

## PROGRAMME SPECIFICATION

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### Master of Engineering in Civil Engineering

<b>Awarding institution</b>	Liverpool John Moores University
<b>Teaching institution</b>	LJMU
<b>UCAS Code</b>	H202
<b>JACS Code</b>	H200
<b>Programme Duration</b>	Full-Time: 4 Years, Sandwich Thick: 5 Years
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Subject benchmark statement</b>	Engineering (2015)
<b>Programme accredited by</b>	Joint Board of Moderators (JBM) on behalf of: the Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE), the Chartered Institution of Highways and Transportation (CIHT), the Institute of Highway Engineers (IHE) and the Permanent Way Institution (PWI)
<b>Description of accreditation</b>	This degree is accredited as fully meeting the academic requirements for registration as a Chartered Engineer.
<b>Validated target and alternative exit awards</b>	Master of Engineering in Civil Engineering  Master of Engineering (SW) in Civil Engineering  Bachelor of Engineering with Honours in Civil Engineering  Bachelor of Engineering Honours (SW) in Civil Engineering  Diploma of Higher Education in Civil Engineering  Diploma in Higher Education (SW) in Civil Engineering  Certificate of Higher Education in Civil Engineering
<b>Programme Leader</b>	Denise Lee

### Educational aims of the programme

The MEng in Civil Engineering fulfils all the academic requirements for Chartered Engineer status. It is designed to develop a high level of technical expertise together with the leadership skills needed to practice successfully as a professional engineer in the modern international civil engineering environment. The knowledge and skills gained from this programme are designed to enable graduates to make an immediate contribution to their employers, and to enable them to achieve the highest positions within the civil engineering profession.

The educational aims of the MEng in Civil Engineering are to:

Provide a programme of study that fully meets the academic requirement for registration as a Chartered Engineer.

Provide a programme of study, which develops core knowledge, and understanding of engineering principles, mathematics and computation, appropriate to the field of Civil Engineering.

Enable students to develop specialist knowledge, intellectual, analytical, practical and critical abilities that will enable them to analyse, investigate and develop robust solutions to Civil Engineering problems.

Develop relevant study and personal skills so that students progressively take responsibility for their learning, becoming, independent learners, while receiving appropriate tutoring and support.

Enable students to develop a full range of communication skills

Equip students with a range of transferable skills and attributes in the use of computers, software packages, team working, communication, time management and problem solving methodology which will enable them to undertake responsible roles in industry.

Provide a degree programme which meets the accreditation requirements of AHEP-4 UK Spec and the needs of industry.

Develop students to work in and manage teams and also to work independently at managerial level utilizing project management and technical skills.

To encourage students to engage with the development of employability skills by completing a self-awareness statement.

For students undertaking a placement year, the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

### **Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education**

*A student who is eligible for this award will be able to:*

Demonstrate a sound knowledge of the basic concepts of civil engineering related subjects and have learned how to take different approaches to solving engineering problems.

### **Alternative Exit/ Interim Award Learning Outcomes - Diploma in Higher Education (SW)**

*A student who is eligible for this award will be able to:*

Apply the analytical and evaluation skills attained to a deeper knowledge of the principles and concepts of civil engineering and related subjects. Students will also be able to apply these principles widely within the context of the civil engineering profession.

Critically evaluate the appropriateness of different approaches to design and problem solving within civil engineering.

For the award of Diploma of Higher Education (SW), students must also demonstrate the professional and personal skills necessary for effective employment within a professional environment.

### **Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education**

*A student who is eligible for this award will be able to:*

Apply the analytical and evaluation skills attained to a deeper knowledge of the principles and concepts of civil engineering and related subjects. Students will also be able to apply these principles widely within the context of the civil engineering profession.

Critically evaluate the appropriateness of different approaches to design and problem solving within civil engineering.

### **Alternative Exit/ Interim Award Learning Outcomes - Bachelor of Engineering Honours (SW)**

*A student who is eligible for this award will be able to:*

Analyse and evaluate a complex body of knowledge, some of which will be at the current boundaries of civil engineering.

Exercise personal responsibility and decision making in complex circumstances. Students will have developed strategic awareness, independent research skills, and a detailed knowledge of civil engineering related subjects together with confidence in applying quantitative and qualitative models.

Make use of the theoretical knowledge base to produce effective civil engineering designs, taking full account of the requirements of sustainability, Health and Safety and risk management.

Demonstrate the professional and personal skills necessary for effective employment within a professional environment.

For the award of Bachelor of Engineering Honours (SW), students must also demonstrate the professional and personal skills necessary for effective employment within a professional environment.

### **Alternative Exit/ Interim Award Learning Outcomes - Bachelor of Engineering with Honours**

*A student who is eligible for this award will be able to:*

Analyse and evaluate a complex body of knowledge, some of which will be at the current boundaries of civil engineering.

