

Course Specification

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Core Information

Awarding Body / Institution:	University of Wolverhampton		
School / Institute:	School of Engineering		
Course Code(s):	MA030F01CX	Full-time	2 Years
	MA030F31CX	Part-time	4 Years
Course Title:	Fd (Eng) Mechanical Engineering at South Staffordshire College - Cannock Campus		
Hierarchy of Awards:	Foundation Degree (Engineering) University Statement of Credit Certificate of Higher Education Mechanical Engineering University Statement of Credit University Statement of Credit		
Language of Study:	English		
Date of DAG approval:	29/Apr/2021		
Last Review:			
Course Specification valid from:	2020/1		
Course Specification valid to:	2026/7		

Academic Staff

Course Leader:	Dr Ahmad Baroutaji
Head of Department:	Dr Aman Dhir

Course Information

Location of Delivery:	South Staffordshire College Cannock Campus
Category of Partnership:	Franchising
Teaching Institution:	South Staffordshire College Cannock Campus
Open / Closed Course:	This course is open to all suitably qualified candidates.

Entry Requirements:

Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS)

Distinctive Features of the Course:

This Fd(Eng) in Mechanical Engineering has been developed alongside our local further education partners and industry leaders in order to ensure that all graduates have the relevant knowledge and skills to excel in the workplace. The course has a strong practical focus and has been designed using a `knowledge then practice` approach to delivery, providing opportunity for knowledge gained to be strengthened with practical activities based around the mechanical, manufacturing and mechatronic laboratory equipment and the exemplary design and rapid prototyping suites at South Staffordshire College.

Students will develop and strengthen their technical competences covering, Engineering Science, Computer Aided Design, Materials Science and Manufacturing, Engineering Management and Quality and Project Management. This foundation degree aims to contribute to widening participation and lifelong learning by encouraging participation by learners who may not previously have considered studying for a higher-level qualification or prefer a more applied curriculum. It increases access and widens participation into higher education, as learners can access the course from a range of starting points and with different entry qualifications.

The programme offers flexible learning patterns to enable students with a relevant Level 3 qualification in a Mechanical Engineering subject, or equivalent, to obtain a Fd(Eng) in Mechanical Engineering and if desired, progress to a BEng (Hons) programme in Mechanical Engineering at University of Wolverhampton. For all disciplines addressed in the course syllabus, students will be taught by lecturers who have a wealth of industrial experience in an environment that is focused on working with, and supporting, engineering and technology led companies. The students will participate in multi-disciplinary group projects, necessitating the application of technologies and techniques in a progressive engineering environment.

Where appropriate, visiting speakers, external visits and real-time case-based activities will add a practical dimension to the learning process. Recognising the rich learning potential from the workplace, opportunities to work with industry will be maximised.

The CANVAS VLE will be used to deliver technology-enhanced learning, teaching and assessment and will integrate several features including access to electronic documents, assessment, collaboration and virtual communication tools.

Educational Aims of the Course:

This Foundation Degree in Mechanical Engineering offered by the University of Wolverhampton in partnership with South Staffordshire College is designed to prepare students for a wide range of career choices in the field of mechanical engineering. It is also intended for students whose career objectives require greater flexibility. Consequently, the educational aims of this foundation degree programme are laid out to prepare students for professional practice in an era of rapidly evolving technological advances. The programme combines a strong base in theoretical background (mechanics, materials, fluid, thermal, systems and control) along with project-based laboratory, design, build and simulation experiences as recognisable by

the professional mechanical engineering community.

A key feature of this programme is its industrial relevance and close ties with the requirements of local industry. As the majority of the students are employed within engineering, projects can be 'live' and assignments related to and based on real experiences within industry. Seminars and group work give the students the opportunity to elaborate on their experiences within industry to their peers and therefore expand knowledge beyond a purely academic sense.

The educational aims for this course collectively strive to develop independence, creative talent, as well as the capability for continuing professional growth and self-learning. This ensures that graduates are equipped with the appropriate knowledge and enterprising capabilities to practise engineering professionally, ethically and sustainably.

