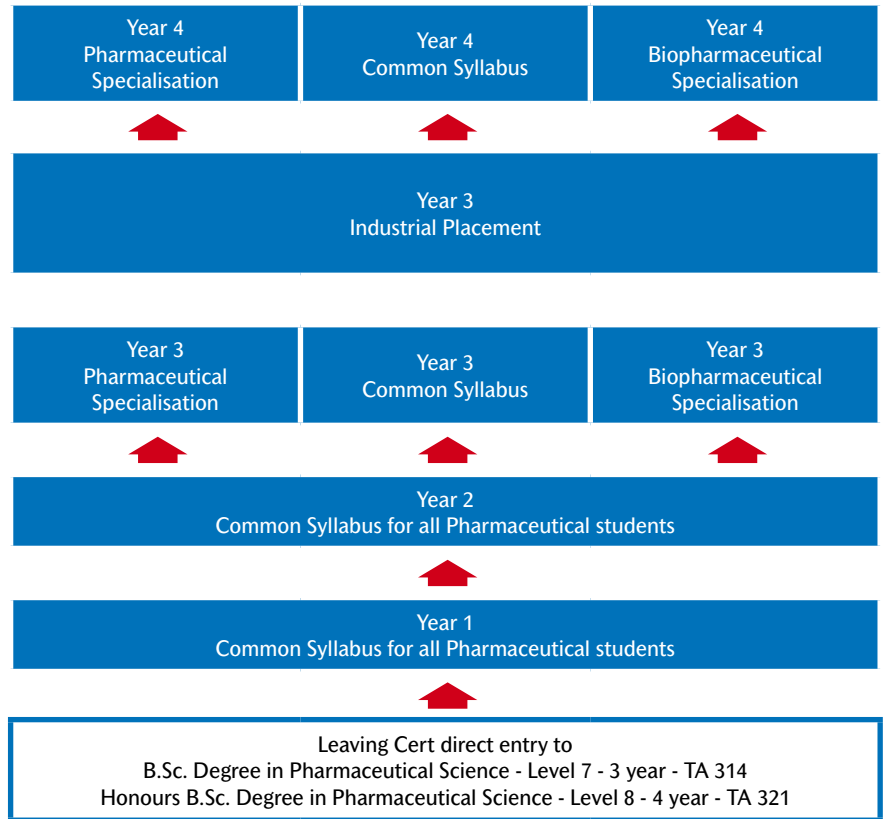


The Pharmaceutical Centre at ITT Dublin



It is an excellent preparation for students about to follow careers in a modern technologically driven industry that operates to very high standards



Pharmaceutical manufacture and formulation is a rapidly expanding industry in Ireland. Nine out of ten of the top companies in the world have operations in Ireland.

ITT Dublin houses an actual fully equipped mini pharmaceutical facility; it is unique in Ireland's educational sector. Known as the National Pharmaceutical Education Centre, it is where students follow the very exacting procedures involved in making powders, tablets, creams, antibiotics, protein drugs, enzymes and the ingredients used in a range of medical treatments. The strict regulatory

controls and quality assurance guarantees that operate in the industry are paralleled here. Student formulations and analysis are carefully monitored and each stage in the parallel production operates to very demanding industry standards.

It is an excellent preparation for students about to follow careers in a modern technologically driven industry that operates to very high standards, and that will attract a large number of young Irish scientists well into the future.



Bachelor Degree of Science – Pharmaceutical Science – TA 314 – Level 7

Pharmaceutical science combines a broad range of biology and chemistry disciplines that are critical to the discovery and development of new drugs and therapies. The course covers the development from discovery through to the formulation of the new treatments and highlights the importance of the regulatory requirements to get a new drug on to the market. This is a three year programme, first year and second year are common and develop the fundamental knowledge in chemistry and biology. In year 3 the student can specialize in either pharmaceutical science targeted at the chemical based pharmaceutical companies or biopharmaceutical science targeted at the biotechnology based pharmaceutical companies. The student also completes a 6-8 month placement as part of the student industrial placement programme (SIPP). This placement gives the student a considerable advantage when seeking employment after completing the course.

