



**GEMS POLYTECHNIC COLLEGE**

**DEPARTMENT OF  
CIVIL ENGINEERING**



**Volume : 10 Issue : 1**

**July – Dec, 2025**

**Build-Up  
Bulletin**

**CIVIL ENGINEERING DEPARTMENT**

**NEWSLETTER**

**VOLUME 10 ISSUE 1**

[www.gemspolytechnic.edu.in](http://www.gemspolytechnic.edu.in)



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## TABLE OF CONTENT

- Vision, Mission, PEO's & PSO's of Civil Engineering
- Virtual Lab
- Site Visit
- Add-on Course on AutoCAD
- Webinar/Guest Lecture: Civil Softwares for Career Development
- Model Making Competition
- Industrial Visit
- Project Review

## PROGRAM EDUCATIONAL OBJECTIVES:

PEO1: To produce diploma graduates with a strong foundation in civil engineering who can contribute to feasible and sustainable solutions for societal and community-based engineering problems.

PEO2: To enhance the capability of graduates to adopt emerging techniques for planning, analysis, design, and execution of civil engineering projects through lifelong learning To imbibe professional ethics, responsibility, and commitment among graduates toward society and the environment.

## FROM HOD'S DESK



**Mr. Samuel Prakash Swami**  
HOD of Civil Engineering Department

 Dear GEMS Polytechnic Community,

As we present Volume 7, Issue 1 of our newsletter, I take pride in the steady growth of the Civil Engineering Department since its inception in 2015. Our focus remains on quality engineering education in design, construction, and environmental sustainability.

Beyond academics, we aim to empower our students to contribute meaningfully to regional and national development through skill, ethics, and innovation.

Thank you to our faculty, students, and stakeholders for your continued support.

## VISION OF THE DEPARTMENT

Empowering the students in technical education and Excel those in the field of Civil Engineering with concern of socio-economic development of region, state and nation.

## MISSION OF THE DEPARTMENT

M1 : To provide a platform for students to develop skills, knowledge and wisdom in various aspects of Civil Engineering.

M2 :To inculcate ethical and moral values among the students.

M3 :To encourage students to pursue higher education and take competitive exams.

## PROGRAM SPECIFIC OUTCOMES

PSO1: Graduates will apply mathematics, basic sciences, and core civil engineering knowledge to identify and solve well-defined engineering problems.

PSO2: Graduates will plan, analyze, design, and prepare specifications and cost estimates for civil engineering works using relevant standards and tools.

PSO3: Graduates will use technical skills and basic project management practices to plan, supervise, and execute civil engineering tasks safely and efficiently.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## NEWSLETTER EDITORIAL BOARD

### Editorial Team



**Mr. Samuel Prakash Swami, HOD, Civil Engineering**

I am pleased to present this edition of the Civil Engineering Department bulletin, showcasing key academic initiatives, activities, and achievements. It reflects our commitment to Outcome-Based Education and the overall development of our students. I hope this bulletin informs and inspires all readers.

— Patron, Build-Up Bulletin



**Mr. Ravi Ranjan Kumar, Lecturer**

I am pleased to present this edition of the Civil Engineering Department bulletin, highlighting key activities, achievements, and academic initiatives. It reflects our commitment to Outcome-Based Education and the holistic development of our students. I hope it inspires and informs all readers.

— Chief Editor, Build-Up Bulletin



**Mr. Daniel Swami, Lecturer**

I am pleased to present this edition of the Build-Up Bulletin of the Civil Engineering Department, highlighting key activities and achievements in line with Outcome-Based Education.

— Associate Editor Build-Up Bulletin



**Aakash Kumar (3rd Year)**

I am glad to be part of this edition of the Build-Up Bulletin, which showcases the activities and achievements of our Civil Engineering Department.

— Student Editor, Build-Up Bulletin



**Mr. Rohit Kumar, (2nd Year)**

I am happy to assist in compiling and organizing content that reflects the learning and achievements of our department.

—Content Coordinator, Build-Up Bulletin



**Vaishali Kumari (3rd Year)**

I am pleased to contribute as a Student Writer to this edition of the Build-Up Bulletin, sharing student activities, and departmental highlights.

—Student Writer/Contributor, Build-Up Bulletin



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Regular Monthly Virtual Laboratory Practices

### The Unstoppable Student: Keeping Practical Knowledge Continuous.



### Virtual laboratories are conducted regularly to enhance practical understanding and ensure continuous, technology-enabled learning.

