Engineering

2+2
## Why choose the 2+2 at the University of Liverpool?

Our story began in 1881... The University of Liverpool became one of the first civic universities. **The original redbrick.**

Nearly 140 years later, we are still as original as ever - offering different viewpoints and daring ideas. Unique perspectives and a city bursting with character. We are uncovering world firsts through our pioneering research and helping you to forge your own original path. Studying in Liverpool will provide you with an amazing, life-changing university experience that will help you to achieve your ambitions.

### Internationally recognised

- Ranked 164th in the QS World University Rankings (2019)
- 20th in the UK for research power with 7 subjects ranked in the top 10 in the UK’s Research Excellence Framework (both Chemistry and Computer Science ranked #1 in the UK for 4* & 3* research THE 2014).

### Benefits of studying in the UK

- Develop communication skills, flexibility, adaptability, empathy and a global outlook – attributes which are highly sought by employers
- No need for an IELTS when applying for postgraduate study in the UK
- Opportunity to explore the UK and Europe.

### Graduate outcomes for 2+2ers

- 76% of all 2+2 graduates in Liverpool achieved a 1st or 2:1 upon graduation
- 80% of 2+2 graduates in Liverpool who were in further study after graduating from the University of Liverpool were enrolled in QS Top 100 Universities (DHLE 2020, University of Liverpool analysis of unpublished data)
- Ranked 1st in the Russell Group for graduate employability (DLHE 2016/17).

### Support services

- Happy students are successful students. In order to help you achieve your ambitions, the University of Liverpool has a wide range of services to support you throughout your studies, including:
  - XJTLU student adviser
  - Academic advisers
  - International advice and guidance
  - English Language Centre
  - Careers Studio
  - Student services (Health, Counselling, etc)
  - Guild of Students
  - Sports centre
  - Libraries
  - On-campus accommodation.

### The university offers great facilities, the 24-hour library, informational Career Centre and the gym. The campus is a very friendly, passionate place with a good balance of studying and socialising.

Siqi Li
2+2 alumna in Communication and Media
Engineering at Liverpool

Built on a strong research environment, the School of Engineering offers taught degree programmes in civil, architectural and industrial design. Industry collaborators include organisations such as Airbus, Arup, Ford, Leonardo Helicopters and Renishaw.

Decide to study engineering in Liverpool and you are choosing a path that will allow you to make a real and lasting impact on the world we live in. At the University of Liverpool’s School of Engineering, our industry-led degrees are creating the engineers of the future.

Choose a degree that prepares you to be a modern engineer for the future
You’ll benefit from research-led teaching, conducted in collaboration with industry, government, research laboratories and academics.

Benefit from learning in outstanding facilities
Our £32 million redevelopment includes the award-winning Active Learning Laboratory, manufacturing robotics, wind tunnels and a water flume.

Gain professional accreditation
All of our degree programmes are accredited, or preparing for accreditation, by at least one professional engineering institution, providing you with a solid foundation for your career. We have excellent links with the professional engineering institutions and benefit from their support.

How you learn
We are leading the UK’s involvement in the international ‘Conceive-Design-Implement-Operate’ (cdio.org) initiative, an innovative educational framework to create the next generation of engineers, providing students with an education stressing engineering fundamentals set in the context of conceiving, designing, implementing and operating real world systems and products.

Our degree programmes develop students’ technical knowledge and skills as well as an understanding of the ethical, safety, environmental, economic and social considerations and requirements involved in practising as a professional engineer. The School also houses the Engineering and Materials Education Research Group, which advises all UK teachers about innovations in engineering education.

Languages at Liverpool
Studying a programme within Engineering allows you to study a language as an extracurricular course, on top of your degree. See liverpool.ac.uk/languages for more information.

Work experience opportunities
Many students undertake placements during the summer.

Skills for success
Our teaching programmes are highly rated and this is underpinned by an extensive programme of research. All of our programmes are strongly linked with industry, both formally through our industrial advisory boards, and informally through industry contacts and alumni.

