

## Course Specification

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| <b>Published Date:</b> | 15-Sep-2020 |
| <b>Produced By:</b>    | Laura Clode |
| <b>Status:</b>         | Validated   |

## Core Information

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|---|--|-----------|-----------|
| <b>Awarding Body / Institution:</b>     | University of Wolverhampton  |           |           |
| <b>School / Institute:</b>              | School of Engineering  |           |           |
| <b>Course Code(s):</b>                  | MA015P01UV   | Full-time | 12 Months |
|   | MA015P31UV   | Part-time | 2 Years   |
| <b>Course Title:</b>                    | MSc Advanced Technology Management (Engineering Analysis)  |           |           |
| <b>Hierarchy of Awards:</b>             | Master of Science Advanced Technology Management (Engineering Analysis)<br>Postgraduate Diploma Advanced Technology Management (Engineering Analysis)<br>Postgraduate Certificate Advanced Technology Management (Engineering Analysis)<br>Postgraduate Certificate Advanced Technology Management (Engineering Analysis)<br>University Statement of Credit University Statement of Credit |           |           |
| <b>Language of Study:</b>               | English  |           |           |
| <b>Date of DAG approval:</b>            | 01/Jun/2017  |           |           |
| <b>Last Review:</b>                     | 2014/5   |           |           |
| <b>Course Specification valid from:</b> | 2014/5   |           |           |
| <b>Course Specification valid to:</b>   | 2020/1   |           |           |

## Academic Staff

|                            |                 |
|----------------------------|-----------------|
| <b>Course Leader:</b>      | Dr Peter Wardle |
| <b>Head of Department:</b> | Dr Syed Hasan   |

# Course Information

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| <b>Location of Delivery:</b>    | University of Wolverhampton                               |
| <b>Category of Partnership:</b> | Not delivered in partnership                              |
| <b>Teaching Institution:</b>    | University of Wolverhampton                               |
| <b>Open / Closed Course:</b>    | This course is open to all suitably qualified candidates. |

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## Entry Requirements:

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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)

For direct entry onto the Master's programme:

- A lower second honours degree or equivalent in related subject is required for direct entry onto this Master's programme.

or

- A Postgraduate Certificate in a related subject or equivalent with a minimum of grade C in all modules.

For entry onto the Postgraduate Certificate programme:

(Completion of which, with a minimum of grade C in all modules, will allow a student to progress to the Master's programme)

- A pass at degree level.

## Other Requirements:

- Students are selected using application form and references in the first instance and may be invited for interview.
- Students applying for individual modules will be required to demonstrate the ability to absorb technical concepts and detail, possibly by way of their previous industrial or commercial experience.
- Minimum English competency is the standard MSc entry: IELTS 6.0 or equivalent.

## Distinctive Features of the Course:

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This course provides you with the unique opportunity to experience the practicalities and applications of modern Engineering Analysis Techniques. The dedicated IT simulation resources and expertise of our specialised staff, based at our Telford Campus, is well renowned and often called upon to support and advise external agencies and key industries across the aerospace, automotive and automotive sports and power generation sectors. You can therefore rest assured of access to a variety of significant simulation techniques facilities and expertise. Beyond this, the course will encourage and guide you to explore and conduct research into emerging Design and use the latest industry standard simulation software to produce complex, economical and sustainable part/component part production. Our expectation is that the exposure offered by the course, to modern and newly emerging manufacturing technologies coupled with the project managerial aspects of the course will ensure that you are well placed to take up a key role in this dynamic industrial sector.

## Educational Aims of the Course:

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Modern industry operates within a highly competitive global market, the adoption, exploration and management of technology across both design and manufacture and product simulation performance is at the forefront of providing successful business with the competitive edge needed to survive and grow. In addition, society is demanding that such business enterprises become evermore proactive in terms of adopting a more socially conscious approach, such as sustainability, across all their strategies and operations.

This course aims to develop your knowledge and understanding of modern engineering analysis and simulation tools and techniques in terms of product development and optimisation before manufacture. You will gain a comprehensive understanding of how various IT-based tools and systems function while also gaining insights into how these are implemented effectively, within the manufacturing and industrial sectors. You will be equipped to undertake cross-functional management roles and to evaluate how modern organisations can strategically exploit existing and emerging technologies. This reflects the growing demand for specialists with advanced skills and knowledge to drive forward effective, new, product development and their introduction across all of the major industrial sectors including automotive, aerospace and general manufacture.

The course will allow you acquire advanced knowledge and systematic understanding of contemporary finite element modelling techniques to analyse the behaviour of complex engineering systems and components. It will involve a comprehensive understanding of advanced solid mechanics and analytical techniques pertinent to product development and sustainability, and to apply these advanced techniques to synthesise novel designs of a range of engineering systems.

