

May-June
2023

GMR Institute of Technology

Department of Civil Engineering Newsletter

Highlights

Faculty Corner

- Consultancy
- Journal Publications
- Course Completions

Student Corner

- Achievements
- Participations
- Organized Events
- Technical Note
 - Self-Healing Concrete
 - LiDAR and Infrared Imaging

THE VISION OF GMRIT

- ❖ To be among the most preferred institutions for engineering and technological education in the country.
- ❖ An institution that will bring out the best from its students, faculty, and staff – to learn, to achieve, to compete and to grow – among the very best.
- ❖ An institution where ethics, excellence and excitement will be the work religion, while research, innovation and impact, the work culture.

THE MISSION OF GMRIT

- ❖ To turnout disciplined and competent engineers with sound work and life ethics.
- ❖ To implement outcome-based education in an IT-enabled environment.
- ❖ To encourage all-round rigor and instill a spirit of enquiry and critical thinking among students, faculty, and staff.
- ❖ To develop teaching, research, and consulting environment in collaboration with industry and other institutions.

DEPARTMENT VISION

- ❖ To be a preferred department of learning for students and teachers alike, with dual commitment to Academic and Research, and serving students in an atmosphere of innovation and critical thinking.

DEPARTMENT MISSION

- ❖ To provide adoptable education for the graduates in preparing them for a rewarding career to develop academic and research in collaboration with industry and other institutions in the field of Civil Engineering. (M1)
- ❖ To prepare the students as thinking professionals and good citizens who will be able to apply their knowledge critically and innovatively in solving contemporary professional and social problems.(M2)

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: Graduates with ability to solve core engineering problems through continuous self-paced learning in tune with changing technologies.

PEO 2: Reinforce engineering skills, critical thinking and problem-solving skills in professional engineering practices and deal with socio-economical, technical and business challenges.

PEO 3: Nurture professionalism with soft skills, managerial & leadership skills and ethical values.

PROGRAM OUTCOMES (POS):

Engineering graduate will be able to:

PO 1: Apply the knowledge of basic sciences and fundamental engineering concepts in solving civil engineering problems **(Engineering knowledge)**

PO 2: Identify and define civil engineering problems and investigate to analyze and interpret data to arrive at substantial conclusions. **(Problem analysis)**

PO 3: Propose appropriate solutions for engineering problems complying with functional constraints such as economic, environmental, societal, ethical, safety and sustainability in accordance with Indian standard codes of practices. **(Design/development of solutions)**

PO 4: Perform investigations, design and conduct experiments, analyze and interpret the results to provide valid conclusions. **(Conduct investigations of complex problems)**

PO 5: Select/develop and apply appropriate techniques and IT tools to analyze, design and scheduling of activities with an understanding of the limitations and successfully implement and adopt to technological changes in civil engineering with intervention of IT industries **(Modern tool usage)**

PO 6: Give reasoning and assess societal, health, legal and cultural issues with competency in professional engineering practice. **(The engineer and society)**

- PO 7: Demonstrate professional skills and contextual reasoning to assess environmental/societal issues for sustainable development. **(Environment and sustainability)**
- PO 8: Demonstrate knowledge of professional and ethical practices. **(Ethics)**
- PO 9: Function effectively as an individual, and as a member or leader in diverse teams, and in multi- disciplinary situations. **(Individual and team work)**
- PO 10: Communicate effectively with respect to oral, written and graphical communication **(Communication)**
- PO 11: Demonstrate and apply engineering & management principles in their own / team projects in multidisciplinary environment. **(Project management and finance)**
- PO 12: Recognize the need for, and have the ability to engage in independent and lifelong learning. **(Life-long learning)**

PROGRAM SPECIFIC OUTCOMES (PSOS):

Engineering graduate will be able to:

- PSO 1: Demonstrate the quality and suitability of construction materials **(Program Specific)**
- PSO 2: Ability to apply the practical aspect of analysis, design and safe construction practices **(Program Specific)**

OVERVIEW

The Department of Civil Engineering was established in 2002. It offers students a solid grounding in better utilization of resources and greater standardization of construction processes required by the construction industry. Students are taught how to use and employ innovative design methods and techniques. Exposure to contemporary facets planning, construction design and project management are key aspects of the course. Annual intake of this Department is 120 students.

CONSULTANCY

Being facilitated with well-equipped equipment and laboratories the Department of Civil Engineering always contributes a major role in the consultancy works offered to the government and private organizations around the districts and so on.

As a part of Consultancy an amount of 20,700/- rupees worth core related works were carried out by the faculty with respect to various specializations.