Thus, the course will:

- aim to develop in learners a range of knowledge and skills to enable successful students to operate in their respective fields in industry as Engineering Technicians. The Fd(Eng) programme also aims to form a foundation on which learners may build on in order to progress to undergraduate level if desired, and attain IEng or CEng status.
- aim to develop in learners the transferable skills necessary to operate effectively in industry especially self-reliance, self-discipline and a capacity for collaboration with other members of a team.
- aim to develop in learners the analytical and research skills necessary for mechanical engineering design, the ability to interpret results of testing and computer-based engineering analysis and an ability to reflect upon the shortfalls. Inherent in this will be an ability to competently use and apply computer aided engineering design techniques and to manage modern technology.
- aim to develop in learners the knowledge and critical understanding of the established principles in Mechanical Engineering and understanding of the limits of their knowledge.
- aim to develop in learners the ability to evaluate critically the appropriateness of different approaches to solving problems and to apply these in a work context.
- aim to develop in learners the ability to apply their knowledge and skills to new situations, including in the workplace.

Intakes:

September
January

Major Source of Funding:

Office for Students (OFS)

Tuition Fees:

Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2021/2	H	Full Time	£6165.00
2021/2	H	Part Time	£4110.00
2022/3	H	Full Time	£6165.00
2022/3	H	Part Time	£4110.00

PSRB:

None

Course Structure:

January (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MM029	Engineering Mathematics I	20	SEM2	Core
4MA008	Engineering Science	20	SEM2	Core
4MA009	Computer Aided Design	20	SEM2	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MM029	Engineering Mathematics I	20	SEM2	Core
4MA009	Computer Aided Design	20	SEM2	Core

January (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MA027	Industrial Work Based Engineering Practice	20	SEM1	Core
4MA017	Mechanical Engineering Principles	20	SEM1	Core
4MA002	Engineering Materials	20	SEM1	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MA002	Engineering Materials	20	SEM1	Core
4MA008	Engineering Science	20	SEM1	Core

January (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA004	Engineering Management and Quality	20	SEM2	Core
5MA039	Thermodynamics and Fluids	20	SEM2	Core
5MA044	Applied Instrumentation and Control	20	SEM2	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MA027	Industrial Work Based Engineering Practice	20	SEM2	Core
4MA017	Mechanical Engineering Principles	20	SEM2	Core

January (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA036	Solid Mechanics and FEA	20	SEM1	Core
5MA037	Materials Science and Manufacturing	20	SEM1	Core
5MA045	Independent Work Based Research Project	20	SEM1	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA036	Solid Mechanics and FEA	20	SEM1	Core
5MA004	Engineering Management and Quality	20	SEM1	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA039	Thermodynamics and Fluids	20	SEM2	Core
5MA044	Applied Instrumentation and Control	20	SEM2	Core

January (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA037	Materials Science and Manufacturing	20	SEM1	Core
5MA045	Independent Work Based Research Project	20	SEM1	Core

September (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MM029	Engineering Mathematics I	20	SEM1	Core
4MA008	Engineering Science	20	SEM1	Core
4MA009	Computer Aided Design	20	SEM1	Core
4MA027	Industrial Work Based Engineering Practice	20	SEM2	Core
4MA017	Mechanical Engineering Principles	20	SEM2	Core
4MA002	Engineering Materials	20	SEM2	Core

September (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4MM029	Engineering Mathematics I	20	SEM1	Core
4MA009	Computer Aided Design	20	SEM1	Core
4MA008	Engineering Science	20	SEM2	Core
4MA002	Engineering Materials	20	SEM2	Core

September (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA004	Engineering Management and Quality	20	SEM1	Core
5MA039	Thermodynamics and Fluids	20	SEM1	Core
5MA044	Applied Instrumentation and Control	20	SEM1	Core
5MA036	Solid Mechanics and FEA	20	SEM2	Core
5MA037	Materials Science and Manufacturing	20	SEM2	Core
5MA045	Independent Work Based Research Project	20	SEM2	Core

