Richmond American University London

Jiangxi Institute of Technology

BEng Mechanical Engineering

Programme Specification

2026-2027

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1. INTRODUCTION

This document describes the **BEng Mechanical Engineering** awarded by Richmond American University London, using the protocols required by *The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies* (QAA, 2024).

This programme is a core engineering discipline that integrates comprehensiveness, practicality, and applicability. It focuses on mechanical design, manufacturing, operation and maintenance, as well as innovation and optimisation, supporting the development of industrial systems. The discipline is highly interdisciplinary, integrating theories from mathematics, physics, materials science, mechanics, and other fields to form a multidimensional knowledge system. With a distinct practice-oriented focus, it aims to solve real-world engineering problems. Through diverse practical components, it develops students' end-to-end engineering capabilities. Its application scenarios span multiple fields, ensuring strong adaptability to meet the needs of both traditional and emerging industries. Emphasizing both innovation and tradition, it keeps pace with industry trends, requiring students to possess both foundational technical skills and cutting-edge innovative thinking. Students must also develop systematic thinking to balance multidimensional requirements in design optimization, achieving equilibrium between technical, economic, and practical value. Through this program, undergraduates master core theories and professional software skills, enabling them to contribute to regional industrial upgrading, participate in industry standard-setting and science popularization, and supply high-caliber talent and technical support to the mechanical engineering field.

The degree awarded by this program is structured within the UK undergraduate framework, with specific requirements as follows:
(1) Successful completion of all compulsory courses at each FHEQ level;
(2) Satisfactory completion of the minimum number of elective courses at each FHEQ level;
(3) Attainment of at least 120 UK credits per level (Levels 4-6), totaling 360 UK credits; and
(4) Achievement of a minimum UK GPA of 1.850.

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 s/he takes full advantage of the learning opportunities that are provided.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each course can be found in course specification documents and syllabi.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

2. OVERVIEW

Programme/award title(s)	BEng (Hons) Mechanical Engineering
Teaching Institution	Jiangxi Institute of Technology
Awarding Institution	Richmond American University London
Date of last validation	
Next revalidation	
Credit points for the award	370 UK Credits at *FHEQ* Levels 4-6
Programme start date	September 2026
Underpinning QAA subject benchmark(s)	Engineering (March 2023): https://www.qaa.ac.uk/docs/qaa/sbs/sbs-engineering-23.pdf?sfvrsn=7c71a881_4
Professional/statutory recognition	n/a
Language of Study	Chinese
Language of Assessment	Chinese
Duration of the programme for each mode of study (P/T, FT, DL)	FT
Accreditation (if applicable)	
Date of production/revision of this specification	February 2026 (see chart at the end of this document for list of revisions)

3. ABOUT THE PROGRAMME

BEng (Hons) Mechanical Engineering is a core engineering discipline integrating knowledge from multiple fields including mechanical design, manufacturing, control, and materials. The course focuses on fostering the abilities required to operate as versatile engineering professionals in mechanical product R&D, process optimisation, and equipment operation and maintenance. Central to industrial system upgrades, this discipline plays a vital role in industries including smart manufacturing, high-end equipment, automotive, and aerospace.

The four-year curriculum design follows the principle of "progressive development and integration of theory and practice." Students in the first year consolidate foundational knowledge in mathematics, physics, and engineering to establish a coherent framework. In the second year, they study core courses, mastering theories such as mechanical principles and materials mechanics. The third year emphasises practical application through course projects and hands-on software training. In the final year, students apply theory to engineering practice via corporate internships and capstone projects.

The core teaching philosophy is guided by the principles of engineering-based, innovation-focused, and industry-aligned. It bridges the gap between theory and practice through a four-pronged teaching model combining classroom instruction, laboratory experiments, innovation competitions, and industry collaboration. This approach develops students' engineering thinking and practical problem-solving skills, enabling them to apply theoretical knowledge to real-world challenges.

