

University of KwaZulu-Natal

Discipline of Chemical Engineering

Guidelines on level of work – Vacation work training

The Discipline of Chemical Engineering values the provision of vacation work that external companies offer to our students. This guideline is meant to serve as a framework for assisting employers to deploy students in a mutually beneficial manner and to allow them to align their training programmes to the competency level of the student.

First year

First-year students are provided with a foundation in the areas of Mathematics, Physics and Chemistry, with some introductory courses in the fundamentals of chemical engineering. The best tasks for a first-year student would be to accompany a senior individual and gain understanding of the workings of a specific process, manufacturing line or protocol. Interaction with a broad range of engineers, managers, artisans and labourers would be equally important to enhance their awareness of personal relations and communication in a technical environment.

Second and Third Year

During this period, the student would have been exposed to specialist courses and the use of software programmes for more detailed engineering work. Process work on a chemical plant could be conducted, which would include introduction to process equipment and plant operation, shift-work, and investigational work on the plant. Material and energy balance problems and investigations can be carried out, as well as studies of process efficiency and economic evaluation.

Third and Fourth Year

General work on a chemical plant would suffice, especially production and process-oriented work, including maintenance planning, investigation into efficiency of production units and the commissioning of units. Design and planning of process modifications and extensions, including economic aspects, can also be conducted. Larger process engineering projects can also be included here, although the duties of the student will be limited due to the timeframe. Process control applications can also be studied, particularly at the end of the fourth year.

Research and Development work

From the second to fourth year level, research and development work, in an appropriate technical environment, would also constitute acceptable vacation work. Chemical engineering research, preferably of a practical nature, should be carried out (including work in the general areas of fluid mechanics, heat transfer, mass transfer, chemical reaction engineering and process control).

General

In each vacation work period, the allocation of a problem which would test the ingenuity of the student would be particularly useful. The substance of such work could then be used in formulating an appropriate report, which will be assessed at the University. If the work is of a confidential nature, a letter indicating this should accompany the certificate-of-completion form.

Wherever possible, the student should be directly responsible to an engineer.