September (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA044	Applied Instrumentation and Control	20	SEM2	Core
5MA039	Thermodynamics and Fluids	20	SEM2	Core
4MA027	Industrial Work Based Engineering Practice	20	SEM1	Core
4MA017	Mechanical Engineering Principles	20	SEM1	Core

September (Part-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5MA004	Engineering Management and Quality	20	SEM1	Core
5MA036	Solid Mechanics and FEA	20	SEM1	Core
5MA037	Materials Science and Manufacturing	20	SEM2	Core
5MA045	Independent Work Based Research Project	20	SEM2	Core

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

Learning, Teaching and Assessment

Academic Regulations Exemption:

Section 1.2.3 Exemption for delivery outside the standard University Academic Calendar to facilitate the May 2021 cohort, as an exception for one year only. Future intakes must adhere to the standard university intake points.

Effective date: May 2021

Approved by Chair's Action on 30th March 2021. Ratified by 22nd April 2021 meeting.

Reference Points:

[UK Quality Code for Higher Education](#)

[Subject Benchmark Statements](#)

[University Policies and Regulations](#)

[Institution of Mechanical Engineers](#)

[Institution of Engineering and Technology](#)

The course aligns to and is informed by the [Framework for Higher Education Qualifications](#) (FHEQ), [QAA Foundation Degree Benchmark statements](#) and the QAA Subject Benchmarks for Engineering ([UK-SPEC](#)). All relevant benchmark statements have been referred to in the construction of the programme aims, outcomes and subsequent outcomes at the module level.

Furthermore, requirements set out by professional, statutory and regulatory bodies (PSRBs) and industry or employer expectations will be additional points of reference.

University's Access and Participation Plan (2020/25) - Inclusive Framework: curriculum design and delivery has been used as a point of reference in the design of this course.

Overview of Assessment:

As part of the course approval process, the course learning outcomes were mapped to each of the modules forming the diet of the programme of study. This process confirmed that all course learning outcomes can be met through successful completion of the modules. This mapping applies to the final award as well as to all of the intermediate awards.

Learning Outcomes

Modules

FD01 Demonstrate knowledge and understanding of the underlying concepts and principles associated with Mechanical Engineering and an ability to evaluate and interpret these to solve engineering problems

FD02 Demonstrate knowledge and understanding of the underlying concepts and principles associated with Mechanical Engineering and an ability to evaluate and interpret these to solve engineering problems

FD03 Evaluate the appropriateness of different approaches to solving problems related to your study of Mechanical Engineering or for work, recognising obligations to society, the profession and the environment.

FD04 Use effective communication and interpersonal skills to describe the results of your study/work accurately and reliably and with structured and coherent arguments.

FD05 Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility, which may be as a team member.

01 Demonstrate knowledge and critical understanding of the scientific principles underpinning Mechanical technologies and their evolution, together with an awareness of statistical methods necessary to support the application of key engineering principles. (Science and Mathematics)

02 Demonstrate an ability to monitor, interpret and apply the results of analysis and modelling outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context. (Engineering Analysis)

03 Apply problem-solving skills, technical knowledge and understanding to manage, create or adapt Mechanical designs solutions that are fit for purpose identifying any constraints including environmental and sustainability limitations. (Design)

04 Demonstrate knowledge of management techniques that may be used to achieve engineering objectives, understanding the requirements for engineering activities to promote sustainable development. (Economic, Legal, Social, Ethical and Environmental Context)

05 Understanding of and ability to use relevant materials, equipment, tools, processes, or products in workshop and laboratory practice, using and applying information from technical literature. (Engineering Practice)

06 Demonstrate the qualities and transferable skills necessary for employment, exercising initiative, personal responsibility and decision-making, whilst planning self-learning to improve performance, as the foundation for lifelong learning/CPD. (Additional General Skills)

Teaching, Learning and Assessment:

Developing knowledge and understanding

- Lectures and tutorial sessions.
- Reading – core and supplementary texts, journals and electronic sources.

- Information retrieval from articles, journals and books for assessments.
- Use of industrially placed guest lectures to enhance both learning experience but also employability.
- Use of industrially placed alumni to give insight into job roles post education.

