Education and Training using a Synchronous (and Asynchronous) Online Learning Platform

To engage and retain students studying remotely

The Engineering Institute of Technology (EIT) has been honing its online platform for almost 15 years. Our focus is on engineering and technology, but there are tips and tricks included here that could apply equally to other disciplines.

A number of resources follow:

1. In late 2019 and in early 2020 Dr Steve Mackay presented extensively to the Deans from a number of South African universities. He was invited to share his knowledge and the online methodologies EIT uses because the South African universities have been experiencing overcrowding and on-campus protests (the latter have made it difficult for students to attend campus).

   This edited version of the presentation/workshop offers a little background information on EIT as an education and training provider. The rest is drawn from Steve's book (Refer to no. 4). It covers some **general approaches to good online education and the system architecture**, including remote and virtual labs, a Learning Management System and an interface with students for live tutorials.

To view the presentation slides please use this link:
https://eitidc.com/files/Online-Learning-Workshop-rev-12.pdf

2. This next link offers a glimpse into some exciting **remote labs** (experiments with real equipment) and **virtual labs** (or simulations in the cloud). The examples shown include:

- Accessing the lab (through a queued system).
- A Programmable Logic Controller (using Ladderlogic).
- Coupled Tanks (a Process Control problem).
- Access to a real Oil Refinery.
- Electrical Resonance using National Instruments Data Acquisition hardware.
- Testing of Operational Amplifiers using a Spice Simulation.
- Applying MATLAB to an electrical Power Application.

To view the remote labs please use this link:
https://vimeo.com/showcase/6754042

3. A number of our **policies and procedures** are pertinent to the online platform:
   - **Academic Honesty and Misconduct Policy & Procedure; Academic Misconduct Detection Policy** - it includes details on how we monitor academic integrity in an online (& on-campus) environment e.g. TurnitIn, **IRIS** etc.

(Our students also complete an Academic Integrity Quiz as part of their Orientation activities.)

- **Safety and Security Policy - Students and Staff** – includes info for on-campus and online.

- **Student Support Policy & Procedure** - includes info for on-campus and online.

- **Assessment and Student Progress Policy & Procedure.** We make a certain level of attendance mandatory (they can, instead, listen to the live session recording and submit written summaries to get their attendance mark). We require 70% attendance at live tutorials and we tie 5% of the unit mark to this attendance. A student receives 0% or 5% - based on their 70% attendance.

To view our policies please use this link:
https://www.eit.edu.au/cms/about-eit/policies-procedures

4. Dr Steve Mackay returned to university to complete a PhD in online methodologies. He realized that the internet could facilitate an online platform – even for students of engineering – and reach those based remotely and working full time. The aim of his thesis was to find that optimal approach; one which engages students in the learning process and produces solid learning outcomes.

To access Steve's book please use this link:
https://eitidc.com/files/Practical_Online_Learning_and_Laboratories_5_April.pdf

5. It has been necessary for us to design **a unique approach to creating materials** for EIT's multi-modal education. Our Academic Resources Manager, Danielle Techera, presented on this at the 2019 TEQSA Conference in Melbourne.

To view Danielle's slides please use this link:
https://eitidc.com/files/forms/CricosAgents/Academic-Resource-Development-TEQSA-2019.pdf