Department Of Civil Engineering

CIVIL CHRONICLES

Vol 3 , Issue 3 YEAR 2024-25

VISION

To grow as a globally recognized centre in civil engineering with a focus on innovation and research by combining technical and ethical qualities.

MISSION

M1 : Professional Skills
To provide a better environment to encourage innovative and research thinking among students.

M2 : Life-Long Learning
Instill in students contemporary knowledge in order to achieve academic and professional excellence with global perspective through experience of lifelong learning.

M3 : Engage with Society
Impart a sense of community responsibility and leadership qualities to better meet the challenges of sustainable growth.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1
Achieve excellence in the professional practices of Civil Engineering by utilizing the acquired knowledge and technical skills supported by modern day tools.

PEO2
Participation in decision making and nation building by adopting energy efficient and sustainable practices in Civil Engineering.

PEO3
Encourage innovative thinking and entrepreneurship by research and higher studies in advanced areas of Civil Engineering.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1
To solve engineering problems related to Civil Engineering by systematic techniques, skills and tools to meet the ever growing needs of sustainable infrastructural development.

PSO2
Design and build Civil Engineering-based systems in the context of structural, geotechnical, transportation and environmental requisites.

PROGRAM OUTCOMES (POs)

PO1
Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2
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.
PO3
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.
PO4
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.
PO5
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.
PO6
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.
PO7 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.
PO8
Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10
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.
PO11
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.
PO12
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.

ORIENTATION SEMINAR ON BUILDING INFORMATION MODELLING

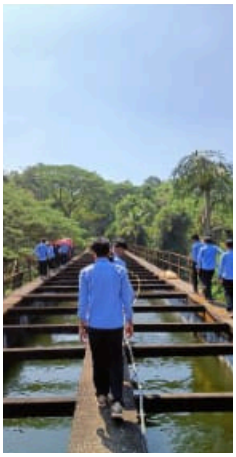
Snapshot from BIM orientation program

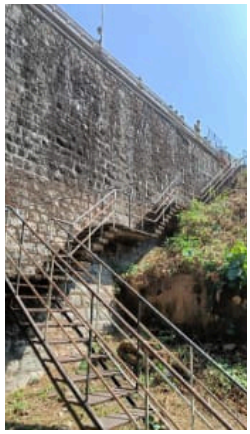
The orientation seminar on "Building Information Modelling" (BIM) was conducted on January 23, 2025, by the Civil Engineering Association in collaboration with the Department of Civil Engineering. The seminar aimed to provide participants with an in-depth understanding of BIM concepts, processes, and applications in the construction industry. BIM is a transformative technology that enhances the planning, design, construction, and management of buildings through intelligent 3D modeling. It goes beyond traditional 2D blueprints by integrating data-rich objects that connect different building systems, allowing stakeholders to visualize and simulate performance, identify potential conflicts, and make informed decisions throughout a project's lifecycle.The seminar covered several key aspects of BIM, including fundamental concepts, software tools such as Revit, Vectorworks, and BricsCAD, and collaborative workflows between architects, engineers, and contractors. Participants learned how to leverage BIM's data-rich environment for improved design decisions, manage and share BIM data effectively, and resolve conflicts between building systems. The event also highlighted BIM's role in different phases of a project, from design and construction to operations and maintenance, emphasizing its impact on cost estimation, scheduling, and sustainability. Additionally, advanced applications such as energy simulations, virtual and AI augmented reality, and AI integration in BIM were explored. The outcomes of the seminar were highly beneficial, as participants gained a deeper understanding of BIM principles, its applications, and the benefits of adopting this technology in real-world projects. Attendees were introduced to industry-standard BIM tools, enhancing their technical skills and encouraging them to further explore BIM in their careers. The seminar also provided a networking platform, allowing participants to engage with professionals and stay updated on industry trends. Moreover, it contributed to improved decision-making capabilities, critical thinking, and problem-solving skills, which are essential for efficient project delivery.

