

# PAVE PULSE

Perspectives, Advancements &  
Visionary Explorations in Civil Engineering

(2024-25)

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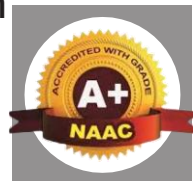


DTE Code: 4151

[www.tgpcet.com](http://www.tgpcet.com)

**TULSIRAMJI GAIKWAD-PATIL**  
**College of Engineering & Technology**

Approved by AICTE, New Delhi and Govt. of Maharashtra | An ISO 9001:2015 Certified Institution  
Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur



— AN AUTONOMOUS INSTITUTE —

**Institute Vision -** To emerge as a learning Center of Excellence in the National Ethos indomains of Science, Technology and Management.

**Institute Mission -**

1. To strive for rearing standard and stature of the students by practicing highstandards of professional ethics, transparency and accountability.
2. To provide facilities and services to meet the challenges of Industry andSociety.
3. To facilitate socially responsive research, innovation and entrepreneurship.
4. To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices

**Department Vision -** To forge learning Center of Excellence in the field of Civil Engineering.

**Department Mission -**

1. To promote academic and ethical development while upholding high standards.
2. To provide advance facilities with the skills needed to face Industry and societal challenges.
3. To promote socially responsible research, innovation, and entrepreneurship in the field of Civil Engineering.
4. To foster the holistic development of both students and faculty members by inculcating a blend of knowledge and professional work methods for overall progress.



## **Program Specific Outcomes (PSOs)**

**PSO 1** - Competency to manage large infrastructure projects while providing safe and cost- effective project execution, along with expertise of rapid construction and project management.

**PSO 2** - Plan, execute, manage, maintain and rehabilitate civil engineering systems and processes.

**PSO 3** - Apply innovative construction and management techniques to compete with modern structural design and construction within the budget and time frame.

## **Program Educational Objectives (PEOs)**

**PEO 1** - Analyse and design civil engineering structures while keeping social awareness and ethical responsibilities in mind.

**PEO 2** - Demonstrate leadership abilities in supporting sustainable practices in Civil Engineering.

**PEO 3** - Exhibit a commitment to lifelong learning, staying updated on developing technologies and industry trends, and adjusting to the evolving world of Civil Engineering.

**PEO 4** - Executing Proficiency in creative problem-solving and innovation, demonstrating an entrepreneurial attitude within the context of Civil Engineering.



## Program Outcomes (POs)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



## About TGPCET

Tulsiramji Gaikwad-Patil College of Engineering and Technology (TGPCET) was established in the year 2007 by Vidarbha Bahu-uddeshiya Shikshan Sanstha (VBSS), a registered society. It is a self-financed Private Engineering College, which is affiliated to Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU) Nagpur and is approved by All India Council for Technical Education, New Delhi. Also, college is approved by Directorate of Technical Education (DTE), Mumbai, Maharashtra State. The Institute is Accredited with A+ (3.32 CGPA) by NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC). An Autonomous Institute affiliated to RTM Nagpur University, Nagpur.

B.Tech Mechanical Engineering and B.Tech Electrical Engineering programmes have been accredited by the NBA for 3 years (up to 30<sup>th</sup> June 2026) and recently B. TECH. Civil Engineering and B. Tech. Electronic and Communication Engineering programmes have been accredited by NBA for 3 years (up to 30<sup>th</sup> June 2028).

## About Department

Department of Civil Engineering was established in 2009 with a degree course in Civil Engineering with an intake of 60 students for graduate course & later on intake of 30 students for Post graduation in Structural Engineering and 60 students for Diploma in Civil Engineering.

Civil Engineering is considered as one of the oldest engineering disciplines. Civil Engineering involves planning, designing and executing structural works. The profession deals with a wide variety of engineering tasks including designing, supervision and constructional activities of public works like roads, bridges, tunnels, buildings, airports, dams, water works, sewage systems, ports etc. and offers a multitude of challenging career opportunities. The Department is dedicated to consultancy, educational research, and an exposure of students to the trends of development in the field of Planning, Designing & Execution to meet the needs of the construction industry, consultancies and research organizations in India and abroad. The department of Civil Engineering in TGPCET possesses a faculty team of experienced & well-qualified professors, well acquainted with deep subject knowledge, commitment to disseminate quality & value-based education in technical subjects. All faculties work hard on student to meet the requirement of market and groom the student to be job friendly.



## Dear Esteemed Readers,

It is with great pleasure and pride that I extend my warmest greetings to you through the pages of this esteemed technical magazine. As the Head of the Civil Engineering Department, I am thrilled to share some of the extraordinary accomplishments that our department has achieved over the past year.

Our commitment to excellence in education and research is reflected in the numerous accolades earned by both our students and faculty members. One noteworthy achievement is the successful completion of NPTEL (National Programme on Technology Enhanced Learning) courses by a significant number of our students. This accomplishment not only showcases the dedication of our students but also speaks volumes about the quality of education and resources provided by our department.