The Department of Civil Engineering successfully conducted virtual laboratory sessions every month, ensuring continuous practical exposure and conceptual clarity for students through digital learning platforms. The series began with the Surveying Laboratory session on 29 July 2025, where students studied the various parts and working of an Auto Level, enhancing their understanding of modern surveying instruments. This was followed by the Concrete Technology Laboratory virtual experiment on 21 August 2025 focusing on the Los Angeles Abrasion Test on Aggregates, helping students understand aggregate strength and durability. On 12 September 2025, a virtual session on the Brinell Hardness Test was conducted to explain material hardness characteristics, and the series concluded on 10 October 2025 with an advanced Ultrasonic Pulse Velocity Test of Concrete, exposing students to non-destructive testing techniques. These monthly virtual labs effectively bridged theory with practice and promoted flexible, technology-enabled learning.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Site Visit

Dated: 01-08-2025

### Bridging the Gap: Real-World Lessons from the Job Site.

Bridging the gap between classroom learning and industry practice, this immersive job-site experience ignited curiosity, confidence, and competence among our students. Stepping into real-world construction environments, they witnessed theories come alive—materials in motion, measurements with meaning, and teamwork driving tangible progress. From understanding on-site challenges to observing professional problem-solving and safety practices, the exposure sharpened technical skills while inspiring a deeper appreciation for the engineering profession. This hands-on engagement didn't just teach concepts—it fueled passion, strengthened industry readiness, and empowered students to envision themselves as future builders shaping the world with purpose and pride.



The Department of Civil Engineering organized a comprehensive site visit on irrigation techniques with the objective of providing students valuable practical exposure to agricultural water management practices and rural infrastructure systems. During the visit, students closely observed various irrigation methods such as canal irrigation, surface irrigation, and modern drip irrigation systems, gaining insights into their design, operation, efficiency, and suitability under different soil and field conditions. Resource persons and field experts elaborated on the importance of timely and adequate water supply, particularly for Kharif crops cultivated during the monsoon season, and discussed challenges related to water distribution, losses, and conservation. Students learned about major Kharif phasal grown in the region, their water requirements at different growth stages, and the impact of proper irrigation planning on crop yield, productivity, and sustainability. The interaction also highlighted the role of civil engineers in developing efficient irrigation networks, promoting water-use efficiency, and supporting rural development. Overall, the visit proved to be highly informative and enriching, effectively bridging the gap between classroom learning and real-field applications while strengthening students' understanding of irrigation engineering, agriculture-linked infrastructure, and sustainable development practices.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Add-on Course on AutoCAD

Dated: 8/09/2025-10/09/2025

### If You Can Dream It, You Can Draft It.

Through hands-on practice, students learn to convert creative ideas and conceptual thoughts into accurate plans, elevations, and layouts using professional drafting tools. AutoCAD empowers learners to visualize their dreams, refine them with technical accuracy, and present them with clarity and confidence. This process not only nurtures creativity but also builds strong design thinking and practical skills, inspiring students to believe that every great structure begins as a dream—and with the right tools and training, that dream can be successfully drafted into reality.



The hands-on training on AutoCAD was conducted in an energetic and highly engaging manner, creating a vibrant learning atmosphere in the lab. Students enthusiastically participated in practical sessions where they learned to draft building plans, elevations, sections, and basic layouts by working directly on the software. Step-by-step demonstrations using a projector helped students clearly understand commands, tools, layers, dimensioning, and drafting standards, while individual practice ensured skill development at a personal pace. The training emphasized learning by doing, enabling students to translate theoretical knowledge into precise technical drawings. This immersive experience not only enhanced their confidence and drafting accuracy but also strengthened their problem-solving abilities and industry-oriented skills, preparing them effectively for real-world civil engineering applications and future professional challenges.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Webinar on “Civil Engineering Softwares for Career Success”

Dated: 19-09-2025



**PRATYAM PRAKASH**  
ALUMINI GPC  
JUNIOR ENGINEER AT IOCL

A Webinar on “Civil Engineering Softwares for Career Success” was successfully conducted to create awareness among students about the importance of digital tools in the modern construction industry. The session highlighted the practical applications and career benefits of widely used civil engineering software such as AutoCAD, STAAD, ETABS, Revit, and basic BIM tools. Students gained insights into how these software skills enhance employability, improve design efficiency, and support professional growth in areas like planning, analysis, drafting, and project management. The webinar was interactive and informative, motivating students to upskill themselves in industry-oriented software for a successful career in civil engineering.

