Name of College: Engineering & Technology

Name of Department: Engineering (Mechanical Manufacturing Engineering)

Programme Specification

September 2014

Programme Title

**BSc (Hons) Engineering (Mechanical)**

Programme valid from September 2014 for an Indefinite Period

JACS code **K220**

Valid for delivery at:

Loughborough College

Preston’s College

 **Contents Page Number**

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# SECTION ONE: GENERAL INFORMATION

## Programme Title/Joint Honours Subject Title

BSc (Hons) Engineering (Mechanical)

**Award titles**

**BSc (Hons) in Engineering (Mechanical)**

**BSc in Engineering (Mechanical)**

## Mode of Study

The programme is available in full-time and part-time modes

## Programme start date and period of validation

Start Date: September 2014 – August 2019

## Awarding Institution

University of Derby

## Faculty Managing the Programme

Engineering and Technology

## INSTITUTION DELIVERING THE PROGRAMME

Loughborough College

## Relevant external subject benchmark statement(s)

QAA Subject Benchmarks for Engineering 2010.

The Framework for Higher Education Qualifications 2008

(through the use of the University level descriptors).

UK Standard for Professional Engineering Competence (UK-SPEC: Edition 3, 2013).

## External Accreditation/Recognition

The programme is developed in line with the UK-SPEC: Edition 3, 2013. Any accreditation will have to be sought by the college.

## JACS Code(s)

H300

## Programme specification last updated

March 14

# SECTION TWO: RATIONALE AND PROGRAMME AIMS

###

### BSc (Hons) Engineering (Mechanical)

Engineering is at the heart of all activities in the modern world and the demand for capable engineers in the workplace is substantial. This programme has been designed to provide specific skills and knowledge for a career within the mechanical engineering sector and has used guidance from appropriate professional bodies. The programme is designed to be specialist and distinctive to provide you with the skills and confidence that is required for a career in mechanical engineering.

The top-up programme is designed as part of the collaborative engineering framework, and offers progression from an appropriate approved Foundation Degrees/HND. The programme will be delivered by the approved partner, and aims to provide flexible modes of access to study. The part-time mode provides a continuous ladder of opportunity for those who wish to remain in employment and further their career prospects.

This programme equips you with a solid background and appropriate skills that would enable you to practice successfully as a professional mechanical engineer. It incorporates elements of all relevant technologies and their applications throughout the programme.

This programme seeks to strike an equitable balance between underpinning academic concepts, practical work, techniques necessary for a successful career in mechanical engineering and the demands of employers and professional bodies for this discipline-specific programme.

The programme provides you with the knowledge base in the fundamental principles in mechanical engineering in order to facilitate decision making concerning design, the selection of functional elements, materials and processes as well as the appropriate and most cost effective use of both time and resources. It engenders an appreciation of the underpinning principles and constraints associated with mechanical engineering and the application of technology within an industrial engineering context.

Current roles within the mechanical industries are extremely technologically challenging with ever increasing paces of change and development, and the larger industries predominantly now operate on a global scale. Graduates must be able to meet the challenges presented by the constant search for improvement and the relentless pace of development that characterise these industries. Additionally the development of management skills throughout the programme plays an important part in your educational process. To that end you will be encouraged to find work placements within the relevant industry to gain vital experience of current practices, systems and techniques.

On completion of this programme you will be able to analyse, synthesise and evaluate those engineering factors that are required to produce engineering solutions. You will explore the themes of:

* Use of general and specialist engineering knowledge and understanding.
* Application of appropriate theoretical and practical methods to appropriate application.
* Technical and commercial leadership and management at all levels.
* Effective interpersonal and communication skills using various media means and resources.
* Commitment to professional standards and recognition of obligations to society and environment in accordance with the latest benchmarks.

These themes form, in varying proportions, the central elements of the programme. The programme has been designed to provide you with an academically challenging degree, which encompasses all of the issues involved in mechanical engineering.

# PROGRAMME AIMS

## BSc (Hons) Engineering (Mechanical) Aims

The content and structure of the programme is designed to provide you with an innovative, challenging and vocationally relevant degree, which encompasses all of the issues involved in successfully supporting the progression of your career within the mechanical engineering industry.

Furthermore, the programme have clearly identifiable core themes (with significant elements of practical based learning), in which capability skills and competencies can be fostered, demonstrated and further developed. It aims to:

The generic aims of these programmes are therefore to:

Develop your awareness of the relationship between theory and practice and the ability to adapt your approach to solving complex technical problems using current technologies.

Provide you with the appropriate intellectual tools to enable you to be an effective engineer, within the multidisciplinary mechanical engineering environment of a mechanical engineering based company.

Provide appropriate applied engineering opportunities, combining theory and practice, to enable you to become competent graduates.