In addition to individual successes, our department takes pride in securing copyrights for innovative research and projects undertaken by our faculty members. These copyrights not only validate the uniqueness of our contributions but also pave the way for further advancements in the field of civil engineering.

I am delighted to announce that our department has consistently produced university toppers, exemplifying the academic prowess of our students. This is a testament to the high standards we maintain in our teaching methodologies, as well as the continuous support provided to our students to help them excel in their academic pursuits.

Furthermore, our faculty members have actively engaged in cutting-edge research, contributing significantly to the body of knowledge in civil engineering. Their research endeavors have not only garnered attention within our academic community but have also made a valuable impact on the wider field.

As we celebrate these achievements, it is important to recognize that they would not have been possible without the collective efforts of our dedicated students, passionate faculty members, and the unwavering support from the institute administration and management.

Looking ahead, we remain committed to fostering an environment of innovation, excellence, and continuous learning within our department. We are determined to build on our successes and overcome new challenges, with the ultimate goal of contributing meaningfully to the advancement of civil engineering.

I extend my heartfelt gratitude to everyone who has been a part of this incredible journey, and I invite you to delve into the pages of this magazine to explore the depth of our achievements and the promising future that lies ahead.



Warm regards,

**Dr. Aasif Baig**

Head of the Civil Engineering Department

Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur







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Editor-in-Chief



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Student Editor



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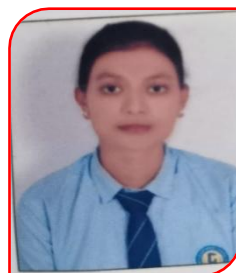
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## Technical Corner

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## Technical Events – Guest Lectures

S.N.	Topic & Speaker	Date	Participants	PO-PSO mapped	Page No.
1.	IWWA Monthly lecture: "Transforming Waste Management: The Role of Circular Economy in Building Sustainable Futures" by Dr. Debishree Khan, Scientist CSIR-NEERI, Nagpur	23.01.2025	12	PO-1,2,6,7,12	10
2.	"Awareness of Civil Engineering Softwares" by Mr. Hitesh Lahoti, Trainer, Civil Engineering Software Academy, Pune	29.01.2025	87	PO-1,2,3,4,5,8,9,10,12	11
3.	"TEKLA on market demand" by Mr. Shubham Tembhare, TEKLA Detailer, Myspace Engineering Service Pvt. Ltd, Nagpur	17.02.2025	50	PO-1,2,3,4,5,8,9,10,12	12
4.	IWWA Late P. R. Bhave Memorial lecture: "Localization of Sustainable Development Goals" by Dr. M. S. Kadu, Former Head, Dept. of Civil Engg., Ramdeo Baba University, Nagpur	28.02.2025	16	PO-1,2,6,7,12	13
5.	IWWA World Water Day-2025 celebration lecture: "Challenges in Water Management" by Dr. Aprup Adawadkar, Founder, Paryavaran Pratham, Industrial Safety, Disaster Management Trainer & Consultant	27.03.2025	7	PO-1,2,6,7,12	14



## Technical Events – Guest Lectures



IWWA Monthly lecture: "Transforming Waste Management: The Role of Circular Economy in Building Sustainable Futures" by Dr. Debishree Khan, Scientist CSIR-NEERI, Nagpur (23.01.2025)



"Awareness of Civil Engineering Softwares" by Mr. Hitesh Lahoti, Trainer, Civil Engineering Software Academy, Pune (29.01.2025)



"TEKLA on market demand" by Mr. Shubham Tembhare, TEKLA Detailer, Myspace Engineering Service Pvt. Ltd, Nagpur (17.02.2025)



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## Technical Events – Site Visits

S.N.	Topic & Speaker	Date	Participants	PO-PSO mapped	Page No.
1.	RCC Commercial Building Construction Site : Wardha road, opposite AIIMS Hospital, Nagpur  Mr. Kunal Akalwar, Om Shivam Buildcon, (P) Ltd. Nagpur	15.02.2025	55	PO-1,2,3,6,8,10,11,12	16
2.	Special Women's Day Site Visit for Top-10 girl students - Bhandewadi Sewage Treatment Plant, Nagpur (200 MLD)  Ms. Sonali Wagade & Ms. Sarika D. Dhote (Deputy Manager)	10.03.2025	10	PO-1,2,3,5,6,7,8,11,12	17
3.	Gosikhurd Dam, Wahi, Pauni (Bhandara)  Ms. Sarita Harne (AE-II), Mr. K. P. Kshirsagar (Junior Engineer) & Mr. Dhairyashil Patil (Junior Engineer), Gosikhurd project	19.03.2025	61	PO-1,2,3,6,7,9,10,11,12 2 PSO-1,2,3	18





