

Enhanced Learning & Employability of Engineering students

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Current Situation

- › Gap between knowledge acquired at university & requirements of employers
- › Lack of structured approach for integrated upskilling of junior engineers by employers
- › Long status as a junior engineer
- › Lower remuneration
- › Lack of exposure to important engineering aspects
- › Lack of confidence and frustration
- › Compromised employability



Generic Improvement Concept

- › Thorough knowledge of relevant first principals
- › Familiarity (at least) with wide range of equipment and control concepts
- › Adoption of customised set of relevant practical engineering (mini) skills
- › Practising those skills under an adequately sourced and mentored work experience program
- › Having adequate “coach”/mentor



Enhanced Learning at University

Learning Program:

1. Module 1 (“In House” learning)
2. Module 2 (specially sourced and mentored work experience)

Teachers - outsourced engineering practicing experts



Enhanced Learning at University- Contents

Module 1:

- › Revisiting relevant first key principals
- › Revisiting/learning design equipment and control concepts
- › Adopting a set of relevant practical engineering skills

Module 2

- › Practising of skills and knowledge adopted in Module 1 in selected real business engineering environment under a mentored program



Enhanced Learning at University- HVAC & Energy Management

Module 1

a. **Revisiting relevant first principals and other theoretical concepts:**

- › Refrigeration Cycle and its components
- › Concept of latent heat
- › Concept of cooling
- › Coefficient of Performance
- › Dependence between Pressure and Volume and variable boiling points
- › Ventilation



Enhanced Learning at University- HVAC & Energy Management

Module 1

b. Revisiting/learning variety of HVAC equipment and control, and energy management concepts:

- › Chillers, Cooling Towers, Hot Water heaters
- › Pumps and fans
- › Air Handling Units
- › Variable speed drives
- › Various HVAC Design concepts
- › BMS
- › Energy management and Energy Audits



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Module 1

c. Learning a set of selected engineering skills:

- › Modelling of heat load
- › Calculation of air and water flows
- › Selection of HVAC equipment
- › Execution of energy audit
- › Processing energy data
- › Interrogation of BMS
- › Engineering, Financial and Environmental calculations of energy savings
- › Reporting



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Module 2

Structured work experience:

- › Mentor agrees on scope of works
- › Mentor finds work place
- › Mentor follows progress of student
- › Set of engineering skills from Module 1–c practiced
- › At the end of the work experience the report is submitted to the mentor
- › Final interview and assessment



Enhanced Learning at University- HVAC & Energy Management

Points of difference to other existing learning programs offered by universities:

- › Focus on real consulting market and its requirements
- › Recognised key areas of competency and expertise
- › Customised learning for each participant
- › Adoption of multiple practical engineering mini skills
- › Practising of those skills in real business environment under specific mentoring
- › Increased confidence
- › Increased employability



Q & A