Summer Abroad
Once you arrive at the University you’ll have the opportunity to apply for one of our exciting Summer Abroad programmes. Summer Abroad allows you to visit a new country whilst undertaking worthwhile academic study. Destinations include Australia, France and Canada. Find out more at liverpool.ac.uk/study-abroad/outbound/what-is-study-abroad/summer/.

97% are employed or in further study within six months of graduating (DLHE 2016/17).

Good to know
We offer accredited programmes.
We offer the chance to study a language.
Invest in your future

The University of Liverpool’s Careers & Employability Service maximises opportunities for career prospects, graduate opportunities, student summer placements and the annual engineering careers fair with 30 blue chip companies attending (including Nestle, JCB, British Army, United Utilities, ABB Ltd, Network Rail, BAE Systems and many more). Our degrees provide pathways into rewarding careers and our graduates have found employment in a wide range of international industries and organisations.

Recent employers of our graduates

Some recent employers of our graduates include:
- ABB Ltd
- Arup
- Atkins
- BAE Systems
- Balfour Beatty
- BMI
- Corus
- Costain
- Government organisations
- Halcrow
- Highways Agency
- Laing O’Rourke
- Metronet Rail
- Mott Macdonald
- Mouchel
- National Grid Transco
- National Nuclear Laboratory
- Network Rail
- Pilkington
- QinetiQ
- Ramboll
- Royal Haskoning
- Siemens
- Tarmac
- United Utilities.

Our research-led teaching ensures that we incorporate the latest advances in cutting edge engineering research. 95% of our research is deemed world leading or internationally excellent, and is highly regarded by engineering industries and partners. As well as achieving a degree qualification, you will graduate as an industry-ready engineer who has both practical experience and highly desirable skills to the engineering industry.

STAFF PROFILE

Dr Richard Barrett

Dr Richard Barrett has joined the University of Liverpool as a Reader in Industrial Design, having occupied a role as Associate Head of Industrial and Automotive Design at Coventry University. This followed 3 years at Cranfield University in a pioneering role establishing their first Creative Design Centre C4D in collaboration with the University of the Arts London, a £3.5m programme funded in response to the Cox Review in 2005. Previously, Dr Barrett has occupied roles with Ford, Nissan and Herman Miller as well significant roles across market research agencies.

I liked modules at Liverpool that involved learning about industry, such as Integrated Design, the Constructionarium, and Project Management. This taught about professional life and employment activities, and provided good opportunities to bring together many technical and engineering things that I had learned in other parts of the degree. It has also been useful in helping me successfully apply for a follow-on Masters.

Civil Engineering 2+2 student
Articulation routes

The Constructionarium field-trip was special and very enjoyable. We went off-campus in teams and succeeded in building our design. I am quite proud of that. There were good chances for us to communicate with each other in the groups, and to talk to native speakers and make friends with foreigners.

Civil Engineering 2+2 student

Architectural Engineering BEng (Hons)

The Architectural Engineering degree is a multidisciplinary degree, encompassing civil engineering and architecture. It is jointly delivered by the School of Engineering and the School of Architecture.

This is a vocational programme which aims to provide the educational base for graduates who wish to work at the intersection of architecture and structural engineering. They will be graduates who are practical, articulate, numerate, literate, imaginative, versatile, confident and inquisitive.

The degree programme will provide you with a multidisciplinary skill set to design building structures, bridges and critical infrastructure incorporating both the solid technical grounding that a typical civil/structural engineering degree provides alongside a robust and wider appreciation of the architectural, societal, economic and environmental aspects associated to a particular design solution.

The BEng programme is accredited by the Joint Board of Moderators, which represents the four major civil engineering institutions and accredits civil engineering programmes on behalf of the Engineering Council, which sets and maintains the standards for the engineering profession in the UK. The BEng degree is accredited as: (i) fully satisfying the educational base for an Incorporated Engineer (IEng) and (ii) partially satisfying the educational base for a Chartered Engineer (CEng). A programme of accredited further learning will be required to complete the educational base for CEng. See jbm.org.uk for further information and details of further learning programmes for CEng.