The educational outcomes focus on developing both technical competencies and professional qualities. Students gain proficiency in CAD/CAM/CAE software, acquire skills in product design and manufacturing process planning, participate in academic competitions and industry internships, and complete graduation projects aligned with industrial requirements. This approach prepares graduates for high-quality employment and placements, supplying industry with skilled technical talent and cultivating candidates for advanced study, thereby supporting regional industrial development.

4. MISSION

This programme aims to develop students' capacity for independent and lifelong learning. Graduates will be equipped to apply mathematical and natural sciences, fundamental engineering principles, and specialised disciplinary knowledge, together with modern engineering tools and experimental techniques, to address complex engineering problems in mechanical design, manufacturing, and automation. The programme prepares applied engineering professionals capable of engaging in mechanical product design, manufacturing, application, and management within mechanical engineering and related industries.

5. PROGRAMME STRUCTURE

BEng (Hons) Mechanical Engineering

Course Code	Course Title	China Credits	UK Credits
RQF Level 3			

1060101011102	大学英语读写译 A (1)-(2) College English Reading and Writing A (1)-(2)	4	16
1060301011114	大学英语听说 A (1)-(2) College English Listening and Speaking A (1)-(2)	2	8
1010107046989	高等数学 A (1) Higher Mathematics A (1)	4.5	18
113010101023	线性代数 A Linear Algebra A (Engineering)	3	12
1040101014454	创新创业教育 Innovation and Entrepreneurship Education	2	8
1220301015810	大学计算机基础 University Computer Foundation (Engineering)	1	4
1030301015600	人工智能导论 B1 Introduction to artificial Intelligence B1	2	8
113010101034	大学物理(1) College Physics (1)	3	12
1130101015817	大学化学 College Chemistry	3	12
113010201021	电工电子技术(1) Electrical and Electronic Technology (1)	3	12
RQF Level 3 CREDIT TOTALS		27.5	**110**
FHEQ Level 4			
1060101011124	大学英语读写译 A(3)-(4) College English Reading and Writing A (3)-(4)	4	16
1060301011118	大学英语听说 A(3)-(4) College English Listening and Speaking A (3)-(4)	2	8
1130101011107	高等数学 A (2) Higher Mathematics A (2)	4.5	18
113010101032	概率论与数理统计 A Probability and Statistics A	3	12
113010101033	大学物理(2) College Physics (2)	3	12
1020301016793	Python 程序设计 Python Programming	3	12
113010201020	电工电子技术(2) Electrical and Electronic Technology (2)	3	12
1010202016830	材料力学 Material Mechanics	3	12
1010102011969	理论力学 Theoretical Mechanics	3	12
1010203016800	流体力学与液压气压传动 Fluid Mechanics and Pneumatic Hydraulic Transmission	3	12
FHEQ Level 4 CREDIT TOTALS		31.5	**126**
FHEQ Level 5			

1010103016988	机械原理 Mechanical Principles	3	12
1010404016092	机械原理课程设计 Course Design of Mechanical Principles	2	8
1010103016802	工程项目管理 Engineering Project Management	2	8
1130201016124	数值计算方法 Numerical Method	3	12
1010202016863	工程材料及热处理 Mechanical Engineering Materials Experiment	3	12
1010102016789	热工基础 Thermal Engineering	3	12
1010202016787	互换性与测量技术 Interchangeability and Measurement	3	12
101010301270	机械工程测试技术 Mechanical Engineering Testing Technology	3	12
1010203016938	工业大数据与智能分析 Industrial Big Data and Intelligent Analysis	3	12
101010304225	模具设计 Mould Design	3	12
1010203016990	机电传动与控制 Mechanical and Electrical Transmission Control	3	12
FHEQ Level 5 CREDIT TOTALS		31	**124**
FHEQ Level 6			
1010103016778	机械制造技术 Mechanical Manufacturing Technology	3	12
1010103016133	机械制造装备设计 Machinery Manufacturing Equipment Design	3	12
1010103041978	增材制造技术 Additive Manufacturing Technology	3	12
1220404016741	工程训练(1)-(2) Engineering Training (1)-(2)	6	24
1010107046993	毕业论文（设计） Undergraduate Dissertation (Design)	9	36
Plus 2 of the following Major electives		**4**	**16**
1010107046942	可持续设计与绿色制造 Sustainable Design and Green Manufacturing	2	8
1010102016150	机械工程控制基础 Mechanic Engineering Control	2	8
1010203016766	电气控制与 PLC 技术 Electrical Control and PLC Technology	2	8
1010107046936	智能检测与机器视觉 Intelligent Detection and Machine Vision	2	8

