed by mechanical engineers.

- Automation & Robotics

From assembling a smartphone to packaging goods in a warehouse—mechatronics, a subdomain of mechanical engineering, revolutionizes industry.

“DISCIPLINE AND CURIOSITY CREATE ACHIEVERS.”

- Supply Chain, Material Handling & Logistics

Engineers develop conveyor systems, lifting equipment, and automated transport units to improve productivity.

- Quality Control & Six Sigma

Mechanical engineers ensure zero-defect manufacturing through process control, inspection techniques, and advanced analytics.

“Behind every product lies the heartbeat of a mechanical system.”

- Sustainability and Future Impact
- With the growing focus on clean energy and environmental responsibility, mechanical engineers are adapting and innovating solutions for a greener planet.
- Solar Power Systems – Designing structures, tilt mechanisms, and energy conversion setups.
- Wind Turbines – Blade design, rotational mechanics, and energy optimization.
- Green Buildings – HVAC design for energy-efficient cooling and heating.
- Waste Management – Mechanical systems for composting, recycling, and water treatment.

“A mechanical engineer doesn’t just build machines—he builds the future.”

A Mechanical Engineer in Society

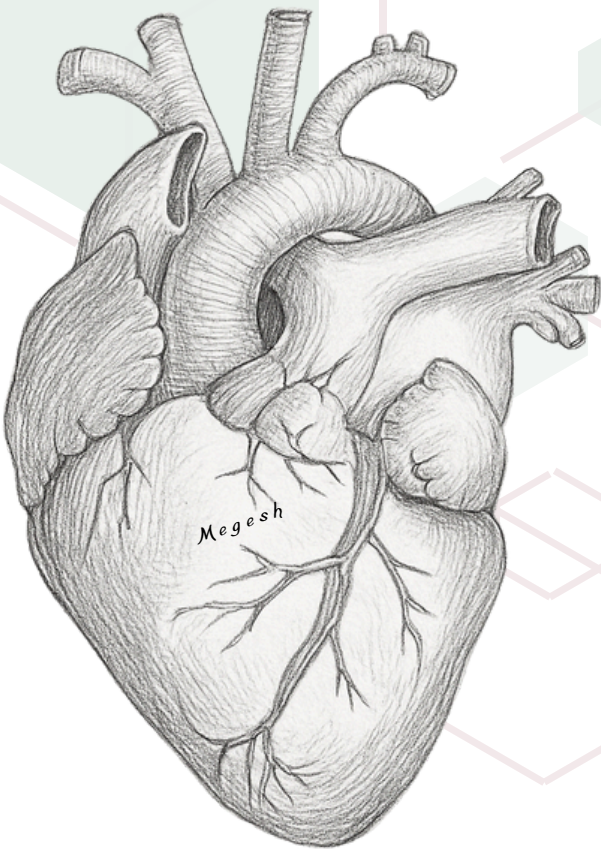
- Beyond machines and numbers, mechanical engineers contribute to education, policy, entrepreneurship, and community.
- Teaching & Research – Training future engineers and driving innovation in labs.
- Startups & Innovation Hubs – Many mechanical engineers lead product design companies, EV startups, or 3D printing ventures.
- Social Engineering – Designing low-cost prosthetics, water lifting devices, or agricultural tools for rural India.

“From grassroots to galaxies, the mechanical mind knows no limits.”

Dr S Anath
Professor, Mech



K. Adhitya - 22881A0312



S Megesh Chavan - 21881A0323



J Rishith Kumar - 23881A0306

“THE HANDS THAT HELD US FIRST”

Before we spoke our very name,
 Before we knew the rules of game,
 They held us close, they gave us light,
 They kept us safe through every night.
 They taught us how to walk and talk,
 To dream with wings, to stand and walk.
 They smiled through tears, they gave their all,
 To catch us every time we'd fall.
 Their love is quiet, deep, and vast,
 A bond too sacred, built to last.
 They work, they weep, they fight, they pray,
 So we may live a brighter day.
 They hide their pain behind their cheer,
 So we may never sense the fear.
 No riches can repay the debt
 Of love in which our roots are set.
 So let's bow down, and let's proclaim —
 For every parent, love's their name.
 Their sacrifice, both seen and not,
 Is the purest gift we ever got.