## Technical Events – Site Visits



RCC Commercial Building Construction Site : Wardha road, opposite AIIMS Hospital, Nagpur  
Mr. Kunal Akalwar, Om Shivam Buildcon, (P) Ltd. Nagpur (15.02.2025)



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Gosikhurd Dam, Wahi, Pauni (Bhandara) Ms. Sarita Harne (AE-II), Mr. K. P. Kshirsagar (Junior Engineer) & Mr. Dhairyashil Patil (Junior Engineer), Gosikhurd project (19.03.2025)

## Technical Events – Technovation 2K25 (2-days' National Level Event)



Project Competition



Bridge making Competition



Technical Quiz Competition



Poster Competition



Award Distribution by Hon. Principal  
Dr. P. L. Naktode



All award winners with  
Technovation-2K25 Team



## Students' Achievements & Participations

S.N.	Name of Student	Name of Events	Details of Activity	Event Organized By / Date of Conduction	Position/ Remark
1.	Sonali Sivne	ICI FEST 2025	Poster Competition in ICI FEST 2025	KDK College of Engineering, Nagpur	Winner 1 <sup>st</sup> Prize
2.	Sonali Sivne	TECHTANTRA 2025	Tech-Canvas Competition in Techtantra 2025	Tulsiramji Gaikwad Patil College of Engineering & Technology	Winner 2 <sup>nd</sup> Prize
3.	Sahil Damle	AEROVISTA 2025	National Level Technical Event AEROVISTA 2025	Aeronautical Department, TGPCET, Nagpur (19th April, 2025)	Winner 2 <sup>nd</sup> Prize
4.	Sonali Sivne	ELECTROKRAT 2025	Technical Quiz in National Level Event ELECTROKRAT 2025	Tulsiramji Gaikwad Patil College of Engineering & Technology	Winner 3 <sup>rd</sup> Prize
5.	Aditya Lokhande	TECHTANTRA 2025	National Level Event TECHTANTRA 2025	Tulsiramji Gaikwad Patil College of Engineering & Technology	Winner 3 <sup>rd</sup> Prize
6.	Akshay Khobragade				
7.	Anil Modi				
8.	Ashik Gaupale				
9.	Nitish Mendhekar	Advantage Vidarbha – Khasdar Audyogik Mahotsav	Vidarbha's Mega Industrial Expo Business & Investment Conclave	Association for Industrial Development held at RTMNU Campus, Nagpur (7th to 9th February 2025)	Participation
10.	Raj Bawankule				
11.	Rohit Meshram				
12.	Ashwin Salunke				
13.	Pratham Shambharkar				



## Students' Achievements & Participations

S.N.	Name of Student	Name of Events	Details of Activity	Event Organized By / Date of Conduction	Position/ Remark
14.	Anil Modi	NATIONAL LEVEL IDEATHON	INNOVATE INDIA 2025 Ideathon competition	Wainganga College of Engineering and Management, Dongargaon, Nagpur	Participation
15.	Aarya Raju Shahare				
16.	Raj Bawankule				
17.	Aditya Lokhande				
18.	Aditya Lokhande	Pratikruti 2025	Pratikruti 2025 Event (Project Competition)	Yeshwantrao Chavan College of Engineering, Nagpur (25th Feb. 2025)	Participation
19.	Anil Modi				
20.	Sujal Mirche				
21.	Aarya Shahare				
22.	Akshay Khobragade	SYNERGY-25	Synergy-25 event at Wainganga College (Project Competition)	Wainganga College of Engineering and Management, Dongargaon, Nagpur	Participation
23.	Aditya Lokhande				
24.	Ashik Gaupale				
25.	Raj Bawankule				
26.	Hidesh Gaikwad				



## Students' NPTEL Certification

S.N.	Name of Student	Course Details	Remarks
1.	Nakul Khodaskar	Basic Construction Materials Jan-Apr 2025 (12 Weeks) IIT, Madras	Elite (Top 5%)
2.	Amit Bhate		Elite
3.	Piyush Lokhande		Pass
4.	Aditya Lokhande		Pass
5.	Kalyani Rambhad		Pass
6.	Mayur Kumbhare		Pass
7.	Sunayana Meshram		Pass
8.	Sandip Kumbhare		Pass
9.	Varsha Yele		Pass
10.	Shilpa Gajbhiye		Pass
11.	Kalyani Meshram		Pass
12.	Kalyani Meshram	Modern Construction Materials Jan-Apr 2025 (12 Weeks) IIT, Madras	Pass
13.	Amit Bhovate		Pass

# Students' NPTEL Certification

**Elite**  
**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**NAKUL MEGHASHYAM KHODASKAR**  
for successfully completing the course

Basic Construction Materials

with a consolidated score of **68 %**

Online Assignments	16.81/25	Proctored Exam	51/75
--------------------	----------	----------------	-------

Total number of candidates certified in this course: 1216

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE075652801807 To verify the certificate