Programme in detail

Working across both disciplines, architectural engineers apply engineering principles to the planning, design and construction of the built environment. Architectural engineers are responsible for the design of different systems within a building or an aspect of critical infrastructure with a particular focus on key areas such as:

- creating innovative design strategies to improve our cities and infrastructure
- structural integrity to sustain earthquakes, fires, vibrations, wind loading, explosions and impacts
- modelling and design of heating, ventilation and air conditioning systems to make an environment hospitable for the user
- acoustic performance and lighting design, sustainability and energy efficiency.

An exciting part of the second year of our programme is a week of real, hands-on construction experience at ‘The Constructionarium’. The Constructionarium takes place at a six hectare site, specifically designed and built to provide a range of challenging teaching and learning conditions for students. There is an additional cost of up to £250 for the Constructionarium.

The programme gives you the opportunity to undertake an individual research project in Year Three. Teaching staff offer projects based on their research expertise.

Modules

For more detail on the programmes, see pages 11-17 for module descriptions.

Civil Engineering BEng (Hons)

This broad-based Civil Engineering programme provides sound academic training for the professional engineer.

Civil engineering graduates are in great demand. Careers in civil and structural engineering offer some of the highest paid jobs for graduates in the UK (source: Telegraph Graduate jobs: Top 10 starting salaries, June 2017).

As well as covering all the required bases of a civil engineer’s education, key features of the programme are the individual and group projects that students undertake in all years of their studies, applying their learning in context, with industrial feedback and an emphasis in engaging with the digital world of civil engineering.

The programmes is accredited by the Joint Board of Moderators, which represents the four major civil engineering institutions and accredits civil engineering programmes on behalf of the Engineering Council, which sets and maintains the standards for the engineering profession in the UK. The BEng degree is accredited as: (i) fully satisfying the educational base for an Incorporated Engineer (IEng) and (ii) partially satisfying the educational base for a Chartered Engineer (CEng).

A programme of accredited further learning will be required to complete the educational base for CEng. See jbm.org.uk for further information and details of further learning programmes for CEng.

This is a vocational programme which aims to provide the educational base for civil engineering graduates who demonstrate ingenuity whilst being practical, articulate, numerate, literate, imaginative, versatile, confident and inquisitive.

Programme in detail

You will be introduced to the essentials: structural analysis and design; fluid mechanics and hydraulics; geomechanics; materials; transport and infrastructure; the digital built environment and its digitisation.

Modules

For more detail on the programmes, see pages 11-17 for module descriptions.

2+2 students studying Civil and Architectural Engineering work closely with home and other international students whilst on site at the Constructionarium and during extensive design projects.

Many of our 2+2 students go on to study Masters degrees at universities around the world. Last year, 2+2 graduates chose to study at Stanford University, California; Imperial College, London; and National University of Singapore.

The facilities are so good in School of Engineering. I like the environment in the rebuilt historical architecture.

Tong Zhang, 2+2 student in Industrial Design
Industrial Design BEng (Hons)

This programme brings together product design creativity with the technical knowledge and skills of engineering.

Students develop as technically competent industrial designers, benefiting from the very latest in new product development techniques. The result is a modern engineering degree that will equip you with an excellent technical and creative grounding for a successful career in designing and developing new products.

The degree is strongly project-based. You will work on many design projects of increasing complexity. You will graduate well-placed to play an important role in new product development, a top management priority in the industry today.

The Industrial Design BEng (Hons) programme is accredited by the Institution of Engineering Designers (IED) for the purposes of fully meeting the academic requirements for Registered Product Designer (RProdDes), and on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a Incorporated Engineer (IEng).

Programme in detail

The BEng Industrial Design programme brings together the qualitative decision-making typical of arts-based industrial design with the quantitative and technical acumen of engineering. The result is a truly modern engineering degree that will provide individuals with an excellent technical and creative grounding for a successful career in and around the exciting discipline of designing and developing new products.

Year Two of study offers a mix of Engineering, Design and Management modules, providing students with a technical and creative grounding. Year Three offers an enhanced learning experience with dedicated design, development, visualisation and simulation projects.

Unique to this programme, final year individual projects are student conceived and based on the development of a commercially viable product design or innovation. This provides an opportunity to pursue a personal interest.

