Module 1: Remote (Online) Engineering

Nominal duration: 5 weeks (40 hours total time commitment)

This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study.

Remote Engineering, also referred to as Online Engineering, is a recent development in Engineering and Science. Its aim is to facilitate the shared use of equipment, resources, and specialized software such as simulators. The International Association of Online Engineering (IAOE) is an international non-profit organization. Its objective is to encourage the wider development, distribution and application of Online Engineering (OE). The main forum of the OE community is the annual International Conference on Remote Engineering and Virtual Instrumentation (‘REV’).

According to the IAOE the reasons for the growing importance of sharing engineering resources include the growing complexity of engineering tasks; the increasing proliferation of specialized and expensive equipment as well as software tools and simulators; the need for expensive equipment and software tools/simulators in short-lived projects; the application of high-tech equipment even in small and medium-sized enterprises; the need for highly-qualified staff to control new equipment, and the demands of globalization and division of labor.

This module will create an awareness of technologies and trends in the area of Remote Engineering.

PRE-REQUISITE
MODULES/UNIT(S)
NONE

ASSESSMENT STRATEGY
To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.

SUMMARY OF LEARNING OUTCOMES
1. Examine and discuss the use of Remote (Online) Technologies in contemporary applications
Learning Outcome 1
Examine and discuss the use of Remote (Online) Technologies in contemporary applications

Assessment Criteria
1.1 Discuss, with examples, the fundamental principles of virtual instrumentation

1.2 Discuss, with examples, the fundamental principles of virtual and remote laboratories and services

1.3 Examine the technologies available for remote process visualization

1.4 Examine commercially-available remote control products and technologies for engineering applications

1.5 Examine and discuss the application of commercially-available products and technologies in military and domestic autonomous (unmanned) vehicles

Delivery Mode
A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, Power Points, notes, reading and study materials (in pdf, html and word format) accessed through the Moodle Learning Management System (LMS).