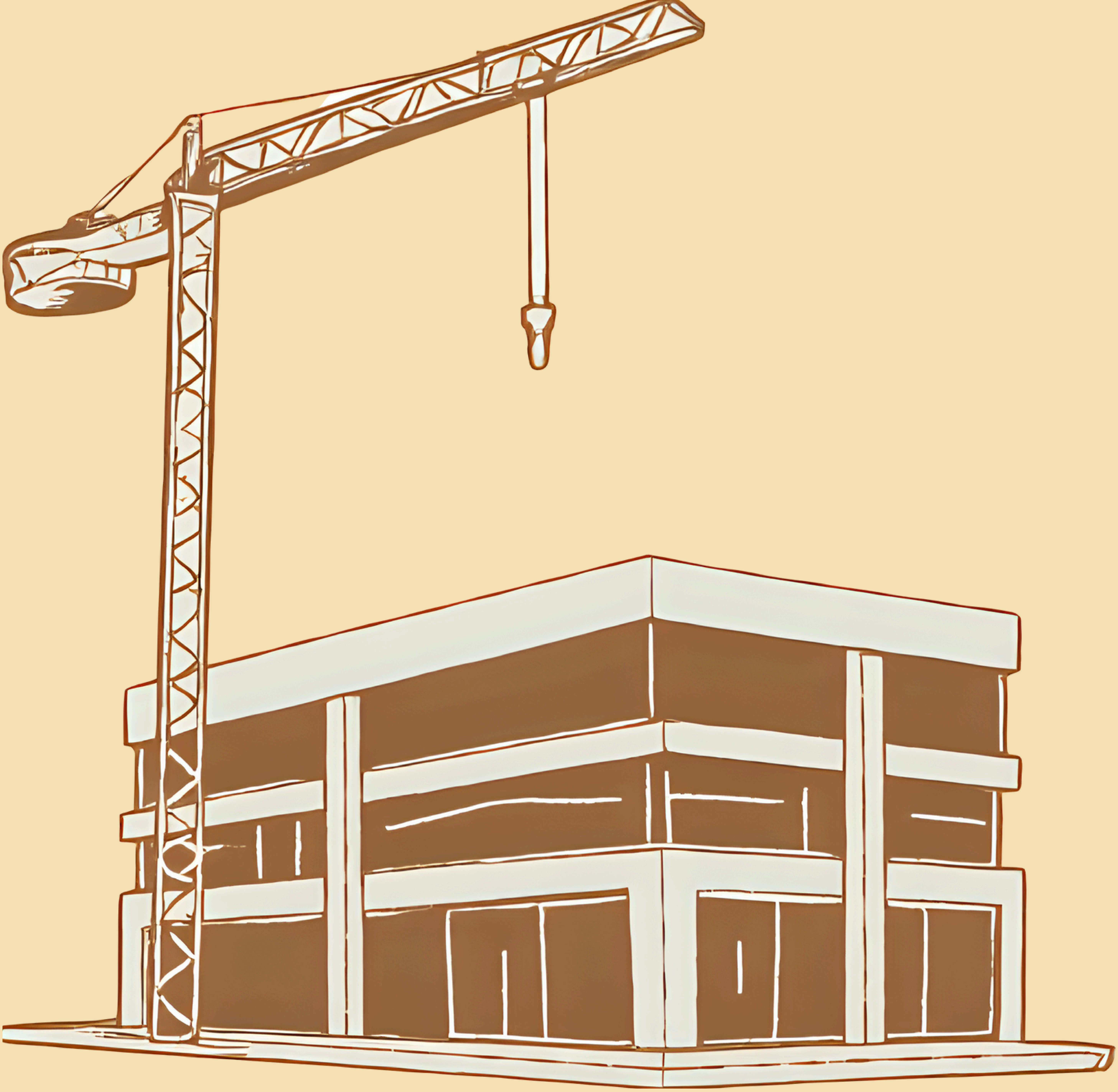

VIVEKANAND EDUCATION SOCIETY'S POLYTECHNIC

CIVIL ENGINEERING NEWS LETTER 2025-26

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Program Educational Objectives

PEO 1:
Demonstrate technical and management competence to lead or contribute to the execution of civil engineering projects.