Extend your confidence and professionalism with high-level communication tools to develop interpersonal and team working skills Develop your ability to reflect and evaluate your learning and technical achievements throughout your study in order to clearly identify your proposed professional intent.

Provide an accessible and flexible programme suitable for your success and career progression.

Support you in becoming an engineer who possesses appropriate, knowledge and understanding of the economic, social and environmental context of industrial technology within the mechanical engineering area.

Provide you with the potential to progress to a level 7 programme of study.

Specifically the BSc (Hons) Mechanical Engineering programme will develop your skills in the key areas of:

* Mechanical technology including Mechanical methodologies, methods, techniques and current / developing theories and conceptual ideas.
* Mechanical Engineering Science and Applied Mathematics.
* Management, including current management techniques and theories, Risk management, supplier relations and financial controls.
* IT which will include developing the student’s skills in the areas of CAD, CAM, spread sheets, Internet usage and general IT skills.
* Transferable communication skills, including written, verbal and new media presentation skills.
* The role of engineers in creating a sustainable and ethical environment.

# SECTION THREE: PROGRAMME LEARNING OUTCOMES

The Programme Learning Outcomes listed are applicable at Level 6, and are articulated in terms of:

1. Knowledge and Understanding
2. Intellectual Abilities
3. Practical / Subject Specific Skills
4. General Transferable Skills.

These learning outcomes are designed for you to propose and carry out individual study programmes in design and research that fully explore your analytical, creative and innovative problem solving potential. Your achievement of learning outcomes is an incremental and progressive by its nature as your advance through programme of study.

Appendix 1 shows the precise modules alignment with the learning outcomes that is to be considered in terms of the overall progression through your programme of study. The ethos of UK-SPEC: Edition 3, 2013. has also been considered.

## Bsc (Hons) Engineering (Mechanical) Learning Outcomes

## Knowledge and Understanding:

On successful completion of the programme you will be able to:

1. Apply project management, business management, environmental issue and ethics as applied to professional engineering.
2. Critically discuss and comment upon particular aspects of current research, or equivalent advanced scholarship in this discipline
3. Systematic understanding of key aspects of Mechanical Engineering, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of Mechanical Engineering
4. Ability to deploy accurately established techniques of analysis and enquiry within the Mechanical Engineering discipline including solving engineering problems

## Intellectual Abilities:

On successful completion of the programme you must be able to:

1. Critical analysis of working practices to ensure safety, carry out risk assessment and apply appropriate safety management techniques
2. Identify and critically evaluate relevant practices within an appropriate professional and ethical framework
3. Critically evaluate arguments, assumptions, abstract concepts and data in order to make judgements and to frame appropriate questions to identify / achieve a solution to a problem.
4. Apply the methods and techniques that you have learned to review, consolidate, extend and apply your knowledge and understanding, and to initiate and carry out engineering projects.
5. Practical / Subject Specific Skills**:**

On successful completion of the programme you must be able to:

1. Apply project planning techniques and scheduling methods including communication of information, ideas, problems and solutions to both specialist and non-specialist audiences
2. Deploy accurately established techniques of analysis and enquiry within the Mechanical Engineering discipline. You will also be able to show an appreciation of the uncertainty, ambiguity and limits of knowledge within this discipline.
3. Manage empirically-research based project under appropriate supervision and recognise of its theoretical, practical and methodology
4. Summarise, accurately, the arguments presented in a range of complex works within and about mechanical engineering specific subject.

## General Transferable Skills:

On successful completion of the programme you will be able to:

1. Exercise self-initiative and personal responsibility including decision making in complex and unpredictable context
2. Demonstrate evidence of planning, self-learning and improving performance, as the foundation for lifelong learning ability needed to undertake appropriate further training of professional or equivalent nature.
3. Communicate effectively with other people using professional oral, written and graphic means
4. Professionally apply safe working procedures, health & safety legislation, risk assessment and risk management techniques
5. Have ability and competence in a range of skills on the current CAD and IT equipment in an effective and productive manner.
6. Work independently and able to work as an effective and efficient member of a team to develop collaborative skills

# SECTION FOUR: PROGRAMME STRUCTURE

## Structure and Curriculum

### Progression and Balance

The balance of academic, practical and vocational skills has been carefully considered across this academic Level, as well as the need to provide opportunity to study the principle branches of Engineering.

The programme structure is shown in the diagrams which follow. A total of 120 credits must be achieved, made up of six 20-credit modules. Of these, four (one is a double) are core. The remaining module is chosen from the two options shown. On the Electrical Electronic Programme the modules *Electrical Power Applications* and *Electronic Devices and Systems* provide the taught centrepiece in this level of study for the two main branches of the field. *Innovation in Sustainable Engineering Design* includes a study of the design process, and how creativity, innovation, and considerations of sustainability may be applied to it.

