



Design for Manufacture

MArch Programme

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MArch Design for Manufacture

Programme Originator: Professor Bob Sheil

OVERVIEW

There is an abundance of advanced design and engineering tools in the UK that an elite workforce develop and deploy to export their expertise worldwide. Yet there is currently a shortage of skilled workers at the point of production tasked with delivering increasingly sophisticated and challenging projects by clients, in line with rising expectations on quality and regulation. The Design for Manufacture (DfM) Master's course aims to prepare a new professional workforce of highly skilled, creative and adaptable experts, with tacit and explicit knowledge in design, engineering, material behaviour, analogue and digital craft, and advanced systems operations. This course will expose students to new forms of advanced design and engineering methodologies – such as robotics and 3D scanning – that are currently reinventing core approaches to shaping, making and refitting the built and manufactured environment.

Broadly, the MArch programme has two goals:

- To provide a high-quality stand-alone qualification which enables students from a wide range of backgrounds to engage with the design and fabrication of advanced building components and structures
- To provide high-quality design-led research training to enable students to carry out future doctoral research in the field.

The programme will provide knowledge and training in the principles and skills of design for manufacture in relation to underlying theories evident in the work of Ayres, Beesley, Burry, Callicott, Gramazio, Kolher, Kolarevic, Lucas, McCullough, Menges, Sheil, and Stacey as well as relevant technologies and skills including 3D and 4D representation, robotics, 3D printing, CNC milling and water jet, 3D Scanning, laser cutting, digital woodworking and metalworking, simulation and fabrication software within a new experimental factory-based environment

Central to the programme's outlook will be its engagement with a network from industry and other Higher Education Institutions. On the former, membership of the programme development team illustrates an existing network that includes diverse practices and companies such as Foster + Partners, ARUP, Laing O'Rourke, ScanLAB Projects and Stahlbogen GmbH

Significantly, all of these practices and firms have a long standing relationship with the Bartlett and have made significant contributions to the biennial FABRICATE conference.

The new MArch will draw upon the related and internationally recognised expertise within The Bartlett Faculty of the Built Environment, as well as across UCL generally, including the Slade and UCL Engineering. The Bartlett School of Architecture (BSA) also hosts one of the leading PhD by Design (PhD AD) programmes in the world, with candidates drawn from across the spatial disciplines, including architects, designers, and fabricators. The BSA's recent success in the 4m InnoChain project, hosting 3 out of 15 fully funded positions across Europe in design and manufacturing domains, is evidence of its status as a centre of excellence in the field.

A 15-month programme has been proposed for two main reasons. The most important of these is that there is a three month period of overlap between outgoing and incoming students. The BSA anticipates that the output from the programme will be inspiring and that the incoming students will learn from the heightened atmosphere of production by the previous year's cohort in the autumn term.

Collaborative research, learning and working is a central tenet of this programme and its aims. Within this context, the programme will be built around clusters of 15 to 20 students, with three clusters seen as the optimum number by 2019. Each design cluster will be led by two tutors who will define a distinct territory of research that will evolve over time. In the first instance it is envisaged that DfM clusters may be formed around themes of: 1) autonomous fabrication, 2) experimental structures, and 3) material innovation. Clusters will evolve into research labs, or form links with existing BSA labs associated with complimentary programmes.

STRUCTURE

The programme is structured to offer the widest scope for creativity in the design modules. These modules are the basis of the programme, with other modules put in place to support them.

The curriculum is outlined in the following diagram:

MArch Design for Manufacture		15 Month Programme			180 credits
Term 1 Sep-Dec	Term 2 Jan-Apr	Term 3 May-Jun	Summer Jul-Sep	Term 4 Sep-Dec	
		INTERIM PORTFOLIO REVIEW			FINAL EXAMINATIONS
DESIGN	15 credits Introductory Workshops > Students take 3 workshops. Each student prepares an individual design workshop portfolio. This is formatively marked at the end of term 1	30 credits Thesis, Preliminary Project > Students work in groups with their specialist design tutor to prepare an initial design portfolio. This is formatively marked at the interim portfolio review	60 credits Thesis, Final Project Students work in groups with their specialist design tutor to prepare a final design project		Submit Thesis, Final Project > Internal and External Exams > Exhibition >
THEORY	15 credits Theory Introduction: DfM. Submit > Students write a 2500 word paper comparing the different approaches and indicating a preference, arguing why they consider it most relevant to their future studies. This is formatively marked at the start of term 2		30 credits Design Thesis Written Report Submit Report > Students work individually to identify a key research question that arises out of the design work in term 2 and research it over term 3 in parallel with their developing design thesis. The dissertation is written up over the summer vacation and is submitted at the start of term		
SKILLS	30 credits Skills Portfolio > Students are directed to learn skills appropriate to the course in general and their chosen preference. Both analytical (simulation and sensing) and synthetic (making) skills are taught. The portfolio is formatively marked at the end of term 2	Submit Portfolio >			
PREVIOUS COHORT					NEXT COHORT

CONTENT Term 1

The first term is an introduction. Students undertake a 15 credit design workshop module, the first tranche of a 30 credit skills module, and a 15 credit theory module giving the background to the programme, its context and purpose.

