



*FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
Department of Chemical, Metallurgical and Materials Engineering
CHEMICAL ENGINEERING INDUSTRIAL PRODUCTION PLANTS
Competition Day, 4 AUGUST 2017*

Introduction

Chemical and Metallurgical Engineering details all aspects of Industrial Production / Processing Plants. These processing plants can be in any of the chemical and petrochemical, pharmaceutical, explosives, fertilizers, food and beverage and metallurgical industries (refining platinum, gold, etc.).

1. Assignment

You are required to thoroughly research **ONLY ONE** of the following Chemical Engineering production plants:

- **Biodiesel Production Plant (You must choose one of these as starting material, either: used cooking oil OR recycled plastics)**
- **Glass manufacture (process must include recycle glass feed)**
- **Petroleum Refining**

You will use the researched information to build a scaled model of the plant and prepare a technical report explaining the general plant operation / process(es) involved – from start to finish!!! i.e. from raw material feed until the finished product.

2. Materials

You may use any type of material that you wish, use your imagination! Try as far as possible to recycle material, e.g. use plastic bottles, toilet paper holders, straws, yoghurt containers, newspaper, etc. These items are easily obtainable and inexpensive. However, do make sure that your model *really does look like an industrial plant!!!* **Pay attention to detail, this counts!**

3. Objective

To build a scaled model of the plant chosen, as well as prepare a written technical report detailing the production processes from start to finish.

Make sure to also pay attention to safety procedures and identify possible hazards associated with your production plant.

4. Learning objectives / outcomes

The learner will be able:

- To gain knowledge and understanding of a specific (your chosen) chemical engineering plant.
- To collect, organise, analyse and critically evaluate information.
- Demonstrate an understanding of a specific engineering processing plant.



- To communicate technical engineering information effectively using visual and language skills.
- To work effectively as a member of a team.

5. Procedure

- You will construct your scaled model of the chosen Engineering Plant prior to the competition day.
- You will also prepare a written technical report detailing the full plant processes (incorporate a flow sheet as well) and the description of equipment that is used in this plant must be submitted on the day of the competition, together with the model.
- You will also need to do a 10-minute oral presentation on the day, as part of the assessment.

6. Time

Each team will have a maximum of 10 minutes, in which to explain the chosen engineering plant process verbally, with the aid of their constructed model. Each member will also be asked questions for which points will be awarded.

7. Teams

A maximum of three (3) students per group will be allowed to participate.

8. Evaluation

The judge's decision is final. The team will be evaluated on the following:

- The correct design and layout of the chosen production plant (Aesthetic component will also play a part of this evaluation) [5]
 - The content of the report submitted detailing the plant process, and equipment used [2]
 - The questions asked by the evaluators [3]
- [10]**

Contact details

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Appendix:

Search hints for "actual" visual of what these plants may look like.

Use search engine www.google.com type your search keywords and click on the images link in the left top corner of your screen to find pictures for the type of plant (keyword) you have chosen to research.