Graduates are expected to fulfil design positions at companies operating in the broad field of new product development, such as product design teams at SMEs, R&D departments of large manufacturing companies, freelance or group innovation and design consultancies.

Modules

For more detail on the programmes, see pages 11-17 for module descriptions.

STAFF PROFILE

Dr Xue Zhang

Dr Xue Zhang is a Lecturer in Geomechanics at the University of Liverpool. Previously, he was a Research Associate at Australia Research Council Centre of Excellence for Geotechnical Science and Engineering, University of Newcastle, Australia, and then a Marie Sklodowska-Curie fellow at International Centre for Numerical Methods in Engineering (CIMNE), Polytechnic University of Catalonia, Spain.

Dr Zhang teaches a variety of modules in Civil Engineering and Industrial Design.

Core and selected optional modules overview Year Two

<table>
<thead>
<tr>
<th>Module title</th>
<th>Architectural Engineering</th>
<th>Civil Engineering</th>
<th>Industrial Design</th>
<th>Semester</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer electronics</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>7.5</td>
</tr>
<tr>
<td>Context 2.1: history and theory of architecture</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Engineering design</td>
<td>C</td>
<td></td>
<td></td>
<td>1 and 2</td>
<td>15</td>
</tr>
<tr>
<td>Environmental design II</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Field theory, partial differential equations and methods of solution</td>
<td>C</td>
<td>C</td>
<td></td>
<td>1</td>
<td>7.5</td>
</tr>
<tr>
<td>Geomechanics II</td>
<td>C</td>
<td>C</td>
<td></td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Group design project</td>
<td>C</td>
<td>C</td>
<td></td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>

Develops understanding of common electrical technologies and their application within consumer electronic products.

The aim of this module is to investigate the attributes of selected examples of 20th century architecture and their associated cultural, social and intellectual framework and to demonstrate, through building analysis, the influence of historical and theoretical concepts on the spatial, social and technological aspects of 20th century architecture.

Teaches the fundamentals of the "total design" process within a group-based engineering design project.

To develop from user requirements an introduction to design of passive and active environmental systems for buildings, their integration into building fabric and structural systems, and a selection of appropriate design options, equipment and materials.

This module introduces students to the concepts of scalar and vector fields and develops techniques for evaluating line, surface and volume integrals.

Provides an introduction to the application of the theory to practical geotechnical engineering problems with emphasis on bearing capacity of foundations, earth pressures on retaining walls and slope stability.

This module gives students an opportunity to apply their knowledge and understanding to a unified design project and to promote teamwork and industrial awareness.

I wanted to experience something additional to China by going to Liverpool on 2+2. From being here in the UK for two years now, I know lots of different things. I have learned new subjects and further knowledge. I understand the industry, design and practical side too. I know local people and others from international countries. I feel my English has improved, and I want to see that continuing next year in my Masters study.

Civil Engineering 2+2 student
## Core and selected optional modules overview Year Two (continued)