The Webinar on “Civil Engineering Softwares for Career Success” was successfully organized to provide students with a clear understanding of the growing role of digital tools in the modern civil engineering industry. The session offered valuable exposure to widely used professional software such as AutoCAD, STAAD, ETABS, Revit, and BIM-based applications, emphasizing their practical applications in planning, design, analysis, and execution of civil engineering projects. Expert speakers shared real-world experiences and industry expectations, helping students understand how software proficiency bridges the gap between academic learning and professional practice. The webinar also focused on emerging career opportunities, skill requirements, and the importance of continuous learning in a technology-driven construction sector. Interactive discussions, real-life examples, and career guidance inspired students to enhance their technical competencies and adopt a proactive approach toward skill development. Overall, the webinar served as a motivating and informative platform, encouraging students to embrace modern engineering tools and prepare themselves for successful and sustainable careers in civil engineering.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Model Making Competition

Dated: 06/10/2025

### Miniature Marvels: Big Ideas on a Small Scale.

highlights the creativity and technical skills of students as they transform complex civil engineering concepts into impactful small-scale models. These models reflect innovative thinking, practical understanding, and the ability to present big ideas through precise and thoughtful design.



Hospital Building Design & Layout  
Aakash kumar civil 3<sup>rd</sup> year



Rural Building Design & Layout  
Sweta Kumari civil 2<sup>nd</sup> Year



Hospital Building Design & Layout  
Santanu kumar civil 3<sup>rd</sup> year



Hospital Building Design & Layout  
Ranju Kumari civil 3<sup>rd</sup> year



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Industrial Visit

Dated: 16-10-2025

### Hydraulics in Action: A Deep Dive into Dam Operations.

Through the study of dam components such as spillways, gates, and outlets, students gain practical insight into flow regulation, pressure management, and energy dissipation—connecting classroom hydraulics with large-scale civil engineering applications.



An industrial visit to Karamchad Dam was organized for civil engineering students to gain practical exposure to irrigation engineering and water resource management. During the visit, students learned about the purpose of the dam, its structural components such as the embankment, spillway, and outlet works, and its role in irrigation and flood control. The engineers explained the functioning of the canal distribution system and how stored water supports agricultural activities, especially during the Kharif season. Students also observed maintenance practices, safety measures, and the importance of sustainable water utilization. The visit effectively bridged the gap between theoretical knowledge and real-world applications, enhancing students' understanding of irrigation structures.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Minor Projects

Dated: 31-10-2025

### Blueprints to Beta: Watching Theory Transform into Reality

journey where classroom concepts come alive through practical application. It highlights how ideas sketched on paper evolve into real-world models, designs, and solutions—empowering students to bridge the gap between theory and hands-on experience with confidence and creativity.



The Department of Civil Engineering organized a site visit on irrigation techniques to provide students with practical exposure to agricultural water management practices. During the visit, students observed various irrigation methods such as canal irrigation, surface irrigation, and modern drip systems, understanding their suitability under different field conditions. The resource persons explained the importance of timely and adequate water supply for Kharif crops, which are cultivated during the monsoon season. Students also learned about major Kharif phasal grown in the region, water requirements at different crop stages, and the role of irrigation in improving crop yield and sustainability. The visit effectively bridged the gap between classroom learning and real-field applications, enhancing students' understanding of irrigation engineering and rural development.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Alumni Article

Dated: 12-11-2025



### Role of Civil Engineers in Disaster-Resilient Infrastructure

By Anjali Kumari  
2022-25 CE

Natural disasters such as earthquakes, floods, cyclones, and landslides pose serious challenges to infrastructure and human safety. In this context, civil engineers play a crucial role in planning, designing, and constructing disaster-resilient infrastructure that can withstand extreme conditions and minimize loss of life and property. Disaster-resilient design involves proper site selection, use of suitable construction materials, adherence to seismic and flood-resistant codes, and incorporation of safety features such as proper drainage systems and structural reinforcements. Advanced tools like computer-aided design, simulation software, and early warning systems further enhance preparedness and response. By integrating engineering knowledge with risk assessment and sustainability principles, civil engineers contribute significantly to building safer communities. Developing resilient infrastructure is not only a technical responsibility but also a social commitment toward protecting lives and ensuring long-term development.

civil engineers play a vital role in creating disaster-resilient infrastructure that protects lives, supports economic stability, and ensures rapid recovery after calamities. By combining engineering expertise, innovation, and social responsibility, civil engineers act as nation builders who strengthen communities against uncertainties of the future. Developing resilient infrastructure is not merely an engineering task—it is a commitment to safety, sustainability, and societal well-being.