Students and staffs participated in BIM orientation program

SITE VISIT AT PAZHASSI DAM








Snapshot from site visit at Pazhassi Dam

The Department of Civil Engineering at St. Thomas College of Engineering and Technology recently organized an insightful site visit to Pazhassi Dam on January 20, 2025. In collaboration with SATTVA, the Civil Engineering Association, this visit provided students with a hands-on learning experience about hydraulic structures and water management systems. students and faculty were warmly welcomed by the dam authorities, followed by an engaging introductory session. The visit included an in-depth analysis of the dam's structural components, including spillway gates, sluice mechanisms, and emergency procedures. A key highlight was the exploration of the inspection gallery, where real-time data collection systems for structural health monitoring were demonstrated. Additionally, the students observed the aqueduct systems which plays a crucial role in irrigation and flood management. The visit reinforced classroom concepts with real-world applications, enhancing students' understanding of sustainable water resource management. With expert guidance from engineers on-site, this experience proved invaluable in bridging theoretical knowledge with practical exposure. Stay tuned for more such educational endeavors as we continue to explore the dynamic world of civil engineering.

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STICK OF STRENGTH - THE ULTIMATE BRIDGE CHALLENGE

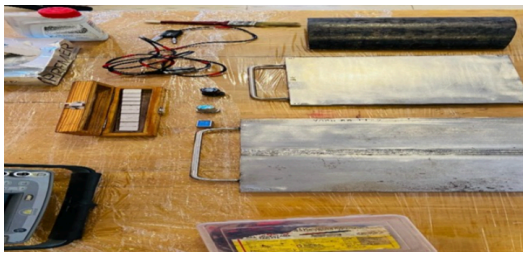
Snapshot from Stick of Strength

The "Sticks of Strength - The Ultimate Bridge Challenge" was conducted on January 24, 2025, in association with the Civil Engineering Association, providing structural engineering students with a hands-on opportunity to apply fundamental principles of design, material behavior, and load distribution. Participants were tasked with designing and constructing bridges using wooden sticks and glue, adhering to strict guidelines regarding dimensions and weight constraints while striving to achieve the highest load-bearing capacity with minimal material usage. The event emphasized key engineering concepts such as load distribution, structural efficiency, material properties, design optimization, and failure modes, allowing students to explore real-world applications of structural integrity, tension, compression, and shear forces. By testing various bridge configurations, including trusses, arches, and beams, competitors refined their understanding of structural performance under stress while balancing complexity with efficiency. The competition also encouraged teamwork and problem-solving, requiring participants to collaborate effectively to overcome design and construction challenges. A crucial aspect of the event was the testing phase, where bridges were subjected to incremental loading to assess their performance, durability, and failure modes, providing participants with valuable insights into real-world engineering challenges. The outcomes of the event included an enhanced understanding of structural principles, hands-on application of theoretical knowledge, improved problem-solving and critical-thinking skills, and greater exposure to the engineering design process. Participants learned about the limitations and performance characteristics of materials, gained practical experience in analyzing structural failures, and developed innovative approaches to optimizing designs. The competition also served as a training ground for future engineering challenges, helping students prepare for advanced structural design and construction scenarios where efficiency, safety, and innovation are paramount. The overall feedback from participants was highly positive, with many appreciating the practical learning experience and the opportunity to apply engineering concepts in a competitive yet educational setting.

