eLearning & Engineering at EDUCON

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Open Education and OERs Repositories

Learn how open education and open educational resources (OERs) are changing the rules of education and how to apply them to your everyday teaching.

http://ieee-edusociety.org/
EDUCON2018 – IEEE Global Engineering Education Conference
Emerging Trends and Challenges of Engineering Education

Date and Venue
IEEE EDUCON 2018 will be organized by the University of La Laguna, University de Vigo and National University of Distance Education, Spain. The event will be held in Santa Cruz de Tenerife, Canary Islands, Spain, April 18-20, 2018. Several pre-conference workshops will be held on April 17, 2018.

Theme
"Emerging Trends and Challenges of Engineering Education"

http://www.educon-conference.org
1. Infrastructure and Technologies for Engineering Education
2. Innovation, Methods, Teaching and Learning
3. Attracting, Engaging and Retaining Human Talent to Engineering
4. Serious Games, Game-Based Learning and Gamification for Engineering
5. Virtual and Remote Labs in Engineering Education
Infrastructures & Technologies

Mining
Architectures
Federated
computing
Analytics

Learning
Open
cloud
Mobile
work
Intelligent
Ubiquitous
Source

Wireless
Web
Education
Virtual
Platforms
Standardization

Ontologies
Semantic
Issues
reusability

Networking
Systems
Collaborative

Interoperability
Innovation, Methods, Teaching and Learning

ACTIVE LEARNING AND ACTIVE METHODOLOGIES

- eAssessment and new assessment
- Life long learning and non traditional students
- Technology enhanced learning for students with special needs
- Flipped Learning and Classroom
- Learning environments that foster innovation and entrepreneurship
- Knowledge and Competencies in Engineering Education
- Open Education
- MOOCs, SPOOCs, NOOCs, MOOLs in Engineering
- Flipped Learning and Classroom
- Project and Problem based Learning
Attracting, Engaging and Retaining Human Talent to Engineering

Competences
attraction
Programs Frameworks
individual differences
Laboratories
Innovative
Competitions Graduate intervention
Preparing Faculty

Engineering
Students
STEAM
Globalization
Attracting promotion Curricula practices Gender retaining New
STEM minorities
Education

IEEE EDUCON
Serious Games, Game-Based Learning and Gamification for Engineering Education
Virtual and Remote Labs (V&RL) in Engineering Education
Virtual and Remote Labs (V&RL) in Engineering Education

http://unilabs.dia.uned.es/

https://remotelab.ap.polyu.edu.hk/

OpenHybrid.org: https://vimeo.com/13:

https://www.farlabs.edu.au/
eLearning & Engineering Education

- Studying Engineering online is possible now but is not yet widespread;

- **Quality of online engineering courses** must be comparable or better than face to face courses and **some competences can be augmented by online methods**.

- Engineering education has special needs when offered in a distance mode, including consideration of how to **provide hands on experiences**:
  - Laboratories are a mainstay of engineering education, as are mathematical foundations and design tools -> solved by **Virtual /Remote hands-on Labs & Home labs based on Arduino**
  - Some materials requires significant use of mathematics, so is not as easy to implement as topics that require only text-based discussion -> solved by **Note digital tablets**
  - Design tools (i.e. CAD) often require computing power and graphics that are not always readily available in distributed networked environments -> solved by **online CAD & cloud CAD**
The 10 institutions most frequently identified as current leaders in engineering education

Common features of the ‘current leaders’

- Established international profile
- External engagement and educational collaborations
- Common Pedagogical features
Common pedagogical features of the ‘current leaders’

• **Pathways** and linkages for students to engage with the university’s research activities;

• Long-standing **partnerships with industry**

• A wide range of **technology-based extra-curricular activities and experiences** available to students;

• Multiple opportunities for **hands-on, experiential learning** throughout the curriculum, often focusing on “**problem identification as well as problem solution**”, and typically supported by **maker spaces and team working areas**;

• The application of **user-centred design throughout the curriculum**, often linked to the development of students’ **entrepreneurial capabilities** and/or engaged with the **social responsibility agenda**;

• **Emerging capabilities in online learning and blended learning**;

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