



LEEDS  
BECKETT  
UNIVERSITY

# Course Specification

**BEng (Hons)  
Robotics and  
Automation**

**Course Code: BENRA**

**2020/21**

# BEng (Hons) Robotics and Automation

## Material Information Summary for 2020/21 Entrants

Confirmed at 27<sup>th</sup> March 2019

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### General Information

<b>Award</b>	Bachelor of Engineering (with Honours) Robotics and Automation
<b>Contained Awards</b>	Bachelor of Engineering Robotics and Automation Bachelor of Engineering Robotics and Automation Diploma of Higher Education Robotics and Automation Certificate of Higher Education Robotics and Automation
<b>Awarding Body</b>	Leeds Beckett University
<b>Level of Qualification &amp; Credits</b>	Level 6 of the Framework for Higher Education Qualifications, with 120 credit points at each of Levels 4, 5 and 6 of the UK Credit Framework for Higher Education (360 credits in total)

### Course Lengths & Standard Timescales

The standard start date for Leeds Beckett University induction week is reproduced below and relates to the majority of students starting a course in September 2019. A proportion of courses have alternate start dates which are displayed on the online prospectus and additionally will be notified to the students concerned via the offer letter. Non-September starters will also have their start dates confirmed in their offer letters.

- 3 years (full time, campus based)  
Starts 23<sup>rd</sup> September 2019/ Ends June 2022
- 4 years (full time, campus based with a one year work placement)  
Starts 23<sup>rd</sup> September 2019/ Ends June 2023
- 6 years (part time, campus based)  
Starts 23<sup>rd</sup> September 2019/ Ends June 2025

### Part Time Study

PT delivery is usually at half the intensity of the FT equivalent course, although there may be flexibility to increase your pace of study to shorten the overall course duration. Some modules may be delivered in a different sequence to that advertised within this Course Specification but the modules offered within each level are

as advertised. Please note that the work placement option is not available to PT students.

**Location(s) of Delivery**

Headingley Campus, Leeds (plus location of work placement, if applicable)

**Entry Requirements**

Admissions criteria are confirmed in your offer letter. Details of how the University recognises prior learning and supports credit transfer are located here:

<http://www.leedsbeckett.ac.uk/studenthub/recognition-of-prior-learning/>

**Course Fees**

Course fees and additional course costs are confirmed in your offer letter

**Timetable Information**

Timetables will be made available to students during induction week via:

- i) The Student Outlook Calendar
- ii) The Student Portal
- iii) The Leeds Beckett app

Any difficulties relating to timetabled sessions can be discussed with your Course Administrator.

**Policies, Standards and Regulations**

<http://www.leedsbeckett.ac.uk/public-information/>

There are no additional or non-standard regulations which relate to your course

**Key Contacts**

**Your Course Director**

Dr. David Love

**Your Course Leader**

Dr. Mark Judge

**Your Academic Advisor**

L4: Dr. Mark Judge

L5: Dr. Mark Judge

L6: Project Supervisor

**Your Course Administrator**

Ms. Lisa Halmshaw

## Placement Information

<b>Summary</b>	Leeds Beckett is dedicated to improving the employability of our students and one of the ways in which we do this is to support our students to gain valuable work experience through work-based placements. Our placement teams have developed strong links with companies, many of whom repeatedly recruit our students into excellent placement roles and the teams are dedicated to supporting students through every stage of the placement process. More information about the many benefits of undertaking a work placement, along with details about how to contact our placement teams can be found here: <a href="http://www.leedsbeckett.ac.uk/studenthub/placement-information/">http://www.leedsbeckett.ac.uk/studenthub/placement-information/</a>
<b>Length</b>	30 weeks, undertaken between Year 2 and Year 3 (Level 5 and Level 6), or a 3 week internship, which can be taken between terms.
<b>Location</b>	Not Specified

## Professional Accreditation or Recognition Associated with the Course

<b>Professional Body</b>	N/A
<b>How is Accreditation/ Recognition Achieved?</b>	N/A
<b>Course Accreditation/ Recognition Period</b>	N/A