No. of credits recommended: 3 or 4

**Elite**  
**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**AMIT MOHANBINGH BHATE**  
for successfully completing the course

Basic Construction Materials

with a consolidated score of **60 %**

Online Assignments	18.88/25	Proctored Exam	40.75/75
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Total number of candidates certified in this course: 1216

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE075652803705 To verify the certificate

No. of credits recommended: 3 or 4

**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**PIYUSH VIJAY LOKHANDE**  
for successfully completing the course

Basic Construction Materials

with a consolidated score of **50 %**

Online Assignments	20.41/25	Proctored Exam	30/75
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Total number of candidates certified in this course: 1216

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE075652801807 To verify the certificate

No. of credits recommended: 3 or 4

**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**ADITYA PRABHODAS LOKHANDE**  
for successfully completing the course

Basic Construction Materials

with a consolidated score of **49 %**

Online Assignments	19.13/25	Proctored Exam	30/75
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Total number of candidates certified in this course: 1216

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE075652801206 To verify the certificate

No. of credits recommended: 3 or 4

**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**KALYANI CHANDRAKANT RAMBHAD**  
for successfully completing the course

Basic Construction Materials

with a consolidated score of **47 %**

Online Assignments	17.18/25	Proctored Exam	30/75
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Total number of candidates certified in this course: 1216

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE075652801243 To verify the certificate

No. of credits recommended: 3 or 4

**NPTEL ONLINE CERTIFICATION**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**KALYANI BHAUDAS MESHRAM**  
for successfully completing the course

Modern Construction Materials

with a consolidated score of **52 %**

Online Assignments	22.16/25	Proctored Exam	30/75
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Total number of candidates certified in this course: 732

Prof. Andrew Thompson  
Dean  
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025  
(12 week course)

M. Vignesh  
NPTEL Coordinator  
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CE415452801519 To verify the certificate

No. of credits recommended: 3 or 4



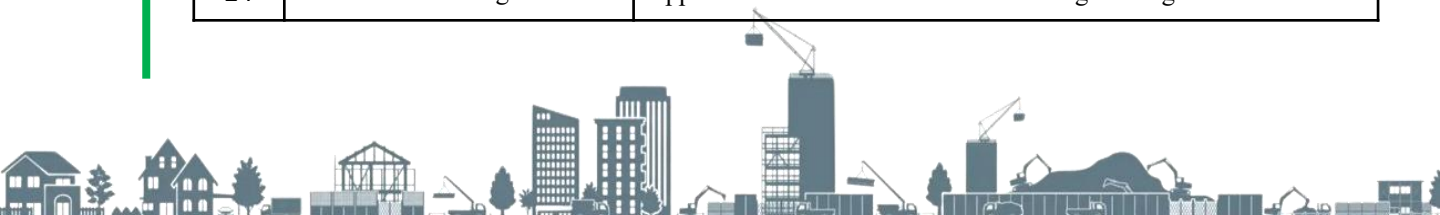
## Students' 1-semester Internship (Group-A) 8<sup>th</sup> semester

S.N.	Student Name	Internship Details
1	Neha Rathod	Arch Buildcon, Chatrapati nagar, Nagpur
2	Sakshi Wadekar	
3	Pranali Nindekar	
4	Vedanti Walde	
5	Yash Yende	J. S. Ram Construction Pvt. Ltd, Nagpur
6	Mahesh Naktode	
7	Yogesh Kakde	
8	Juhi Ramteke	CAAD Center, Nandanvan, Nagpur
9	Bhimrao Panewar	Nimish Patankar, RCC and Structural Consultants, Nagpur
10	Shyamsundar Panewar	
11	Mayur Barapatre	
12	Pranay Tekam	
13	Chhakuli Meshram	Admiretech Vision, Trimurti Nagar, Nagpur
14	Tushar Kowe	
15	Nikhil Patle	Shri Sai Construction, Nagpur
16	vaishnav Chakole	MD Construction, Jawahar Nagar, Bhandara
17	Vaibhav Katekhaye	
18	vaishnav Lanjewar	
19	Mukul Walke	Trimurti Construction, Tirora, Gondia
20	Dnyandip Wasekar	Prashant Construction, Gadchiroli
21	Gaurav Kadate	Kapil Pendam Construction Malewada, Gadchiroli
22	Shubham Warkade	