For the Mechanical Programme the focus is on advanced design through the modules Advanced Engineering Design Modelling and Advanced Mechanical Design and Materials with options related to the regional expertise in the understanding of Fluids behaviour with Computational Fluid Dynamics and Applied Thermodynamics.

The *Independent Project (Engineering)* gives the opportunity to study in depth a topic of direct interest to you.

The programme provides progression opportunities to students who have already completed a Foundation Degree, Higher National Diploma or equivalent number of credits at levels 4 and 5. The progression is also offered to industry professionals who may wish to follow a part-time mode of study. If you gain a “good” degree classification, i.e. Upper Second or First Class, you may consider applying for Master’s level study, for example the MSc in Control and Instrumentation at the University of Derby.

The programme is normally studied full time. Part time day release can also be offered.

**The following section shows the programme structure in both full time and part time modes as well as the September and January starts.**

## BSc (Hons) Engineering (Mechanical) - Full-time Study Mode – September Start

**CORE MODULES**

**OPTIONAL MODULES**

Advanced

Engineering Design Modelling

Core

20 Credits

DR Dani Harmanto

Applied Thermodynamics

Optional

20 Credits

Dr Dani Harmanto

Independent Project (Engineering)

Core

40 Credits

Dr John Redgate

Innovation in Sustainable Engineering Design

Core

20 Credits

Mike Veveris

Advanced Mechanical Design and Materials

Core

20 Credits

Dr Dani Harmanto

Computational Fluid Dynamics

Optional

20 Credits

Dr Dani Harmanto

Autumn

Spring

Figure 1 Full Time Mechanical September Start

## BSc (Hons) Engineering (Mechanical) - Part-time Study Mode – September Start

**Year 1**

Core Modules

Optional Modules

**Spring**

**Autumn**

Advanced

Engineering Design Modelling

Core

20 Credits

Dr Dani Harmanto

Advanced Mechanical Design and Materials

Optional

20 Credits

Dr Dani Harmanto

Applied Thermodynamics

Optional

20 Credits

Dr Dani Harmanto

Computational Fluid Dynamics

Optional

20 Credits

Dr Dani Harmanto

Innovation in Sustainable Engineering Design

Core

20 Credits

Dr Dani Harmanto

Figure 2 Part Time Mechanical Engineering September Start (Year 1)

## BSc (Hons) Engineering (Mechanical) - Part-time Study Mode – September Start

**Year 2**

Independent Project (Engineering)

Core

40 Credits

Dr John Redgate

**Autumn**

**Spring**

**CORE MODULES**

**OPTIONAL MODULES**

Figure 3 Part Time Mechanical September Start (Year 2)

# BSc (Hons) Engineering (Mechanical) - Full-time Study Mode – January Start

Advanced

Engineering Design Modelling

Core

20 Credits

Dr Dani Harmanto

Independent Project (Engineering)

Core

40 Credits

Dr John Redgate

**Spring**

**Autumn**

**CORE MODULES**

**OPTIONAL MODULES**

Advanced Mechanical Design and Materials

Optional

20 Credits

Dr Dani Harmanto

Innovation in Sustainable Engineering Design

Core

20 Credits

Mike Veveris

Applied Thermodynamics

Optional

20 Credits

Dr Dani Harmanto

Computational Fluid Dynamics

Optional

20 Credits

Dr Dani Harmanto

Figure 4 Full Time Mechanical Engineering January Start

## BSc (Hons) Engineering (Mechanical) - Part-time Study Mode – January Start

**Year 1**

**Spring**

**Autumn**

**CORE MODULES**

**OPTIONAL MODULES**

Innovation in Sustainable Engineering Design

Core

20 Credits

Dr Dani Harmanto

Advanced Mechanical Design and Materials

Optional

20 Credits

Dr Dani Harmanto

Advanced

Engineering Design Modelling

Core

20 Credits

Dr Dani Harmanto

Applied Thermodynamics

Optional

20 Credits

Dr Dani Harmanto

Computational Fluid Dynamics

Optional

20 Credits

Dr Dani Harmanto

Figure 5 Part Time Mechanical Engineering January Start (Year 1)

## BSc (Hons) Engineering (Mechanical) - Part-time Study Mode – January Start

**Year 2**

Independent Project (Engineering)

Core

40 Credits

Dr John Redgate

**Spring**

**Autumn**

**CORE MODULES**

**OPTIONAL MODULES**

Figure 6 Part Time Mechanical Engineering January Start (Year 2)

## Progression

Your progression is reflected by learning outcomes articulated at Level 6 through which you are encouraged to independently apply your knowledge, skills and understanding, with a focus on active and reflective practice and clear evidence of synthesis and integration of the various skills and knowledge acquired throughout the course. This Level is designed for you to propose and carry out individual study programmes in design and research that fully explore your analytical, creative and technological problem solving potential. It allows you to demonstrate how the design, technological, contractual, procurement and professional practice issues studied throughout the course inform your design process and consequent technological solutions.

