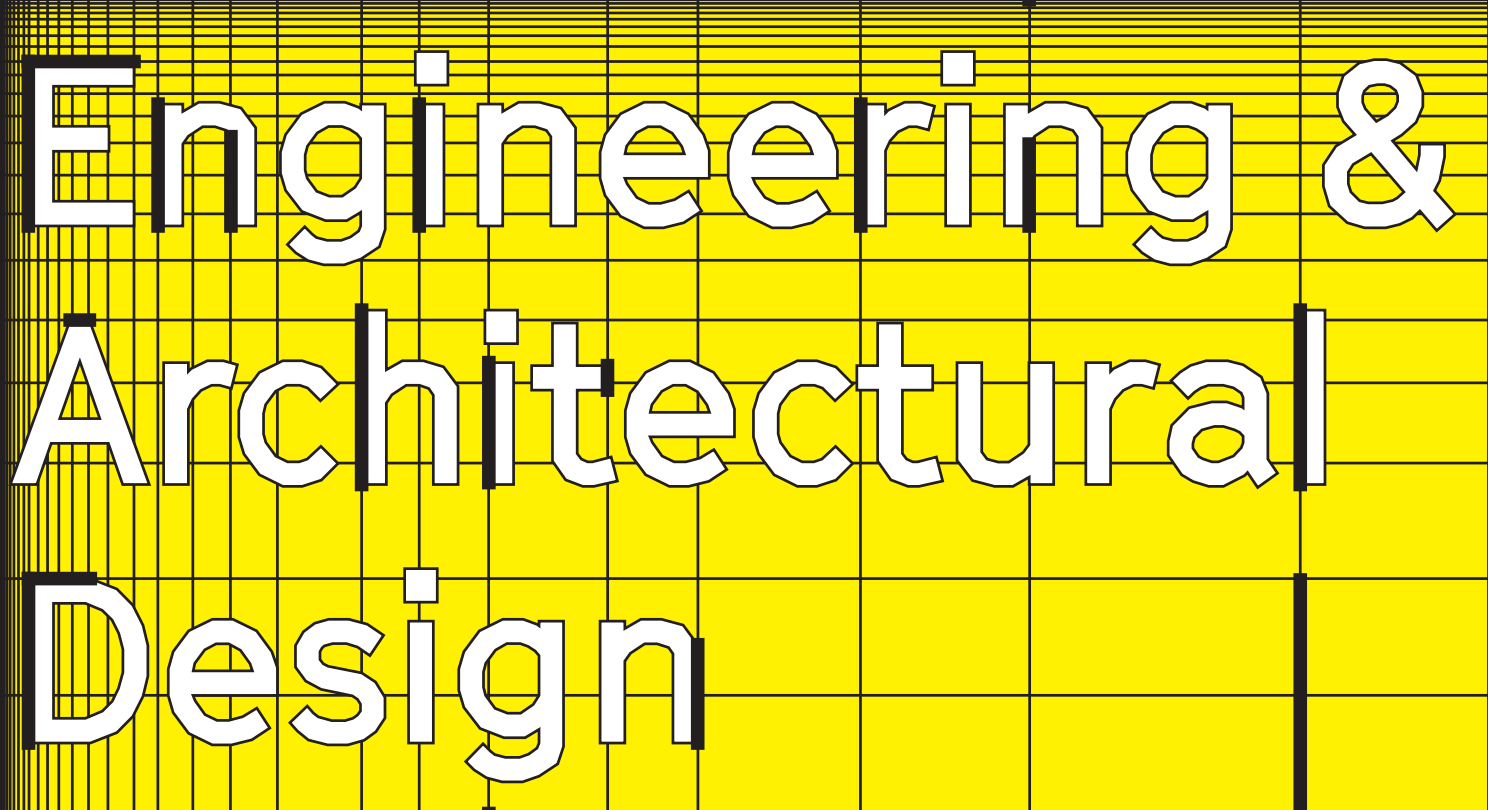Structural Environmental Architectural
Three disciplines
One degree

Engineering & Architectural Design

MEng Programme

The Bartlett School of Architecture, UCL
UCL Institute for Environmental Design & Engineering
UCL Civil, Environmental & Geomatic Engineering
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CONTENTS

MEng Engineering & Architectural Design

OVERVIEW

The MEng Engineering & Architectural Design is a new four-year full-time integrated masters that aims to challenge students to develop a critical, independent, experimental and technically rigorous approach to architectural, environmental and structural design and engineering in buildings. Graduates will have the knowledge, understanding and skills to be world leaders in designing and developing resilient buildings that deliver both excellence in use and low environmental impact.