<table>
<thead>
<tr>
<th>Module title</th>
<th>Architectural Engineering</th>
<th>Civil Engineering</th>
<th>Industrial Design</th>
<th>Semester</th>
<th>Credit</th>
<th>Module description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors in product design: practice ENGG224</td>
<td>C</td>
<td>2</td>
<td>7.5</td>
<td>Builds on Human factors in product design: theory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human factors in product design: theory ENGG222</td>
<td>C</td>
<td>1</td>
<td>7.5</td>
<td>Develops understanding of the main concepts of human factors including human capabilities/limitations and how they would be incorporated into designed systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulics CIVE210</td>
<td>C</td>
<td>2</td>
<td>15</td>
<td>Introduces students to more practical hydraulic problems, especially advanced topics in pipelines and open channel flow.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing product development MNGT205</td>
<td>C</td>
<td>1</td>
<td>7.5</td>
<td>Develops knowledge and understanding of the main concepts of the subject and the main models used, to develop analytical skills in applying the concepts and models to real-life examples and to stimulate an appreciation of the special challenges of managing new product development and the importance of this function to organisational success.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials processing and selection I MATS214</td>
<td>C</td>
<td>1</td>
<td>7.5</td>
<td>Provides an understanding of the main techniques and technology associated with the mechanical and thermal processing of metallic materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials processing and selection II MATS210</td>
<td>C</td>
<td>2</td>
<td>7.5</td>
<td>Helps students to understand materials performance indices and apply materials selection charts and software.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product development II ENGG220</td>
<td>C</td>
<td>1 and 2</td>
<td>15</td>
<td>Teaches intermediate elements of industrial design including manufacturing considerations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product form and materials ENGG226</td>
<td>C</td>
<td>2</td>
<td>7.5</td>
<td>Develops understanding of how materials influence the perception, appreciation and experiences people have of, and with, products.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product visualisation and simulation I ENGG221</td>
<td>C</td>
<td>1 and 2</td>
<td>15</td>
<td>Teaches the principles of virtual reality systems, visualisation techniques and simulation practice to an introductory level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programming for civil and architectural engineers CIVE285</td>
<td>C</td>
<td>C</td>
<td>1 and 2</td>
<td>15</td>
<td>Students are introduced to the fundamental concepts of computer programming, Python and Excel to solve engineering problems.</td>
<td></td>
</tr>
</tbody>
</table>

Please note: modules are illustrative only and subject to change.

## Module title | Architectural Engineering | Civil Engineering | Industrial Design | Semester | Credit | Module description
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project management MNGT202</td>
<td>C</td>
<td>1</td>
<td>7.5</td>
<td>Introduces the tools and constraints associated with managing both small and large projects, and with some simple costing approaches.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforced concrete and steelwork CIVE241</td>
<td>C</td>
<td>C</td>
<td>1 and 2</td>
<td>15</td>
<td>To explain and illustrate the basic behaviour of both a reinforced concrete section and a steel section under various load conditions.</td>
<td></td>
</tr>
<tr>
<td>Solids and structures II ENGG209</td>
<td>C</td>
<td>1 and 2</td>
<td>15</td>
<td>Provides awareness and understanding of the principles of solid mechanics applied to engineering structures. In particular, the behaviour and types of failure (instability) of simple elastic systems and structural members used in aerospace, civil and mechanical engineering applications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural engineering in the built environment II CIVE233</td>
<td>C</td>
<td>C</td>
<td>1 and 2</td>
<td>22.5</td>
<td>Students are introduced to advanced and emerging materials used in Civil and Architectural Engineering, deeper theoretic and applied understanding of structural behaviour and systems.</td>
<td></td>
</tr>
<tr>
<td>Transport and infrastructure project CIVE261</td>
<td>C</td>
<td>1</td>
<td>15</td>
<td>An introduction to the range of infrastructure projects, their importance to society and the context for civil engineering.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I like the module structure of Industrial Design here most. We can have access to design, engineering and management knowledge, which impresses me a lot. I think a good industrial designer should not only focus on his own field. Learning engineering and management could benefit my future career to large degrees.

Yichen Jin, 2+2 student in Industrial Design

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Key: C: Core  O: Selected optional modules

*Courses feature a Year in Industry. See Programmes at a glance page for more detail.*
## Core and selected optional modules overview Year Three