Kumar Shankar - 20881A0325

“WHERE THE HEART LIVES”

Where fields are gold and skies are wide,
 And rivers through the silence glide,
 The village breathes a slower time,
 With temple bells and morning chime.
 The cowherd sings a rustic tune,
 Beneath the shade of sleepy noon.
 The air is pure, the hearts are kind,
 And peace is something all can find.
 No towers rise, no engines roar,
 Yet joy is rich from every door.
 For in the village, life is deep —
 Where roots are strong and memories sleep.

Yadangi Abhishek - 20881A0349

“THE VOICE OF EARTH”

She speaks in leaves, in winds that blow,
 In rivers deep and mountain snow.
 She hums through bees and ocean tide,
 In every dawn and eventide.
 She paints the sky with crimson fire,
 And lifts the sun a little higher.
 She shelters life in every tree,
 A home for bird, for beast, for bee.
 Yet we, in haste and blinded greed,
 Ignore her cry, her wounded need.
 We cut, we burn, we spill, we take —
 We shake the ground with every quake.
 But nature waits, she still forgives,
 She still believes in all that lives.
 She asks for care, for love, for time,
 Not poisoned air, nor plastic grime.
 Let's heal her wounds, her breath restore,
 Before she speaks to us no more.
 For nature's not just scenery —
 She is our past and destiny.

Ch Yogeshwar - 23881A0304

“THE SPIRIT IN THE GAME”

With beating hearts and running feet,
 The thrill of sport is pure and sweet.
 On dusty grounds or polished floor,
 The game is life, and so much more.
 It teaches strength, it sharpens will,
 It builds the fire no fear can kill.
 With every pass, with every try,
 We learn to fall, get up, and fly.
 It binds the team, it builds the soul,
 And pushes us to chase the goal.
 In sweat and cheers, we find our way —
 For sport is joy that cannot sway.

Ch Varun Reddy - 20881A0308



Ms K Rajini
Admin Office, Mech

"EACH COLOR IS A VOICE — LET YOUR ART SPEAK."

“Revving Innovation: A Deep Dive into the SAE BAJA Event”

Introduction

In the world of automotive engineering and innovation, few student competitions stand as tall and dynamic as SAE BAJA (Society of Automotive Engineers - Baja). This prestigious intercollegiate design competition challenges engineering students to design, build, and race off-road vehicles that can withstand the toughest terrains and most rigorous testing. Originating in the USA and now held globally, BAJA SAE India is a premier event for Indian students, designed to simulate real-world engineering challenges and team collaboration under strict constraints.

Objective of SAE BAJA

The primary goal of the SAE BAJA competition is to provide students with a platform to apply classroom engineering knowledge in a practical, team-based environment. Teams design and build a single-seater, all-terrain, four-wheeled vehicle capable of withstanding severe punishment of rough terrains such as hills, mud, water, and rocky tracks. The vehicle must be safe, easily transported, easily maintained, and low-cost.

Structure of the Event

The event is typically divided into several stages across virtual and physical rounds:

1. Virtual BAJA (VBAJA)

Teams are evaluated on the basis of their design reports, CAE (Computer-Aided Engineering) analysis, cost report, and marketing strategy through an online or in-person presentation round. This is the elimination round, and only qualifying teams are invited to the main event.

2. Main Event (Dynamic & Static Rounds)

Held at designated tracks (like NATRAX, Pithampur), the main event spans 5-7 days, covering multiple technical inspections and performance-based rounds.

3. Highlights of the Rule Book

Each year, SAE India releases a detailed Rule Book, which all teams must strictly follow. The key categories and guidelines include:

- **Vehicle Specifications:** Dimensions, weight, rollover protection structure, suspension, steering geometry, and braking systems.
- **Engine Constraints:** All teams must use a common 10 HP Briggs & Stratton engine, provided or approved by the organizers.
- **Safety Requirements:** Helmets, harnesses, fire extinguishers, kill switches, and roll cage configurations must comply with strict standards.
- **Manufacturing Protocol:** Only undergraduate students can build the car, though faculty advisors can offer guidance.
- **Cost Report and Bill of Materials (BOM):** Every part used must be documented with real-time costs and sourcing details.