The programme has a strong focus on design, with over a third of student time spent in the design studio, and on practical engineering methods, with extensive use of advanced fabrication facilities and labs, where students are encouraged to develop leading-edge engineering knowledge, judgment and intuition.

Students' learning will combine the design studio model of UCL's renowned Bartlett School of Architecture with project-based learning in Structural, Civil and Environmental engineering and design, drawing on expertise from the Institute for Environmental Design Engineering (IEDE) and the Department of Civil, Environment and Geomatic Engineering (CEGE).

The programme will be based in new UCL facilities at Queen Elizabeth Olympic Park, a state-of-the-art 4,000 square metre fabrication, experimentation, testing and study resource with cutting-edge labs that are fully equipped with digital and analogue and digital fabrication facilities including robotics, 3D printing and scanning, CNC milling, waterjet, laser cutting and studio space.

The programme has been designed to fully meet the educational requirements for Chartered Engineer (CEng) and we intend to secure accreditation from the Joint Board of Moderators (JBM), which includes the Institution of Structural Engineers (IStructE) and the Institution of Civil Engineers (ICE), and the Chartered Institution of Building Services Engineers (CIBSE), with expanded attributes in architectural design.

STRUCTURE

The MEng Engineering & Architectural Design is delivered over four years with four UCL Course Units per year, and students must pass all of them to progress. There is a continuous spine of Design and Core Modules in the first three years, supplemented by research and optional modules in the final year. See the diagram below.

Year 1	Course Units	Year 2	Course Units	Year 3	Course Units	Year 4	Course Units
Core Module 1 Materials and Making	0.5	Core Module 9 Structural Analysis and Foundation Design	0.5	Core Module 14 Mechanics of Buildings	0.5	Optional Module 1 Range of options	0.5
Core Module 2 Mechanics of Structures and Soils	0.5	Core Module 10 Mathematical Modelling and Analysis	0.5	Core Module 15 Sense, Sensing and Controls	0.5	Optional Module 2 Range of options	0.5
Core Module 3 Mathematical Techniques	0.5	Core Module 11 Urban Physics	0.5	Core Module 16 Practice and Project Management	0.5	Core Module 19 MEng Dissertation	1
Core Module 4 Building Physics and Energy	0.5	Core Module 12 Environmentally Responsible Building Systems	0.5	Core Module 17 Making Buildings	0.5		
Core Module 5 Building Physics and Environment	0.5	Core Module 13 Design Lab 1 Design studio	2	Core Module 18 Design Lab 2 Vertical design units	2	Core Module 20 Design Lab 3 Vertical design units	2
Core Module 6 History and Theory of Engineering & Architecture	0.5						
Core Module 7 Making Information	0.5						
Core Module 8 Design Make Live 'Live' project	0.5						

Core Modules	7.5
Design	6.5
Research & Specialisation	2

In year one students will develop core mathematics and engineering knowledge and skills across a range of carefully tailored modules, learn to locate these in a history module and to start applying these via a design, make and test module.

From year two onwards, half of student time will be spent in Design Labs, where you will develop skills in design and engineering synthesis, building abilities to set, articulate and advocate progressive ambitions and strategies, and to address complex design challenges in the built environment.

In the final year, students will have the opportunity to focus and develop specific expertise in their Design Lab and pursue a related research dissertation. Students will also select two optional modules from a range depending on their particular areas of interest and the specialist skills and knowledge they wish to develop.

CONTENT

Year 1

This is the year when students transition from the working and thinking methods that have served them well in their school education to develop and evolve complimentary capabilities as independent, critical and creative thinkers. Modules that utilise a broad and complimentary range of teaching and learning methods support them in this transition and also in developing core mathematics and engineering knowledge and skills. History and Theory of Engineering and Architecture locates the programme in its disciplinary and professional contexts, seeking to awaken student curiosity about noteworthy historical designs, the methods used and the basis for them in their particular contexts. A range of modules, all carefully tailored to this programme, cover core topics including Mathematical Techniques, Materials and Making, Structures and Soils and Building Physics in relation to matters of Energy and Environment. Making Information introduces the range of information used in the creation of the built environment, from hand drawing to GPS based data capture, and incorporates up-skilling workshops for students. The continuous spine of design modules extending across all four years commences with Design Make Live, a group project which works as a microcosm of engineering and architectural design practice with students designing, building and then inhabiting small pavilions.