## Balance

The balance of academic, practical and vocational skills has been carefully considered across all three Levels, with the progression through the course providing you with the opportunity to develop your knowledge and understanding, intellectual skills as well as practical, subject specific and transferable skills in the discipline of mechanical engineering.

## Sustainability

This BSc programme also uses the Engineering Council (UK-SPEC: Edition 3, 2013. guidance on sustainability in an informing manner, based around the six principles identified by UK-SPEC: Edition 3, 2013.. The six principles are:

1. Contribute to building a sustainable society, present and future
2. Apply a professional and responsible judgement and take a leadership role
3. Do more than just comply with legislation and codes
4. Use resources efficiently and effectively
5. Seek multiple views to solve sustainability challenges
6. Manage risk to minimise adverse impact to people or the environment.

## Personal Development Planning (PDP)

Personal Development Planning (PDP) is the process by which you monitor, reflect on and control your own professional and educational progress. It is part of, and emphasises, the life-long learning process that you are engaged with. Elements of PDP will be covered in the Independent Study module. You will be supported in this, but you should view it as your responsibility.

You will be given every opportunity to discuss your progress with your programme leader and any other appropriate member of your programme team, and will be strongly advised to produce a Personal Development Portfolio throughout your period of study.

The majority of these aspects of Personal Development Planning are embedded within a number of modules including the independent study module. It is also embedded as part of the summative assessment requirements for such modules that the majority of your PDP work will be expected to be undertaken. However, you are strongly advised that PDP is a continuous process, and as such you should continue the development of your Personal Development Portfolio throughout the whole course of your studies on this programme, taking into account both formative and summative feedback received.

To remind you, formative feedback relates to the work undertaken to practice your skills, explore subject understanding and gain fast feedback. Summative feedback conversely is provided on the work submitted to make judgements of performance and award of credits.

The representative sample of files will be available to the External Examiner for comments, and will be returned to you after the External Examiner has completed their review of any portfolios.

The need for you to build up a continuous and progressive portfolio of your own work on the programme will be emphasised. The onus of responsibility that is placed upon you as regards PDP and the development of your own Personal Progress File will also be emphasised. In conjunction with this file you will also make use of the electronic facilities for PDP (“Keynote”), available on Udo [www.derby.ac.uk/udo](http://www.derby.ac.uk/udo)

# SECTION FIVE: PROGRAMME DELIVERY

**Learning and Teaching Methods**

An award of BSc/BSc (Hons) Engineering **Top-up (Mechanical)** is achieved when the set of required modules, as seen in programme structure, are successfully completed. Modules are written to provide a coherent programme of studies meeting the overall aims and Objectives. Each module has a module specification. This indicates the indicative content of the module, the learning outcomes, and the teaching, learning and assessment methods used. Every module normally has two or three learning outcomes. These are a fundamental statement of what you should learn from that module. Each is directly linked to an assessment. You will receive the module specification in the module handbook, distributed to you as you begin to study each module.

The Learning and Teaching strategy is designed to impart the knowledge, understanding and associated skills which are defined in the programme’s learning outcomes, and the assessment is designed to test that the learning has been achieved. Assessment also provides a framework for feedback on performance. Assessment is divided into formative assessment, which provides a learning experience and feedback which contributes to further learning, and summative assessment, which simply makes a judgement on the level of achievement.

Much of the knowledge and associated understanding is derived from lectures, which are intentionally interactive and will incorporate questions and answers and simulation. Students are provided with seminar and tutorial opportunities to develop understanding and its application in both familiar and unfamiliar circumstances, and practical sessions in which to develop skills in both equipment use and the evaluation of experimental procedures and data.

Team working develops inter-personal and communication skills, and is an important skill for the workplace. It is practiced in a number of modules.

Contact with professional practice is made through industrial visits to companies or trade shows, through visiting speakers, or attendance at prestige specialist lectures.

While much staff-student contact is still face-to-face, technology-enhanced-learning plays an important role and interaction will be supported by the use of appropriate virtual learning environments (BlackBoard or hosting collections of lecture/tutorial notes, contact details for module tutors, module handbooks, relevant web links and lists of wider reading.

All students are required to comply with research governance and ethics principles whilst undertaking their programme of study. This is of particular importance when conducting research involving other people, e.g. for module assessments or independent studies. Information on these principles can be found on the College web site.

This programme has been designed to engage you in your study so that you will have a varied and exciting diet of learning and teaching methodologies which will include:

## Lectures

The purpose of a lecture is to convey basic knowledge and concepts. You will learn both from the lecture content and, by observation, from different approaches to the organisation and presentation of material.