<table>
<thead>
<tr>
<th>Module title</th>
<th>Architectural Engineering</th>
<th>Civil Engineering</th>
<th>Industrial Design</th>
<th>Semester</th>
<th>Credit</th>
<th>Module description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced modern management MNGT352</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Introduction to various aspects of advanced modern management.</td>
</tr>
<tr>
<td>Architectural engineering project CIVE362</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>This module introduces students to the technologies and workflows that industry is adopting related to parametric design and its derivatives (algorithmic and generative design).</td>
</tr>
<tr>
<td>Coastal and estuary processes CIVE387</td>
<td></td>
<td>O</td>
<td></td>
<td>1</td>
<td>15</td>
<td>Introduces students to the work required in the coastal and estuary environment with emphasis on understanding the coastal and estuary environment problems with which they must deal.</td>
</tr>
<tr>
<td>Construction management CIVE345</td>
<td>C</td>
<td>C</td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>To introduce the student to various aspects of construction management and develop a knowledge and understanding of modern management tools as applied in construction.</td>
</tr>
<tr>
<td>Context 3.1: history and theory of architecture ARCH321</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>15</td>
<td>To develop final year undergraduate skills in the evaluation and presentation of an historical project through seminar-based group study. This module also presents an opportunity for final year students to work in areas where staff are active in research.</td>
</tr>
<tr>
<td>Earthquake engineering CIVE342</td>
<td></td>
<td>O</td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>Introduces students to earthquake engineering. It acquaints students with basic skills for analysing the seismic response of structures subjected to earthquake excitations using structural dynamics principles. Background knowledge in engineering seismology will be covered to provide a comprehensive perspective to the topic.</td>
</tr>
<tr>
<td>Environmental design III ARCH311</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>15</td>
<td>Develop from user requirements an introduction to the design of environmental systems for large buildings. Give insight and background for the selection of appropriate equipment and materials, and their integration into building fabric and structural systems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module title</th>
<th>Architectural Engineering</th>
<th>Civil Engineering</th>
<th>Industrial Design</th>
<th>Semester</th>
<th>Credit</th>
<th>Module description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geotechnical engineering CIVE320</td>
<td>C</td>
<td>C</td>
<td></td>
<td>2</td>
<td>15</td>
<td>Provides an introduction to the theory and methods that underpin geotechnical engineering practice, with emphasis on design of shallow and deep foundations, retaining walls, slopes and other structures according to Eurocode 7.</td>
</tr>
<tr>
<td>Individual design project INDD341</td>
<td>C</td>
<td></td>
<td></td>
<td>1 and 2</td>
<td>30</td>
<td>Provides an opportunity for students to experience a major design task similar to those working as a professional designer in an industrial, research or consultancy organisation and demonstrate the development of a design brief.</td>
</tr>
<tr>
<td>Individual project ENGG341</td>
<td>C</td>
<td>C</td>
<td></td>
<td>1 and 2</td>
<td>30</td>
<td>Provides an opportunity to apply engineering knowledge, understanding and skills to plan, carry out and control an open-ended project in a topic of your choice.</td>
</tr>
<tr>
<td>Introduction to finite elements ENGG303</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Students will develop a fundamental understanding of the Finite Element method and apply this to a range of problems, spanning mechanical and civil engineering.</td>
</tr>
<tr>
<td>Management of design MNGT313</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>Develops professional and managerial attitudes towards project management and gives a basis to the management of the group design project in Year Four.</td>
</tr>
<tr>
<td>Manufacturing systems MNFG321</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>15</td>
<td>Develops an overall understanding of manufacturing systems at a global, company, factory and shop floor level.</td>
</tr>
<tr>
<td>Materials design MATS303</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>Develops an understanding of the important factors in materials and process selection for engineering components and design, and the planning and execution of activities associated with the professional materials design engineer.</td>
</tr>
<tr>
<td>Materials for durable and sustainable construction CIVE311</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>15</td>
<td>This module introduces students to advanced concepts and principles of sustainability and durability in terms of construction materials.</td>
</tr>
</tbody>
</table>

Please note: modules are illustrative only and subject to change.

Key: C: Core  O: Selected optional modules  *Courses feature a Year in Industry. See Programmes at a glance page for more detail.*
### Core and selected optional modules overview Year Three (continued)