Exercise personal responsibility and decision making in complex circumstances.

Students will have developed strategic awareness, independent research skills, and a detailed knowledge of civil engineering related subjects together with confidence in applying quantitative and qualitative models.

Make use of the theoretical knowledge base to produce effective civil engineering designs, taking full account of the requirements of sustainability, Health and Safety and risk management.

## Target award Learning Outcomes - Master of Engineering

*A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.*

*A student who is eligible for this award will be able to:*

1. Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Knowledge will be informed promoting a critical awareness of new developments in Civil engineering.
2. Formulate and analyse complex Civil Engineering problems by collecting, processing and inferring relevant data, facts and information, and by using first principle mathematics, statistics, applied science and engineering principles.
3. Select and apply appropriate computational and analytical techniques to simulate complex Civil Engineering systems for planning, designing and construction, with due regard to the limitations of the techniques and scope of applications employed.
4. Develop a methodology based on the critical evaluation of technical literature, using qualitative and quantitative data to provide recommendations to bring improvement aligned with UN SDG's, through independent research.
5. Design innovative solutions in accordance with current appropriate codes of practice and industry standards.
6. Demonstrate professional and ethical behavior with regard to Civil Engineering, involving consideration of Health and Safety, diversity, inclusion, cultural, societal, environmental and commercial matters
7. Demonstrate knowledge of the holistic nature of Civil Engineering projects and the wider impact on the society, economy and environment. This will include BIM and life cycle analysis.
8. Develop an awareness and the ability to identify ethical concerns and to make reasoned and justified ethical choices.
9. Evaluate and mitigate risk, including environmental, commercial and security risk associated with Civil Engineering projects.
10. Work effectively within a group to design, analyse and evaluate Civil Engineering projects, adopting an inclusive approach and recognising the responsibilities, benefits and importance of supporting equality, diversity and inclusivity.
11. Apply practical engineering skills acquired through laboratory work, to the design of complex civil engineering projects.
12. Use a range of land surveying equipment effectively for setting out engineering works and for collecting site data for the production of engineering plans.
13. Exercise initiative and ethical personal responsibility both as a leader and as a team member.
14. Plan and record CPD for personal and professional development.
15. Apply an extensive knowledge and understanding of a wide range of engineering materials and components to civil engineering design.
16. Develop specifications for materials and methods to ensure quality of engineering design solution and its construction.
17. Develop planning and control project schedules with regard to Civil Engineering project management principles, commercial and legal aspects.
18. Write original technical and research reports in compliance to relevant intellectual property and copyrights.
19. Communicate effectively through the written word, engineering drawings, clear use of mathematic notation, orally and through effective use of IT.
20. Generate an innovative design for construction, products, systems, components or processes to fulfil new needs
21. Demonstrate an understanding of the need for a high level of professional and ethical conduct in civil engineering and a knowledge of professional codes of conduct.
22. Evaluate and design structures exposed to dynamic loads
23. Demonstrate a wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them to unfamiliar situations.

24. Manage the design process and evaluate outcomes.

## Alternative target awards

A student who is eligible for the following awards will be able to:

Master of Engineering (SW) in Civil Engineering -

In addition to the learning outcomes above a student who is eligible for this award will have successfully completed a placement year and be able to demonstrate the professional and personal skills necessary for effective employment within a professional Civil Engineering environment.

Bachelor of Engineering Honours (SW) in Civil Engineering -

Diploma in Higher Education (SW) in Civil Engineering -

## Teaching, Learning and Assessment

The methods used to enable outcomes to be achieved and demonstrated are as follows:

Acquisition of underpinning knowledge is achieved mainly through student-centred learning delivered through, lectures, tutorials, problem solving sessions, workshops, laboratory and computer sessions, off-site learning activities, participation in group projects and individual investigational/research project. The major vehicles for practical skills are laboratory work, field work including the surveying field course week, and the research project at level 6. The economic, Social and Environmental context of engineering operations is delivered by means of lectures and case studies. The use of appropriate case study material is an essential part of teaching in this area.

Testing of knowledge will be done through unseen examinations, assignments, preparation of reports, design tasks, oral presentations, workshops, peer review, computer-based exercises, work placement reports. Assessment of field work and laboratory work also includes practical tests in situ. Tracking of key skills and Civil Engineering attainments.

## Programme structure - programme rules and modules

The programme is offered in full-time and full-time sandwich attendance modes. Entry to the programme is normally at level 4 for suitably qualified candidates.

The programme will offer the opportunity of 60 credits of study abroad at Level 5. Students will be enrolled on a 480 credit (or 600 credit, if combined with a placement year or a study abroad year) honours with study abroad programme. A 60 credit Level 5 study abroad module, 5300CIVSA will normally replace the semester 2 modules on the standard programme. This study abroad should cover the same learning outcomes as the modules being replaced. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 120 credits at Level 5 (or 240 credits, if combined with a placement year or a study abroad year).