Year 1 Modules:

Materials and Making

Introduces the behaviour of construction materials. This includes looking at the structure of materials, their interaction with and impact on the environment, their production, use and carbon footprint.

Mechanics of Structures and Soils

This module will introduce the relationship between the making of space in architectural and structural terms.

Mathematical Techniques

This module develops an understanding of the mathematical concepts that underpin the study of engineering systems.

Building Physics and Energy

This module will provide an understanding of fundamental building physics principles that have implications on energy use in the built environment.

Building Physics and Environment

This module will provide participants with an understanding of building physics principles that have implications on environmental building design.

History and Theory of Engineering and Architecture

This module locates the programme in its disciplinary and professional contexts and introduces students to the historical and cultural context in which they will operate.

Design Make Live

A prototyping project where students work in groups to design and make a small and simple 'building' prototype and then in some way inhabit it.

Making Information

Introduces the range of information used in the design, engineering, construction and post occupancy evaluation of the built environment.

Year 2

From Year 2 onwards, half of each student's time is spent in Design Labs, where students develop critical thinking, propositional design and engineering synthesis capabilities. The innovative Design Labs evolve the design studio model to incorporate engineering tools in creative design development methods and augment the design studio environment, with advanced fabrication facilities and engineering labs to put experimentation and prototyping at their hearts. Year 2 Design Lab is undertaken in a relatively open studio structure and includes both individual investigations and group work, with a focus on designing a small building, including its structural and environmental aspects, as an integral part of their design ambition, strategy and development methodology.

Design Lab activity in Year 2 is augmented by modules that extend the core mathematical and engineering expertise students develop in Year 1. These modules are all carefully tailored to the programme, introducing tools and methods directly relevant to Design Lab activity and using case studies to indicate a range of potential applications of particular tools within overarching project design and engineering approaches and strategies. Mathematical Modelling and Analysis develops mathematical concepts that underpin the analysis and design of engineering systems; Urban Physics addresses the contexts within which buildings and other designs exist; Structural and Foundation Analysis and Design focuses on developing student's analytical understanding of structural systems; and Environmentally Responsible Building Systems addresses active environmental control systems, building on the Building Physics principles learned in Year 1.

Year 2 Modules:

Mathematical Modelling and Analysis

This module develops mathematical concepts that underpin the analysis and design of practical engineering systems.

Structural Analysis and Foundation Design

This module will apply virtual work and flexibility analysis to develop a conceptual and analytical understanding of new and existing structural systems.

Urban Physics

This module will introduce the fundamental principles and analytical techniques used in building engineering related to the local environment.

Environmentally Responsible Building Systems

This module explores the steps involved in the identification of active building systems for integration within the context of a medium-scale building design and practice. This will incorporate the development of these ideas from scheme design to the detailed design stage.

Design Lab 1: Introduction to Building Design

This is the first of three extensive 'design lab' modules aimed to develop skills in design and engineering synthesis, enhancing students' ability to address complex design challenges in the built environment by bringing together the 'know what' of science with the 'know how' of design.

Year 3

In Years 3 and 4 the Design Labs are organised as vertical design units where each student is a member of a particular unit (typically consisting of around 15 students in total), developing designs in response to a unit brief that works within the overarching Design Lab parameters for that particular year. The vertical arrangement, with its overlapping of Year 3 and Year 4 students, brings huge benefits relating to peer learning. It also means evolved cultures develop within each unit, developed around particular, constantly progressing fields of interest and investigation. The Year 3 and 4 Design Labs are a crucial forum within which student evolve their capabilities as independent thinkers with abilities to critically consider and identify relevant questions and challenges, develop creative propositions, and to contextualise and advocate their work as it progresses. In addition to Design Lab, Year 3 students undertake a range of core modules with direct applicability to Design Lab. These include Practice and Project Management, addressing professional practice and its construction industry context and with a construction project management field trip; Mechanics of Buildings, where students learn formal structural theories and computer based analysis; Sense, Sensing and Controls focused on human centred environmental design and engineering; Making Buildings, addressing noteworthy case study buildings, 'deconstructing' them and interrogating their architectural, structural, environmental and energy strategies.