## Course Overview

### Aims

The this course is aimed at students who wish to undertake a study that has a strong technological and applied focus. Most of those students will also seek recognition after graduation as Professional Engineers, through the standards set by one or more of the Professional Engineering Institutes. Therefore, this award also aligns itself with the Engineering Council's *UK Standard for Professional Engineering Competence* (UK-SPEC), aiming to produce graduates who would qualify for registration as Incorporated Engineers (IEng). Broadly the UK-SPEC defines the qualities of and role of Incorporated Engineers as being capable of maintaining, managing and applying current and developing technologies to engineering design, development, manufacturing, construction and operation. For candidates to qualify for professional registration as IEEng, they must demonstrate (Engineering Council, 2013. pg. 16)<sup>1</sup>

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<sup>1</sup> Engineering Council (2013). **UK-SPEC: UK Standard for Professional Engineering Competence** [Online]. Third Edition. Available from: <<https://www.engc.org.uk/ukspec>> [Accessed 23 November 2018]

- *The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques*
- *Successful application of their knowledge to deliver engineering projects or services using established technologies and methods*
- *Responsibility for project and financial planning and management together with some responsibility for leading and developing other professional staff*
- *Effective interpersonal skills in communicating technical matters*
- *Commitment to professional engineering values.*

As with all engineering courses aiming to produce graduates capable of professional registration, an academic course can only satisfy part of the requirements for that registration. Therefore, this course aims to express its alignment with the UK-SPEC though adherence to version 3 of the Engineering Council's standard for the *Accreditation of Higher Education Programmes*, and to the subject and discipline learning outcomes defined by the Institution of Engineering and Technology (the sector recognised PSRB and Professional Engineering Institute (PEI) for electronics and electrical engineering). Together these learning outcomes for graduates of the award are reflected in the following course aims:

1. To facilitate the provision of a quality learning experience for each student that fosters engagement with their programme of study and promotes independent study and life-long learning.
2. To maintain a high quality, comprehensive and coherent curriculum focusing on the area of control and manufacturing, within the broader discipline of robotics that develops the underpinning principles of electrical and electronic engineering, management, entrepreneurship, digital literacy and offers a global appeal, informed by research, scholarly activity and practice to enhance each participant's career prospects.
3. To develop professionals with a sound understanding of both robotic and associated disciplines in Electronic and Electrical engineering, in a holistic approach and understanding the key features that link the two subject areas.
4. To encourage the creative and appropriate application of technology to promote innovation and enterprise through the research project whilst enhancing students' employability skills.

### Course Learning Outcomes

1	On completion of the course, students will possess the core knowledge and understanding of scientific principles and methods necessary for robotics and control in the context of electronic and electrical engineering; enabling their appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.
2	On completion of the course, students will develop an ability to analyse a system through appropriate tools, methods and techniques; developing appropriate quantitative solutions and communicating the results of those analyses in a form appropriate to both specialist and non-specialist audiences.
3	On completion of the course, students will develop the skills to undertake projects to a professional standard by the consistent application of development, management and evaluation methods and techniques.
4	On completion of the course, students will have an understanding of the context of engineering knowledge; the characteristic tools, equipment, processes and products of the discipline of electronic and electrical engineering and be able to use the technical literature and other information sources to develop that understanding over the course of their professional careers.

## Teaching and Learning Activities

### Summary

The delivery style will encourage independent and collaborative learning with fellow students, and supported by the academic staff. Students will have to develop many practical skills, and students are encouraged to develop their personal interest through individual research and option modules from Level 6. Assessments within the robotics course allow integrative projects which span a number of modules enabling a holistic view of how systems are designed and managed. A number of delivery methods will be used from guest lectures, group activities, online support and communication.

Students are made aware of the goal of independence in learning and are given explicit guidance on those aspects of their learning for which they are responsible. Key opportunities for students in this regard include the non-credit *Maths and Physics Support* modules at Level 4 and 5, and the Level 6 *Work Placement* module. Many modules will also include induction sessions and all modules will include guidance through the module handbook and MyBeckett.

Scheduled sessions will include the use of lectures, seminars and tutorials: many of which will take place in or using specialist facilities. Advantage will be taken of both technology and supportive activities to ensure that effective learning takes place. Some of those supportive activities may strongly encourage the student to attend sessions that are not in themselves credit bearing, but which are designed to reinforce the concepts and skills introduced in the credit bearing modules.