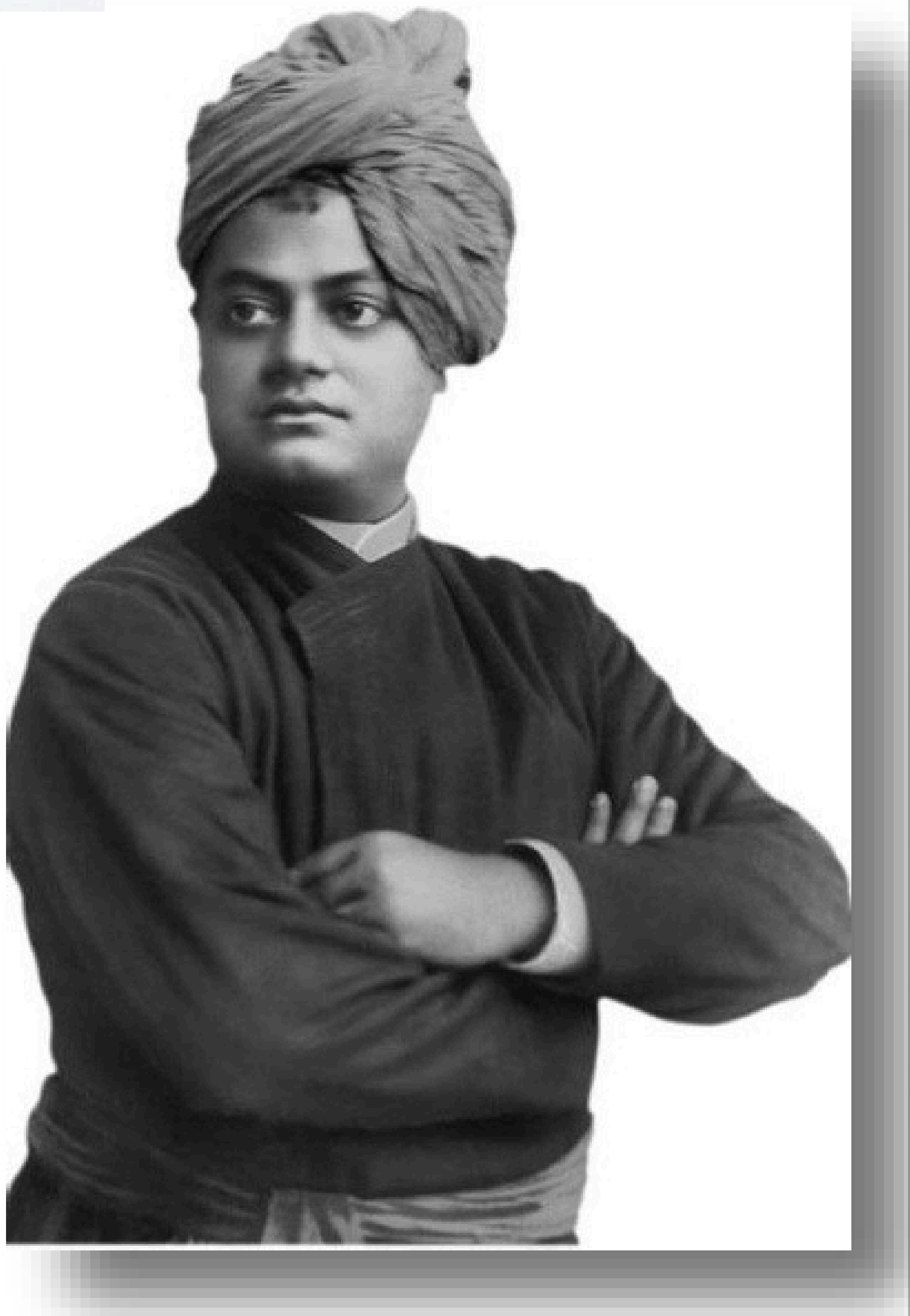
PEO 2:
Pursue successful careers in the public or private sector, advance toward professional licensure, and take on roles of increasing responsibility.

PEO 3:
Understand the impact of engineering solutions on society and the environment and commit to principles of sustainable development.

Program Specific Objectives

PSO 1:
Applyfundamental engineering principles to analyze, formulate, and solve complex civil engineering problems in areas such as structural, geotechnical, and environmental engineering.

PSO 2:
Use of modern tools: Effectively use modern engineering techniques, software, and computational tools for the prediction, modeling, and design of complex engineering systems.