The rulebook also stresses sustainability, innovation, and industry-relevant practices, simulating what an engineer would face in an actual product development cycle.

Events and Evaluation Criteria

SAE BAJA events are categorized as:

A. Static Events

These evaluate the team's theoretical and planning capabilities:

- **Design Evaluation:** Experts from the automotive industry assess design innovation, safety, feasibility, and technical soundness.
- **Cost Evaluation:** Analysis of how economically the team built the vehicle, including cost reduction techniques.
- **Sales Presentation:** Simulated pitch to potential investors or manufacturing companies.

B. Dynamic Events

These test the real-world performance of the vehicle:

- *Acceleration Test: Measures how quickly the vehicle can accelerate over a short straight track.*
- *Brake Test: Ensures that the car stops completely within a specified distance.*
- *Maneuverability Test: A tight, winding course with cones to test steering response and control.*
- *Hill Climb/Rock Crawl: Challenges the torque and traction capacity of the vehicle on steep or rocky terrain.*
- *Endurance Race: The crown jewel – a 4-hour race that puts all systems to the ultimate test. Points are awarded for number of laps completed without major failures.*

Why Participate in SAE BAJA?

Participating in SAE BAJA offers a comprehensive exposure to:

- Engineering Design & Manufacturing
- Teamwork and Leadership
- Budget Management and Sponsorship Hunting
- Time-bound Project Execution
- Networking with Industry Experts

Top-performing teams also receive recruitment opportunities from major automotive giants like Mahindra, Tata, John Deere, Cummins, and Bosch.

SAE BAJA Electric (e-BAJA)

To align with the global shift towards sustainable mobility, SAE India introduced e-BAJA, where teams design electric ATVs using an approved battery pack and electric drivetrain. This sub-event fosters innovation in electric vehicle technologies and green design practices.

Mr. S. Naresh Kumar
Assistant Professor, Mech

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Ms U Pranavi
Assistant Professor, Mech

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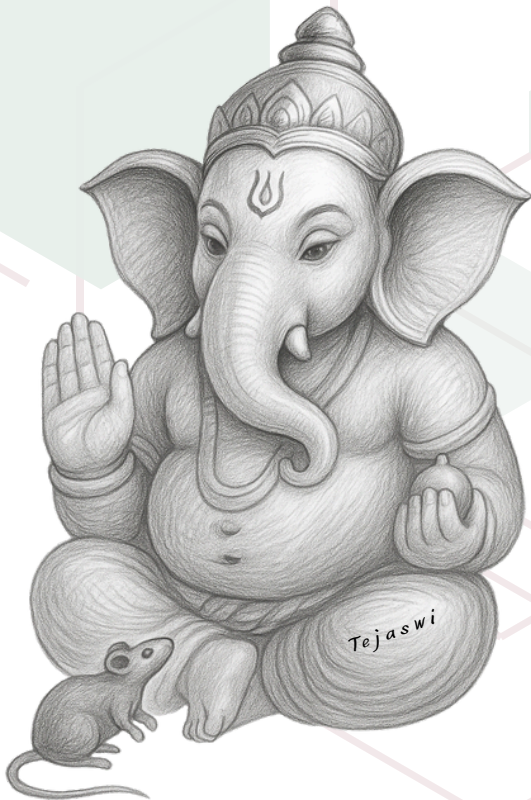
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K Pandu Naik - 23881a0309



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S Mallikarjun - 24885A0324

The Japanese language has a unique and complex writing system that combines three different scripts: Hiragana, Katakana, and Kanji. Additionally, Romaji is used to represent Japanese words in the Latin alphabet (English letters). Each of these scripts plays a vital role in Japanese writing and communication.

