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BENT200 Simulation-based and Hands-on Teaching Methodologies

ECTS Value: 5 ECTS
Self-Study Hours: 64

Contact Hours: 25
Assessment Hours: 36

Overall Objectives and Outcomes

This module gives the skills and knowledge to provide improved students' learning experience. First the traditional hand-on activity-based laboratory in Engineering Technology is reviewed and then compared with simulation-based labs which has gain popularity in the field of engineering and technology. Finally, a number of recommendations for improving students learning using each methodology or a combination of both is provided.

By the end of this module, the learner will be able to:

Competences

a. understand enhanced students' learning experiences with methodological teaching techniques;
b. understand the theoretical framework of traditional hands-on activity based on laboratory for Engineering Technology;
c. understand the theoretical framework of emerging simulation-based activities for the field of Engineering Technology.

Knowledge

a. select and use appropriate teaching methodologies techniques for a particular application / subject in Engineering Technology;
b. apply traditional hands-on activity based on laboratory for a specific application / subject in Engineering Technology;
c. apply simulation-based activities for a specific application / subject in Engineering Technology.

Skills

a. provide a well-documented activity for students both for hands-on and simulation activity;
b. adjust to the necessary needs of the class cohort.

Assessment Methods

This module will be assessed through: Practical Assignment(s) (100%)

Suggested Readings

Core Reading List:

1. Goodhew, P.J. (2010). Teaching Engineering: All you need to know about engineering education but were afraid to ask. UK: The Higher Education Academy. Available from: http://core.materials.ac.uk/repository/teachingengineering/teaching_engineering_goodhew.pdf
2. Felder, R.M. and Brent, R. (1999). How to improve teaching quality.Quality Management Journal, 6(2), 9-21.

Supplementary Reading List:

1. NSPE (2013). Professional Enginering Body of Knowledge: Prepared by the Licensure and Qualifications for Practice Committee of the National Society of Professional Engineers.Available at: https://www.nspe.org/sites/default/files/resources/nspe-body-of-knowledge.pdf
2. Effective Adult Learning: A Toolkit fir Teaching Adults. Available at: http://www.nwcphp.org/training/opportunities/toolkits-guides/effective-adult-learning-a-toolkit-for-teaching-adults;
3. Lang, J.M. (2016). Small Teaching: Everyday Lessons from the Science of Learning. Jossey-Bass.
4. Oakley, B. (2014). A Mind for Numbers: How to Excel at Maths and Science. TarcherPerigee.

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