"The education that you are getting now has some good points, but it has a tremendous disadvantage which is so great that the good things are all weighed down."

Result Analysis

Analysis for the Academic Year 2025-26

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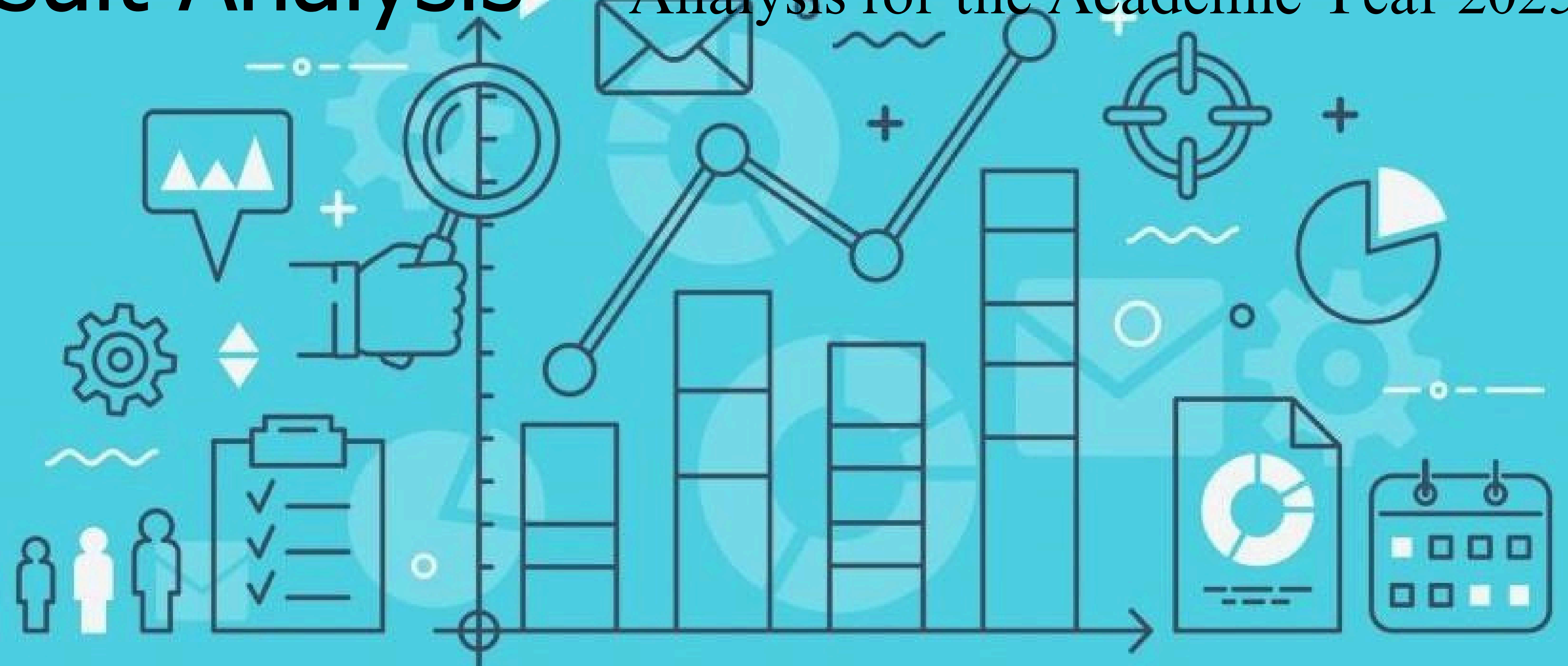