BENVGF11 INTRODUCTORY DESIGN WORKSHOPS includes presentations by the design teaching staff who run design clusters within the design thesis portfolio module. Students take three of these workshops and subsequently elect which cluster to join for the remainder of the year.

BENVGF21 CONTEXTUAL THEORY: DESIGN FOR MANUFACTURE introduces students to the various theoretical and practical positions that can be taken in the subject.

BENVGF31 SKILLS PORTFOLIO commences with operations that are generic to the programme, such as 3D modelling and machine tooling. Many of these skills are digital based and some are analogue. In the first instance this module is framed as an "icebreaker" exercise where all students are taught, or reminded of, the basics of design through making, such as; the structural behaviour of materials and assemblies, the properties of materials and composites including behaviour within the manufacturing process, the difference between the drawn and the made, and the flow of information between both.

Term 2

Having elected which design cluster to join for the remainder of the programme, students settle into their design cluster. The design cluster is the primary teaching and learning vehicle of the entire programme and mirrors one of the distinguishing elements of teaching as a whole in BSA. It will be led by research active staff where at least half of whom will occupy key positions in practice or industry. Students take the second tranche of BENVGF31 SKILLS MODULE as project specific skills workshops that are indicated by their design cluster tutors.

They simultaneously commence BENVGF12 DESIGN THESIS PORTFOLIO, PRELIMINARY PROJECTS and at this point, as the skills module and the design module form intimate ties, one of the core objectives of the programme is established. Students will occupy the HEF workshops on almost a daily basis, engaging with the environment of production as a studio for design through making. BENVGF12 DESIGN THESIS PORTFOLIO: PRELIMINARY PROJECT MODULE is formatively marked at the end of Term 2, and summatively marked at the end of year.

Term 3

Students commence BENVGF13 DESIGN THESIS PORTFOLIO, FINAL PROJECT which follows on from the preliminary project as new and related challenge.

At the same time they start BENVGF22 DESIGN THESIS REPORT, which examines a key research question that has arisen from their preliminary design work and which will inform their final project. BENVGF22 is staffed with dedicated tutors who work closely with the design thesis tutors on providing appropriate support applicable to the design thesis project. Students write up their submissions for BENVGF22 DESIGN THESIS REPORT over the summer break with tutorials from their BENVGF22 tutors.

Term 4 (overlapping with Term 1 for incoming new cohort)

At the beginning of term students hand in their submissions for BENVGF22 DESIGN THESIS REPORT. There is a conference where they present a summary of their report to staff and incoming students.

Students then carry on to complete BENVGF13 DESIGN THESIS PORTFOLIO, FINAL PROJECT and prepare presentations for final marking and a public exhibition at the end of term. Simultaneously, the new cohort undertake Term 1 as described above, and witness the preceding cohort complete Term 4. They also assist in preparing the exhibition, which gives them an insight on what lies ahead for them 12 months hence.

Modular/Flexible Route

Students can only take modules when they occur in the academic year. Students taking the modular/ flexible route will be expected to take all Term 1 modules in Term 1 of their year of entry. They can then choose to continue to both of the Term 2 modules or interrupt, taking the Term 2 modules in Term 2 of a following year. After this they can choose to take the two Terms 3 and 4 modules over a period of one or more years depending on the time available to them. Students choosing to work in this way must submit individual design portfolios.

STAFF Programme Staff are to be confirmed.

The programme has been developed by [Professor Bob Sheil](#), and a programme development team from The Bartlett including [Tim Lucas](#), Lecturer in Structural Design; [Dr Sean Hanna](#), Reader in Space and Adaptive Architectures; [Dr Guan Lee](#), Lecturer in Architecture and Digital Craft; Peter Scully, Technical Director B-made; Nat Chard, Professor of Experimental Architecture and Stephen Gage, Professor of Innovative Technology.

FAQs General Information

How long is the Masters course?

