MSc Pharmaceutical Formulation and Entrepreneurship
The MSc in Pharmaceutical Formulation and Entrepreneurship at UCL provides recent graduates with the skills and knowledge to allow them to participate effectively in the creation and growth of high-impact pharmaceutical business ventures. The development of this course is in direct response to the demands of industry, and its graduates will be highly competitive in the global jobs market.

The programme is taught by the Department of Pharmaceutics in the UCL School of Pharmacy, and the UCL School of Management. The Department of Pharmaceutics 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 drug delivery, including gene and vaccine delivery, nanomedicines, inhalation, oral, dermal and transdermal drug delivery. Much of this work is underpinned by excellence in materials characterisation, for which a vast range of the very latest analytical instrumentation is available. The Department has been exceptionally successful in the commercialisation of its research, and its academics have established a number of companies including Nanomersics (Prof Uchebgu), FabRy (Prof Basit, Dr Gaisford), Polytherics (Prof Brocchini) and Intract Pharma (Prof Basit).

The UCL School of Management is home to UCL’s business and management research and education programmes. It is a member of the Association of Business Schools with a growing academic staff of around 50, and offers taught and research programmes in management, technology entrepreneurship, information management, business analytics and healthcare management. The School’s research and teaching in entrepreneurship and life sciences are recognised both nationally and internationally. It has an enviable track record of fostering successful student business start-ups and nurturing growth within industries including technology, engineering, pharmaceuticals, health-tech and finance.

The MSc in Pharmaceutical Formulation and Entrepreneurship (PFE), led by Dr Gareth Williams in Pharmacy, draws upon both departments’ deep expertise in knowledge development and dissemination. Students will learn how to develop and assess a new business concept, and how to raise finance for and market a business and its outputs. They will build their scientific skillset by exploring four emerging research areas in pharmaceutics. Students will also undertake two extended projects in which they will both undertake original experimental work and develop a business case, for a pharmaceutical concept. As a result, both high-level scientific and transferrable skills will be developed.
The programme is delivered through a combination of lectures, journal clubs, practicals, tutorials, group and individual coursework exercises, and can be tailored to fit a student’s particular areas of interest. The projects take place under the guidance of UCL’s internationally-recognised academics. In addition to providing a stimulating and vibrant experience, the MSc programme includes pastoral 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 projects (60 credits). Students sit four core taught modules, and choose four further optional modules (currently from a selection of 8). 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:**

- Mastering Entrepreneurship, discussing business planning and the criteria for the success of a new business
- Entrepreneurial Marketing, in which students will learn about pricing strategies, messaging, market testing and developing new entrepreneurial opportunities.
- Entrepreneurial Finance, considering how to develop a business plan and raise finance for a new endeavour
- Initiating a Pharmaceutical Start-up, where academic staff and industry speakers with direct experience of creating a start-up company in the pharmaceutical sector will share their experience and best practice.

**Optional 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.
- 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.

Project work is undertaken over 7 months, and will involve both an original piece of laboratory-based research in one of the research groups in the Department of Pharmaceutics, and the development of a business case for a new pharmaceutical start-up company.

Entry criteria and suitability: The minimum entry requirement will be an upper second-class UK Bachelor’s degree or higher in pharmacy, pharmaceutical science, chemistry, chemical engineering, materials science, biotechnology, pharmaceutics or a related field in the life or physical sciences, 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 English language, equivalent to an IELTS score of 7.0 overall with a minimum of 6.5 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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