All teaching activity will emphasise the engineering context, even modules are shared with other courses. Wherever possible the learning activities will focus on electronic or robotic systems, and the learning activities will include the use of simulations, role play, case studies, projects, practical work, work based learning, workshops, peer tutoring, self-managed teams and learner managed learning.

The research project at Level 6 has been designed around practice-centred product development, enabling students to focus their energies in developing future thinking and practical solutions to their sphere of work or career aspirations. Students will be encouraged to use these modules to move their focus outside the course, for instance in producing work accessible to engineering colleagues through publication in peer-reviewed literature.

### Your Modules

*(Correct for students progressing through the programme within standard timescales. Students who are required to undertake repeat study may be taught alternate modules which meet the overall course learning outcomes. Details of module delivery will be provided in your timetable).*

#### **Level 4 Core Modules (2019/20 for FT students and 2019/20 and 2020/21 for standard PT students)**

Computer Systems Architecture

Computers in Engineering

Digital Electronics

Electrical and Electronic Principles 1

Engineering Design Project 1

Engineering Systems and Data Acquisition

Engineering Skills 1 (non-credit bearing)

**Level 5 Core Modules (2020/21 for FT students and 2021/22 and 2022/23 for standard PT students)**

Analogue Electronics

Embedded Systems

Engineering Design Project 2

Instrumentation and Control

Operating Systems for Robotics

Robotics and Automation

Engineering Skills 2 (non-credit bearing)

**Level 6 Core Modules (2021/22 for FT students, 2022/23 for sandwich placement students and 2023/24 and 2024/25 for standard PT students)**

Advanced Manufacturing Technology

Engineering Cost and Management Accounting

Production Project

**Level 6 Option Modules (delivery years as per Level 6 core modules above)**

*The following option modules are indicative of a typical year. There may be some variance in the availability of option modules. Students take two of:*

Digital Signal Processing

Engineering Control

Engineering Simulation

Industrial Networks

Power Electronics

### Assessment Balance and Scheduled Learning and Teaching Activities by Level

The assessment balance and overall workload associated with this course are calculated from core modules and a sample of option module choices undertaken by a typical student. They have been reviewed and confirmed as representative by the Course Director.

A standard module equates to 200 notional learning hours, which may be comprised of teaching, learning and assessment, placement activities and independent study. Sandwich placement years spent out of the University are not be included in the calculation unless they are credit bearing and attributed to a level of the course. Modules may have more than 1 component of assessment.

Level 4 is assessed by coursework and examinations predominantly, with some practical assessments.

Level 5 is assessed by coursework predominantly, with some examinations and practical assessments.

Level 6 is assessed by coursework predominantly, with some examinations and practical assessments.

Overall Workload	Level 4	Level 5	Level 6
Teaching, Learning and Assessment	300 hours	240 hours	216 hours
Independent Study	900 hours	960 hours	984 hours
Placement	-	-	-

### Learning Support

If you have a question or a problem relating to your course, your Course Administrator is there to help you. Course Administrators works closely with academic staff and can make referrals to teaching staff or to specialist professional services as appropriate. They can give you a confirmation of attendance letter, and a transcript. You may also like to contact your Course Rep or the Students' Union Advice team for additional support with course-related questions.

If you have any questions about life at our University in general, call into or contact the Student Hub on either campus to speak to our Student Experience Team. This team, consisting of recent graduates and permanent staff, are available to support you throughout your time here. They will make sure you have access to and are aware of the support, specialist services, and opportunities our University provides. There is a Student Hub on the ground floor of the Rose Bowl at City Campus and one in Campus Central at Headingley. You can also find the team in the Gateway in the Leslie Silver Building at City Campus. The telephone number is 0113 812 3000, and the e-mail address is [StudentHub@leedsbeckett.ac.uk](mailto:StudentHub@leedsbeckett.ac.uk).

Within MyBeckett you will see two tabs (Support and Opportunities) where you can find online information and resources for yourselves. The **Support** tab gives you access to details of services available to give you academic and personal support. These include Library Services, the Students' Union, Money advice, Disability advice and support, Wellbeing, International Student Services and Accommodation. There is also an A-Z of Support Services, and access to online appointments/registration.

The **Opportunities** tab is the place to explore the options you have for jobs, work placements, volunteering, and a wide range of other opportunities. For example, you can find out here how to get help with your CV, prepare for an interview, get a part-time job or voluntary role, take part in an international project, or join societies closer to home.

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