15 months, from late September to December in the following year.

When should I apply?

You are advised to apply as early as possible. Applications open in the October and close in the July prior to the programme commencement in September.

How can I apply?

Please visit the UCL Postgraduate [Application and Entry page](#) for information on how to apply.

Is there an application fee?

There is an admissions processing fee per online application, this was £75 for 2016-17 applications.

What are the Entry Requirements for MArch Design for Manufacture

You will need the minimum of a lower second-class (2:2) Honours degree at undergraduate level, or the international equivalent. International Students may click on [this link](#) to ascertain qualification equivalents. A strong portfolio is required, see below for details. See below for English language requirements. If you do not have the above qualifications but have relevant experience and are interested in applying for the programme then please contact The Bartlett Faculty Office for advice on this email address: t.heintz@ucl.ac.uk

What does the admissions process involve?

Your online application, once submitted, will be received by the UCL Central Admissions Office. Once your details have been logged, your application will be sent to the Department for consideration. The department may contact you regarding the submission of a portfolio. Once a recommendation has been made, your application will be returned to the Admissions Office where an official letter will be produced and sent to you informing you of the admissions decision.

How long should my Personal Statement be?

One side of A4 is usually sufficient.

Can I visit in person to talk to staff about my application and/or tour the facilities?

No, unfortunately this will not be possible, as The Bartlett is not open to the public. Applicants for some programmes may be asked to attend for interview in person post-submission where it is deemed warranted (or interviewed by telephone/Skype if it is more convenient), but speculative visits are not possible. Additionally The Bartlett hosts a series of open lectures and exhibitions throughout term time. These are all open to the public and may provide a chance to speak to current students. Please check The Bartlett website for further details and updates at: <https://www.bartlett.ucl.ac.uk/latest/events>. Alternatively if you would like to visit the main UCL campus (the Bartlett buildings are not included), you can book yourself onto one of the

guided tours given by current UCL students during the summer. If you're not able to get to the UCL main campus, you can also enjoy a virtual tour through the Meet UCL website. Visit the [Meet UCL website](#) to find out more.

Portfolios

What should I include in my portfolio?

The portfolio that you submit will depend on your first degree or prior experience. Otherwise no specific skills are required but a design and /or performance capability must be demonstrated. Both static image and time-based media are acceptable in digital format. The latter should be edited to give a maximum 5-minute sample.

When and how do I upload my portfolio?

Please do not upload a portfolio at the initial application stage. The Department will contact you regarding your design work once your completed application form has arrived in the Department. This will only be once your referees have uploaded their references. You should upload it to your application. It must be compressed to 2MB or less. Give a link to any time based presentations (video, sound etc.) that you wish to include.

English Language Proficiency

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>. The Bartlett requires the 'Standard' level in all cases. (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.

I am going to take an English test later in the year, can I still apply now?

You may apply for a place on a programme without a current English test as long as you send your qualification as soon as you receive it. If you are offered a place, it will be conditional on your providing evidence of English before you will be allowed to enrol.

References

Do both of my references need to be academic?

At least one of your references should be from an academic source. Your application will not normally be processed without one. The other may be from an employer or colleague who has worked with you closely.

What happens if I graduated a long time ago and I cannot provide an academic reference?

Please note that your academic referee does not necessarily need to be someone that knows you from your undergraduate degree – they may know you through another programme of study. As long as they can comment on your performance in an academic capacity, this will suffice. If this is not possible, please provide two employment references and we will contact you if we require further information.

Admissions Process

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

Because we require a portfolio and possibly an interview it may take approximately two months before you hear a result.

Why has no decision been made on my application yet?

We will only consider complete applications. Any that are missing a reference(s) and/or an academic transcript will not be sent on to us for consideration. Therefore please check your application to see if anything is missing and if it is please supply it at your earliest convenience.

What happens after I have been made an offer?

Once you have been made an offer the Department and the Registry will contact you with any relevant information regarding your time as a UCL student – this will be sent by post/email. Over the summer months the Department will send you induction information by email before the course commences.

Can I ask for feedback on an unsuccessful application?

No, we regret that we cannot offer feedback on unsuccessful applications.

If my application is unsuccessful can I claim a refund of the admissions processing fee?

No, a refund is not possible. This is because the fee covers the cost of processing your application regardless of the admissions decision.

Deferring Entry

If I cannot take up my offer of a place can I defer it to next year?

It is not usually a problem to defer your offer of a place to the following year. Applicants will need the authorisation of the Programme Director and the Admissions Office will need to issue a renewed and updated offer letter.