1. Hiragana (ひらがな)

- What is it?
- Hiragana is a phonetic syllabary consisting of 46 basic characters. Each character represents a specific sound (a syllable).
- Usage:
 - Used to write native Japanese words and grammatical elements such as particles and verb endings.
 - Essential for beginners to learn Japanese because it forms the basic foundation of the language.
 - For example, the word for “water” is みず (mizu) written in Hiragana.
- Example Characters:
 - あ (a), い (i), う (u), え (e), お (o)
 - か (ka), き (ki), く (ku), け (ke), こ (ko)

2. Katakana (カタカナ)

- What is it?
- Katakana is also a phonetic syllabary with the same sounds as Hiragana but with different characters.
- Usage:
 - Primarily used for foreign words, loanwords, names, onomatopoeia, scientific names, and emphasis.
 - For example, “coffee” is コーヒー (kōhī), written in Katakana.
 - It’s also used in advertisements and manga for stylistic effects.
- Example Characters:
 - ア (a), イ (i), ウ (u), エ (e), オ (o)
 - カ (ka), キ (ki), ク (ku), ケ (ke), コ (ko)

3. Kanji (漢字)

- What is it?
- Kanji are logographic characters borrowed from Chinese, each representing a meaning or concept rather than just a sound.
- Usage:
 - Used for nouns, stems of verbs, adjectives, and many common words.
 - Each Kanji can have multiple pronunciations depending on context (called “on’yomi” and “kun’yomi”).
 - Example: The Kanji 水 means “water” and is read as “mizu” in Japanese.
- Challenge:
- There are thousands of Kanji characters, but literacy requires knowledge of about 2,000 commonly used ones.

4. Romaji (ローマ字)

- What is it?
- Romaji is the representation of Japanese sounds using the Latin alphabet (English letters).
- Usage:
 - Used for teaching Japanese to beginners worldwide.
 - Used for typing Japanese on keyboards (input method).
 - Used in signage, passports, and in some advertising to help non-Japanese speakers read Japanese words.
- Example:
 - こんにちは is written as “konnichiwa” in Romaji.
 - 水 is “mizu”.
- Note:
- Romaji is not used in native Japanese writing but serves as a learning and input aid.

Dr.A Srinivas Pavan Kumar
Associate Professor, Mech

“EVERY WORD ECHOES ANCIENT TRADITION.”

Health & Fitness in Daily Life: A Journey Within

“Health is not just about what you’re eating. It’s also about what you’re thinking, saying, and doing.”

In the chaos of deadlines, digital devices, traffic, and to-do lists, one vital priority is often forgotten—our own well-being. The concept of health and fitness isn't merely about six-pack abs or restrictive diets; it's about balance, energy, and longevity. It is about waking up refreshed, staying active through the day, and sleeping peacefully at night. It is the art of living well—not just existing.

The Foundation: Daily Habits That Heal

Each day is a new chance to love your body, sharpen your mind, and lift your spirit. The way we start and spend our day can either build or break our health.

1. Rise with the Sun

Waking up early aligns our body clock with nature. It allows time for self-care—yoga, a morning walk, or silent reflection.

“Win the morning, and you win the day.”

2. Hydrate First

Begin your day with a glass of lukewarm water. Add lemon or tulsi for detox benefits. Our body is 70% water—hydration is fuel.

3. Move Daily

Be it walking, jogging, stretching, dancing, or cycling—30 minutes of movement is non-negotiable. It boosts heart health, improves focus, and elevates mood by releasing endorphins.

4. Balanced Nutrition

A plate filled with colors—greens, grains, fruits, nuts, and natural proteins—nourishes your body. Avoid ultra-processed, oily, or sugary temptations that drain energy.

Dr. A C Uma Maheshwar Rao

Associate Professor, Mech

5. Mental Fitness

Meditation, journaling, reading, or a screen-free hour daily helps cleanse the mental clutter. Remember, mental health is as important as physical health.

“FITNESS IS NOT A DESTINATION—IT’S A LIFESTYLE.”

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Mr Dheeraj Joshi
Assistant Professor, Mech

3	1	6	9	5	7	2	8	4
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“THE BRAVE WHO GUARD OUR SLEEP”

They walk where silence dares not stay,
 Through dust and fire, both night and day.
 With hearts of steel and eyes so wide,
 They guard the land with humble pride.
 They do not ask for golden fame,
 They fight and fall without a name.
 No trumpet calls, no roses bloom,
 Just echoes near a soldier's tomb.
 They leave behind a child's sweet face,
 A mother's prayer, a warm embrace.
 Their boots have crossed both hill and plain,
 Their blood has blessed this country's name.
 They hold their breath on snowy nights,
 And never flinch in fatal fights.
 No letter home, no peaceful bed —
 Their dreams are made of tears unsaid.
 Yet through it all, they stand so still,
 Their courage stronger than their will.
 For every dawn we safely see,
 A soldier stood to keep it free.
 For every song the children sing,
 A soldier fought defending spring.
 Let's not forget their silent grace,
 Their absence in a once-loved place.
 Each fallen soul, each battle scar,
 Has shaped the peace in who we are.
 So raise the flag, but bow your head —
 And softly thank the valiant dead.
 They gave us all, their youth, their years,
 Their final breath, their deepest fears.
 And those who live still guard the line,
 With grit and hope and light divine.
 For freedom's price is steep and true —
 And soldiers paid it all for you.

