



MSc in Applied Biomolecular Technology

University of Nottingham

The course is designed to train students with a first degree in Biological or Chemical Sciences for work at the research assistant grade in Industrial Research and Development laboratories engaged in biotechnology or similar work. Although it has a full academic content particular emphasis is placed on the skills needed for such work. The course has its origins in a joint Leicester-Nottingham course, which ran at Leicester for eight years, and much of the experience gained from that has been carried over to the new course, which transferred to Nottingham in 1997 with 3 students (pilot year). Since then it has grown steadily in popularity with 28 students in 1999 and this year has 51 students (2005) following a restructuring and merger with the Applied Molecular Microbiology degree previously run in parallel with the ABT course.

The students receive a thorough grounding in theory and techniques for handling proteins, polysaccharides and nucleic acids. They are taught methods such as analytical ultracentrifugation, light and X-ray scattering methods, viscosity measurements. They are introduced to the concepts of gene cloning and heterologous gene expression and the procedures used for enzyme isolation such as ion exchange and gel filtration columns. Last but not least they learn a selection of gel electrophoresis methods (we have conducted a survey which shows that almost every paper in the mainstream literature contains an example of electrophoresis). They have underpinning modules covering **Basic Laboratory Skills** (that includes the fundamentals of Safe Laboratory Practice for working with Microorganisms), **Molecular Microbiology/Biology** and **Biomolecular Science**.

They also take modules on **Genetics and Bioinformatics** - we believe that IT competence is essential and an understanding of molecular databases and data-mining is key for many research areas. The module on **Industrial and Biomedical Macromolecules** covers a wide range of biotechnology applications and in **Industrial Polysaccharides and Drug Delivery** they are introduced to new applications of macromolecules. The **Antibody Biotechnology** module covers a both a variety of applications and finally a course on **Structural Biology** gives the students and understanding of high resolution and solution probes.

The course is rounded off by a placement in an industrial research or development laboratory. Because of the origins of the course the essential feature is seen as work experience. Most of the students have no experience of full time professional research work, and as a result of this some of them decide that laboratory work is not for them. Most however greatly enjoy it. Our aim is that our students should be able to walk into the laboratory and start work. Feedback suggests that on the whole we do achieve this, and that after a very short introduction they are able to make a real contribution to the work. We are acutely aware of the supervision burden that inadequate students might cause, and therefore put in place stringent measures to avoid it.

Almost any work done in an industrial research laboratory is suitable, though in most cases we prefer if the student is given a defined job to do. At the end of the placement they must write a report on their work and give a presentation describing their experiences on return to Nottingham University. Students should be given time and facilities (and sometimes help) to prepare these. Any requests for confidentiality (including the report and presentation) are always accommodated, and in fact 90% of companies request this. The presentation and reports are also treated confidentially, and company representatives are encouraged to attend the student's presentation, held early September. In the past we have been fortunate enough to obtain repeated placements

with, amongst others, GSK, Pfizer, Zeneca, Celltech, British Biotechnology, Astra-Zeneca, Quadrant, Unilever, Nestle, Novartis, Boots and West-Danbiosyst (now Archimedes).

Dates for Placement:

Start date: mid May (15th or after)
Finish date: mid August
(these dates negotiable to suit company arrangements)
Date for student to submit report: 17 August (can be extended in special cases of confidentiality, clearance etc.)
Seminar: 5th September
Viva: 6th September (the external examiner is Dr. Olwyn Byron, University of Glasgow)

Confidentiality:

Where requested both the Course Director, Course Manager/Coordinator, Industrial Supervisor and the External Examiner will sign confidentiality forms. Only those people who have signed confidentiality agreements will see the reports and these will be immediately returned or destroyed. The student's presentation will also be attended by just those who have signed confidentiality agreements.

Payment:

This is not mandatory or indeed expected. Any financial assistance that can be provided (e.g. help with relocation / accommodation costs) is however always appreciated.

Further Course Description

Can be found on the Web page:

<http://www.nottingham.ac.uk/ncmh/> and by clicking on the MSc prompt.