CAO Code: TA 314: BACHELOR DEGREE OF SCIENCE – PHARMACEUTICAL SCIENCE

Honours Bachelor of Science Degree Pharmaceutical Science

Length of programme: 3 years

Recent minimum CAO points: New Course

Recent points range for applicants choosing this programme: New Course

Leaving Cert entry requirements for the Honours Bachelor of Science Degree (Pharmaceuticals)

Leaving Certificate with a minimum of Grade C3 in two Higher Level subjects, and a minimum of Grade D3 (Ordinary Level) in 4 other subjects in the Leaving Certificate Examination, which must include Mathematics and English. See also pages 176 - 178.

No Leaving Cert Science subject is required for this programme

Links Scheme

3 Distinctions, Laboratory Techniques (CASLT) (with a pass in Level 5 Maths), Food (CASFX) (with a pass in Level 5 Maths and either Biology or physics as elective modules)

Recognised in Europe

Mature students welcome

Mature applicants (23 years of age) may not be required to meet the minimum entry requirements but may be considered on their merits.

Research opportunities at Post Graduate level

MSc and PhD

Career Opportunities

The pharmaceutical industry in Ireland is an international leader. Opportunities are excellent and graduates are in demand in the following areas: pharmaceutical, health-care, biopharmaceutical, medical devices, biotechnology, and research.

Pharmaceutical Science – TA 314

Fourth Year – Bachelor Degree of Science – Pharmaceutical Science

Semester 8	Process Control Technology	Industrial Statistics II	Project	Bio Pharmaceutics Option Pharmaceutical Biotechnology II Cell Technology	Pharmaceutical Chemistry Option Manufacturing Technology III Organic IV
Semester 7	Systems Validation	Project		Bio Pharmaceutical Option Bioprocess Technology Advanced Biopharmaceutical Technology Practical Course	Pharmaceutical Chemistry Option Organic Chemistry III Unit Processes II
	1	2	3	4	5

Third Year – Bachelor Degree of Science – Pharmaceutical Science

Semester 6	Industrial Placement					
Semester 5	Aseptic Processing and Utilities	Production Management	Good Manufacturing Practice	Environmental Health and Safety	Bio Pharmaceutics Option Pharmaceutical Biotechnology I Protein Technology	Pharmaceutical Chemistry Option Organic Chemistry II Unit Processes 1
	1	2	3	4	5	6

Second Year

Semester 4	Manufacturing Technology II	Pharmaceutical Microbiology	Pharmaceutical Analysis	Computerised Measurement Systems		
Semester 3	Manufacturing Technology I	Organic Chemistry I	Principles of Biochemistry	Industrial Statistics I	Regulatory Affairs	Scientific Communications
	1	2	3	4	5	6

First Year

Semester 2	Biology 2	Chemistry 2	Physics 2	PC Applications	Statistics
Semester 1	Biology 1	Chemistry 1	Physics 1	Laboratory Practice & Procedures	Mathematics
	1	2	3	4	5

Honours Bachelor Degree of Science – Pharmaceutical Science – TA 321 – Level 8

What is Pharmaceutical Science?

The pharmaceutical sciences combine a broad range of biology and chemistry disciplines that are critical to the discovery and development of new drugs and therapies, for example the knowledge and skills required to design and make new anti-cancer and anti-viral agents.

Programme Outline

This course is of four years duration, with two semesters in each year. The course allows students to specialise in either Pharmaceutical or Biopharmaceutical Science. First and second year are common and focus on developing fundamental knowledge and skills in both biology and chemistry.

In year 3 students may then choose to specialise in either pharmaceutical science (targeted at the chemical pharmaceutical/healthcare industry) or biopharmaceutical science (targeted at the biotechnology-based pharmaceutical/healthcare industry). In the first semester of this year, students cover a core of common modules and their selected specialisation. In second semester, students will participate in a 6-8 months industrial placement as part of the Student Industrial Placement Programme (SIPP). The majority of placements will be based in Ireland.