#### Intakes:

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September  
January

#### Major Source of Funding:

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Office for Students (OFS)

#### Tuition Fees:

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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    |
|--------|----------|-----------|-----------|
| 2020/1 | H        | Full Time | £6400.00  |
| 2020/1 | Overseas | Full Time | £13350.00 |
| 2020/1 | H        | Part Time | £3200.00  |

#### PSRB:

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None

#### Course Structure:

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### January (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

## Year 1

| Module | Title                                    | Credits | Period | Type |
|--------|--|---------|--------|------|
| 7CM003 | CAD and Product Definition               | 20      | INYR   | Core |
| 7AT004 | Emerging Design Tools                    | 20      | INYR   | Core |
| 7ET032 | Applied Stress Analysis                  | 20      | INYR   | Core |
| 7ET023 | Dissertation                             | 60      | CRYRA  | Core |
| 7ET022 | Research Methods and Professional Skills | 20      | INYR   | Core |
| 7MA020 | Design Optimisation and Simulation       | 20      | INYR   | Core |
| 7CM002 | Project Management Tools and Techniques  | 20      | INYR   | Core |

## September (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

## Year 1

| Module | Title                                    | Credits | Period | Type |
|--------|--|---------|--------|------|
| 7ET022 | Research Methods and Professional Skills | 20      | INYR   | Core |
| 7CM002 | Project Management Tools and Techniques  | 20      | INYR   | Core |
| 7AT004 | Emerging Design Tools                    | 20      | INYR   | Core |
| 7CM003 | CAD and Product Definition               | 20      | INYR   | Core |
| 7MA020 | Design Optimisation and Simulation       | 20      | INYR   | Core |
| 7ET032 | Applied Stress Analysis                  | 20      | INYR   | Core |
| 7ET023 | Dissertation                             | 60      | CRYRA  | 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:

None

Reference Points:

- Faculty of Science and Engineering E&D policy, 2010
- Institute of Engineering Designers. Product Design Specific Learning Outcomes
- QAA subject benchmark – Masters Level - Engineering
- FHEQ England, Wales and Northern Ireland

- Descriptor for a higher education qualification at level 7: Master's degree.

## Learning Outcomes:

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### PGCert Course Learning Outcome 1 (PGCCL01)

"Demonstrate a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of your academic discipline, field of study or area of professional practice with a conceptual understanding that enables the student: 1. to evaluate critically current research and advanced scholarship in the discipline. 2. to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses."

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### PGCert Course Learning Outcome 2 (PGCCL02)

"Demonstrate a comprehensive understanding of techniques applicable to your own research or advanced scholarship and ability to continue to advance your knowledge and understanding, and to develop new skills to a high level."

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### PGCert Course Learning Outcome 3 (PGCCL03)

"Demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline."

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### PGCert Course Learning Outcome 4 (PGCCL04)

"Ability to deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate your conclusions clearly to specialist and non-specialist audiences."

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### PGCert Course Learning Outcome 5 (PGCCL05)

"Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level."

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### PGCert Course Learning Outcome 6 (PGCCL06)

Demonstrate the qualities and transferable skills necessary for employment requiring: 1. the exercise of initiative and personal responsibility 2. decision-making in complex and unpredictable situations 3. the independent learning ability required for continuing professional development.

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### PGDip Course Learning Outcome 1 (PGDCL01)

"Demonstrate a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of your academic discipline, field of study or area of professional practice with a conceptual understanding that enables the student: 1. to evaluate critically current research and advanced scholarship in the discipline 2. to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses."

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### PGDip Course Learning Outcome 2 (PGDCL02)

"Demonstrate a comprehensive understanding of techniques applicable to your own research or advanced scholarship and ability to continue to advance your knowledge and understanding, and to develop new skills to a high level."

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### PGDip Course Learning Outcome 3 (PGDCL03)

"Demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline."

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PGDip Course Learning Outcome 4 (PGDCLO4)

"Ability to deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate your conclusions clearly to specialist and non-specialist audiences."

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PGDip Course Learning Outcome 5 (PGDCLO5)

"Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level."

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PGDip Course Learning Outcome 6 (PGDCLO6)

Demonstrate the qualities and transferable skills necessary for employment requiring: 1. the exercise of initiative and personal responsibility 2. decision-making in complex and unpredictable situations 3. the independent learning ability required for continuing professional development.

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Masters Course Learning Outcome 1 (MACLO1)

"Develop novel strategies for the management and deployment of advanced and emerging technologies, tools and techniques."

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Masters Course Learning Outcome 2 (MACLO2)

"Select and apply appropriate industry standard computer aided engineering software and analysis methods to model, analyse and evaluate engineering systems and solve engineering problems."

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Masters Course Learning Outcome 3 (MACLO3)

"Apply knowledge to create original concepts for products, engineering systems or processes."

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Masters Course Learning Outcome 4 (MACLO4)

"Make use of high level skills and abilities to exploit generic and bespoke software tools, solve complex design, configuration or process problems and thereby develop industrially appropriate solutions for delivery to a range of audiences."