How can I defer my offer of admission?

You can request to defer entry to postgraduate programmes by emailing admissions@ucl.ac.uk citing your name and student number.

Can I defer entry more than once?

No, you may only defer entry once. If you cannot take up your deferred offer you will forfeit your place and will need to re-apply.

What is the deadline for deferring entry?

Usually you can defer entry any time before enrolment.

Tuition Fees & Finances

What are the tuition fees?

Fees for the 15-month programme, commencing in 2017, are anticipated to be £12,947 for UK/EU students and £26,780 for Overseas students. These figures are provisional and the formal fee level will be confirmed on the [Money page](#) over the summer.

Can you tell me 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 the [Fee Status Procedure page](#) for more details.

I am a part-time Masters student, how much are my fees?

Part-time or modular/flexible students pay fees according to how many credits they take each year, calculated pro-rata the full-time fee. So if for example a student takes 60 credits in year one (one-third of the 180 credit programme) then they would be charged one-third of the full-time fee charged in that session.

I am a part-time Masters student, how much will my fees be in total?

It depends on how long it takes to complete the programme. Modular/flexible students have a maximum of 5 years in which to complete their studies and the fees increase annually.

How do I pay the tuition fees?

Fees are payable at enrolment in September, either in full or 50% by the end of October with the remaining 50% in early February. Payment by any other kind of installment plan is not an option.

I've been made Overseas fee status, but I should be UK/EU fee status. How do I change this?

You will need to request a Fees Questionnaire via the Admissions Office to have your fee status reconsidered.

How much is the fee deposit? When do we pay it?

There is currently no fee deposit payable in advance.

Visas & Immigration

How do I apply for my visa?

The UCL visa information web pages have detailed information on how to apply for a visa. Visa applications will be only open three months before the start of your Master's programme (i.e. 30 June). More details can be found on the [Immigration & Visas](#) page.

How can I request a Confirmation of Acceptance for Studies (CAS)?

If you have an unconditional offer you have formally accepted you will receive an email from admissions with information on how to request a CAS.

When will I receive my CAS?

CAS numbers will be issued 3 months before your programme start date. For example if your start date is 28 September you will not receive your CAS before 29 June. This is because UKVI will refuse any visa application that is made earlier than three months before the programme start date. CAS numbers will usually be issued within 5 working days of receiving your CAS request form (from 29 June onwards).

Employment & Money

Are there any scholarships available?

Unfortunately, funding for students is very scarce. Most of our students are self-funding through loans or saving although the Bartlett has offered some funding to Masters students in recent years (see here: <http://www.bartlett.ucl.ac.uk/programmes/applying/funding-and-scholarships/bartlett-masters-scholarships>). Information on funding opportunities may be found on UCL's main [Scholarships and Funding page](#).

Will The Bartlett help me find a part-time job?

No, although the UCL careers service will make you aware of the different options open to you. They may also offer tips and/or advice on finding part-time work. Please also look at the [Student Union Job shop](#).

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 the page on [opening a UK bank account](#) for information. 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.

Joining UCL

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 in the [Accommodation FAQs](#):

When does the programme start?

The course starts each year in the last week of September.

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.

Is there an airport pick-up?

No, unfortunately there is no airport pick-up but our central London location makes UCL very accessible from all major airports, train and bus stations.

Where should I go on my first day?

You will be sent information about this at a later stage – meanwhile please check the [new student website](#). If not advised where and when your first session is taking place by e-mail, please report to your School Office on arrival.

Can I get a programme timetable?

Timetables are only available to new students in the first week of term as they can change yearly.

Graduation

When is graduation?

Graduation ceremonies take place in the year after you complete your studies. For example, if you finish your programme in September 2016, your graduation ceremony will usually take place in early autumn 2017. You will be sent your degree certificate by postal delivery around 3 months after you complete your studies (to the 'contact address' in your personal records which you can update as and when necessary).

Further Information

Can I study part-time?

The programme can be taken part-time on a flexible basis over a maximum of 5 years. While we try to make part-time study as flexible as possible, our Masters programmes are demanding and we advise students that, if they intend to work alongside the programme, their work should be flexible in nature.

Is there more than one intake a year?

No, we only have one intake to taught programmes every year in September.

I am already studying at another institution. Can I enrol at UCL at the same time?

No, you cannot be enrolled in two institutions at once, so you would need to de-register from your current course.

Can I transfer my studies to UCL?

No, UCL does not accept transfer to Masters programmes.

Can I study by distance learning?

No, it is not possible to study any Bartlett programmes by distance learning or online.