1010107046937	数字孪生与虚拟调试 Digital Twin and Virtual Commissioning	2	8
Plus 1 of the following Major electives		**2**	**8**
1010203016785	机械设计 Mechanical Design	2	8
1010404011499	机械设计课程设计 Course Design of Mechanical Design	2	8
1010107046941	有限元基础与应用 Finite Element Basis and Applications	2	8
1010203016940	机器学习与数据驱动设计 Machine Learning and Data-driven Design	2	8
1010203016939	机器人学与应用 Robotics and Applications	2	8
FHEQ Level 6 CREDIT TOTALS		**30**	**120**
DEGREE CREDIT TOTALS		**120**	**480**

Blue = Gen Ed / Common Foundation courses
Black = Major compulsory courses
Green = Major elective courses

6. PROGRAMME OUTCOMES

Programme-level learning outcomes are identified below. Please refer to the Curriculum Map at the end of this document for details of how outcomes are deployed across the study programme.

A. Disciplinary Knowledge and Understanding
B. Disciplinary Applied Skills
C. Communication Skills
D. Transferrable Skills

Disciplinary Knowledge and Understanding (A)

LEVEL 3

I. Describes the fundamental principles of mechanics, thermodynamics, and materials as preparation for mechanical engineering study.
II. Recognises how forces, energy, and materials interact within simple mechanical systems.
III. Identifies the role of mechanical engineering in technology, industry, and society.

LEVEL 4

I. Explains core theories and models in solid mechanics, dynamics, fluid mechanics, and heat transfer.
II. Demonstrates understanding of material properties, manufacturing processes, and mechanical design methods.

III. Describes the ethical, environmental, and sustainability considerations relevant to engineering practice.

LEVEL 5

I. Analyses and evaluates mechanical components and systems using appropriate analytical and computational techniques.
II. Integrates theoretical knowledge in mechanics, materials, and thermofluids to solve real-world engineering problems.
III. Critically discusses how engineering design decisions are influenced by safety, cost, performance, and sustainability.

LEVEL 6

I. Demonstrates systematic understanding of advanced mechanical engineering principles, with particular emphasis on manufacturing systems, system integration, and innovation.
II. Critically appraises research, tools, and emerging technologies to address complex mechanical and multidisciplinary challenges.
III. Synthesises technical knowledge with ethical and global awareness to evaluate the wider impact of engineering solutions.

Disciplinary Applied Skills (B)

LEVEL 3

I. Applies basic mathematical and physical principles to solve structured mechanical problems with guidance.
II. Uses standard laboratory equipment and simple software tools to collect and present engineering data.
III. Demonstrates emerging digital literacy and safe workshop practice.

LEVEL 4

I. Designs and tests simple mechanical systems using engineering mathematical, analytical and computer-aided methods.
II. Applies standard methods in measurement, data analysis, and component manufacture in structured contexts.
III. Demonstrates effective use of CAD/CAE tools and technical documentation.

LEVEL 5

I. Develops and evaluates mechanical designs or prototypes following recognised engineering procedures.
II. Employs analytical, experimental, and computational techniques (such as FEA or CFD) to solve real engineering problems.
III. Integrates materials selection, sustainability, and safety into design and testing processes.

LEVEL 6

I. Designs and delivers substantial, research-informed engineering projects that demonstrate creativity and autonomy.
II. Applies advanced modelling, simulation, and experimental approaches to investigate complex mechanical systems.

III. Integrates interdisciplinary knowledge (e.g., control, mechatronics, or manufacturing) to produce innovative engineering solutions.

