UNIVERSITY OF LIVERPOOL

Building Information Modelling and Digital Transformation MSc

COURSE DETAILS

- Full-time: 12 months
- Part-time: 24 months

KEY DATES

- Apply by: 29 August 2025
- Starts: 22 September 2025

Course overview

Discover the transformational impact and future potential of building information modelling (BIM) on architecture, engineering and construction. You'll gain expertise using innovative digital technologies and explore the application and implementation of BIM across all stages of project planning and delivery.

INTRODUCTION

The rapid evolution of digital technologies and innovations in design and construction is transforming how professionals in the architecture, engineering and construction (AEC) industry are creating, communicating and interacting.

Building information modelling (BIM) is emerging as a new method, process and technology for creating and managing information for a built asset. Automating information flow across disciplines, BIM is embedding a culture of collaboration, integration and coordination across the design, construction and operational phases of building projects.

This programme will immerse you in the exciting new tools, technologies and methods that are driving this digital transformation and collaborative approach to project delivery.

You'll gain practical experience using BIM software, including design authoring tools, such as Revit, ArchiCAD and Rhino, as well as design coordination and clash detection tools, for example Navisworks and Solibri.

Other specialist software and hardware technologies will also be introduced. These range from 3D visualisation and animation software to virtual reality, parametric modelling, and sustainable environmental design.

Guided by academic experts, researchers and leading practitioners, you'll take part in a variety of team-based tasks and activities. These will provide you with experience of devising BIM implementation strategies, researching BIM in real-world contexts, and identifying and communicating the benefits and challenges of BIM for a project or organisation.

WHAT YOU'LL LEARN

- The theories, technologies, methods and processes underpinning BIM
- National and international BIM standards
- Innovations driving digital transformation in the architecture, engineering and construction industry
- How to use design authoring tools and design coordination and clash detection tools
- How to develop and communicate BIM implementation plans and recommendations
- How to design and manage effective workflows in collaborative BIM settings
- The role of BIM technologies in sustainable design and energy-efficient solutions
- The impact of BIM on the design, construction and operational stages of building projects

Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

SEMESTER ONE

COMPULSORY MODULES

BIM THEORY, PRACTICE AND TOOLS (ARCH724)

Credits: 30 / Semester: semester 1

The module aims to provide students with a critical and systematic understanding of the theoretical, practical and technological aspects of Building Information Modelling as a tool, as a process, and as a managerial method. Through a combination of formal lectures, presentations and seminars managed by academic staff and leading practitioners from the AEC industry, students will be able to scrutinise the multi-faceted impact of BIM on the whole project life-cycle based on a thorough understanding of the limitations of traditional project delivery and the several challenges that may restrict full BIM adoption in practice. The module will introduce students to the various concepts and technologies that underpin BIM practice such as nD modelling and maturity levels, common data environment and clouds, data exchange and design coordination, clash detection and model checking, and interoperability and Industry Foundation Classes (IFCs). Students will also get familiar with the national and international BIM standards and will be able to observe the growth of BIM adoption in the UK and worldwide. Furthermore, the module will present BIM as enabling tool/method to support building sustainability and will introduce students to different concepts that are shaping the wider context of BIM and its future potentials. The module will be complemented with case studies to show examples of successful BIM implementation within real building projects. The module will introduce students to the case study research, allowing students to investigate the applications of BIM within a real-life project while enhancing their academic writing and research skills.

OPTIONAL MODULES

COMPUTATIONAL DESIGN THEORY AND PRACTICE (ARCH777)

Credits: 15 / Semester: semester 1

In parallel to the rapid evolution of digital technologies, architectural practice is similarly undergoing unprecedented, rapid transitional changes. New design tools, techniques and methodologies are being developed that are shifting the design processes from individual to collaborative, from disciplinary to interdisciplinary, and from implicit to explicit. The tools are becoming more adaptable, the processes are becoming more iterative and flexible, and the traditional form-based models are being abandoned in favour of data-rich and performative models.