## Students' Research Topics (Group-B) 8<sup>th</sup> semester

S.N.	Student Name	Research Project Topic
1	Aashay Mahendra Jambhulkar	Latest Technologies To Improve Soil Strength
2	Aashishkumar Ramesh Rao Tarole	Stability Of High-rise Building
3	Chakor Sunil Barapatre	Statue Construction Techniques In India And World
4	Chetan Padmakar Atala	Rehabilitation Of Heritage Structures Using Modern Techniques
5	Chetan Tularam Bhoyar	Innovation And Technology In Tunnel Construction
6	Devkumar Roy	Application Of Automation And Robotics In Civil Engineering
7	Harish Ishwar Bahekar	Building Information Modelling (BIM)
8	Kalpeshkumar Bharatkumar Tembhare	Innovation And Technology In Dam Construction
9	Kunal Bharat Chopkar	Infrastructure Monitoring Systems
10	Nandini Khilon Dhawale	Green Building Design And Analysis
11	Piyush Sadaram Bhajipale	A Case Study On Smart Road Development Using IOT And AI
12	Piyush Sanjay Pandey	Sustainable Construction Structures In World
13	Priyanshu Sanjay Lanjewar	Uses Of Drone And Robotics In Construction Industries
14	Purushottam Umesh Fendar	Advance Tidal And Tsunami Barrier System For Coastal Area Protection
15	Raunak Kishor Sahare	The Role Of Wastewater Treatment Plant In Sustainable Water Management
16	Rohit Bharatlal Bisen	Innovative Building Comfort Enhancement Techniques
17	Samyak Sikandar Bansod	Innovative Road Maintenance Strategies For Sustainable Development
18	Sharvil Sanjay Lokhande	Transforming Shipping Containers into Intelligent Living Spaces
19	Shubham Khumansingh Sharnagat	Pavements And Mass Transportation
20	Srushti Rahul Gondane	Advanced Bridge Construction
21	Sumit Padam Rangari	Role Of Nanotechnology In Enhancing Pervious Concrete Performance
22	Swapna Baburao Nitnaware	GIS Based Morphometric Analysis Of Nag River Basin
23	Vijay Vilas Rathod	Self Compacting Concrete
24	Vikas Shankar Bagde	Application of GIS and GPS in Civil Engineering





## Faculty Achievements & Publications

S.N.	Name of Faculty	Activity	Topic of Research	Details
1.	Dr. Snehal Abhyankar	Award	Outstanding leadership in education	HNI/WSN/2025-073
2.	Dr. Aasif Baig	Patent	System and method for automated consumer behavior analysis using machine learning	202521023481
3.	Dr. Aasif Baig	Conference	Advanced engineering approaches to segmental flyover construction (RTO Wadi flyover)	ICASTM-2025 21 & 22 March 2025
4.	Prof. Sanjay Bhadke	Paper Publication	BIM for seismic analysis and design, enhancing seismic resilience in earthquake prone areas: A review	SSRN Elsevier
5.	Prof. Sanjay Bhadke	Paper Publication	Effect of wind load on low, medium, high rise buildings in different terrain category	SSRN Elsevier
6.	Prof. Sanjay Bhadke	Paper Publication	RCC Design of light vehicular underpass in nagpur- amravati project	SSRN Elsevier
7.	Dr. Amey Khedikar	Paper Publication	Dynamic analysis of a high rise structure on a deep pile foundation using advanced computational tools: a review	SSRN Elsevier
8.	Dr. Snehal Abhyankar	Paper Publication	Dynamic analysis of a high rise structure on a deep pile foundation using advanced computational tools: a review	SSRN Elsevier
9.	Dr. Amey Khedikar	Paper Publication	Analysis on behavior of reinforced concrete structures under consideration of explosive loads: a review	SSRN Elsevier



## Faculty Achievements & Publications

S.N.	Name of Faculty	Activity	Topic of Research	Details
10.	Prof. Divyani Harpal	Paper Publication	The impact of high temperature on behavior of concrete materials: a review	SSRN Elsevier
11.	Prof. Divyani Harpal	Paper Publication	Seismic response analysis of vintage building using BIM: a review	SSRN Elsevier
12.	Dr. Aasif Baig	Paper Publication	Analysis and design of a multi- storey building incorporating belt truss and outrigger systems	SSRN Elsevier
13.	Dr. Aasif Baig	Paper Publication	Uses of UHPFRC segment in nagpur city live flyover project	SSRN Elsevier
14.	Dr. Aasif Baig	Paper Publication	Analysis of irregular shape of building in earthquake prone area by time history analysis	SSRN Elsevier
15.	Dr. P. L. Naktode	Paper Publication	Seismic response and performance of multistorey prefabricated building structure	SSRN Elsevier
16.	Dr. Aasif Baig	Paper Publication	Seismic response and performance of multistorey prefabricated building structure	SSRN Elsevier
17.	Dr. Amey Khedikar	Paper Publication	Analysis and design of roof trusses for industrial shed of maple more unit using STAAD Pro: a review	SSRN Elsevier
18.	Dr. Aasif Baig	Online Certification	Emerging Trends & Innovations in Multidisciplinary Engineering	Certificate



