

MPhil in Advanced Chemical Engineering Practice

Why this programme?

The MPhil in Advanced Chemical Engineering Practice provides chemical engineers with advanced and durable skills to equip them to tackle the demands of working at scientific interfaces and of exploiting new technology, in both large and small companies. The unique features of this programme include both Cambridge and MIT based courses in advanced aspects of chemical engineering practice and in business administration, academic research, and an intensive industrial period at a 'UK company site' to develop professional skills.

Benefits to students

Chemical engineers are increasingly being employed in areas such as life sciences, the environment and new materials, which are outside the conventional core of the discipline. The MPhil develops the essential knowledge and advanced skills required to undertake work at these interfaces. Graduates will have a high level of attainment in both technical and business-related subjects.

Benefits to companies

Companies can benefit from this programme in two main ways. The first is by direct recruitment of the very highly trained and motivated chemical engineers who complete the programme. The second is by hosting an industrial internship for a period of six to eight weeks. Each internship has a 'director' who identifies and sets up suitable problems to be solved by a visiting group of students. There is an emphasis on producing the best solution, given the constraints imposed by the short time, production considerations and imperfect process information likely to be available. The projects therefore deliver quantifiable, added value to the company, remain confidential to the company and can be viewed as high-quality technical consultancy performed by highly trained engineers rather than just student projects which often have marginal impact.

Special features

By requiring students to undertake periods of study and research at the University of Cambridge and to spend time in industry, the programme sets ambitious educational objectives for its graduates, including the development of:

- an advanced understanding of fundamental areas of chemical engineering: chemical engineering thermodynamics, transport phenomena and numerical methods;
- an understanding of how discoveries and other ideas can be exploited effectively, including new company spin-outs, reorganisation of existing company structures, technology licensing etc., by undertaking a series of business-based modules to include topics such as financing, marketing and sustainability;
- the ability to define, organise and undertake a research project within a specified period of time and to present it in writing in an acceptable manner; and

- the ability to work in a team under time constraints whilst interacting with company personnel, to obtain process information effectively, to define optimal outcomes for the company, and to present and communicate results.

For companies providing industrial internships, a unique feature is that each company is urged to make an economic appraisal of each student project to ensure that quantifiable benefits have resulted.

Funding opportunities

Companies can support the programme and draw benefits from it in three main ways:

- by sponsoring their own promising young chemical engineers through the course. A typical candidate will have shown early promise in the company and might have been with it for up to five years since graduation with a first degree in chemical engineering;
- by providing full or partial bursaries, thereby assisting the company with finding new, highly-qualified recruits;
- by hosting an industrial internship. This is an excellent way for a company to view a range of students, with obvious recruitment opportunities, whilst receiving first-rate consultancy or trouble-shooting on difficult projects, the solution of which would have a major impact on its operations.

The Programme Director is always available to discuss these options, or to consider others to suit the individual circumstances of particular companies.

Contact details

For more information please contact:

Dr J. S. Dennis
Department of Chemical Engineering
University of Cambridge
Pembroke Street
Cambridge CB2 3RA UK
Tel.: + 44 (0) 1223 334777
Fax: + 44 (0) 1223 334796
E-mail: jsd1010@cheng.cam.ac.uk