This module will introduce students to the different computational design methods, such as performative design, generative and algorithmic design, as well as parametric design. Students will also be introduced to digital fabrication and will touch on some applications of Artificial Intelligence (AI) in architectural design. The students will therefore be able to scrutinise the real impact of the computational design methods on the architectural design process based on critical understanding of the nature, structure and methods of conventional design.

Students will also be able to critically and profoundly investigate the true potential of computational design in real practice through conducting case study research for an existing architectural project.

NET ZERO CARBON DESIGN (ARCH747)

Credits: 15 / Semester: semester 1

Net zero carbon design is a key response to how buildings will reduce their environmental impact and help combat climate change. This module considers developments in the environmental design of buildings, from the vernacular architecture of the past to the 21st Century target of net zero carbon. The module covers key carbon issues, such as embodied carbon, life cycle analysis and the retrofitting of existing buildings. The health of building users is an important factor in sustainable design, and the module reviews indoor conditions and their effects on physical and mental wellbeing. The module will be delivered as lectures (from tutors who are active researchers in net zero carbon design), as workshops, as site visits and as guest talks from practitioners. Assessment will be a detailed case study report (70%) and presentation (30%) of net zero carbon buildings located in two different climate regions.

VIRTUAL ENVIRONMENTS FOR ARCHITECTURE (ARCH708)

Credits: 15 / Semester: semester 1

With the rapid development of Virtual Reality (VR) and Virtual Environments (VE), costs have now fallen to the point where it is feasible and practical for architects to consider integrating VR/VE in their design workflow. This module aims to give a theoretical and practical grounding in VR and VE to equip students with the tools to use this technology.

Students will be introduced to the historical context of virtual environments and virtual reality, and different related concepts such as augmented reality and mixed reality. They will experience different ways of interacting with the virtual environments through modelling, editing, visualising, immersing and walkthroughs.

Students will be able to explore profoundly different VR systems through a comparative study. They will be introduced to various software specialised in advanced 3D modelling and visualisation, and will be able to practice using this software through developing a detailed model for an existing space.

Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.

SEMESTER TWO

COMPULSORY MODULES

BIM IMPLEMENTATION IN COLLABORATIVE ENVIRONMENTS (ARCH725)

Credits: 15 / Semester: semester 2

The module is designed to develop the necessary understanding of the design and management of effective workflows in BIM-enabled collaborative settings. The focus of the module will be to introduce new ways of working, strategies and implementation plans necessary for the successful adoption of BIM on project and organisational levels. Integrated Project Delivery (IPD) will be introduced and its contribution to early collaboration and effective decision making will be discussed and exemplified with real projects on both local and global scales. Students will be introduced to the concepts of data sharing in file-based and model server environments, basics of different models and data formats and interoperability. An important focus will be understanding the necessary information and data flows in different stages of the project and building life cycle. The module will also aim to develop a comprehensive awareness of the BIM requirements by the UK Government and the current global use of BIM as an integrated platform.
Students will have the opportunity to undertake tasks and activities similar to those BIM specialists undertake in real practice, such as presenting the opportunities, obstacles, tasks and activities associated with BIM implementation within collaborative project delivery, and working within groups to provide a BIM implementation plan for a hypothetical project.

INTEROPERABILITY AND DESIGN COORDINATION WITH BIM (ARCH745)

Credits: 15 / Semester: semester 2

This module will provide an opportunity to develop hands-on skills and experience in generating both domain-specific and collaborative design models, and merging models for design coordination, clash detection, model checking and 4D simulation. Students will be introduced to various 3D BIM packages and develop a comprehensive understanding of working with different BIM models including data sharing, merging information, and interoperability across various BIM and CAD packages aligned with their domain expertise. Students will also be introduced to the legal implications for data sharing.

In addition, the module will offer students the opportunity to experience design-based and experimental research within a team-based research group, and report their work progress and results based on a comprehensive understanding of the concepts of 'Open BIM' and Industry Foundation Classes (IFC).