Activities | Guest Lectures

Guest Lectures conducted by industrial experts for the academic year 2025-2026

Sr. No.	Date	Program Code	Course Name	Topic	Industrial Expert Name	Designation	Organization	Number of students attended/ participated
1	2/8/2025	CE3K	EDP Cell	Creating Awareness on Entrepreneurship and Guidance for Establishment of Incubation Centers at Hub Institute	Dr. Prajakta Joshi, Founder, PWST & AWEC Foundation	Founder	PWST & AWEC Foundation	20
2	2/9/2025	CE3K	VESLARC	Coping with failure and criticism	Sagareeka Das, Counselor, VESLARC	Counselor	VESLARC	42
3	19/9/2025	CE3K	Expert Lecture	Electoral Literacy and Voter's Education	Adv. Vipul Patil	Advocate	Bombay High Court	60
4	20/9/2025	CE1K	EDP Cell	Creating Awareness on Entrepreneurship and Guidance for Establishment of Incubation Centers at Hub Institute	Dr. Prajakta Joshi, Founder, PWST & AWEC Foundation	Founder	PWST & AWEC Foundation	11
5	3/10/2025	CE5K	EDP Cell	Decoding Entrepreneurial Leadership	Dr. Karishma Desai, Founder, KS Publication Pathway	Founder	KS Publication Pathway	5
6	6/10/2025	CE5K	EDP Cell	From Idea to Impact: Understand Incubation and it's benefits	Dr. Jyoti Chandwani, Nodal Officer, H.A.B.I.T Foundation, VES	Nodal Officer	H.A.B.I.T Foundation, VES	39

Activities | Industrial Visits

IndustrialVisits(IVs)fortheacademicyear2025-2026

Sr. No.	Program Code	Course Name	Objectives	Industry/ Organization Name	Address	Date	No. of students participated
1	CE3K	Essence of Indian Constitution	To Gain knowledge about constitution of India	Ms. Sandhya Ambade, Controlling Officer	Bharatratna Dr. Babasaheb Ambedkar Smarak, Airoli, Navi Mumbai	14/8/2025	55
2	CE3K	Concrete Technology	To understand the practical process of production, quality control, and application of Ready Mix Concrete in an RMC plant.	RMC Plant, Turbhe	Gaam UP Infra Pvt. Ltd, Turbhe	26/8/2025	55
3	CE4K	EES	To create awareness about Environment, Ecosystem at Natuere park.	Maharashtra Nature Park, Sion	Sion bandra link road, PMGP Colony, Dharavi 400017	30/12/20...	52

Students Corner|Achievements

Student Activities for the academic year 2025-2026

Co-curricular Activities Details

Sr. No.	Class	Name of students	Event Name	Event Details	Organized by	Dates	Achievement
1	CE5K	Afeef Kazi Ritesh Harkude Hrishikesh Kamble	Technical Paper Presentation	Engineer's Day	VES Polytechnic, Chembur, Mumbai-400071	24/9/2025	First Prize
2	CE5K	Harsh Rahate Pritee Gite Kajal Sangle Madhul Jagtap Manish Chaudhari	Technical Paper Presentation	Engineer's Day	VES Polytechnic, Chembur, Mumbai-400071	24/9/2025	Second Prize
3	CE5K	SAHU JAYSEN CHITRASEN VARADKAR KARAN RAJENDRA DARSHAN BADAR SANGALE KAJAL AMBADAS RAHATE HARSH RAVINDRA WAGHMARE RANJANA DATTATRAY VISHE VEDANT JANARDAN KHUSHI MAHENDRA GHADIGAONKAR GAIKWAD KARUNA LAXMAN HARKUDE RITESH KALYANI WAGHMARE VINIT SARJERAO YADAV KRISHNA KIRTIKUMAR SATYAJEET NAYAK	Spoken Tutorial	OGIS Test Training Program	EduPyramids, Sine, IIT Bombay	8/10/2025	Participation
4	CE3K	SHIRKE NEEL KISHOR DALVI AARYAN RAJESH SWARIT SUBODH SALASKAR CHAITANYA PRASAD SHINDE BHOSALE KARAN MANGESH SINGH TRILOKII RAMNARAYAN CHAVAN NIKHIL YUVRAJ SHRIMUKHAVEDANT PEMBARTHI GURAV DNYANESHWARI RAJAN THAKUR SHOURYA UMAKANT GIRKAR SANSKRUTI SANJAY JUIKAR SARTH CHETAN KADAM PRADNYA ARUN	Spoken Tutorial	OGIS Test Training Program	EduPyramids, Sine, IIT Bombay	8/10/2025	Participation

Students Corner | Achievements

StudentActivitiesfortheacademicyear2025 - 2026
Extra Curricular (2025-26)