Engineering analysis

- Simulation and problem-solving exercises.
- Engaging in informed discussion with fellow students and academic staff in tutorials and seminars.
- Researching articles, journals and books for assessments.

Engineering design

- Problem-based learning techniques, e.g. design projects, case studies.
- Providing solutions to meet real world problems/requirements.
- Solving closed and open-ended problems.
- Applying systematic methods to develop (novel) solutions.

Engineering practice

- Practical and laboratory sessions.
- Group activities aimed at developing team-working skills in a multi-disciplinary environment.

Additional general skills

- Using computer software and hardware to model and simulate products and engineering systems.
- Preparing written presentations; both analytically and textually based.
- Oral presentations; both group and individual.
- Student led presentations.
- Coursework reports (technical and discursive).
- Preparing for unseen examinations.
- Writing Project Portfolio.
- Critical examination of data.

The assessment methods used with the programme are varied, formative and will develop your transferable skills as well as your technical ability. The ability to plan, judge, communicate complex issues, solve problems logically, and develop original solutions, in appraising critically the work of others, and in managing your own learning are all significant contributors to determining your grade for a module.

Some modules on the course are assessed by a mixture of coursework and examination. The coursework is designed to assess practical skills and problem-solving ability whereas the examination will focus more on assessing knowledge and understanding. Some modules will be teaching practical applied skills and so may be assessed entirely by coursework which might include laboratory work, report writing and presentations.

The learning strategy will promote the transferable skills gained during the course. These will include project management, analytical thinking, process application and materials analysis allowing you to pursue a career in Mechanical engineering. Personal reflection and collaborative learning will be vital components to foster initiative, team working, and communication skills and you will be expected to participate fully.

Employers, where possible, will be involved in the assessment of work-based learning.

Feedback

Students will experience a range of formative and summative assessment activities which will provide feedback and feed forward opportunities which will support the development of confidence, knowledge, skill and aptitudes for learning. Formative assessments will include self and peer assessment, short written and verbal tasks, group work, practical observations and question and answer activities both simple and more complex. Summative assessment provides learners with a final measure against the required standard for progression and the award of the qualification.

Advice will be given through the induction process and then through appointments throughout the year, in addition to classes and tutorials. Students can expect to receive support and guidance in Personal Development Planning, to understand better their learning process, have the skills and understanding to act

on the feedback. Lecturers will provide personalised feedback for formative and summative assessments. On occasions lecturers may provide generalised feedback to the whole group on points relating to an assessment.

Inclusivity

This foundation degrees increases access and widens participation into higher education, as

learners can access it from a range of starting points and with different entry qualifications, for example: access courses, NVQs, and professional certificates and diplomas (and relevant work experience). It has been designed with work-based learning as an integral part of the course, so it is possible for learners to 'earn and learn'. This enables more students to access a higher education qualification while boosting their employability on graduation. The ability to 'earn and learn' also helps to widen access to higher education for those already in employment.

The knowledge, understanding and skills associated with this foundation degrees are delivered through a diverse and innovative range of methods that will reflect the diversity of learners' needs. The learning and teaching strategy for the course identifies appropriate teaching styles and learning opportunities for foundation degree learners, as well as elements that may require additional resources, for example the management of work-based learning.

An inclusive curriculum is imperative to ensure ALL our students have an equal chance to succeed and progress and is central to the University 2030 strategic plan 'inclusive student success'. Our students bring with them unique lived experiences from a range of communities and as such we bring diverse experiences into learning, teaching and assessment that will enhance diversity and relatability of the curriculum to the student. Our curriculum is designed and delivered with students as our co-creators and as such the modules in this course are developed with Universal Design in mind, and to meet all accessibility standards. For instance, downloadable lecture notes will be provided for all the modules using our VLE platform CANVAS and we will ensure that all documents, PDFs etc are formatted to best be used by screen readers.

Case studies, examples and resources are drawn from a wide range of sources and contexts representing our diverse and international community.