## Tutorials

These may be individual, or in small groups, but the key element is the interaction between tutor and you around problems that you have raised. They are important in helping you to learn to identify and articulate problems in their work, and to seek help and constructive criticism.

## Laboratories

Laboratory sessions provide you with an opportunity to put into practice some of the procedures described in lectures, and to carry out practical experiments to test concepts and methods. These sessions also enable you to gain experience in using specialist equipment.

## Computing Workshops

Computing workshops are used to enable you to gain experience in using specialist software and applying it to solve real or simulated problems. You will be expected to develop ICT skills, using either personal hardware and software or the extensive facilities provided by University.

## Group Work

Group work is designed so that you learn to organise and structure collective or co-operative work processes. Group work provides a forum for you to address questions of roles and authority within the group, and may also be used to simulate relationships in organisations related to particular work situations.

## Self-Directed Learning

This is regarded as a vital extension of formal teaching and learning methods. You are expected to underpin learning by private study, and to utilise all available resources to good effect. The following aspects are considered to be particularly important:

## Workshops

These are used for practically-orientated modules and seek to develop practical ability and awareness, and the ability to make proposals and evaluate them against predetermined criteria. You will learn to be self-critical.

## Research and Ethics

You are required to comply with research governance and ethics principles whilst undertaking their programme of study. This is of particular importance when conducting research involving other people e.g. for module assessments or Independent Studies. Information on these principles can be found on the University web site at http://www.derby.ac.uk/research/ethics-and-governance/research-ethics-and-governance

## Technology Enhanced Learning

As well as the face-to-face activity tutors will support you in your learning via email and other communication opportunities, as appropriate, in your study. You will be applying and reflecting on your knowledge in your workplace. You will also be encouraged to elicit value and use feedback from others in the workplace including their mentor and their module tutor.

You may also be taught using on-line lectures and tutorials which support the subject area. These will enable you to engage with academic members of staff through either electronically supported lectures, tutorials and workshops in real time or with appropriate on-line materials through the University website to support your own independent learning. Tutors will support you in your learning via email and other communication opportunities, as appropriate, in your study. You will utilise technology enhanced learning through an extensive use of university resources including Course Resources. This may come in many forms, and require different styles of interaction with your tutors. You will also be able to take assessment on-line in some modules.

## Plagiarism

In cases where module are not submitted using the E-Submission route, you may be required to submit their work to 'Turnitin' - an electronic plagiarism detection system. Programme leader will take action as guided by the University’s’ rules and regulations if plagiarism is suspected by the module leader.

Please refer to the weblink below for the detail

<http://www.derby.ac.uk/files/guide_to_originality_reports_-_staff.pdf>

Cheating and plagiarism are taken very seriously, so you should ensure you conduct yourself properly in exams and check your coursework for correct referencing etc.

Please refer to the Rights, Responsibilities and Regulations available from [www.derby.ac.uk/qed/3Rs/](http://www.derby.ac.uk/qed/3Rs/)

For each module (where required), you and module leaders will be able to upload work and will receive a report indicating where (if at all) submitted work is similar to other pieces of writing.

## Assessment

A range of assessment methods are applied, as summarised in Table 1. These are consistent with the University Assessment Policy, and recognise and test the diverse skills that a professional engineer needs to have. Note is also taken of the current high prevalence of plagiarism, in part due to web access; for this reason the formal examination remains an important element in the assessment strategy. Assessment methods in each module are chosen to reflect the Learning Outcomes they assess. As many modules contain both theoretical and practical elements, it is common to find assessments which address both components.

Assessments are designed to enable you to demonstrate achievement of the learning outcomes for your module. Up to two different assessments (assessment components) may be ascribed to a module. An assessment component may sometimes take the form of a number of small submissions e.g. lab reports or short in-class tests. Each assessment component may carry one or more learning outcomes which will be assessed against assessment criteria.

Examinations can include traditional unseen examinations, open-book examinations, or pre-briefed examinations based on case studies. The questioning style can include essay questions, multiple choice questions, or problem-solving questions. Online questions are also used in some modules to enable you to gauge their own knowledge and understanding of the module material.

Outlines of the assessment strategies for each module can be found in the module matrix. Precise assessment requirements, together with specific assessment criteria are issued to you in module handbooks at the commencement of each module.

A mixture of formative and summative assessment is utilised, with a strong commitment to deep learning and an assessment strategy that, on a formative level, aims to help to continuously develop as independent learners throughout the programme. The more formative assessment plays a crucial part in some modules, being a part of programmed activity. In these modules the learning experience and assessment are part of continuous activity based on not only the formal lectures, but also on frequent tutorial feedback, advice and discussion on initial proposals, project reviews and tutor one to one consultations, culminating in the final project submission. The objective is to encourage a creative philosophy and expression, whilst at the same time giving professional advice to take forward conceptual proposals to a working solution level. To achieve this, you will be involved in range of “live projects” and case studies, building upon successes from the previous year.