Sr. No.	Class	Name of students	Event Name	Event Details	Organized by	Dates	Achievement
1	CE5K	Afeef Kazi Ritesh Harkude Hrishikesh Kamble	Technical Paper Presentation	Engineer's Day	VES Polytechnic, Chembur, Mumbai-400071	24/9/2025	First Prize
2	CE5K	Harsh Rahate Pritee Gite Kajal Sangle Madhul Jagtap Manish Chaudhari	Technical Paper Presentation	Engineer's Day	VES Polytechnic, Chembur, Mumbai-400071	24/9/2025	Second Prize
3	CE3K	Sakshi Kamble	Biopic Reading	Vachan Prerana Divas (Dr. Abdul Kalam Jaynti)	VES Polytechnic, Chembur, Mumbai-400071	15/10/2025	First Prize
4	CE3K	Sanskruti Girkar	Biopic Reading	Vachan Prerana Divas (Dr. Abdul Kalam Jaynti)	VES Polytechnic, Chembur, Mumbai-400071	15/10/2025	Second Prize

ARTIFICIAL INTELLIGENCE (A.I) IN CIVIL ENGINEERING FOR CONSTRUCTION

ArtificialIntelligence(AI) has emerged as atransformativeforceacrossindustries, andcivil engineering is no exception. By integrating AI into planning, design, construction, and maintenance, engineers can enhance efficiency, safety, sustainability, and cost-effectiveness. As civil engineering projects grow in scale and complexity, AI offers innovative tools that help professionals make data- driven decisions and optimize resources.

1. Design and Planning

AI algorithms can analyze large datasets, including environmental conditions, material properties, and structural requirements, to generate optimized designs. Tools like generative design and machine learning assist architects and engineers in creating models that balance cost, durability, and aesthetics.

2. Construction Management

AI-powered systems can forecast project timelines, identify potential delays, and allocate resources efficiently. Machine learning models predict risks, while robotics and autonomous equipment enhance on-site productivity and reduce human error.

3. Structural Health Monitoring Sensors embedded in buildings, bridges, and dams collect real-time data on load, vibration, and material degradation. AI analyzes this information to detect anomalies, predict failures, and schedule preventive maintenance, extending the lifespan of infrastructure.

4. Smart Cities and Infrastructure In smart cities, AI supports traffic management, energy-efficient buildings, and water distribution systems. By processing real-time data from IoT devices, AI enables adaptive infrastructure that responds dynamically to changing demands.

5. Geotechnical Engineering

AI models analyze soil behavior, predict landslides, and assess the stability of slopes and foundations. This improves safety and reduces uncertainties in underground and earth-related projects.

6. Sustainability and Environmental Impact AI aids in designing eco-friendly structures by optimizing material use and reducing carbon footprints. Machine learning also helps assess environmental risks such as floods or earthquakes, enabling resilient infrastructure development.

ARTIFICIAL INTELLIGENCE (A.I) IN CIVIL ENGINEERING FOR CONSTRUCTION

7.Advantages ofAIin Civil Engineering

- Improved efficiency and accuracy in design and construction.
- Cost savings through predictive maintenance and resource optimization.
- Enhanced safety for workers and users of infrastructure.
- Real-time monitoring and decision-making capabilities.
- Greater sustainability and reduced environmental impact.

8. Challenges and Limitations

Despite its potential, AI adoption in civil engineering faces several challenges:

- High implementation costs and the need for skilled personnel.
- Limited availability of quality data for training AI models.
- Resistance to change and lack of awareness in traditional engineering practices.
- Ethical concerns regarding automation and job displacement.

9. Future Prospects The future of AI in civil engineering is promising. With advancements in big data analytics, cloud computing, and robotics, AI will become more accessible and powerful. Future applications may include fully autonomous construction sites, self-healing materials guided by AI, and infrastructure that adapts intelligently to environmental changes. **Conclusion** Artificial Intelligence is revolutionizing civil engineering by improving efficiency, safety, and sustainability. While challenges remain, the integration of AI-driven solutions will continue to reshape how infrastructure is designed, built, and maintained. Embracing AI not only enhances engineering practices but also paves the way for smarter, more resilient societies.

USES OF (A.I) IN CIVIL ENGINEERING

-Rugved Purkar

MATHEMATICAL MODEL FOR PREDICTION OF THE STRENGTH OF SANDCRETE CEMENT BLOCK.

1. Introduction In the construction industry, sandcrete blocks are commonly used in building walls, fences, and partitions. Despite their widespread application, concerns have been raised about their quality and performance due to inconsistent production practices. The compressive strength of a sandcrete block is the most critical factor determining its suitability for structural use. Developing a mathematical model that can reliably predict block strength will serve as a valuable tool for engineers, block makers, and regulatory agencies.