RESEARCH METHODOLOGY (ARCH707)

Credits: 15 / Semester: semester 2

Research methods training for MA/MSc thesis

OPTIONAL MODULES

DIGITAL TRANSFORMATION AND CONSTRUCTION 4.0 (ARCH743)

Credits: 15 / Semester: semester 2

The module will introduce students to the cutting-edge technologies and the state-of-the-art methods to foster an understanding of the development of the construction industry. It will offer students the opportunity to explore, analyse and scrutinise those innovative technologies and methods, such as Artificial Intelligence (AI), Machine Learning (ML), Off-site Construction/Modular Construction, Digital Twins, Internet of Things, and Reality Capture.

The students will be able to investigate the technologies, methods and factors that are driving the digital transformation in the construction industry based on a critical understanding of the nature of the construction industry, the typical role of construction managers and the inefficiencies in traditional construction methods.

PARAMETRIC DESIGN AND DIGITAL FABRICATION 2 (ARCH730)

Credits: 15 / Semester: semester 2

This module is a continuation of ARCH729 and will deepen the knowledge gained in parametric modelling tools and fabrication, focusing on advanced fabrication and assembly techniques as well as the development of prototypes in 1:1 one scale.

Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.

FINAL PROJECT

You must choose one of ARCH721 or ARCH722. You will only study one of these modules, not both.

OPTIONAL MODULES

THESIS: DISSERTATION (ARCH721)

Credits: 60 / Semester: summer

A primary aim of this module is to offer the opportunity to submit a conventional written dissertation on an individual, approved topic related to the student's degree topic.

THESIS: RESEARCH BY DESIGN (ARCH722)

Credits: 60 / Semester: summer

A primary aim of this module is to offer the opportunity to submit a ' Research by Design' thesis which combines a thorough piece of research culminating in a design project. This should respond to current research agendas in the fields of architecture, sustainability, computational design, history, heritage or BIM and in particular the idea of design-led research. It is expected that the majority of students will work individually but, with the prior agreement of the Programme Director, students undertaking a Research by Design Thesis may be permitted in pairs where the project is of sufficient complexity. Clear demarcation of individual contributions to the project must be evident in the final submission.

Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.

HOW YOU'LL LEARN

You'll learn through a combination of lectures, small-group seminars, tutorials, group work, reflection and guided independent study.

Lectures will typically provide a broad introduction to key topics and debates, while seminars allow for group discussion and enable issues to be explored in greater depth.

HOW YOU'RE ASSESSED

The assessment of this programme includes a variety of written essays, reports, blogs, portfolios, projects, and group and individual presentations.

Most of these diverse assessment methods are designed to mimic real-life scenarios. This includes developing a BIM implementation plan for a hypothetical project, for example, and communicating the benefits, issues and challenges of implementing BIM for design coordination to a project team.

You'll receive comprehensive feedback on your work at the end of each module.

LIVERPOOL HALLMARKS

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

Careers and employability

BIM is a rapidly growing area of architecture, engineering and construction, both in the UK and also globally. This programme enhances your employability by enabling you to get hands-on with a variety of design tools. You'll gain practical experience and insights using these innovative technologies.

A variety of tasks will familiarise you with the activities and real-world challenges that BIM professionals encounter in practice. They'll also enable you to demonstrate communication, teamwork, presentation and problem-solving skills.

Career support from day one to graduation and beyond

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Career planning

Our Careers Studio and career coaches can provide tailored support for your future plans.

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From education to employment

Employability in your curriculum for a successful transition

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Networking events

Make meaningful connections with like-minded professionals

YOUR FUTURE

BIM professionals are in high demand in a range of roles and industries relevant to the built environment.

These include careers in:

- Architecture
- Construction
- Management
- Project management
- Higher education
- The arts

- Conservation.

You may also wish to continue your studies and will find you are well prepared for PhD research.

Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

TUITION FEES

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)	
Full-time place, per year	£11,700
Part-time place, per year	£5,850

International fees	
Full-time place, per year	£26,600
Part-time place, per year	£13,300

Fees stated are for the 2025-26 academic year.
Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **Learn more about fees and funding**.

ADDITIONAL COSTS

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This could include buying a laptop, books, or stationery.