This Programme operates within the University’s Regulatory Framework and conforms to its regulations on assessment.

|  |  |  |
| --- | --- | --- |
| **Assessment Type** | **Assessment Activity** | **Formative Benefits** |
| Practical results and short written observations | The student submits experimental results on-line. This will be accompanied by a short written statement, for example a conclusion. | The student gains confidence in experimental methods, and learns to present results in appropriate numerical form (e.g. using scientific notation, with appropriate units).  |
| Formal technical report  | This is often used to report major items of practical or investigative work, applying a formal technical report structure and protocols.  | The student learns to present technical activity and findings clearly and objectively, using appropriate forms of written English.  |
| Spoken presentation | This form of assessment tests the student’s ability to present ideas in spoken form, typically combined with the use of visual presentation, for example PowerPoint. | The student learns to present technical activity and findings in spoken form, maintaining focus and concentration when speaking to a group.  |
| Phase test  | This assessment method is frequently applied in the middle of a module. It has some of the benefits of a formal examination, in that the student is tested alone. It allows rather immediate feedback to be given to students on their progress. The test may be on-line or in paper form. | Motivates students to develop fast and accurate thinking skills, provides feedback to students on their progress to date, and gives training for exams. |
| Formal examination | This remains an important assessment tool, as there is minimal opportunity for academic offence. The exam may be on-line or in paper form. | The ability to think clearly and produce outcomes under time pressure. |
| Assignment | The student produces and extended piece of written work, submitted on-line, demonstrating both detailed exploration and extension of knowledge of concepts beyond taught material and facility with in-depth, extended problem-solving activity. | The student develops their research and technical writing skills and presents solutions to complex problems in a professional manner. |
| Log book or web log  | The student maintains a continuous record of a sustained activity over a period of time. | Training in a common industrial practice.  |

**Table 1: Assessment Methods**

# SECTION SIX: ADMISSIONS

## Entry requirements

Although this programme is academically demanding it is important to us that students entering have an enthusiastic attitude to their course of study and the passion for design. We have therefore decided to keep the academic requirements to a reasonable level to allow a wide variety of potential applicants, from a variety of backgrounds, to apply. We are seeking to attract well-motivated students who wish to pursue their studies in a stimulating and vocationally orientated learning environment.

### BSc Engineering ( Mechanical)

Our entry requirements are usually:

* Evidence of the ability to study to a higher level, for example shown by a Higher National Diploma or Foundation Degree profile (in a relevant subject area) which includes some Merits and/or Distinctions, preferably in analytical units/modules. The profile should show levels 4 and 5 and appropriate workbased experience
* Successful completion of two years of a relevant degree programme and appropriate workbased experience
* International students with equivalent international qualifications to the above and with appropriate level in English Language for entry at level 6

Plus you'll need to have GCSE subjects including maths and English language at grade C or above (Key Skills qualifications will be accepted as the equivalent to GCSEs, provided that they are of the correct level for your chosen course).

Additionally non-standard entry to the programme will be considered through the following routes:

* We welcome applications through the University’s APL/APEL procedure for advanced standing and encourage applications from people of all ages as long as they can be considered adequately prepared to succeed on the programme. If you have few or no formal qualifications, they may be able to gain entry to the programme if they have the required communication and learning skills as well as the knowledge, experience and motivation to succeed. You will be asked to provide evidence of any experience to confirm their ability to undertake the programme and will/may be interviewed.

For a full list of accepted qualifications, please follow the link <http://www.derby.ac.uk/undergraduate/general-entry-requirements/general-entry-requirements-bachelors-degrees>

## International Entry Requirements

For undergraduate courses if you are an international student whose first language is not English we usually require you to attain a minimum of one of the following qualifications:

* IELTS 6.0
* TOEFL 550 (213 online)
* Cambridge Advanced Certificate pass
* London Tests of English: We accept level 4 for undergraduates and level 5 for postgraduates.
* International GCE O-Level English Language grade C
* International GCSE English/English as a second Language grade C
* AES Proficiency pass

\*We may be able to waive the language requirement if you can provide other evidence of your competence, such as having lived in an English-speaking country for a significant length of time. Decisions in such cases will be made on an individual basis according to the specific circumstances.

