SUSTAINABLE ENGINEERING EDUCATION EMBEDDED CURRICULA RESEARCH PROJECT

Smith, Anthony Edward; Soeiro, Alfredo*; Berge, Ragna Ann; Atabarut, Tamer; Atkinson, John; Caratozzolo, Patricia*.

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(*Presenting)

Importance of sustainability in all engineering education

- Qualitative research
- Engineering Learning Curricula
- Future work practice
- Faculties and institutions
- Corporate and government policy
- Continuing Engineering Education

Sustainability Education & Research IN Action (SERinA)

- Database
- Best practices
- Engineering Education
- CEE practice
- Websites
- Academics
- Professional organisations

Future

- Interviews
- Companies
- Indicators
- Records of decisions
- Website analytics
- Number of contributions

Sustainability

- "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED)
- "Sustainability for the planet is not a sideshow" (Smith, la Grange, Soeiro)
- 17 United Nations Sustainable Development Goals
- UNESCO "Engineering for Sustainable Development"

Competences needed

- Critical thinking
- Problem solving beyond technical
- Daily practice like safety
- Mindset and toolsets
- IACEE Porto Declaration
- Innovation in Continuing Professional Development:

Resources

- Case studies
- Examples
- Policies
- Projects
- Initiatives
- Sustainability strategies

Case 1

- 30-credit MS degree program
- Far-reaching diversity of sustainability content
- Interdisciplinary training
- Different backgrounds
- "Ethics of Engineering Sustainability"
- "Economics of Engineering Sustainability"
- University at Buffalo (SUNY)

Case 2

- Master in Engineering Management
- Mixture of technical and soft
- Manage and lead projects
- Bachelor background
- Legal and ethical principles, leadership, innovation, and sustainable development
- Tecnlogico Monterrey

Case 3

- Qualification framework
- Safety and Health Construction Coordinators
- Quality criteria
- Knowledge, skills and attitudes
- Incorporate UNSDGs
- Sustainability concerns about Ethics, Work, and Health
- ISHCCO

Case 4

- Green Deal - European Commission
- Green Competence Framework
- Joint Research Centre think tank
- Dedicated for education and training
- Embodying sustainability values
- Embracing complexity in sustainability
- Envisioning sustainable futures
- Acting for sustainability.

Conclusions

- Sustainability to be "integrated into engineering education"
- Undergraduate and graduate
- Active engineers (mandatory CPD?)
- Use GreenComp to design education and training
- "God made the World and Engineers Change the World" (unknown source)

Thank you!

pcaratozzolo@tec.mx
avsoeiro@fe.up.pt