Find out more about the additional study costs that may apply to this course.

SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries that could help pay your tuition and living expenses.

We've set the country or region your qualifications are from as United Kingdom. Change it here

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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – ACHIEVEMENT

- International students

If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your prior academic achievement, choice of course, and you not having studied with us before.

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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – COUNTRY

- International students
- Antigua and Barbuda
- Australia
- Bangladesh
- Barbados
- Belize
- Brunei
- Canada
- China
- Cyprus
- Dominica
- Egypt
- Ghana
- Grenada
- Guyana
- India
- Jamaica
- Japan
- Kenya
- Malaysia
- Mauritius
- Mexico
- New Zealand
- Nigeria
- Pakistan
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and The Grenadines

- Singapore
- South Africa
- South Korea
- Sri Lanka
- Tanzania
- Thailand
- Trinidad and Tobago
- Turkey
- Uganda
- Vietnam

If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your nationality, choice of course, and you not having studied with us before.

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GRADUATE LOYALTY ADVANCEMENT SCHOLARSHIP

- Home and international students

If you're a University of Liverpool graduate starting this master's degree with us, you could be eligible to receive a loyalty discount of up to £2,500 off your master's tuition fees.

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CHILEAN NATIONAL AGENCY FOR RESEARCH AND DEVELOPMENT (ANID) SCHOLARSHIP

- International students
- Chile

If you're a Chilean student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Chilean National Agency for Research and Development (ANID) Scholarship. Scholarship.

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CHEVENING SCHOLARSHIPS

- International students
- Albania
- Algeria
- Anguilla
- Antigua and Barbuda
- Argentina
- Australia
- Azerbaijan
- Bangladesh
- Barbados
- Belize
- Bolivia
- Brazil
- British Virgin Islands
- Brunei
- Canada

- Cayman Islands
- Chile
- China
- Columbia
- Costa Rica
- Cuba
- Dominica
- Ecuador
- Egypt
- El Salvador
- Ghana
- Guatemala
- Guyana
- Honduras
- Hong Kong
- Iceland
- India
- Indonesia
- Iraq
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Libya
- Malaysia
- Mauritius
- Mexico
- Moldova
- Mongolia
- Montserrat
- Morocco
- Nepal
- New Zealand
- Nicaragua
- Nigeria
- Pakistan
- Panama
- Paraguay
- Peru
- Philippines
- Russia
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and The Grenadines
- Serbia
- Singapore
- South Africa

- South Korea
- South Sudan
- Sri Lanka
- Sudan
- Taiwan
- Tanzania
- Thailand
- Trinidad and Tobago
- Turkey
- Turks and Caicos Islands
- Uganda
- Ukraine
- Uruguay
- Venezuela
- Vietnam
- Zimbabwe

If you're an international student from an eligible country, joining a one-year master's course, you could be eligible to apply for a Chevening Scholarship. If your application is successful, you could expect to have your master's fees paid, up to a maximum of £18,000, and receive additional help with living costs.

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CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA (CONACYT) AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree, you could be eligible to apply for a 30% discount on your tuition fees with a CONACyT Award.

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FUND FOR THE DEVELOPMENT OF HUMAN RESOURCES (FIDERH) AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree and you're in receipt of a FIDERH graduate loan, you could be eligible to benefit from a 20% discount on your tuition fees with a FIDERH Award.

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FUNED AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree and you're in receipt of a FUNED loan, you can apply to be considered for a 20% tuition fee discount. A total of up to 50 awards will be available to master's and PhD students per academic year.

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HONG KONG GRADUATE ASSOCIATION & TUNG FOUNDATION POSTGRADUATE SCHOLARSHIPS

- International students
- China
- Hong Kong

If you're a master's student from Hong Kong or the People's Republic of China who can demonstrate academic excellence, you may be eligible to apply for a scholarship worth up to £10,000 in partnership with the Tung Foundation.

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HRH PRINCESS SIRINDHORN UNIVERSITY OF LIVERPOOL SCHOLARSHIP (THAILAND)

- International students
- Thailand

If you're a student from Thailand joining a one-year master's degree, you might be eligible to apply to have your tuition fees paid in full and receive help with living costs. One award is available and only students who are new to the University will be considered.