2. Factors Affecting Strength of Sandcrete Blocks

Several variables influence the strength of sandcrete blocks, including:

- Cement-to-sand ratio: Higher cement content typically results in stronger blocks.
- Water-cement ratio: Excess water weakens blocks by increasing porosity.
- Curing method and duration: Proper curing enhances hydration and improves strength.
- Compaction: Adequate compaction reduces voids and increases density.
- Sand quality: Grain size distribution and cleanliness significantly affect block performance.

3. Development of the Mathematical Model To predict the compressive strength fcf_cfc of a sandcrete block, the following general form of a regression-based model can be proposed. This equation integrates the main parameters that influence block strength. The constants can be estimated using regression analysis on laboratory test results.

4. Model Validation

The model should be validated through experimental investigations:

1. Prepare sandcrete blocks with varying mix ratios and curing conditions.
2. Measure compressive strength at different curing ages.
3. Perform regression analysis to fit the model and determine constants.
4. Compare predicted strengths with measured values to evaluate accuracy.

5. Applications of the Model

- Quality control: Ensures blocks meet minimum strength requirements before use. Cost
- optimization: Helps in reducing excess cement usage without compromising strength. Design
- purposes: Provides engineers with a tool to estimate block strength at various ages. Policy and
- standards: Supports regulatory bodies in enforcing compliance with building codes.

6. Conclusion A mathematical model for predicting the strength of sandcrete blocks provides a scientific and practical approach to quality assurance in construction. By considering key factors such as cement-sand ratio, water-cement ratio, curing time, and block density, the model ensures more reliable production and use of sandcrete blocks. Future research can refine this model by incorporating additional variables such as admixtures and environmental curing conditions.

-Vedant Vishe

CLIMATE CHANGE ADAPTATION IN INFRASTRUCTURE DESIGN

1. Introduction Infrastructure—roads, bridges, buildings, water supply systems, and energy networks—forms the backbone of socioeconomic development. However, these assets are increasingly exposed to climate-related hazards such as flooding, heatwaves, storms, and droughts. The economic and social costs of infrastructure failure are enormous, especially in developing regions with limited adaptive capacity. To safeguard investments and ensure long-term functionality, infrastructure design must integrate climate adaptation strategies.

2. Climate Risks to Infrastructure
Some of the major risks posed by climate change include:

- Flooding and sea-level rise: Damage to roads, railways, coastal defenses, and drainage systems.
- Temperature extremes: Asphalt softening, concrete cracking, and rail track buckling.
- Storms and high winds: Structural failures of bridges, transmission lines, and roofs.
- Water scarcity: Reduced reliability of hydropower and irrigation infrastructure.
- Ecosystem changes: Soil erosion and landslides affecting foundations and slopes.

3. Principles of Climate-Resilient Infrastructure Design
To adapt infrastructure systems to climate change, several key principles are essential:

1. Risk-based planning: Incorporating climate projections rather than relying solely on historical climate data.
2. Flexibility and adaptability: Designing infrastructure that can be upgraded or retrofitted as conditions change.
3. Nature-based solutions: Using green infrastructure such as wetlands, mangroves, and permeable surfaces to complement traditional engineering.
4. Redundancy and robustness: Ensuring multiple systems can provide backup in case of failure.
5. Sustainability and low-carbon approaches: Reducing greenhouse gas emissions while adapting to impacts.

4. Adaptation Strategies in Practice
Examples of adaptation strategies include:

- Transport infrastructure: Elevated roadways, climate-resilient pavements, stormwater drainage improvements.
- Buildings: Passive cooling designs, flood-proof foundations, use of durable construction materials.
- Water systems: Reservoir redesign, integrated urban water management, desalination technologies.
-

5. Challenges in Implementation
Despite the recognized importance of climate-resilient design, several barriers exist:

- Uncertainty in climate projections: Difficulty in translating global models into local design parameters.
- High upfront costs: Adaptation measures may increase initial investment requirements.
- Policy and governance gaps: Weak enforcement of building codes and standards in many regions.
- Limited technical expertise: Lack of training and awareness among engineers and planners.
- Equity considerations: Ensuring adaptation measures benefit vulnerable populations.

-Bharat Suthar

Students Corner | Sketches

Student Activities for the academic year 2025-26

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