### Artificial Intelligence and Digitalization in Civil Engineering

By Gaurav Kumar  
(2022–25 CE)

Artificial Intelligence (AI) and digitalization are transforming the field of civil engineering by making planning, design, construction, and maintenance more efficient and intelligent. Advanced tools such as AI-driven design optimization, Building Information Modeling (BIM), digital twins, and data analytics enable engineers to predict project outcomes, reduce errors, and improve decision-making. Automation and smart technologies enhance construction quality, safety, and productivity while minimizing time and cost overruns. Digital platforms also support sustainable practices by optimizing resource usage and monitoring infrastructure performance throughout its lifecycle. As the industry moves toward smart cities and sustainable infrastructure, AI and digitalization are becoming essential skills for future-ready civil engineers, opening new opportunities for innovation and career growth.





# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Student Article

Dated: 14-11-2025



### Building Information Modeling (BIM): Transforming Modern Civil Engineering

By Neha Kumari  
(2024–27 CE)

Building Information Modeling (BIM) is rapidly redefining the landscape of modern civil engineering, marking a significant shift from traditional 2D drafting to intelligent, data-rich digital construction. Across the globe, infrastructure projects are increasingly adopting BIM to improve accuracy, coordination, and efficiency at every stage of a project. For today's civil engineering students, BIM is emerging not just as a tool, but as a powerful platform that connects design, construction, and facility management into a single integrated workflow.

What makes BIM truly transformative is its ability to visualize projects before they are built. Through 3D models, engineers can detect clashes between structural, architectural, and service components well in advance, thereby reducing costly errors and delays on site. BIM also supports time and cost management through 4D and 5D modeling, enabling better planning, scheduling, and budget control. This digital approach enhances teamwork among engineers, architects, and contractors, creating a transparent and collaborative project environment.



BIM is not just transforming how structures are built; it is shaping how the next generation of civil engineers think, learn, and innovate toward a smarter and more efficient future.



### Green Concrete: A Sustainable Solution for Future Construction

By Ruhi Singh  
(2023–26 CE)

With growing environmental concerns, green concrete is emerging as a game-changing innovation in civil engineering. Unlike conventional concrete, green concrete uses industrial waste materials such as fly ash, slag, and recycled aggregates, reducing carbon emissions and conserving natural resources. This eco-friendly alternative not only improves durability and strength but also supports sustainable construction practices. For today's civil engineering students, learning about green concrete opens doors to environmentally responsible design and future-focused careers. As the world moves toward sustainable infrastructure, green concrete stands as a strong step toward building a cleaner and greener tomorrow.



Governments and construction industries are increasingly encouraging the use of green materials through sustainable building codes and green rating systems. For aspiring civil engineers, understanding green concrete technology is not only academically important but also essential for contributing to climate-resilient and sustainable infrastructure. By adopting such innovative materials, civil engineers can play a vital role in balancing development with environmental protection.



# Build-Up Bulletin

Volume 10, Issue 1 | July- Dec, 2025



## Academic Excellence: Toppers' Achievements & Student Reflections

Dated: 01-08-2025

### Hall of Fame: Celebrating Our Academic Champions.

students who have achieved outstanding academic excellence through hard work and dedication. Their achievements inspire peers to strive for higher goals and reflect the strong academic culture of the department. We proudly celebrate these champions and their commitment to excellence.



Supriya Kumari -3<sup>rd</sup> year  
9.51 CGPA



Vaishali Kumari -2<sup>nd</sup> year  
651/750



Rohit Kumar -1<sup>st</sup> year  
873/1000



The outstanding achievements of our academic toppers stand as a source of inspiration for the entire student community. Through consistent effort, effective time management, and strong conceptual understanding, these students have set remarkable benchmarks of success. Their achievements not only bring pride to the institution but also highlight the quality of teaching-learning practices followed by the department.

Along with achievements, the reflections shared by students reveal valuable insights into their academic journey. Many emphasized the importance of regular study habits, active classroom participation, practical exposure, and guidance from faculty members. Students also shared how challenges helped them grow more confident and focused. These success stories motivate juniors to aim higher, believe in their abilities, and pursue academic excellence with determination. Together, toppers' achievements and student reflections create a culture of motivation, excellence, and continuous improvement within the institution.