Process Plant Design Project (CENG0016)

Aims:
The module aims to further develop and test the students' ability to apply the knowledge gained in earlier modules and to apply this to the design of a chemical processing plant in a sustainable context.

Lectures, tutorials and group meetings will provide training in the techniques and tools required to carry out the design project, applying appropriate design concepts and computational tools.

The module also develops the following transferable skills: teamwork, presentation, written communication and project management.

Learning Outcomes:

On completion the students will be expected to:

Understand that design is an open-ended process, lacking a pre-determined solution, which requires:

- synthesis, innovation and creativity;
- choices on the basis of incomplete and contradictory information;
- decision making;
- working with constraints and multiple objectives;
- justification of the choices and decisions taken;

Understand the importance of identifying the objectives and context of the design in terms of:

- the business requirements;
- the technical requirements;
- sustainable development;
- safety, health and environmental issues;
- appreciation of public perception and concerns;
Be able to deploy chemical engineering knowledge using rigorous calculation and results analysis to arrive at, and verify, the realism of the chosen design;

Be able to take a systems approach to design appreciating complexity;
interaction and integration;
Be able to work in a team and understand and manage the processes of:
peer challenge;
planning;
prioritising and organising team activity;
the discipline of mutual dependency;

**Be able to communicate effectively to:**
acquire input information;
present the outcomes of the design clearly, concisely and with the appropriate amount of detail, including flowsheets and stream data;
explain and defend chosen design options and decisions taken;

**Synopsis:**

Chemical engineering design is the creation of a system, process, product, or plant to meet an identified need and serves to:

Develop an integrated approach to chemical engineering;

Encourage the application of chemical engineering principles to problems of current and future industrial relevance including sustainable development, safety, and environmental issues;

Encourage students to develop and demonstrate creative and critical powers by requiring choices and decisions to be made in areas of uncertainty;

Encourage students to take a broad view when confronted with complexity arising from the interaction and integration of the different parts of a process or system;

Encourage the development of transferable skills such as communication and team working;
Give students confidence in their ability to apply their technical knowledge to real problems;