For a full list of accepted qualifications from your country, please follow the link <http://www.derby.ac.uk/international/applying/international-qualifications-we-accept-for-entry-onto-an-undergraduate-course>

# SECTION SEVEN: STUDENT SUPPORT AND GUIDANCE

## PROGRAMME MANAGEMENT

### Programme Leader

Your Programme Leader has the overall responsibility for the smooth running of the programme, and its day-to-day administration. He/she will provide advice, guidance and information including programme organisation, enrolment, assessment and feedback. You will be able to contact your Programme Leader by email or at his/her office to discuss your student experience and any programme or pastoral issues.

### Module Leaders

Each of your modules has a Module Leader. Module Leaders are responsible for communication of module information and should be your first point of contact for matters relating to specific modules.

### Tutoring and Support

You will be assigned a personal tutor at the start of the academic year. Your tutor will aim to support you throughout your studies, and monitor your progress. He/she will meet with you at least once in each semester. If there are times of difficulty, he is available to address problems relating to your academic progress, as well as to discuss any personal issues that may hinder your academic development. He will also help to produce and develop your personal development plan (PDP). In overview, your personal tutor aims to:

* Inform and advise you on issues of academic nature, e.g. teaching methods, information on the modules, assessment methods;
* Clarify issues regarding policies and regulations;
* Provide support for any personal problems that might emerge, which may have an impact on your performance;
* Provide guidance for further studies or career planning;
* Contribute to a mutual understanding and the establishment good relations between students and academic staff;
* Develop a sense of cooperation in accordance with the academic philosophy and mission of London College.

Similarly an industrial mentor will be assigned by your employer to support your studies related to workbased learning when appropriate.

### Programme Monitoring and Student Feedback

The operation and health of this programme of study is monitored by the Programme Committee, which meets three times a year. This is hosted by the University of Derby, but may be undertaken by video conferencing. Student focus groups are held before each Programme Committee, to gather student feedback; where possible any issues raised are addressed before the Programme Committee meets. Larger issues are brought to the Committee. A process of Annual Monitoring is also undertaken, as defined by the University of Derby.

###

### Students with Additional Needs

The University and College are committed to ensuring that all students engaged on a programme have equal opportunity to succeed in it. If you have a need which makes it difficult for you to engage with one of the activities on offer (whether teaching, learning or assessment), then we will make every effort to make adjustments to make it accessible to you.Liaison with student services ensures that systems for the early notification of student disabilities are fully utilised, so that appropriate account can be taken, from the outset, of particular learning needs. Regular team meetings and the arrangements for counselling students enable staff to build up a picture of individual student needs, and to ensure that colleagues are equally aware of these requirements.

The programme team ensures that class discussions are managed so that students with hearing or sight impairments are not disadvantaged. All rooms used for teaching have adequate disabled access, as do the on-campus learning facilities used by students. Where staff make use of videos they check, for example, that there are transcripts available for hearing impaired students.

Care is taken to ensure that any students with disabilities are not disadvantaged by potential barriers to access when undertaking visits. If insurmountable problems are encountered (e.g. access to a narrow staircase in a power station visit), photographs are taken of the subject matter in question.

University admissions policy requires competence in the English language. The teaching team will ensure that students from different cultural backgrounds are not disadvantaged in any way by the learning, teaching and assessment strategy implemented, provided the language requirement is satisfied.

###

### Equality and Diversity

The College prides itself on its commitment to equality and diversity across all aspects of its operations, and it is at the heart of the University’s values. We continually monitor the progress that is being made to ensure that we are fully effective in establishing non-discriminatory practice in all aspects of our work.

# SECTION EIGHT: POST PROGRAMME OPPORTUNITIES

## Post-Programme Opportunities

You can progress into many fields of professional activity with and without the mechanical and general engineering sector. These include production management, technical consultancy, the design of mechanical systems and their installation, environmental production management or even start your own company. Our graduates are working in a range of companies, from the largest to the smallest.

If you are interested in postgraduate study, it is important to identify a specialist area that interests you. This may well be the same area that you choose for your individual project. You will also be able to access a range of post-qualifying education and training provided by both the professional institution and higher education institutions, such as a postgraduate Master’s qualification in Mechanical and Manufacturing Engineering offered at the University of Derby.

# SECTION NINE: EMPLOYER LINKS

## Employer Links

The University of Derby mechanical engineering undergraduate programmes are well established and accredited programme, renowned for the strength of their contacts with employers. They were designed in close collaboration with mechanical engineers, engineering designers, technologists, mechanical specialists and professional bodies to offer rigorous professional and practical training backed with sound academic theory and thus meet both the student and employer aspirations.

These programmes have started to develop a number of links within the industry who have and continue to provide valuable input through the employer consultation group into the programme structure, design and its delivery.

The strong philosophical thread of our programmes is inspired by its locality, being relevant to the City we belong to, its local communities and people. We are trying to collaborate with local industries on a wide range of challenging and relevant choices of live projects when they are available.

Employers, Students and other stakeholders were consulted through various means including programme committee meetings; industrial advisory committee, programme team meetings, etc.

