Institute for Education, Martin Luther King Road, Pembroke PBK 1990. Tel: +35625982001 | Email: ife@ilearn.edu.mt

MENT209 The Engineering Technology Educator

ECTS Value: 5 ECTS
Contact Hours: 25
Self-Study Hours: 60
Assessment Hours: 40

Overall Objectives and Outcomes

This module focuses on the role of the Engineering Technology educator in making use of the VET subject to support students in becoming active and responsible learners. The educator needs to be a role model for students and to also be aware of the problematic issues faced by society at a local, national, and international level, to link these to the VET subject. Furthermore, the educator needs to be aware of what students are learning in other subjects to also make appropriate links with these.

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

Competences:

a. Plan engaging practical and applied Engineering Technology lessons in a safe learning environment;
b. Deliver practical and applied Engineering Technology lessons making use of limited tools and resources;
c. Make use of appropriate digital resources to enhance students' learning both in class and at home;
d. Manage students' learning and behaviour during Engineering Technology lessons in both classrooms and workshops;
e. Link Engineering Technology to other subjects being studied by students;
f. Identify topics related to local, national and international problems in Engineering Technology lessons;
g. Integrate local, national and international problems in the teaching and learning of Engineering Technology;
h. Plan professional development and learning opportunities for own personal and professional growth as an Engineering Technology educator;
i. Prepare practical and applied lessons when tools and resources in the workshop may be limited;

Knowledge:

a. Identify possible hazards in an Engineering Technology learning environment;
b. Understand different student behaviors in classes and in workshops;
c. Outline strategies that can be used to improve student behaviour and learning during Engineering Technology practical and theoretical sessions;
d. Be aware of the curriculum of other subjects being studied by students;
e. Be aware of local, national and international problems that have adverse effects on societies;
f. Explain the United Nation's Sustainable Development Goals for 2030;
g. Understand the importance of professional development for Engineering Technology educators;
h. Be aware of the various existing opportunities of professional development

Skills:

a. Minimize hazards in Engineering Technology workshops;
b. Plan, deliver and review practical and applied lessons making use of limited tools and resources;
c. Create a safe and motivating environment in workshops where students learn, behave; and act responsibly;
d. Make appropriate use of digital resources to enhance students' learning;
e. Plan lessons that include references to local, national and international problems that can be related to the field of Engineering Technology;
f. Plan own professional development to grow as an Engineering Technology educator;
g. Understand how communication during practical and applied activities can be improved;
h. Analyse what motivates students during Engineering Technology lessons;

Assessment Methods

This module will be assessed through: Assignment, Reflection.

Suggested Readings

Core Reading List:

1. Andersson, P., & Köpsén, S. (2015). Continuing professional development of vocational teachers: Participation in a Swedish national initiative. Empirical Research in Vocational Education and Training, 7(1), 1-20.
2. Lloyd, C., & Payne, J. (2012). Raising the quality of vocational teachers: continuing professional development in England, Wales and Norway. Research Papers in Education, 27(1), 1-18.
3. Balasubramanian, N., Wilson, B. G., & Cios, K. J. (2006). Innovative methods of teaching science and engineering in secondary schools. Inquiry, 1(2), 1-6.
4. Richards, L. G., Laufer, G., & Humphrey, J. A. (2002, November). Teaching engineering in the middle schools: Virginia middle schools engineering education initiative. In 32nd Annual Frontiers in Education (Vol. 1, pp. T1C-T1C). IEEE.
5. National Academies of Sciences, Engineering, and Medicine. (2020). Building capacity for teaching engineering in K-12 education. National Academies Press.
6. Ministry of Education and Employment. (2012). Teachers' Code of Ethics and Practice.
7. Queiruga-Dios, M. Á., López-Iñesta, E., Diez-Ojeda, M., Sáiz-Manzanares, M. C., & Vázquez Dorrío, J. B. (2020). Citizen science for scientific literacy and the attainment of sustainable development goals in formal education. Sustainability, 12(10), 4283.

Supplementary Reading List

1. Nguyen, T. P. L., Nguyen, T. H., & Tran, T. K. (2020). STEM education in secondary schools: Teachers' perspective towards sustainable development. Sustainability, 12(21), 8865.
2. Caruana, H. Please cite this publication as: ReferNet Malta (2018). Cedefop opinion survey on vocational education and training in.
3. https://sdgs.un.org/goals

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