MSc
Pharmaceutics
Pharmaceutics is the science of medicines design. This programme addresses the fundamental science underlying the design, development, and manufacture of medicines. MSc Pharmaceutics graduates from UCL are highly skilled scientists capable of taking new drug candidates and developing them into world-class medicines. They are highly competitive in the global jobs market.

The programme is taught by the Department of Pharmaceutics in the UCL School of Pharmacy. The Department houses 16 members of academic staff and ca. 75 PhD students and post-doctoral fellows. It has outstanding teaching and research profiles, producing world-leading research in virtually all major areas of contemporary pharmaceutics, including gene and vaccine delivery, nanomedicines, inhalation, oral, dermal and transdermal drug delivery. Much of this work is underpinned by excellence in materials characterisation, and the Department houses a vast range of the very latest analytical instrumentation.

The MSc in Pharmaceutics, led by Dr Gareth Williams, draws upon this deep expertise in knowledge development and dissemination. Through a combination of traditional teaching and advanced experimental approaches, the course assists students to develop a unique set of knowledge and experimental skills and apply these to medicines development and therapeutics.

The programme is delivered through a combination of lectures, journal clubs, practicals, tutorials and a research project, and can be tailored to fit a student’s particular areas of interest. The project takes place in the research group of one of our internationally-recognised academics. In addition to providing a stimulating and vibrant experience, the MSc programme includes pastoral and networking elements that provide evidence of continuing professional development and will maximise the value of the course for the future careers of its graduates.

Programme outline: The programme is full-time, lasting 12 months and starting in September 2017. It is divided into a taught module component (120 credits) and a research project (60 credits). Students sit five core taught modules, and choose three further optional modules (currently from a selection of four). Syllabi are updated annually to ensure course material encompasses the very latest scientific advances and developments. Taught material is delivered by academic staff and internationally-recognised guest speakers from academia or industry, giving students the chance to interact with some of the leading figures in the field.
Core modules include:

- Analysis and quality control, providing an in-depth grounding in the major analytical techniques used in pharmaceutics, including HPLC, thermal methods, X-ray diffraction, microscopy and a range of spectroscopies.
- Preformulation, giving students a detailed understanding of the physicochemical properties of drugs and how these affect their formulation into medicines, and using these principles to design better drug delivery systems.
- Formulation of small molecules, which explores the production of dosage forms using small molecule actives, with a particular focus on modified release technologies.
- Personalised medicine, discussing the development of medicines bespoke to the individual, and the challenges and benefits of this approach.
- Pharmaceutical biotechnology, encompassing approaches to achieve the effective delivery of the labile, high molecular weight, biomolecules which are increasingly used in 21st century medicines.

Optional modules include:

- Initiating a pharmaceutical start up, covering the process of taking a concept from the research lab to the clinic, and taught by experts with direct experience of doing this.
- Clinical pharmaceutics, exploring the translation of a medicine from the lab to the clinic, considering the disease burden and treatment process and aiming to understand how the properties of a formulation affect its performance in patients.
- Nanomedicine, which addresses the concept of drug targeting and how nanoscale systems can improve targeting specificity.
- Formulation of natural products and cosmeceuticals, in which students will learn about the skin physiology, and the use of colloidal systems for the topical delivery of phytochemicals as cosmeceutical agents.

The research project consists of an original piece of laboratory-based research undertaken over 7 months in one of the research groups in the Department of Pharmaceutics. The work of MSc Pharmaceutics students is frequently published in prestigious international journals (e.g. Biomaterials, 2012, 33, 4608; Eur. J. Pharm. Biopharm., 2012, 80, 149, Int. J. Pharm., 2013, 447, 165; Int. J. Pharm., 2013, 457, 268), Int. J. Pharm., 2014, 459, 19; Int. J. Pharm., 2015, 494, 657 J. Controlled Release 2016, 234, 41),
Entry criteria and suitability: The minimum entry requirement will be a lower second-class UK BSc in Pharmaceutics, Biotechnology, Chemistry, Chemical Engineering, Materials Science, Pharmaceutical Science, Pharmacy or a related field from any UK university, or an overseas qualification of an equivalent standard. Those with an appropriate professional qualification and relevant work experience may also apply. All students whose first language is not English must demonstrate a proficiency in the English language, equivalent to an IELTS score of 6.5 overall with a minimum of 6.0 in any subtest.

For further information visit:

http://www.ucl.ac.uk/pharmacy/courses-and-phd

https://www.ucl.ac.uk/prospective-students/graduate/taught/degrees/pharmaceutics-msc

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Scanning Electron Micrograph Cover Image:

Aspirin crystals
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