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Masters Course Learning Outcome 5 (MACLO5)

Be fully conversant with the theories underpinning the fundamental principles that govern Stress Analysis.

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Masters Course Learning Outcome 6 (MACLO6)

"Model and analytically analyse the behaviour of structures and engineering components under complex loading conditions especially in specific applications such as those encountered in the automotive, aeronautical, aerospace and power generation industries."

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Overview of Assessment:

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| Module | Title                                    | Course Learning Outcomes   |
|--------|--|--|
| 7AT004 | Emerging Design Tools                    | MACLO1, MACLO2, PGCCLO1, PGCCLO2, PGDCLO1, PGDCLO2                           |
| 7CM002 | Project Management Tools and Techniques  | MACLO1, MACLO2, PGCCLO1, PGCCLO2, PGDCLO1, PGDCLO2                           |
| 7CM003 | CAD and Product Definition               | MACLO3, MACLO4, PGCCLO3, PGCCLO4, PGDCLO3, PGDCLO4                           |
| 7ET022 | Research Methods and Professional Skills | MACLO5, PGDCLO5  |
| 7ET023 | Dissertation                             | MACLO3, MACLO4, MACLO5   |
| 7ET032 | Applied Stress Analysis                  | MACLO1, MACLO3, MACLO6, PGCCLO1, PGCCLO3, PGCCLO6, PGDCLO1, PGDCLO3, PGDCLO6 |
| 7MA020 | Design Optimisation and Simulation       | MACLO1, MACLO4, PGCCLO1, PGCCLO4, PGDCLO1, PGDCLO4                           |

### Teaching, Learning and Assessment:

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You will have the opportunity to engage with a range of learning approaches during the course of your study.

You will take part in lectures and seminars. Some of these will be more traditional whereas others will require you to undertake research before coming together to discuss technical issues with a range of students and academic staff. You will have seminars from industry practitioners and have the opportunity to discuss your projects with them to gain real world insight into the problems you are trying to solve.

You will have the opportunity to work in a range of dedicated facilities such as the Dedicated IT Laboratories to develop practical skills and understand the link between the theory and practical implementation of integrated CAD, Simulation and Finite Element Analysis Techniques. Throughout the weekly class sessions and through use of the on-line support material, you will obtain skills required to successfully implement and manage a range of modern design and simulation systems, processes and methodologies.

Often working on assessment and project briefs specified by industry practitioners, you will develop solutions to meet real world problems/requirements and be able to present these to your peers, practitioners and third parties in order to obtain balanced and current feedback.

### Assessment Methods:

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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:

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#### Course support:

At the start of your course you will be assigned a Personal Tutor who will guide you through the induction process and provide support and academic counselling throughout your course on an appointment basis. They should be able to offer you advice and guidance to help you liaise with other staff and support facilities

in the School and University.

The Student Support Advisers (SSA) provides academic counselling and will be accessible throughout the week on a drop-in or appointment basis to discuss timetables, requests for extensions, requests for extenuating circumstances, general concerns about study and student life and general programme planning. The SSA will act as a first point of contact in relation to leave of absence (including returning after leave), withdrawal, transferring to another course (internal and external) and changes to mode of attendance. Your Course Leader will be available thereafter for meetings by appointment to discuss leave of absence, withdrawal, transferring to another course (internal and external), changes to mode of attendance, returning after leave of absence and direct entrants.

#### Subject support:

Tutorials, workshops, seminars and meetings - provide the primary opportunities for students to interact with staff on topics relating to modules. All modules provide at least one of these forms of face-to-face support.

Formative feedback - tutors provide personalised written feedback on most summative assessments. The mechanism for feedback from purely formative tasks varies between assessments, but will always be provided in some form. Online formative tasks often provide feedback straight away. On occasions tutors may provide generalised verbal feedback to the whole class on points relating to an assessment

Assessment and subject-based surgeries provide additional student support for subjects that students often need extra help with. They are often concentrated around the times when assessments take place.

Revision sessions are provided for many modules that have exam-like tests and enable you to interact with tutors to review parts of the course. Mock exams and tests may provide opportunities to experience an examination environment before the final summative test and give you feedback on your understanding.

#### International Students:

The International Centre will provide pre and post entry visa and immigration support and advice on and arrange for the necessary paperwork to be submitted to UKBA. They will also provide appropriate University Induction support on arrival and be a point of contact for international students throughout their stay here.

A range of social and cultural activities arranged by the International Centre will also promote the integration of international students into the whole of the University's learning community. English language support is also available through the international language centre in the University.

#### Employability in the Curriculum:

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The course is aimed at Science and Technology graduates who aspire to Engineering and Manufacturing management roles, in leading industrial organisations.

On completion of the programme, you can expect to develop your career leading to senior management where strategic thinking skills, project management experience and a deeper technological knowledge-base would be beneficial.