Loughborough College operate standard HNC/D programmes in Mechanical, Electrical / Electronic and Operations Engineering on day release and evening-only bases, for a range of employers such as E-On, Babcock International, Preci-Spark and Brush Electrical Machines. These programmes have specialist modules or pathways to suit specific employer requirements. The College also operates bespoke HNC/D programmes with employer-derived attendance patterns and module selections for RWE npower, PowerOn Connections and HMGCC, including a HND top-up delivered entirely through distance learning for npower.

In addition, the College co-delivers Foundation Degree provision in conjunction with Aston University in Power Engineering for clients including National Grid, Scottish and Southern Energy, Western Power Distribution and Balfour Beatty Utility Solutions. These relationships will shortly be expanded further into Higher Apprenticeship delivery for Balfour Beatty Utility Solutions.

The College has recently developed a Foundation Degree and Higher Apprenticeship framework in Space Engineering in partnership with the University of Leicester, in collaboration with a variety of employers, including the European Space Agency, Avanti Communications, Qinetiq and Magna Parva.

# APPENDIX 1

## Curriculum Mapping

## Programme Learning Outcomes Vs Specific Modules

### BSc Engineering ( Mechanical)

| **LEVEL 6** | **Independent Project** | **Advanced Mechanical Design and Materials** | **Advanced Engineering Design Modelling** | **Innovation in Sustainable Engineering Design** | **Applied Thermodynamics** | **Computational Fluid Dynamics** |
| --- | --- | --- | --- | --- | --- | --- |
| **General Learning Outcome** |
| 1. **Knowledge and Understanding**
 |
| Project management, business management, environmental issue and ethics as applied to professional engineering. | 🗸 | 🗸 |  | 🗸 |  |  |
| Critically discuss and comment upon particular aspects of current research, or equivalent advanced scholarship in this discipline | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |  |
| Systematic understanding of key aspects of Mechanical Engineering, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of Mechanical Engineering | 🗸 | 🗸 | 🗸 |  | 🗸 | 🗸 |
| Ability to deploy accurately established techniques of analysis and enquiry within the Mechanical Engineering discipline including solving engineering problems | 🗸 | 🗸 | 🗸 |  | 🗸 | 🗸 |
| 1. **Intellectual Abilities**
 |
| Critical analysis of working practices to ensure safety, carry out risk assessment and apply appropriate safety management techniques | 🗸 | 🗸 |  | 🗸 | 🗸 |  |
| Identify and critically evaluate relevant practices within an appropriate professional and ethical framework | 🗸 | 🗸 |  | 🗸 | 🗸 |  |
| Critically evaluate arguments, assumptions, abstract concepts and data in order to make judgements and to frame appropriate questions to identify / achieve a solution to a problem. | 🗸 | 🗸 | 🗸 |  | 🗸 | 🗸 |
| Apply the methods and techniques that you have learned to review, consolidate, extend and apply your knowledge and understanding, and to initiate and carry out engineering projects. | 🗸 | 🗸 | 🗸 |  | 🗸 | 🗸 |
| 1. **Practical / Subject Specific skills**
 |
| Apply project planning techniques and scheduling methods including communication of information, ideas, problems and solutions to both specialist and non-specialist audiences | 🗸 | 🗸 | 🗸 |  |  |  |
| Deploy accurately established techniques of analysis and enquiry within the Mechanical Engineering discipline. You will also be able to show an appreciation of the uncertainty, ambiguity and limits of knowledge within this discipline. | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |  |
| Manage empirically-research based project under appropriate supervision and recognise of its theoretical, practical and methodology | 🗸 | 🗸 |  | 🗸 |  |  |
| Summarise, accurately, the arguments presented in a range of complex works within and about mechanical engineering specific subject. | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |  |
| 1. **General Transferable Skills**
 |
| Exercise self-initiative and personal responsibility including decision making in complex and unpredictable context | 🗸 | 🗸 | 🗸 |  | 🗸 | 🗸 |
| Demonstrate evidence of planning, self-learning and improving performance, as the foundation for lifelong learning ability needed to undertake appropriate further training of professional or equivalent nature. | 🗸 |  | 🗸 | 🗸 |  |  |
| Communicate effectively with other people using oral, written and graphic means | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| Professionally apply safe working procedures, health & safety legislation, risk assessment and risk management techniques | 🗸 |  |  | 🗸 |  |  |
| Have ability and competence in a range of skills on the current CAD and IT equipment in an effective and productive manner. |  | 🗸 | 🗸 |  | 🗸 | 🗸 |
| Work independently and able to work as an effective and efficient member of a team to develop collaborative skills | 🗸 | 🗸 | 🗸 |  |  |  |

Table 1 Programme Learning Outcomes VS Specific Modules