Year 3 Modules:

Mechanics of Buildings

This module presents and develops advanced structural analysis methods to resolve problems relating to structures supporting real buildings, formed of several structural elements with different function.

Sense, Sensing and Controls

This module integrates the human centred process of designing an extensive engineering solution for environmental control systems to be installed in a medium size building.

Practice and Project Management

This module introduces students to the professional practice of engineering and architectural design in the context of the construction industry.

Making Buildings

This module equips students with the skills, knowledge and aptitude to critically examine matters relevant to their year 3 design proposals

Design Lab 2: In-depth Building Design

This is the second of the 3 'design labs'.

Year 4

The MEng year gives students an excellent opportunity to undertake an in depth pursuit of specific areas of interest and to develop areas of specialism and expertise, with the opportunity to open up trajectories for them beyond their graduation into their preferred areas of professional practice and/or academic inquiry. This opportunity is made available via all areas of student activity throughout the year. In Design Lab, the second year in the vertical design unit system, students are encouraged to pursue ambitious agendas via increasingly complex designs and to take these forward with a greater level of testing and resolution than in previous years. Students undertake their MEng Dissertation to address a research question or area of investigation agreed with the module coordinators and supported by tutors with relevant expertise. Students also select two optional modules from a range that may include Advanced Structural Design and use of Parametric Modelling, BIM and GIS for Design and Retrofit, Tall Building Design, Organisational Learning and Dispute Resolution and Technology and Integration.

Year 4 Modules:

Optional Modules

In Year 4 students select two optional modules from a range on offer, according to their particular areas of interest and the specialist skills and knowledge that they wish to develop in their final year on the programme. Several optional modules developed specifically for this programme are available, on topics that may range from parametric modelling to the use of GIS and BIM in retrofit.

MEng Dissertation

This module enables the students to develop and evidence independent research skills by engaging in the development and delivery of a research project involving a literature review, collection, modelling and analysis of data, and interpretation of results.

Design Lab 3: Advanced Building Design

This is the final of the three 'design lab' modules.

DEVELOPMENT TEAM

The programme has been developed by a collaborative team consisting of the following people, in liaison with a number of leading engineering and architectural firms:

Professor Bob Sheil, Director of The Bartlett School of Architecture (BSA)

Professor Stuart Robson, Head of Department, Department of Civil, Environmental and Geomatic Engineering (CEGE)

Professor Mike Davies, Director of the UCL Institute for Environmental Design and Engineering (IEDE)

Oliver Wilton, Director of Education, BSA

Luke Olsen, Senior Teaching Fellow, BSA

Professor Dina D'Ayala, Head of Structures, CEGE

Dr Liora Malki-Epstein, Lecturer, CEGE

Professor Dejan Mumovic, Deputy Director, IEDE

Visiting Professor Tim Dwyer, IEDE

Alison Parker, UCL Energy Institute

Dr Rachel Cruise, External Scrutineer, School of Architecture, The University of Sheffield

FAQs General Information

What is the deadline for applications?

All applications made before January 15 2017 will be considered.

What are the Entry Requirements?

Please see the UCL Prospectus for more information regarding entry requirements for applicants resident in the United Kingdom, EU, and international applicants. Please also see the UCL Prospectus for information regarding Undergraduate Preparatory Certificates as well as English Language requirements. Click this link to go to the prospectus: https://www.ucl.ac.uk/prospective-students/undergraduate/

What A-Level subjects do I need to apply for the BSc Architecture course?

We do not require any A-levels in particular; we welcome applicants with a wide range of A-level subjects. Where Mathematics and Physics are not offered at A-Level then an A is required in Mathematics and Physics (or Science Double Award) at GCSE. See prospectus for more details.

What is the application process?

The application process has several stages: application, upload portfolio excerpts, and interview with portfolio. When you submit your application via UCAS and you meet our Entry Requirements, you will be invited to upload excerpts from your portfolio (up to 10 sheets) to the on-line application system. You will have two to three weeks to do this.

Your portfolio excerpts will then be assessed and, if successful at this stage, you will be invited to interview. The interview is an informal talk mainly based around the work in your portfolio. The interviewer will be looking to assess your potential and will do this through getting to know you and your work, why you are interested in studying Engineering and Architectural Design at UCL and any other interests you may have. Please keep in mind that the interview lasts only 15-20 minutes and you may not be able to present all of your work.