## Faculty Achievements & Publications

S.N.	Name of Faculty	Activity	Topic of Research	Details
19.	Prof. Rishabh Mahure	Online Certification	Basic construction materials	NPTEL 12-week course
20.	Prof. Divyani Harpal	Online Certification	Basic construction materials	NPTEL 12-week course
21.	Prof. Nayana Sangole	Online Certification	Basic construction materials	NPTEL 12-week course
22.	Prof. Mrunali Makode	Online Certification	Basic construction materials	NPTEL 12-week course
23.	Prof. Mohitsingh Katoch	Online Certification	Waste to energy conversion	NPTEL 08-week course
24.	Prof. Mohitsingh Katoch	Online Certification	Waste to energy conversion	FDP
25.	Dr. Aasif Baig	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
26.	Prof. Komal Meshram	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
27.	Prof. Nayana Sangole	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)



## Faculty Achievements & Publications

S.N.	Name of Faculty	Activity	Topic of Research	Details
28.	Prof. Rishabh Mahure	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
29.	Ms. Vaishnavi Muraskar	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
30.	Prof. Mrunali Makode	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
31.	Prof. Hiteshkumar Mishra	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
32.	Prof. Divyani Harpal	1-week Online STC	Integrating advances in geotechnical & highway engineering for sustainable and resilient transportation infrastructure	NIT Jalandhar (28 April – 02 May 2025)
33.	Prof. Mohitsingh Katoch	Online Certification	Renewable energy engineering: solar, wind and Biomass energy systems	NPTEL 12-week course
34.	Prof. Mohitsingh Katoch	Online Certification	Renewable energy engineering: solar, wind and Biomass energy systems	FDP
35.	Prof. Mohitsingh Katoch	Online Certification	Environmental quality monitoring & analysis	NPTEL 12-week course



## Faculty Achievements & Publications

S.N.	Name of Faculty	Activity	Topic of Research	Details
36.	Prof. Mohitsingh Katoch	Online Certification	Environmental quality monitoring & analysis	FDP
37.	Prof. Mohitsingh Katoch	Domain Scholar Certification	Energy & Environment Domain – Chemical Engineering (Swayam-NPTEL)	April 2025



# Faculty Achievements – NPTEL Glimpses





## Faculty Articles in Scopus (SSRN) Journals

### Uses Of UHPFRC Segment In Nagpur City (Wadi-RTO) Live Flyover Project – Dr. Aasif Baig

#### Abstract:

Conducting a thorough investigation into the latest advancements in Ultra-High-Performance fiber reinforced Concrete (UHPFRC) is crucial to establish essential materials testing protocols and expand its practical applications. The primary goal of UHPC development is to attain high tensile strengths by leveraging fiber reinforcement, which provides tensile resistance once the cement matrix has cracked. Ongoing research and significant projects will further bolster the medium-term development of UHPC and help demonstrate its substantial structural and architectural capabilities. UHPFRC is a cement based composite material that has many positive properties including:- a) economy as compare to conventional concrete . b) Durability:- UHPFRC is resistant to corrosion and fatigue. C) strength :- UHPFRC has high strength in compression and tension .

### RCC Design of Light Vehicular Underpass (LVUP) In Nagpur-Amravati (NH) Project – Prof. Sanjay Bhadke

#### Abstract:

A light vehicular underpass is a key infrastructure solution designed to alleviate traffic congestion and enhance mobility in urban areas. By allowing vehicles to pass beneath roadways, underpasses reduce the need for traffic signal stops and minimize the impact of intersections. This infrastructure is particularly beneficial in areas with high traffic volumes and limited space for above-ground road expansions. The design and construction of a light vehicular underpass require careful consideration of factors such as traffic flow, safety, environmental impact, and cost effectiveness. Key components include efficient drainage systems, proper ventilation, and structural integrity to accommodate varying traffic loads. The underpass can also contribute to the aesthetic and functional enhancement of urban spaces by freeing up surface-level roads for alternative uses, such as pedestrian walkways or green spaces. This study aims to explore the benefits, challenges, and best practices involved in the planning, design, and implementation of light vehicular underpasses, with a focus on their role in improving traffic management and urban development.



## Faculty Articles in Scopus (SSRN) Journals

### Seismic Response Analysis of Vintage Building (Vidarbha Region) Using BIM: A Review – Prof. Divyani Harpal

#### Abstract:

Buildings are at serious risk from earthquakes, which are caused by abrupt energy releases along fault lines, especially in seismically active regions like Vidarbha, India. There are a number of historic and architecturally significant old buildings in this area. However, they are particularly susceptible to seismic disasters due to their age and lack of current construction techniques. It is crucial to evaluate these buildings' seismic reaction in order to ensure their safety and preservation. By combining extensive data into a single 3D model, Building Information Modelling (BIM) provides a solid answer to this problem. Accurate risk evaluations are ensured by this method's ability to thoroughly analyze both structural and non-structural components under possible earthquake situations. In addition to facilitating pre- and post-earthquake assessments, BIM allows for real-time structural component monitoring, which helps avert catastrophic failures. Engineers can ensure prompt action in the event of damage by monitoring the integrity of important building components. A sophisticated, data-driven approach to safeguarding culturally significant buildings while preserving their structural integrity under seismic stress is offered by the incorporation of BIM into earthquake risk management.