Communication Skills (C)

LEVEL 3

I. Communicates basic engineering ideas clearly using appropriate terminology and simple diagrams.
II. Works effectively as part of a small team to complete structured design or laboratory tasks.

LEVEL 4

I. Produces structured reports and presentations following academic and professional conventions.
II. Contributes actively to team-based design and problem-solving activities.

LEVEL 5

I. Communicates technical information and analytical results clearly to specialist and non-specialist audiences.
II. Demonstrates professional written, oral, and visual communication skills using appropriate digital tools.

LEVEL 6

I. Constructs and defends evidence-based engineering arguments, critically engaging with alternative approaches.
II. Adapts communication style and format for professional, academic, and interdisciplinary audiences.
III. Produces professional-standard documentation suitable for industrial or research submission.

Transferrable Skills (D)

LEVEL 3

I. Demonstrates emerging self-management, teamwork, and digital literacy skills in guided learning contexts.
II. Shows awareness of personal learning needs and begins to take responsibility for development.

LEVEL 4

I. Plans and monitors own learning using feedback to improve performance.
II. Demonstrates awareness of ethical, legal, and environmental considerations in engineering contexts.
III. Uses collaboration and project tools responsibly to support group work.

LEVEL 5

I. Reflects on professional performance and applies feedback to enhance learning and employability.

II. Shows initiative, adaptability, and critical thinking when addressing unfamiliar engineering problems.
III. Engages with professional and ethical issues in design, research, and practice.

LEVEL 6

1. Acts autonomously with professional accountability and ethical integrity in complex situations.
2. Demonstrates leadership, creativity, and innovation in project and teamwork settings.
3. Integrates sustainability, inclusivity, and global responsibility into professional and research practice.

7. TEACHING, LEARNING, AND ASSESSMENT

Teaching Strategy

The teaching strategy emphasises a structured and practice-oriented curriculum that integrates theoretical learning with problem-based and project-based activities. Through progressive development of analytical and problem-solving skills, students are supported in applying engineering principles to complex problems, preparing them for professional practice in mechanical engineering and related fields.

Assessment Strategy

The assessment strategies we use with our **BEng (Hons) Mechanical Engineering** degree speak directly to how we anticipate progression with student learning to take place.

The assessment strategy is designed to evaluate students' understanding and application of mechanical engineering knowledge through a range of formative and summative assessments, including problem-solving tasks, design-based coursework, and examinations. Assessments encourage innovative thinking grounded in disciplinary knowledge, require students to propose solutions to practical engineering problems, and incorporate consideration of professional, global, and social responsibilities where appropriate.

8. ENTRY REQUIREMENTS

Applicants are required to take part in the NCEE (Gaokao) organised by the Ministry of Education and apply for our programme. JXIT will recruit students nationwide. The upper limit of total admissions is determined by the Enrollment Plan approved by the provincial government.

9. EXIT AWARD REQUIREMENTS

An exit award is defined as a lower award than one for which the student is registered. Such an award may be conferred if a student completes part, but not all, of the requirements of the programme for which he or she is registered. Students may not enter the university registered for an exit award.

Certificate of Higher Education in Mechanical Engineering (UK)

The UK CertHE can be awarded as an exit award for those students completing the following minimum requirements.

120 credits at FHEQ Level 4

- Pass (normally a GPA of between 1.85 and 2.99 for all Level 4 courses)
- Merit (normally a GPA of 3.0 to 3.54)
- Distinction (normally a GPA of 3.55 and above for all level 4 courses)

Of the total number of credits required for the UK CertHE, 60 UK credits must be completed at Validated partner institution.

The requirements for the UK CertHE are outlined in the section of Table 1 pertaining to FHEQ Level 4 requirements.

Diploma of Higher Education in Mechanical Engineering (UK)

The UK DipHE can be awarded as an exit award for those students completing the following minimum requirements.

120 credits at FHEQ Level 4
120 credits at FHEQ Level 5

- Pass (normally a GPA of between 1.85 and 2.99 for all Level 4 courses)
- Merit (normally a GPA of 3.0 to 3.54)
- Distinction (normally a GPA of 3.55 and above for all level 4 courses)

Of the total number of credits required for the UK DipHE, 60 UK Level 4 credits and 60 UK Level 5 credits must be completed at the University.