What should I include in my portfolio?

A portfolio of creative work is mandatory at interview stage, however there is no prescribed format. We are looking for evidence of independent and innovative thinking, the ability to challenge methods and norms, creativity and problem solving skills. Portfolios should consist of a visual presentation of original authored work such as sketches, drawings, paintings, photography, physical models, digital models, built designs and prototypes, coding, apps and/or films. In terms of size, we recommend a portfolio should be no smaller than A4 and no larger than A1. Please do not send us your portfolio in advance.

I am an international/EU applicant. Do I have to come to London for an interview?

If you wish to come for an interview please let the Faculty Office know when you receive the task email. If you cannot attend an interview, you may be able to schedule one with our Director for International Affairs, who visits several countries for interview days. Please check the programme of UCL overseas visits for further details. If you cannot attend an interview either in London or abroad, you may be asked to send in a portfolio and we may arrange an interview via Skype. Please do not send us your portfolio unless you are asked to do so as you might not be able to get your work back.

Does UCL accept transfer students?

No, unfortunately we do not. Due to the nature of this programme, all applicants must join the course in Year 1.

Can I study part-time?

No, the programme requires full-time attendance only.

Does The Bartlett School of Architecture have an exchange programme with other universities abroad?

No. However, we encourage students to spend time abroad during their Year Out as part of their work experience and every year you will have the opportunity to participate on a field trip that may take you travelling abroad.

Can I visit before applying?

We do not have the resources to give individual or group tours of The Bartlett School of Architecture or UCL. However, we host a series of lectures and exhibitions which are open to the public and may provide an opportunity to informally speak to current students or staff, including our International Lecture Series and Summer Show. Please check our website for further details. We also participate in a number of Open Days.

Can I attend an Open Day?

Yes, and we encourage applicants to do so. The Bartlett participates in a series of UCL Open Days during our Summer Show every July. This is an opportunity to see the full range of work and research undertaken at The Bartlett School of Architecture. More information about UCL Open Days can be found on the UCL website. There is a ULU Open Day every September and Open Days held at The Bartlett School of Architecture: check the website for details.

What are the English Language requirements?

UCL's full English language requirements can be viewed here: http://www.ucl.ac.uk/prospective-students/graduate/life/international. For this programme the 'Standard' level is required. (IELTS: Overall grade of 6.5 with a minimum of 6.0 in each subtest.) Please note that tests or pre-sessional courses not listed on the above webpage will not be accepted by UCL.

How long should I expect to wait for an admissions decision?

We aim to turn around applications in approximately 60 working days. However, this may take much longer during busy times in the year.

What are the tuition fees?

Tuition fees are confirmed on this website: http://www.ucl.ac.uk/current-students/money

Can you tell be what my fee status will be before I submit my applications?

No, we cannot advise on this issue. Your fee status can only be determined following receipt of your application. Please see here for more details: http://www.ucl.ac.uk/current-students/money/fees-support/fee_status_proc

How much money will I need to live on per month/year?

This differs from student to student but there are many websites such as The Student Calculator which help you to answer this question.

When will I be able to open a UK bank account?

Students will enrol during the first week of the course and once enrolment is complete, can use their student ID to open a bank account. This should be complete within the first 3 or 4 days.

How can I open a bank account when I arrive in the UK?

Please see here for information on opening a bank account: https://www.ucl.ac.uk/new-students/open-bank-account. It is recommended that you discuss your move to the UK with your bank at home and seek advice on what the best option is regarding the withdrawal of cash in the UK using their cards.

Can you tell me how I can find accommodation during my studies?

Faculties can't advise on this issue but the UCL Accommodation Office can. Please see all sorts of queries answered here: http://www.ucl.ac.uk/prospective-students/accommodation/faqs

When is induction and orientation?

Induction Week takes place in the last week of September. Students from outside the UK can apply to attend UCL's Orientation programme, which takes place the week prior.

What are the term dates?

Information on term dates can be found here: https://www.ucl.ac.uk/staff/term-dates

Does UCL accept mature students?

Mature students are defined as any student aged 21 or over at the start of their studies who haven't already completed a higher education course. We welcome applications from mature students from a wide range of backgrounds.