Assessment Methods:

At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

Student Support:

General University support:

[University Learning Centres](#) are the key source of academic information for students. The Library subscribes to a large number of databases that are made freely available to students and staff through the library website. We have negotiated with publishers to extend access, where possible, to University of Wolverhampton (UoW)

students based at [partner institutions](#) and the staff that support them. The library website also contains a list of resources containing links to eBooks, eTextbooks and journal articles that were published Open Access and are freely available for use online. The resources can be accessed via [LibrarySearch](#). The platforms or tools can be accessed via the links provided and aggregate or search millions of [Open Access](#) scholarly publications.

Learning Centres also provide students with academic skills support via the [Skills for Learning programme](#). Students can attend online workshops or ask for one-to-one help on a range of skills such as academic writing and referencing. Students can access a range of online skills material at; [Skills for Learning Workshops](#).

The [University Student Support website](#) offers advice on a variety of matters (careers, counselling, student union advice, etc.) Students can also access these services by booking appointment with the SU, careers, counselling services, etc.

Course Specific Support at SSC:

Our aim is to help every student to succeed. South Staffordshire College has a strong ethos in providing outstanding teaching alongside strong academic support using our experienced and well-established Learning Support and Mentoring departments.

All students are given access to additional support and this can range from tuition sessions, one to one module assistance to help ensure all areas are fully understood, to support and training in revision techniques, presentation skills and coursework production to ensure the coursework is to the students' highest standard.

Sometimes students may require extra support with reading, writing, maths, mobility or even motivation... we will do our very best to help you any way we can. This is tailored support and is beneficial for all our learners from school leavers to those returning to education. Students are offered at least one formal academic tutorial per term to discuss academic progress and agree individual targets

If you enrol on a course that is validated by University of Wolverhampton, you will receive a student ID card which gives you access to the University's facilities, including online resources such as e-journals, e-books and databases. You will also get your own email account.

You will also have access to University of Wolverhampton's campuses at Wolverhampton, Telford and Walsall including the Students' Union and all the great social life on offer there.

For additional information and advice, please contact Learner Services – Email: guidance@southstaffs.ac.uk

Employability in the Curriculum:

We have excellent links with local employers and community organisations which can give you a great chance to develop the skills, attributes, and experience that you need to pursue your career. Proficiency in skills such as team-working, communication, numeracy and IT is the expected baseline for any graduate. The assessment methods used on this course are designed to develop and extend these skills. Working to deadlines will improve your time management, prioritising, and planning skills.

Employability is a key aspect in this foundation degree course, and its inclusion equips and

assists you to enhance your employment opportunities, and/or allow you to prepare for a career change. The learning activities on this course will develop distinctive graduate attributes that will make you stand out and enhance your employability. These skills will be embedded into the curriculum throughout your course. Examples include:

Work-based learning (WBL) provides experience that is vital to your personal development and employment prospects. This enables students to access a higher education qualification while boosting their employability on graduation. The ability to 'earn and learn' also helps to widen access to higher education for those already in employment.

Work-related learning (WRL) is learning based as closely as possible on real work situations (e.g. case studies, research projects, simulations and enquiry-based learning). 'Authentic' activities and assessments provide

students with opportunities to develop an understanding of how their knowledge and skills can be applied in real-world contexts.

In addition, the following skills and professional development attributes will be developed across level 4 and 5 as follows.

- Knowledge and understanding - *Use engineering knowledge and understanding to apply technical and practical skills.*
- Design and development of processes, systems, services and products – *Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions.*
- Responsibility, management, or leadership - *Accept and exercise personal responsibility. Work reliably and effectively without close supervision, to the appropriate codes of practice.*
- Communication and inter-personal skills - *Use oral, written and electronic methods for the communication in English of technical and other information.*
- Professional commitment - *Make a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.*

The level 5 Project (WBL) is designed to train students as investigators, able to take responsibility for their own independent work as engineering technicians. It will combine the study of specific areas of engineering technology but would also be expected to encompass aspects of financial appraisal, safety and management within the working environment. This module is regarded as the culmination of the course and as such, the final report should clearly show the integration of core themes into the work and the development of the transferable skills achieved during the course. Successful completion of this module demonstrates an ability to work independently and demonstrate an understanding of their responsibilities with respect to project management, health and safety and aspects of environmental and sustainability within their working environment.

