MITS

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE

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A Report on

Workshop on

"Design Thinking, Critical Thinking & Innovation Design"

Organized by

Department of Civil Engineering

in association with

ASCE MITS Student Chapter, Institution's Innovation Council (IIC), ED Cell & Builders club

Date: 31.01.2026

Report Submitted by: Mrs. Kandukuri Anitha, Assistant Professor, Department of Civil Engineering; Dr. Nakkeeran G, Assistant Professor, Department of Civil Engineering, MITS.

Resource Person Details: Dr. Poonguzhali S, Professor, Aarupadai Veedu Institute of Technology (AVIT), Chennai.

Attendance: 90+ Students and Faculty Members (Civil Engineering & other disciplines)

Mode of Conduct: Hybrid (Physical Venue: LB211 & Online Platform: Google Meet)

Venue:LB211

Report Received on 09.02.2026.

Objective of the Program:

To equip students with the fundamental frameworks of Design Thinking and Critical Thinking for innovative problem-solving in engineering.

To foster an innovation-driven mindset and introduce systematic approaches to idea generation and project design.

To bridge the gap between theoretical knowledge and creative, user-centric solution development.

To inspire students to apply these methodologies in their academic projects and future careers.

Program Overview:

The Department of Civil Engineering, in collaboration with its ED Cell, Builders Club, and ASCE Student Chapter, successfully organized a hybrid workshop on "Design Thinking, Critical Thinking & Innovation Design" on 31.01.2026. The workshop was led by the esteemed Chief Guest, **Dr. Poonguzhali S**, Professor from AVIT, Chennai.

The session provided participants with a deep dive into the stages of Design Thinking—Empathize, Define, Ideate, Prototype, and Test—and contrasted it with structured Critical Thinking processes. Dr. Poonguzhali illustrated concepts with real-world case studies from technology and engineering domains, emphasizing the role of innovation in sustainable and smart infrastructure development.
The hybrid mode enabled wide participation, with students engaging actively through interactive polls, breakout room discussions, and a live Q&A session.

Program Highlights:

- In-depth presentation on the 5-stage Design Thinking framework by the resource person.
- Interactive sessions on developing Critical Thinking skills for engineering problem analysis.
- Case studies on AI, data mining, and smart systems relevant to civil engineering applications.
- Hands-on activity where participants applied Design Thinking to a sample problem statement.
- Active mentoring and guidance provided to students on integrating innovation into their projects.
- Hybrid engagement allowed both in-person and remote attendees to participate fully.

Outcomes of the Program:

- Enhanced understanding of structured innovation processes among students.
- Improved ability to approach engineering challenges with user-centric and iterative thinking.
- Increased awareness of the intersection between technology (AI/ML) and civil engineering innovation.
- Strengthened collaborative and presentation skills through group activities.
- Inspired students to participate in hackathons, project competitions, and research initiatives.

Program Outcomes (POs) Covered:

PO3: Design/Development of Solutions
PO6: The Engineer and Society
PO9: Individual and Team Work
PO12: Life-long Learning

Knowledge Outcomes (KOs)

- **KO 1 – Innovation Methodology:** Understanding of Design Thinking and Critical Thinking frameworks.

Sustainable Goals

SDG 4 – Quality Education: Promoting innovative pedagogy and critical thinking.
SDG 9 – Industry, Innovation, and Infrastructure: Linking creative thinking to sustainable infrastructure development.

Conclusion

The workshop successfully introduced students to powerful frameworks for innovation and complex problem-solving. Dr. Poonguzhali S's expertise and engaging delivery motivated participants to adopt design-driven approaches in their academic and professional pursuits. The programme reinforced the department's commitment to nurturing holistic, forward-thinking engineers capable of contributing to a smarter and more sustainable future.