B Siddarth Naik - 21881A0324

“THE LIGHT OF THE TEACHER”

A chalk-stained hand, a steady gaze,
 A voice that lights our earliest days.
 They shape the mind, they guide the way,
 They plant the thoughts that bloom and stay.
 They speak of stars and lands unknown,
 They teach us how the seeds are sown.
 From numbers small to dreams so wide,
 A teacher walks right by our side.
 They see the spark before it glows,
 They water hope until it grows.
 They lift us when the skies are grey,
 And show the path, then step away.
 They write on boards, but more than that —
 They write on hearts, both thin and fat.
 No crown they wear, no grand reward,
 Yet in their care, the world is stored.
 For every book, for every line,
 A teacher's love is the design.
 They open doors, they give the key,
 They help the smallest soul to see.
 Their lessons stretch beyond the bell,
 They cast a long, enduring spell.
 They shape the leaders yet to rise,
 With gentle hands and watchful eyes.
 So let us bow and speak with grace,
 To honor those who light this place.
 For every step, and every start —
 A teacher built that beating heart.

E Harini -20881A0314



B Mahesh - 2285A0302



D Sri Ram Varshith - 22885A0306

"A SINGLE SKETCH CAN SAY EVERYTHING."

The Battery and the Blackboard – A Story on Energy, Equity, and Hope

In the hilly village of Rampur Ghat, nestled deep in the shadows of tall pine trees, stood a small government school — cracked walls, wooden benches, and a single dusty blackboard. Yet, the school glowed — not because of light bulbs (there were none), but because of a teacher named Mr. Balan, and a girl named Champa.

Champa was 11, full of curiosity and questions. She walked 3 km every morning through fog and forest, her notebook tucked under her arm. One rainy day, lightning struck the school transformer. Electricity was gone for weeks. While other students stayed home, Champa kept coming. “I don’t mind the dark,” she said. “I just need to learn.”

Moved by her spirit, Mr. Balan carried an old battery-operated LED lamp from home each day. They’d huddle under its light — teacher and student — solving math, reading poems, drawing maps. Word spread. Soon, two children joined. Then five. Then the whole class.

Inspired by their dedication, a local youth group began a crowdfunding campaign. Within months, the school had solar panels, fans, lights, and even a donated projector. A place once dark and forgotten had become a lighthouse of learning.

Champa would go on to represent her district in a national science fair, showcasing a model of a low-cost solar study lamp. She didn’t just receive light — she became the light for others.

Moral of the Story:

When effort meets purpose, even a small battery can power big dreams.

Energy is not just electricity — it’s enthusiasm.

A spark of learning can brighten an entire village.

Let’s ensure no child is left behind — in darkness, or in doubt.

L K Radhika - 22885A0311

The Girl Who Taught Google – A Story on Digital Literacy Awareness

In a dusty government school tucked away in the rural outskirts of Vikarabad, lived a curious 13-year-old girl named Suhani. She had never used a computer, never typed a word on a screen, but she was fascinated by a single word she had overheard from a visitor: “Wi-Fi.”

“What is it?” she wondered. “Does it really connect you to the whole world?”

One day, a mobile digital library van visited Suhani’s school, bringing with it tablets, ebooks, and access to the internet. As her classmates eagerly opened apps and explored Google, Suhani hesitated. She didn’t know where to begin. But instead of walking away, she looked up and asked the librarian,

“How does the internet know everything?”

The librarian smiled and showed her the basics — how to use the search bar, how to ask questions, and how to read answers. That simple moment opened up a world Suhani had never imagined. In the weeks that followed, she explored online science experiments, watched videos on simple coding, and even began reading newspapers in both English and Telugu.