The requirements for the UK DipHE are outlined in the sections of Table 1 and Table 2 above pertaining to FHEQ Level 4 and FHEQ Level 5 requirements. Level 6 courses can be “dipped-down” to fulfil missing Level 5 credits.

Students may not be awarded more than one UK exit award and the University Examination Board will recommend the most relevant one for the individual student circumstance.

10. STUDENT SUPPORT AND GUIDANCE

Students are supported through structured guidance on effective study methods, including the development of coherent knowledge frameworks (such as the hierarchical relationship between components, assemblies, and complete machines in mechanical design), the use of specialist reference materials (e.g. mechanical design handbooks), and the application of simulation software (e.g. SolidWorks and ANSYS) to support learning.

In-class learning support is further provided through course knowledge maps, short instructional videos addressing key and challenging topics, access to relevant industry

standards (e.g. GB mechanical design standards), and guidance on the use of simulation software.

11. PLACEMENT

The University has established partnerships with 29 off-campus practice bases, which form an integral part of the programme's practical teaching provision. These bases represent ongoing collaboration between the University and industry partners and provide students with opportunities for off-campus internships, practical training, and employment-related experience. Partner organisations include enterprises and institutions able to support teaching placements, production and workplace internships, graduation placements, and collaborative activities in applied research and teaching development.

12. STUDY ABROAD

N/A

13. LIBRARY RESOURCES

The University library occupies approximately 33,000 square metres and provides access to a substantial collection of print and electronic resources, including over 2.4 million physical volumes and more than 2.1 million e-books. The collection supports teaching and research across a wide range of disciplines and includes books, journals, and magazines in multiple languages.

In recent years, the library has expanded its digital holdings in line with the development of digital library services and operates an open-access circulation model that integrates collection, borrowing, and reading functions. Print materials are freely accessible on site, while electronic resources, including a wide range of academic journals, are available online.

The library also holds specialist resources in areas such as automation, computer technology, electrical and electronic engineering, and telecommunications, with annual acquisitions informed by faculty-recommended reading lists.

14. REGULATORY FRAMEWORK

The BEng (Hons) Mechanical Engineering degree is operated under the policy and regulatory frameworks of Richmond American University London, the Framework of Higher Education Qualifications, the Office for Students conditions and the UK Quality Code for Higher Education.

Also key to the background for this description are the following documents:

- QAA (2024). UK Quality Code for Higher Education. (www.qaa.ac.uk)
- QAA (2021). The Higher Education Credit Framework for England: Advice on Academic Credit Arrangements. (www.qaa.ac.uk)

- SEEC (2021). Credit Level Descriptors for Higher Education. Southern England Consortium for Credit Accumulation and Transfer (www.seec.org.uk).

Ensuring and Enhancing the Quality of the Programme

The BEng (Hons) Mechanical Engineering degree features detailed published educational objectives that are consistent with the mission of the institution. All course outlines contain course specific objectives that are regularly monitored by the individual instructors and by the faculty as a group.

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

- External Examiners
- Internal Moderation
- Student representation
- Curricular change approval process
- Annual Programme Monitoring and Assessment
- Formal Programme Review, every five years
- Course evaluation
- Student satisfaction surveys and the NSS
- Feedback from employers

BEng (Hons) Mechanical Engineering is provided through a system of ongoing evaluations that demonstrate achievement of the programme's objectives, and uses the results to improve the effectiveness of the programme.