NATIONAL & INTERNATIONAL JOURNALS

- ❖ Arun Solomon A, et.al, “Abusive Comment Detection in Social Media with Bidirectional LSTM Model”, 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT), Tirunelveli, India, IEEE Xplore, 2023, pp. 1368-1373. *(Scopus Indexed)*
- ❖ Arun Solomon A, et.al, “Land-cover classification with hyperspectral remote sensing image using CNN and spectral band selection”, Remote Sensing Applications: Society and Environment, Remote Sensing Applications: Society and Environment, Volume 31, August 2023, 100986. *(Scopus and ESCI Indexed, SJR:Q1)*
- ❖ Ganesh Prabhu G, et.al, “Effects of fly ash and silica fume on alkalinity, strength and planting characteristics of vegetation porous concrete”, 2023, Journal of Materials Research and Technology, Vol.24, pp. 5347-5360. *(Impact Factor: 6.26, SCI and Scopus Indexed, SJR:Q1)*
- ❖ Ganesh Prabhu G, et.al, “Engineering properties of SBS and crumb-rubber modified bitumen – a design of experiment approach”, 2023, Journal of Engineering, Design and Technology. *(Impact Factor: 0.371, Scopus and ESCI Indexed, SJR: Q2)*
- ❖ B.P.R.V.S. Priyatham, et.al, “Review on performance and sustainability of foam concrete”, Materials Today: Proceedings, 2023. *(Scopus Indexed, SJR:Q2)*

- ❖ B.A.V. Ram Kumar, et.al, “Performance evaluation of red mud as a construction material–A review”, 2023, Materials Today: Proceedings, 2023. *(Scopus Indexed, SJR:Q2)*
- ❖ Sridhar J, et.al, “Influence of Prosopis juliflora ash in mechanical properties of concrete”, Materials Today Proceedings, vol.80, pp.11681172. *(Scopus Indexed, SJR:Q2)*
- ❖ Arun Solomon A, et.al, “Energy Consumption of Composite Structure in Various Regions in India: A BIM Approach”, Civil Engineering and Architecture, Vol. 11, No. 4, pp. 1776 - 1794, 2023. *(Scopus Indexed, SJR:Q2)*
- ❖ Gokulan R, et.al, “Comparative adsorptive removal of Reactive Red 120 using RSM and ANFIS models in batch and packed bed column”, Biomass Conversion and Biorefinery, 2023,Vo.13,Pp. 5843–5859. *(Impact Factor: 2.68, SCIE and Scopus Indexed, SJR:Q3)*
- ❖ Pandimani, P "Computational modeling and simulations for predicting the nonlinear responses of reinforced concrete beams", Multidiscipline Modeling in Materials and Structures, Vol. 19 No. 4, pp. 728-747. *(Impact Factor:2.6, SCIE and Scopus Indexed, SJR: Q4)*
- ❖ Gokulan R, et al, “Production of Bio Briquettes from Gloriosa Superba Wastes-Turmeric Leaves (GSW-TL) with Cassava Starch Binder for Environment Sustainability. Waste and Biomass Valorization,2023.pp 1-20. *(Impact Factor: 3.4, SCIE and Scopus Indexed, SJR: Q2)*

FACULTY ONLINE COURSE COMPLETION

- ❖ Dr.A.Arun Solomon has completed 4 weeks online course on “Machine Learning for All” on 19th May-2023, certified by Coursera.

Student Corner

ACHIEVEMENTS

- ❖ In the Academic year 2022-2023 third year B.Tech students-83 Numbers completed Data Analytics course and 3 completed Digital Marketing and e-commerce course in the Coursera platform.

PARTICIPATIONS

- ❖ Total 45 students (4th Semester Civil Engg.) attended a virtual Guest Lecture on "Digital transformation: New-age tech skills" by Mr. T. Vamsi Naga Raju, Asst. Professor, SRKR, Engineering. College, Bhimavaram, Andhra Pradesh on 13-05-23, 2:00-3:20PM, Organized by the Department of Civil Engineering, GMR Institute of Technology, Rajam.
- ❖ 60 students of 2nd Semester-BS &H, 4th Semester-Civil Engg. & 6th Semester- Chemical Engg. attended a one day Seminar on "EIA for Environment & Sustainability" by Er. A. Prasad, ONGC, Amalapuram, Andhra Pradesh on 05th June-2023 organized by the Department of Civil Engineering, GMR Institute of Technology, Rajam.
- ❖ Department of Civil Engineering's Green ECO Club in collaboration with NSS Unit of GMR Institute of Technology, in connection with 'World Environment Day' on 05th June-2023 was organized an awareness rally on environment protection at Dolapeta area, Rajam. In this program, nearly 30 students of various department participated along with few teaching faculty members.

ORGANIZED EVENTS

- ❖ **World Environment Day-Quiz**
 - This is a technical event organized by the Eco Club of department of civil engineering during the celebration of **World Environment Day** on 05th June 2023. This event highlights the environmental challenges such as climate change, deforestation, pollution and endangered species,

making participants more conscious of these issues. This event also includes questions that require critical thinking and problem-solving, fostering the development of skills needed to address complex environmental problems. In this context quiz competition were conducted and winners were appreciated with certificates. Total 57 numbers of students were participated in this event.