Suhani’s excitement was contagious. She began helping her classmates, translating digital tools into everyday learning. She explained how to use Google to check weather reports, practice math, and even listen to poems. Encouraged by her enthusiasm, the school created a Digital Literacy Club, and Suhani was made its youngest leader.

Her journey didn’t stop there. Years later, Suhani earned a scholarship, pursued computer science, and became a data analyst working on AI-powered tools for rural education — building the very platforms she once struggled to understand.

Moral of the Story:

Digital literacy is no longer a privilege — it is a right.

Empowering children, especially in rural areas, with access to technology and the skills to use it can bridge the widest gaps — of geography, of opportunity, and of time.

P Karthik Reddy - 21881A0321

“EVERY STORY TEACHES, IF YOU LISTEN.”

The Locked Diary – A Story on Child Abuse Awareness

In the quiet neighborhood of Chitrakoot, 12-year-old Anvi stood out not for her voice, but for her silence. A bright student with elegant handwriting and a gentle presence, she often kept to herself — skipping games, avoiding eye contact, and quietly slipping through the school day. Her teachers noticed the change but assumed she was simply shy.

One afternoon, as Anvi packed her bag, her diary fell to the floor. Her teacher picked it up and caught a glimpse of a handwritten line:

"I wish the bad uncle would stop visiting when no one is home."

Alarmed and heartbroken, the teacher took immediate action. The school informed the child protection authorities, and within days, it was confirmed — a close family friend had been abusing Anvi. What followed was not silence but support. With the help of counseling, legal aid, and the care of her school, Anvi began her journey to healing.

Her classmates, once unsure how to help, were educated on empathy, boundaries, and how to support one another without judgment. Teachers were trained in identifying behavioral red flags. The school evolved from a place of routine learning to a haven of emotional safety.

Months later, at a student awareness seminar titled "My Voice Matters," Anvi stood before her peers and said, "One kind question could have changed everything earlier." Her courage inspired many to listen more closely — not just to words, but to silence.

Moral of the Story:

Child abuse thrives in silence. A safe world for children begins with awareness, action, and compassion.

Every child deserves to grow in protection, not fear.

Let's listen. Let's believe. Let's act.

The Message That Vanished – Cyber Crime Awareness

In the buzzing town of Neelapur, where smartphones were as common as schoolbooks, lived Tanay, a 15-year-old gaming enthusiast. Known for his sharp reflexes and online victories, he had built a network of virtual friends across the country. Weekends meant long hours of gaming and chatting online — a space where he felt confident and admired.

One evening, a new teammate sent him a private message:

"Click here to claim free game credits! Only for top players like you!"

Tanay clicked without hesitation. At first, nothing seemed odd, but soon his phone slowed down. His photo gallery disappeared. Passwords stopped working. Embarrassed and confused, he told no one. Days later, his social media account began sending offensive messages to classmates. Shocked and ashamed, he was summoned by the principal. Trembling, he admitted what had happened.

Instead of punishment, Tanay found support. The school invited a cybercrime officer, who spoke about phishing, fake links, and safe browsing. Students were taught about strong passwords, reporting suspicious activity, and how to protect their digital identity.

Inspired, Tanay helped form the Cyber Safe Club — a student team that created awareness through posters, workshops, and digital hygiene sessions. From victim to leader, Tanay turned his mistake into a mission to protect others.

Moral of the Story:

The internet is powerful, but not always safe. One careless click can open doors to digital theft and harassment. Awareness is the best antivirus.

Stay alert. Stay secure.

Smart surfing begins with smart choices.

! Tejaswini - 21881A0312

"TRUE COURAGE IS DOING RIGHT SILENTLY."

In today's fast-evolving academic and professional landscape, learning is no longer confined to the four walls of a classroom. The rise of Massive Open Online Courses (MOOCs) has transformed the way students, professionals, and lifelong learners access knowledge, develop skills, and stay industry-ready.

MOOCs are online courses offered by reputed institutions, universities, and industry leaders—open to anyone with an internet connection. These platforms offer flexibility, affordability, and access to top-quality content created by global experts. From basic programming to AI, design thinking to digital marketing, there is a MOOC for nearly every field imaginable.