### Analysis and Design of Roof Trusses for Industrial Shed of Maple More Unit Using STAAD.Pro: A Review – Dr. Amey Khedikar

#### Abstract:

An industrial building is a structure designed for the storage of raw materials or the production of industrial goods, characterized by components such as purlins, rafters, roof trusses, wind bracing, and columns. These buildings, often used as workshops or warehouses, rely heavily on steel for construction, particularly when concrete is impractical or time-sensitive. This study focuses on the design and analysis of a multi-story industrial steel truss building, developed using manual calculations in accordance with IS codes. The structural analysis includes various load combinations, such as dead, live, and wind loads, which significantly influence the performance of critical components like the column base. Steel purlins span between rigid frames, supporting the light gauge metal cladding. The findings, based on detailed load and impact evaluations, provide insights into the structural behavior and stability of industrial buildings, ensuring they meet safety and performance requirements.



## Faculty Articles in Scopus (SSRN) Journals

### **The Impact of High Temperatures on Behavior of Concrete Materials: A Review – Prof. Divyani Harpal**

#### **Abstract:**

This study analyzes the effect of high temperatures in the components of concrete, focusing particularly on the usage of ground-granulated blast furnace slag, also known as or Blast Furnace Slag (BFS) in concrete formulations. It explains how certain materials react to high temperatures, especially in the setting of fire exposure. Concrete's mechanical qualities, such as strength, elasticity of flexibility, and volume security, are dramatically affected when exposed to high temperatures, resulting in structural damage. The study highlights the importance of designing buildings to withstand elevated temperatures and potential fire incidents, as these conditions can alter concrete's color, compressive strength, and elasticity, ultimately affecting its density and surface appearance. A comparative analysis of the performance of GGBS and BFS concrete against conventional concrete under high temperature scenarios underscores the necessity for enhanced fire-resistance measures in concrete structural design. This research aims to inform better design practices and improve the resilience of concrete structures in fire-prone environments.

### **Analysis of Irregular Shape of Building in Earthquake prone area by Time History Analysis – Dr. Aasif Baig**

#### **Abstract:**

Seismic waves are produced when strain energy stored in the earth's crust is rapidly released, causing an earthquake. Structures are susceptible to damage from ground motion during earthquakes. Understanding the characteristics of ground motion is crucial for taking preventative measures against damage to structures caused by ground motion. Peak ground acceleration, frequency content, and duration are the three most crucial dynamic characteristics of an earthquake. These traits are crucial in determining how a structure will behave when subjected to ground motion during an earthquake. If non-linear behavior is avoided, a liner time history analysis outperforms modal response spectrum analysis in every way. More computing power is needed to calculate the response at discrete times using this method. The relative signs of response amounts are maintained in the response histories, which is an intriguing benefit of this process. This is crucial when designing with interaction effects among stressors in mind.



## Faculty Articles in Scopus (SSRN) Journals

### **Analysis and Design of a Multi-Storey Building Incorporating Belt Truss and Outrigger Systems – Dr. Aasif Baig**

#### **Abstract:**

During the last few decades several buildings have been built utilizing belt truss and outrigger system for the lateral loads transfer (throughout the world). This system is very effective when used in conjunction with the composite structures especially in tall buildings. The design of high-rise building is more often dictated by its serviceability rather than strength. Structural Engineers are always striving to overcome challenge of controlling lateral deflection and storey drifts as well as self-weight of structure imposed on foundation. One of the most effective techniques is the use of outrigger and belt truss system in Composite structures that can astutely solve the above two issues in High-rise constructions. This paper investigates deflection control by effective utilization of belt truss and outrigger system on a 60-storey composite building subjected to wind loads. A three-dimensional Finite Element Analysis is performed with one, two and three outrigger levels. The reductions in lateral deflection are 34%, 42% and 51% respectively as compared to a model without any outrigger system. There is an appreciable decline in the storey drifts with the introduction of these stiffer arrangements.

### **Dynamic Analysis of a High-Rise Structure on A Deep Pile Foundation Using Advanced Computational Tools: A Review – Dr. Snehal Abhyankar**

#### **Abstract:**

This study investigates the critical role of soil types, foundations, and building frames in resisting external loads, with a particular focus on storey displacement as an indicator of structural safety under various loading conditions. In earthquake-prone regions, foundation failures are a leading cause of structural displacement, often resulting in significant human and economic losses. The interaction between deep foundations and the surrounding soil, known as Soil-Structure Interaction (SSI), plays a pivotal role in a structure's performance. Factors such as foundation geometry, soil properties, and load conditions significantly influence the stability and design of buildings. This research highlights the importance of considering SSI effects to enhance the structural resilience and safety of buildings, especially in areas susceptible to seismic activity.