Students have the option to undertake a placement year. The placement year, module 5200CIVSW, will follow Level 5 and students will be enrolled on a 600 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Students not undertaking a placement year are registered on the non Sandwich version of the programme and will have the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 600 credit honours (with study abroad) programme. Of those 600 credits, 120 will be taken via a Level 5 study abroad module 5200CIVSA. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

The revised programme structure will apply to all existing students with the exception of those completing level 7 in 2022-23 who will complete using the previously validated structure.

Level 7	Potential Awards on completion	Master of Engineering
Core	Option	Award Requirements
<a href="#">7300CIV</a> Engineering Design Project (60 credits) <a href="#">7301CIV</a> Sustainable Infrastructure (20 credits) <a href="#">7303CIV</a> Structural and Earthquake Engineering (20 credits) <a href="#">7305CIV</a> Civil Engineering Professional Practice (20 credits)		120 core credits at level 7 0 option credits at level 7

Level 6	Potential Awards on completion	
Core	Option	Award Requirements
<a href="#">6300CIV</a> Advanced Materials (10 credits) <a href="#">6301CIV</a> Transportation and Infrastructure (10 credits) <a href="#">6302CIV</a> Applied Geotechnics and Design (20 credits) <a href="#">6303CIV</a> Structural Design and Risk Management (20 credits) <a href="#">6304CIV</a> Research Project (40 credits) <a href="#">6305CIV</a> Water Supply and Wastewater Management (20 credits)		120 core credits at level 6 0 option credits at level 6
Level 5	Potential Awards on completion	
Core	Option	Award Requirements
<a href="#">5300CIV</a> Materials II (20 credits) <a href="#">5301CIV</a> Surveying and Transportation (20 credits) <a href="#">5302CIV</a> Engineering Mathematics II (10 credits) <a href="#">5303CIV</a> Geotechnics II (10 credits) <a href="#">5304CIV</a> Water Engineering (20 credits) <a href="#">5305CIV</a> Structural Analysis and Design II (20 credits) <a href="#">5306CIV</a> Civil Engineering Project (20 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements
<a href="#">4300CIV</a> Engineering Mathematics I (20 credits) <a href="#">4301CIV</a> Structural Analysis and Design I (20 credits) <a href="#">4302CIV</a> Introduction to Materials I (10 credits) <a href="#">4303CIV</a> Surveying and CAD (20 credits) <a href="#">4304CIV</a> Geotechnics I (20 credits) <a href="#">4305CIV</a> Hydraulics (10 credits) <a href="#">4306CIV</a> Infrastructure Design and Skills Project (20 credits)		120 core credits at level 4 0 option credits at level 4

## Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.  
<https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework>

## Opportunities for work-related learning ( location and nature of activities)

To put the students' learning into appropriate vocational contexts project modules at all levels are assessed in realistic, industrially relevant contexts. At each level of the course students participate in cross disciplinary project modules and a major design project in the final year, mentored by industry, develops this further.

The full-time course is offered in Sandwich mode so that after two years of study, students may elect to work in a design and/or consultancy practice or with a contractor for a one year placement. This would afford students the opportunity to contextualise their theoretical learning in a real life working environment.

## Criteria for admission

### A/AS Level

Level 4: 128 UCAS points: Minimum Two A2 levels. Science and maths subjects are preferred but not essential for A-Levels.

### Irish Leaving Certificate

Level 4: 128 UCAS points; minimum 3 subjects at Higher level

### Scottish Higher

Level 4: 128 UCAS points; minimum 2 subjects at Advanced Higher level

### International Baccalaureate

24 IB points

### Higher national diploma

HNC/HND (Cognate)

Level 4 Entry: Pass

Level 5 Entry: Pass with an average mark of at least 65%

### Other

Foundation degree

Level 5 entry: Foundation Degree in Civil Engineering with a final award mark of at least 65%.

Progression from LJMU B.Eng in Civil Engineering:

Level 6 entry: available for LJMU students who have completed level 5 LJMU B.Eng in Civil Engineering with a capped mean mark from all level 5 modules of at least 55%.

### Overseas qualifications

Overseas student applicants must have the equivalent qualifications as UK students. In addition they must have achieved an IELTS score of at least 6.

## External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA) Published review reports are available on the QAA website at [www.qaa.ac.uk](http://www.qaa.ac.uk)

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

## Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

## Methods for evaluating and improving the quality and standards of teaching and learning

### Student Feedback and Evaluation

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

## **Staff development**

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

## **Internal Review**

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

## **External Examining**

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

## ***Please note:***

*This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content, teaching, learning and assessment methods of each module can be found in module and programme guides.*