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MENT101 Pedagogy for Engineering Technology

ECTS Value: 5 ECTS

Overall Objectives and Outcomes

This unit provides the opportunity for students to explore Engineering Technology from the engineer's point of view and at the same time from a teacher perspective as technology is applied in workshops and classrooms at specialised training centres. Participants are also given the opportunity to reflect on social and ethical day to day responsibilities in the circles of vocational schools, manage people and projects, creates research-based diagnosis to typical problems and use multi-disciplinary knowledge gathered from this unit and throughout their career.

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

Competences:

a. perform critical evaluation and analysis to improve attendance, discipline and workshop control during practical vocational sessions and at the same time keep students highly motivated;
b. engage in literature to evaluate how technologies to improve the quality of teaching and the general safety in workshops can be used;
c. integrate concepts from related technologies into design of a product component or product;
d. design a survey to evaluate the learning achieved by students and general feeling of students at the end of a vocational unit;
e. evaluate Engineering technology Vocational Education and Training finance requirements;
f. perform critical evaluation on techniques to lead a social and ethical discussion on subjects such as dress codes in workshops; hanging jewellery with or without religious symbols.

Knowledge:

a. explain competency-base vocational engineering education and training;
b. demonstrate knowledge of inquiry-based teaching and learning methodologies as applied to Technology Engineering education and training;
c. demonstrate knowledge of the European Qualification Framework and the Malta Qualification Framework;
d. demonstrate knowledge of systems and methodologies of how to improve teaching quality;
e. demonstrate knowledge of the Learning Outcome Approach, also known as the Instructional Objectives Approach;
f. demonstrate knowledge of how the concepts of 'high constructability', 'operability', 'Maintainability and reliability' with 'cost control', are achieved with related technologies;

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Skills:

a. develop and deliver Engineering Technology lessons with formative and summative learning assessments;
b. design and conduct an analysis of needs, of learners in an Engineering Design Technology context;
c. analyse the fabrication or manufacturing resources required and related methodology to produce a product considering workshops available;
d. apply practices that integrate engineering technology disciplines such as technical design and fabrication techniques to achieve integrated, developmentally appropriate learning experiences for all students.

Assessment Methods

This module will be assessed through: Assignment

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.
3. Lucas, B., Spencer, E., & Claxton, G. (2012). How to Teach Vocational Education: A Theory of Vocational Pedagogy. London: City & Guilds Centre for Skills Development.

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.