## Faculty Articles in Scopus (SSRN) Journals

### **Analysis On Behavior of Reinforced Concrete Structures Under Considerations of Explosive Loads: A Review – Dr. Amey Khedikar**

#### **Abstract:**

Reinforced concrete structures are renowned for their strength and durability, making them integral to modern construction projects. While they are designed to withstand routine loads from occupants and environmental conditions, they face considerable vulnerabilities when subjected to explosive forces from events like terrorist attacks, industrial accidents, or military conflicts. The intense shock waves generated by explosions can lead to severe damage, including cracking, spalling, and, in extreme cases, catastrophic structural failure. This project aims to analyze the behavior of reinforced concrete structures under explosive loads to improve their resilience against such threats. Utilizing advanced computer simulations alongside a thorough review of existing research, we will explore the dynamic response of these structures to blast forces. This investigation will identify critical failure points and assess the effectiveness of current design practices. Ultimately, the study will provide recommendations for design enhancements that can bolster the strength and safety of buildings made of reinforced concrete in the midst of explosives threats.

### **BIM for Seismic Analysis and Design, Enhancing Seismic Resilience in Earthquake-Prone areas: A Review – Prof. Sanjay Bhadke**

#### **Abstract:**

This project investigates the integration of BIM (Building Information Modeling) in seismic analysis and structural redesign to improve resistance and safety in regions susceptible to earthquakes. BIM models of various building types—low-rise, medium-rise, and high-rise—were created and exported to structural analysis software for assessing seismic response under probable earthquake scenarios. Using the Federal Disaster Management Agency's Evaluation of Performance Calculation Tool, damage states and associated repair costs were estimated. Additionally, a Life Cycle Environmental Assessment quantified the environmental impacts of earthquake-related damages. Comparative analysis revealed that BIM-based designs significantly improve seismic performance compared to traditional methods, highlighting BIM's potential for optimizing collaborative design processes among architects, engineers, and construction professionals. This research underscores the importance of integrating BIM in seismic resilience strategies, emphasizing its role in improving structural performance and cost-efficiency while mitigating environmental impacts.





## Faculty Articles in Scopus (SSRN) Journals

### Seismic Response and Performance of Multistorey Prefabricated Building Structures – Dr. Aasif Baig

#### Abstract:

The multi-story modular constructions' seismic performance—which are made from prefabricated modules that are built on-site—is examined in this study. The creation of discontinuous diaphragms—where modules are joined at different points—is the main obstacle in modular construction and could jeopardize structural integrity. The main goal is to assess how in-plane diaphragm strength and stiffness affect modular structures' seismic response. A streamlined process for evaluating diaphragm service stiffness is presented, taking into account shear deformation in both diaphragm connections and individual modules. To simulate seismic behavior, A four-story, four-bay steel-frame modular building is modelled numerically. The research also emphasizes the increasing use of prefabricated architecture, which, in contrast to conventional site-built techniques, reduces environmental consequences while increasing building speed, material efficiency, and worker safety. Additionally, the study analyzes how well modular prefab solutions function under seismic loading, looking at things like life cycle analysis, energy use, and thermal behavior. To better understand the seismic resilience of two modular structural systems, one with bracing and the other with shear walls, a 20-story building is examined. This study aims to close the gap in existing standards by providing insights into the behavior and design of modular buildings under seismic circumstances, namely in the Indian standard IS 1893-2016 (Part I).





## Faculty Articles in Scopus (SSRN) Journals

### Effect Of Wind Load On Low, Medium, High-rise Buildings In Different Terrain Category – Prof. Sanjay Bhadke

#### Abstract:

The movement of wind can cause tall structures to sway in both the "along wind" and "across wind" directions. Even buildings designed to meet lateral drift criteria may experience excessive movement during storms. As the height of a structure increases, it becomes more vulnerable to wind-induced oscillations, which can pose a risk to the building. These oscillations may also cause discomfort for the occupants, even if the building itself is not at risk of collapse. Therefore, accurately evaluating the movement of the structure is essential for ensuring serviceability. There are several methods available to determine the Wind Load Response of tall buildings. Wind currents, which are visible to the human eye, vary in their intensity depending on the terrain. In rocky areas, wind travels more slowly, whereas on flat ground, it moves faster. This study examines the impact of wind on three different building heights (G+5, G+10, and G+15) in three different types of terrain. By using wind data from these terrains, the research explores the effects of story drift, shear forces, and structural responses on buildings of varying heights. All 12 models are analyzed using ETABSv9.7.4 software. The findings of this study provide valuable insights into the variations in drift, shear forces, and the percentage change in these factors with respect to both the building height and terrain type.



*Congratulations*



**Prof. Mohitsingh Katoch**  
*Completed “Energy & Environment” Domain of Chemical Engineering  
(April-2025)*



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