

Innovation in Engineering Education – IEE 2025

The planned topics for the sessions

1. Innovative Teaching Methods in Engineering Education

- Application of active learning techniques in engineering education
- Flipped classroom and blended learning in engineering programs
- Virtual and augmented reality in education
- The role of digital tools and e-learning platforms
- Gamification and game-based learning in engineering education

2. Teaching Engineering Design and Systems Science

- Multidisciplinary approaches in education: engineering design and systems thinking
- Teaching model-based design: using mathematical and physical models
- Educational challenges and opportunities in systems science

3. Data Science and Artificial Intelligence in Engineering Education

- Developing data science competencies for engineering students
- Teaching artificial intelligence and machine learning
- AI and data-driven approaches to solving industrial and engineering problems
- Ethical issues of AI in engineering education

4. Sustainability and Engineering Ethics in Education

- Integrating sustainability into the engineering curriculum
- Teaching engineering ethics: responsible engineering practices
- Environmental impacts in engineering design and education
- Social responsibility and the role of engineers in sustainability

5. Transdisciplinarity and Integrated Approaches

- Integration of engineering education with social sciences
- Interdisciplinary collaboration in educational innovations
- The role of the humanities and social sciences in engineering education

6. Industry Collaboration and Integrating Real-World Problems into Education

- Integrating real-world industrial problems into project-based education
- Enhancing university-industry collaborations in engineering education
- Simulation techniques and modeling real-world problems for educational purposes

7. Digital Technologies and the Future of Engineering Education

- The impact of digitalization on engineering education and the labor market
- Industry 4.0 and the challenges for engineering education
- Robotics and automation in education

8. Skills Development for Future Engineers

- Teaching creative problem-solving and innovation
- Developing critical thinking and systems thinking
- Communication and teamwork skills for engineering students

9. The Future of Education: Hybrid and Remote Learning

- Developing and evaluating hybrid educational methods
- Distance learning and virtual collaboration in engineering education
- Creating international learning communities through online platforms

10. Didactic Innovations and Assessment Methods

- Innovative assessment methods for evaluating engineering students' performance
- Competency-based education and assessment approaches
- Learning analytics and data-driven decision-making in education