❖ World Environment Day-Seminar

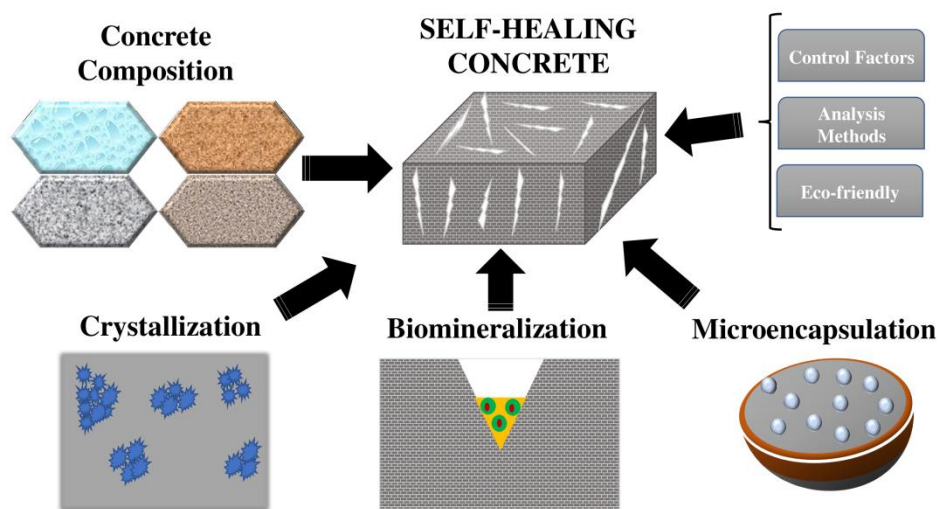
- This is a technical event organized by the Eco Club of department of civil engineering during the celebration of **World Environment Day** on 05th June 2023. Er. A. Prasad (Sr. Engineer in Environment, Health & Safety Department, ONGC) shared insights on environmental legislation, regulations and initiatives, highlighting the need for stronger environmental policies and advocating for sustainable practices at global level. Total 85 students have participated in this event.



TECHNICAL NOTE

Self-healing Concrete

Self-healing concrete is an innovative material designed to address one of the most persistent challenges in construction: cracking. Over time, traditional concrete develops cracks due to environmental stresses, temperature fluctuations, and load-bearing pressure, which can lead to water ingress, steel reinforcement corrosion, and structural failure. Self-healing concrete offers a groundbreaking solution by automatically repairing these cracks, significantly extending the lifespan of structures and reducing maintenance costs.

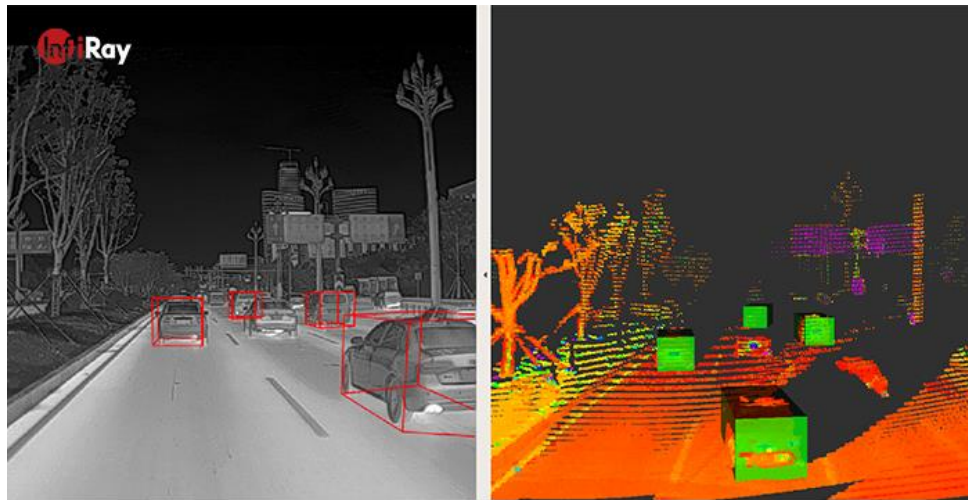


By
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LiDAR and Infrared Imaging

LiDAR (Light Detection and Ranging) and Infrared Imaging are transformative technologies widely used in civil engineering, geospatial analysis, and construction. LiDAR operates by emitting laser pulses to measure distances between the sensor and objects, creating detailed 3D maps and models. It works by calculating the time it takes for a laser pulse to reflect back after hitting a surface. This technology is highly accurate and efficient for applications such as topographic mapping, urban planning, transportation infrastructure design, and disaster management. LiDAR's ability to penetrate vegetation makes it invaluable for forestry studies and

terrain mapping, while its precision helps in the planning and maintenance of roads, bridges, and other critical infrastructure. Despite its many advantages, LiDAR is expensive and can be less effective in adverse weather conditions like heavy rain or fog. Thermal imaging can monitor energy efficiency, while LiDAR aids in precision construction.



Comparison of environmental perception results based on thermal imaging and lidar

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