In fourth year, students study their specialised area in more detail, as well as some common modules and a project. The course work is almost equally divided between practical laboratory classes and lecture classes. The course aims to help students to develop knowledge of and practical skills and experience in chemical and biological industrial processes. Students will learn how to apply these valuable skills in solving technical problems in industry. In addition they will learn about the operation of the bio/pharmaceutical industry and the quality control and manufacturing systems employed by industry.

Career paths

The pharmaceutical industry is involved in the making of drug molecules, drug ingredients, tablets, injections, creams, which are used to treat a wide range of illnesses in patients. Ireland is a key location for the pharmaceutical and chemical industry in Europe. 16 of the top 20 companies in the world have operations in

Ireland and have an ongoing need for a highly educated and skilled workforce. The industry continues to expand and currently there is new investment in companies including Wyeth BioPharma, Bristol Myers Squibb, Genzyme, Alza, Takeda and Abbot. These companies alone will be offering approximately 2500 jobs in the immediate future.

CAO Code: TA 321: HONOURS BACHELOR DEGREE OF SCIENCE – PHARMACEUTICAL SCIENCE

Honours Bachelor of Science Degree Pharmaceutical Science

Length of programme: 4 years

Recent minimum CAO points: 210

Recent points range for applicants choosing this programme: 530 - 210

Leaving Cert entry requirements for the Honours Bachelor of Science Degree (Pharmaceuticals)

Leaving Certificate with a minimum of Grade C3 in two Higher Level subjects, and a minimum of Grade D3 (Ordinary Level) in 4 other subjects in the Leaving Certificate Examination, which must include Mathematics and English. See also pages 176 - 178.

No Leaving Cert Science subject is required for this programme

Links Scheme

3 Distinctions, Laboratory Techniques (CASLT) (with a pass in Level 5 Maths), Food (CASFX) (with a pass in Level 5 Maths and either Biology or physics as elective modules)

Recognised in Europe

Mature students welcome

Mature applicants (23 years of age) may not be required to meet the minimum entry requirements but may be considered on their merits.

Research opportunities at Post Graduate level

MSc and PhD

Career Opportunities

The pharmaceutical industry in Ireland is an international leader. Opportunities are excellent and graduates are in demand in the following areas: pharmaceutical, health-care, biopharmaceutical, medical devices, biotechnology, and research.

Pharmaceutical Science – TA 321

Fourth Year – Bachelor Degree (Honours) of Science – Pharmaceutical Science

Semester 8	Process Control Technology	Industrial Statistics II	Project	Bio Pharmaceuticals Option Pharmaceutical Biotechnology II Cell Technology	Pharmaceutical Chemistry Option Manufacturing Technology III Organic IV
Semester 7	Systems Validation	Project		Bio Pharmaceutical Option Bioprocess Technology Advanced Biopharmaceutical Technology Practical Course	Pharmaceutical Chemistry Option Organic Chemistry III Unit Processes II
	1	2	3	4	5

Third Year

Semester 6	Industrial Placement					
Semester 5	Aseptic Processing and Utilities	Production Management	Good Manufacturing Practice	Environmental Health and Safety	Bio Pharmaceuticals Option Pharmaceutical Biotechnology I Protein Technology	Pharmaceutical Chemistry Option Organic Chemistry II Unit Processes 1
	1	2	3	4	5	6

Second Year

Semester 4	Manufacturing Technology II	Pharmaceutical Microbiology	Pharmaceutical Analysis	Computerised Measurement Systems		
Semester 3	Manufacturing Technology I	Organic Chemistry I	Principles of Biochemistry	Industrial Statistics I	Regulatory Affairs	Scientific Communications
	1	2	3	4	5	6

First Year

Semester 2	Biology 2	Chemistry 2	Physics 2	PC Applications	Statistics
Semester 1	Biology 1	Chemistry 1	Physics 1	Laboratory Practice & Procedures	Mathematics
	1	2	3	45	5