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HUMANITARIAN SCHOLARSHIPS FOR MASTER'S PROGRAMMES

- International students

Do you have recognised status as a refugee or person with humanitarian protection outside the UK? Or are you a Ukrainian who's sought temporary protection in the EU? You could be eligible to apply for the full payment of your master's fees and additional financial support.

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JOHN LENNON MEMORIAL SCHOLARSHIP

- Home students

If you're a UK student, either born in or with strong family connections to Merseyside, you could be eligible to apply for a fee discount of up to £4,500. You'll need to demonstrate an active interest in global, community and environmental issues to be considered.

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JUVENTUDESGTO SCHOLARSHIP

- International students
- Mexico

If you're a resident of the state of Guanajuato in Mexico joining a master's degree, you could be eligible for a 10% discount on your tuition fees with a JuventudEsGto Scholarship.

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KAPLAN DIGITAL PATHWAYS EXCELLENCE SCHOLARSHIP

- International students

Completed a Kaplan Digital Pathways Pre-Master's? We're offering a £5,000 fee discount off the first year of master's study for a maximum of two high achieving students joining one of our non-clinical master's courses from an online Kaplan Pre-Master's programme.

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MARSHALL SCHOLARSHIP

- International students

- United States

If you're a USA student joining an eligible master's with us, you could be eligible to apply for a Marshall Scholarship. If your application is successful, your master's tuition fees will be paid in full. One Marshall Scholarship for master's study is available in each academic year.

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POSTGRADUATE OPPORTUNITY BURSARY

- Home students

If you're a UK University of Liverpool graduate joining a master's degree with us, you could be eligible to receive £3,000 off your tuition fees. You must have graduated in the last two years and received a widening access scholarship during your undergraduate studies.

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SPORT LIVERPOOL PERFORMANCE PROGRAMME

- Home and international students

Apply to receive tailored training support to enhance your sporting performance. Our athlete support package includes a range of benefits, from bespoke strength and conditioning training to physiotherapy sessions and one-to-one nutritional advice.

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TURKISH MINISTRY OF EDUCATION SCHOLARSHIP

- International students
- Turkey

If you're a Turkish student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Turkish Ministry of Education Scholarship.

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UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE EXCELLENCE SCHOLARSHIP

- International students

Completed a Pre-Master's at University of Liverpool International College (UoLIC)? We're offering a £5,000 fee discount off the first year of master's study to some of the highest achieving students joining one of our non-clinical master's courses from UoLIC.

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UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE IMPACT PROGRESSION SCHOLARSHIPS

- International students

If you're a University of Liverpool International College student awarded a Kaplan Impact Scholarship, we'll also consider you for an Impact Progression Scholarship. If selected, you'll receive a fee discount worth £3,000 off the first year of your master's course.

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VICE-CHANCELLOR'S INTERNATIONAL ATTAINMENT SCHOLARSHIP FOR MAINLAND CHINA

- International students

- China

Are you a high-achieving graduate from the People's Republic of China with a degree from a Chinese university? You could be eligible to apply for a £5,000 fee discount if you're joining an eligible master's course. Up to 15 eligible students will receive this scholarship.

Entry requirements

The qualifications and exam results you'll need to apply for this course.

Your qualification	**Requirements** About our typical entry requirements
GCSE	4/C in English and 4/C in Mathematics
Postgraduate entry requirements	We accept a 2:2 honours degree from a UK university, or an equivalent academic qualification from a similar non-UK institution. This degree should be in a relevant field of study, e.g. Architecture, Landscape Architecture, Interior Design, Civil/Structural Engineering, Urban Design, Building, Project Management, Construction Management, Quantity Surveying, Architectural Engineering, Architectural Technology, Design Management, Building Surveying or Facility/Asset Management. Non-graduates with very extensive professional experience and/or other prior qualifications may also be considered.
International qualifications	Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

THE ORIGINAL REDBRICK