APPENDIX 1 Curriculum Map

Course Code	Course Title	Disciplinary Knowledge and understanding (A)			Disciplinary Applied Skills (B)			Communication Skills (C)			Transferrable Skills (D)		
		I	II	III	I	II	III	I	II	III	I	II	III
Level 3													
1060101011102	大学英语读写译A (1)-(2) College English Reading and Writing A (1)-(2)										√	√	
1060301011114	大学英语听说A (1)-(2) College English Listening and Speaking A (1)-(2)										√		
113010101028	高等数学 A (1) Higher Mathematics A (1)				√						√		
113010101034	大学物理(1) College Physics (1)	√	√		√	√							
1130101015817	大学化学 College Chemistry	√				√			√				
113010201021	电工电子技术(1) Electrical and Electronic Technology (1)			√		√			√				
1030301015600	人工智能导论B1 Introduction to artificial Intelligence B1						√					√	
113010101023	线性代数A Linear Algebra A (Engineering)				√						√		
1040101014454	创新创业教育 Innovation and Entrepreneurship Education			√							√	√	
1220301015810	大学计算机基础 University Computer Foundation (Engineering)			√				√					

Level 4													
1020301016793	Python 程序设计 Python Programming				√				√		√		
1060101011124	大学英语读写译A (3)-(4) College English Reading and Writing A (3)-(4)							√			√		√
1060301011118	大学英语听说A (3)-(4) College English Listening and Speaking A (3)-(4)							√			√		√
1130101011107	高等数学 A (2) Higher Mathematics A (2)				√				√				
113010101033	大学物理 (2) College Physics (2)	√							√				
113010201020	电工电子技术(2) Electrical and Electronic Technology (2)				√				√				
1010202016830	材料力学 Material Mechanics	√	√			√							
1010102011969	理论力学 Theoretical Mechanics	√	√										
113010101032	概率论与数理统计 Probability and Statistics A	√	√		√								
1010203016800	流体力学与液压气压传动 Fluid Mechanics and Pneumatic Hydraulic Transmission	√		√		√	√					√	
Level 5													
1010103016988	机械原理 Mechanical Principles	√			√								√
1010404016092	机械原理课程设计 Course Design of Mechanical Principles	√		√	√			√			√		
1010103016802	工程项目管理			√	√			√					

	Engineering Project Management												
1130201016124	数值计算方法 Numerical Method	√			√				√				
1010202016863	工程材料及热处理Mechanical Mechanical Engineering Materials Experiment		√				√						
1010102016789	热工基础 Thermal Engineering		√										
1010202016787	互换性与测量技术 Interchangeability and Measurement	√				√							
101010301270	机械工程测试技术 Mechanical Engineering Testing Technology			√			√						
1010203016938	工业大数据与智能分析 Industrial Big Data and Intelligent Analysis					√		√				√	
101010304225	模具设计 Mould Design	√					√	√					√
1010203016990	机电传动与控制 Mechanical and Electrical Transmission Control	√				√		√					√
Level 6													
1010103016778	机械制造技术 Mechanical Manufacturing Technology	√										√	
1010103016133	机械制造装备设计 Machinery Manufacturing Equipment Design	√	√		√			√			√		
1010103041978	增材制造技术 Additive Manufacturing Technology	√				√							
1220404016741	工程训练(1)-(2) Engineering Training			√	√						√		

	(1)-(2)												
1190404011168	毕业论文 (设计) Undergraduate Dissertation (Design)	√			√	√			√	√	√		
Major Elective Courses													
1010107046942	可持续设计与绿色制造 Sustainable Design and Green Manufacturing			√									√
1010102016150	机械工程控制基础 Mechanic Engineering Control	√					√						
1010203016766	电气控制与 PLC 技术 Electrical Control and PLC Technology	√					√						
1010107046936	智能检测与机器视觉 Intelligent Detection and Machine Vision		√										
1010107046937	数字孪生与虚拟调试 Digital Twin and Virtual Commissioning		√	√		√		√					
Major Elective Courses													
1010203016785	机械设计 Mechanical Design	√				√							
1010404011499	机械设计课程设计 Course Design of Mechanical Design	√				√							
1010107046941	有限元基础与应用 Finite Element Basis and Applications				√	√							
1010203016940	机器学习与数据驱动设计 Machine Learning and Data-driven Design		√			√		√				√	
1010203016939	机器人学与应用 Robotics and Applications		√			√		√					√

Programme Specification Publication Dates