<table>
<thead>
<tr>
<th>Module title</th>
<th>Architectural Engineering</th>
<th>Civil Engineering</th>
<th>Industrial Design</th>
<th>Semester</th>
<th>Credit</th>
<th>Module description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechatronics</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Develops an appreciation of how microcomputer-based control systems can be used in the design and implementation of electro-mechanical engineering systems.</td>
</tr>
<tr>
<td>Prestressed concrete design CIVE343</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Provides an overview of the concepts related to prestressed concrete together with practical construction and application issues.</td>
</tr>
<tr>
<td>Product design group project ENGG340</td>
<td>C</td>
<td></td>
<td></td>
<td>1 and 2</td>
<td>15</td>
<td>Integrates knowledge from the three-year Industrial Design programme into a single group activity in which high level engineering science is applied to practical problems.</td>
</tr>
<tr>
<td>Product development III ENGG3320</td>
<td>C</td>
<td></td>
<td></td>
<td>1 and 2</td>
<td>15</td>
<td>Builds on Product development I and II.</td>
</tr>
<tr>
<td>Product visualisation and simulation II ENGG321</td>
<td>C</td>
<td></td>
<td></td>
<td>1 and 2</td>
<td>15</td>
<td>Teaches the principles of virtual reality systems, visualisation techniques and simulation practice to an intermediate level, giving an appreciation of the role that visualisation and simulation plays in the development of new or existing products to an intermediate level.</td>
</tr>
<tr>
<td>Structural dynamics ENGG301</td>
<td>C</td>
<td></td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Develops skills in carrying out and reporting upon simple experiments in structural dynamics.</td>
</tr>
<tr>
<td>Structural steelwork, timber and masonry CIVE334</td>
<td>C</td>
<td>C</td>
<td></td>
<td>1</td>
<td>15</td>
<td>Develops student ability with regard to structural engineering design with emphasis on structural engineering design in steelwork, timber and masonry and how these materials are used in practice.</td>
</tr>
<tr>
<td>Structures III CIVE344</td>
<td>C</td>
<td>C</td>
<td></td>
<td>1</td>
<td>7.5</td>
<td>Acquaint students with plastic material behaviour and its effects on structural member behaviour, and with effective methods for determining collapse mechanisms.</td>
</tr>
<tr>
<td>Sustainable water engineering CIVE396</td>
<td>C</td>
<td></td>
<td></td>
<td>2</td>
<td>15</td>
<td>Introduces students to the work of the water engineer, to provide a practical understanding of some of the key environmental, social and economic problems.</td>
</tr>
<tr>
<td>Uncertainty, reliability and risk I ENGG304</td>
<td>O</td>
<td></td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>Develops understanding and appreciation of uncertainties in engineering on a basic level. It involves the qualitative analysis of the uncertainty and risks in engineering systems in view of engineering decision making under uncertainty.</td>
</tr>
</tbody>
</table>

Please note: modules are illustrative only and subject to change.

**Key:** C: Core  O: Selected optional modules

My dream is to become a great product designer. What I have learned here gives me a higher level of cognition of the industry and the real world and helps me better understand how to connect design, industry and people, which will help me a lot in my future career.

Yifeng Mao, 2+2 student in Industrial Design
Student support in the School of Engineering & next steps

As an Engineering student you will be part of the School of Engineering situated on the Victoria Building Quadrangle. Within the School of Engineering you will find a dedicated student support team, offering guidance and advice all the way from enrolment through to your graduation.

Learning and Teaching Support
All students are assigned an Academic Advisor with whom they meet regularly to help support their studies at the University of Liverpool. There is also a dedicated Student Support Team located in the School who can provide help and guidance on welfare and other support issues.

Disability Support
The University has specialist support and guidance for students with special needs, and students are encouraged to contact Disability Guidance and Support (https://www.liverpool.ac.uk/studentsupport/disability/) either in advance or on arrival to find out what help is available. The School has a disability contact who is available to discuss any special support needs. In addition the Student Support Team can offer guidance and help you find the support you need.

Careers and Employability
The School of Engineering has a team who are responsible for providing students with information and opportunities to support their Careers and Employability development, including workshops on CV writing, to alumni events with past graduates offering careers advice.

Next steps
You will be asked via email to register for your modules on Liverpool Life prior to your arrival in Liverpool.

During welcome week and the first week of the autumn term, the School of Engineering host events to welcome 2+2 students, where you can meet your Academic Advisor and current students. The Student Support Team are also on hand to help with registration issues you may have, and to explain how to access and read your timetable.

Studying at the University of Liverpool’s Industrial Design programme gives me the chance to jump out of my safe zone. It helps me to figure out the role of a designer and understand what is critical for me to become a designer in future career.

Xiangshu Xu, 2+2 student in Industrial Design

Key: C: Core O: Selected optional modules