NPTEL – India's Knowledge Powerhouse

The National Programme on Technology Enhanced Learning (NPTEL), an initiative by IITs and IISc under the Ministry of Education, Government of India, is one of the most trusted platforms for engineering students in India. It offers video lectures, assignments, certification exams, and discussion forums for a wide range of subjects. NPTEL certifications are widely recognized by academic institutions and industries alike.

Coursera – Learn from World-Class Universities

Coursera partners with top global universities like Stanford, Yale, and companies like Google to deliver university-style education in an online format. Its "Professional Certificates" and "Specializations" help learners build job-relevant skills. Courses often include interactive videos, peer-graded assignments, and capstone projects.

Udemy – Skills for the Real World

Unlike traditional university platforms, Udemy is a marketplace for learning where industry professionals create practical courses across areas like Python, photography, entrepreneurship, personal development, and more. Students love its lifetime access model and wide variety of topics.

K Sai Kiran - 20881A0323

In today's education landscape, academic excellence is no longer limited to classroom achievements. Institutions now emphasize the holistic development of students through value-based engagement, social responsibility, and national service. Two of the most impactful platforms that blend learning with leadership are the National Service Scheme (NSS) and the National Cadet Corps (NCC).

Both NSS and NCC serve as dynamic vehicles for channeling youthful energy toward nation-building, community welfare, and personal growth. These programs instill qualities such as discipline, empathy, physical fitness, patriotism, time management, and social awareness. Whether in urban universities or rural colleges, participation in NSS and NCC adds substantial weight to a student's profile for higher studies, government services, and global opportunities.

How NSS and NCC Support the SDGs

By design, NSS and NCC align deeply with the United Nations Sustainable Development Goals (SDGs). Their activities contribute directly to achieving several of these global targets. Some key connections include:

- **SDG 1 – No Poverty:** NSS volunteers conduct financial literacy programs and teach vocational skills in rural and slum communities. NCC cadets participate in relief distribution and awareness campaigns for marginalized families during crises.
- **SDG 2 – Zero Hunger:** Students organize food donation drives, work with NGOs to feed the homeless, and raise awareness about nutrition and food security, especially in tribal and backward regions.
- **SDG 3 – Good Health and Well-being:** Health camps, blood donation drives, menstrual hygiene awareness, and fitness initiatives like yoga are actively promoted by NSS. NCC cadets support disaster response efforts and are trained in first aid and emergency care.
- **SDG 4 – Quality Education:** Volunteers teach underprivileged children, run literacy campaigns, and conduct digital learning workshops, contributing to education access in underserved communities.

"NOT ALL HEROES WEAR UNIFORMS — SOME SERVE IN SILENCE."

- **SDG 5 – Gender Equality:** Both NSS and NCC ensure inclusive participation. NSS often leads women’s health campaigns and gender sensitization drives, while NCC trains both boys and girls equally, offering leadership and self-defense skills to young women.
- **SDG 6 – Clean Water and Sanitation:** Students conduct cleanliness drives under Swachh Bharat, promote handwashing, and campaign for safe drinking water practices in villages.
- **SDG 11 – Sustainable Cities and Communities:** By engaging in tree plantation, eco-club activities, plastic-free campaigns, and community cleanliness initiatives, NSS and NCC promote sustainability in both urban and rural settings.
- **SDG 13 – Climate Action:** Awareness campaigns on climate change, waste segregation, and conservation practices are integral to their service camps and annual activities.

Why Every Student Should Join

Joining NSS or NCC is not just about serving the community — it's about transforming oneself into a responsible, aware, and capable citizen. Students experience teamwork, fieldwork, leadership, and decision-making — real-life lessons that enhance their careers and character. They get opportunities to work with government departments, NGOs, and institutions at national and international levels.

Beyond the badges, uniforms, or certificates lies a deeper reward — the satisfaction of being part of a cause greater than oneself. Whether you are cleaning a riverbank, teaching a child, rescuing flood victims, or planting trees, you are building a better India and contributing to a better world.

NSS and NCC are not side activities — they are stepping stones to a life of purpose, passion, and public service.

Join NSS to serve with compassion. Join NCC to lead with courage. Join now to build the future you wish to see.

GSV Krishna Aditya - 20881A0317

“IN GIVING, WE GROW. IN SERVICE, WE SHINE.”