WORKSHOP ON NON-DESTRUCTIVE TESTING

The two-day NDT workshop was organized by the Civil and Mechanical Engineering departments in association with IEDC on January 20th and 21st, 2025. It was conducted for 8th-semester Civil Engineering and 6th and 8th-semester Mechanical Engineering students. The workshop was led by Mr. Hari Krishnan M (QA/QC Engineer), Mr. Shins Joseph, and Mr. Arun M R, NDT Technicians from Intway Inspection Technology and NDT Pvt. Ltd. A total of 52 students participated, gaining hands-on experience with modern non-destructive testing (NDT) instruments. The sessions, held from 9:00 AM to 4:00 PM, were assisted by Assistant Professors Ms. Alphy Mathew and Mr. Adharsh Madhu, in coordination with SATTVA and ARMS-STM. The aim was to teach students how to use NDT methods for detecting material defects without causing damage. Intway Inspection Technology & NDT Pvt. Ltd., the organizing company, has been a leader in NDT services since 1989, providing training in oil and gas, shipbuilding, mechanical and civil QA/QC, and safety. Mr. Hari Krishnan M, with nine years of experience, guided students in understanding various NDT techniques. Mr. Arun M R and Mr. Shins Joseph demonstrated different testing methods, such as ultrasonic testing, liquid penetrant testing, and magnetic particle testing. The workshop covered key NDT methods, including Visual Testing, Radiography, Ultrasonic Testing, Magnetic Particle Testing, Liquid Penetrant Testing, Eddy Current Testing, Acoustic Emission Testing, Thermal Imaging, and Leak Testing. The workshop helped students improve their practical skills, understand industry standards like ASME, API, and ASTM, and learn how NDT ensures safety and quality in engineering. The event was well-received, and students appreciated the practical learning experience.

Snapshot from NDT Workshop



IGNITE 2024

PAVEMENT DESIGN AND EVALUATION: A COMPREHENSIVE APPROACH TO OPTIMIZING HIGHWAY PERFORMANCE

31/12/2024

The expert talk dedicated to the evolving landscape of highway infrastructure. As the demands on our transport networks grow, the need for long-lasting, high-performance highway systems has never been more critical. This session is designed to provide professionals and students alike with an integrated understanding of modern methodologies, sophisticated tools, and the latest techniques that are currently redefining how we optimize pavement design and enhance structural durability.

The program begins with a deep dive into the Fundamentals of Pavement Design, moving beyond basic concepts to explore the intricate balance between structural and functional design principles. Attendees will examine the diverse factors that influence long-term pavement performance—ranging from the physical properties of innovative materials to the heavy demands of shifting traffic loads and extreme environmental conditions. By integrating cutting-edge materials and technologies into the design phase, engineers can ensure that infrastructure is built to withstand the challenges of the next century.

A significant portion of the session will focus on Evaluation and Performance Monitoring. In this segment, we will detail specific techniques for assessing pavement health, including the analysis of surface distress, roughness, and deflection. A key highlight will be the application of nondestructive testing (NDT) methods, which allow for thorough assessments without damaging the existing assets. We will discuss how these data points feed into predictive maintenance models, allowing for more efficient and cost-effective rehabilitation planning that prevents minor issues from becoming major failures as they are resilient.

In alignment with global environmental goals, the discourse will shift to Sustainability in Pavement Engineering. We will explore practical strategies for reducing the carbon footprint of the construction industry, specifically through the incorporation of recycled materials and the use of warm mix technologies. By examining how these greener alternatives can be implemented without compromising quality, this segment aims to empower participants to design road networks that are as environmentally responsible

Resource person,Dr. Goutham Sarang is a Junior Scientist at the National Transportation Planning and Research Centre (NATPAC) in Kozhikode, Kerala, specializing in the Highway and Bridges Division. An expert in civil engineering, he holds a PhD and M Tech in Transportation Engineering from the National Institute of Technology (NIT) Karnataka His core research interests include pavement materials, bituminous mixtures, soil stabilization, and transportation design.

Mr. Shijith P P is a transportation engineering professional currently serving as a Scientist B at NATPAC. He holds an M Tech in Transportation Engineering from NIT Karnataka, Surathkal.His extensive work experience includes roles as a Highway cum Pavement Design Engineer at Louis Berger, a Deputy Manager at ICT New Delhi, and a Project Engineer at NATPAC Trivandrum. His expertise covers transportation planning, traffic engineering, pavement evaluation, and software skills such as MX Road.

Group photo from expert talk

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