

Nottingham Trent University Course Specification

Basic Course Information

1.	Awarding Institution:	Nottingham Trent University
2.	School/Campus:	School of Architecture, Design and the Built Environment / City
3.	Final Award, Course Title and Modes of Study:	MSc Structural Engineering with Materials / FT/PT
4.	Normal Duration:	Full Time = 1 year; Part Time = 2 years
5.	UCAS Code:	

6. Overview and general educational aims of the course

The MSc in Structural Engineering with Materials is designed to enhance the technical skills of graduates and experienced personnel who work in construction-related industries. It is designed to appeal to you if you are working in the broad civil engineering industry but you aspire to a senior technical or management position.

This course of technically based modules is organised in such a way as to minimise the conflict of interests between study and employment commitments. The course concentrates on the civil engineering and structural aspects of building construction as well as environmental problems affecting construction projects.

The course, which runs in full and part time modes, involves some learning at home as well as periods of attendance for lectures.

This course is particularly suited to you if you have previously obtained a UK accredited BSc (Hons) e.g. in Civil Engineering or a science, mathematics or an engineering related built environment degree. This course is accredited as a 'further learning' by the JBM to meet the educational base for Chartered Engineer.

This course aims to give you the ability to develop and extend your research methods necessary to enable you to apply your knowledge and understanding of the continually changing issues related to structural engineering and materials. You will gain awareness, understanding of and competence in the design, construction and renovation of structures. You will work flexibly by using study guides. Providing you have the appropriate entry qualifications this course also aims to give you the necessary education and qualifications to meet the Engineering Council's Matching Section criteria.

On the course you should be exposed to industry and visiting academic experts who will be teaching parts of some of the modules.

If you are a part-time student you will find that the course's flexible structure enables you to take most of the modules at weekends. Instead, if you prefer, you could take most modules on weekdays. There are study guides which contain comprehensive learning materials.

If you are unsure that this is the right course for you there is the possibility to

<p>undertake selected individual modules on a CPD basis which could then be used as an access point for formal enrolment on the full MSc course. The individual modules could be used as part of matching section learning in conjunction with other accredited awards.</p>
<p>7. Course outcomes Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.</p>
<p>Knowledge and understanding By the end of the course you should be able to:</p>
<p>Comprehensively explain and critique engineering principles used in advanced materials behaviour and structural engineering.</p> <p>Produce computer based models to systematically assess structural engineering problems and challenges and be aware of their limitations.</p> <p>Appraise the design process and adapt techniques and novel solutions to a wide range of applications. Constructively evaluate and endeavour to improve health and safety issues as they relate to the use of materials, to structural engineering and to construction practice.</p> <p>Explain and debate with technical and policy based evidence, complex sustainability and environmental issues related to the use of materials, to structural engineering and construction generally and develop strategies and procedures which take them into account.</p> <p>Identify and astutely assess risks and apply risk assessment and mitigation strategies and techniques.</p> <p>These outcomes have specific reference to the Subject benchmark statement Engineering 2015 as well as Accreditation of Higher Education Programmes: UK Standard for Professional Engineering Competence 2015</p>
<p>Skills, qualities and attributes By the end of the course you should be able to:</p>
<p>Integrate knowledge of mathematics, science, information technology, design and engineering practice to solve a substantial range of problems, some of a complex nature, apply understanding to novel and challenging situations and be aware of the limitation of the solution.</p> <p>Assess the capabilities and limitation of computer based methods for problem solving, have awareness of the future developments of IT tools, and formulate and anticipate needs.</p> <p>Investigate from available data that which is pertinent to an unfamiliar problem and apply, in its solution, computer based tools where appropriate.</p> <p>Argue efficiently and effectively at all levels.</p> <p>Generate innovative design for systems, components or processes to fulfil new needs. Critically evaluate fundamental knowledge in the investigation of new and emerging</p>

technologies.

Appraise and use new methods required for novel situations and adapt to specific purposes if necessary.

These outcomes have specific reference to the [Subject benchmark statement Engineering 2015](#) as well as [Accreditation of Higher Education Programmes: UK Standard for Professional Engineering Competence 2015](#)

8. Teaching and Learning Methods

A wide range of teaching and learning methods are employed. In most modules the teaching and learning centres on intensive sessions of key point lectures supported by study guides and other literature. The study guides are provided before the module is delivered so that you can "read in" to the subject material to gain maximum benefit from the lectures.

Each module is unique. Some are delivered by one member of staff and some by a team. Many modules include presentations by external industry specialists to give a "real life" perspective on the topics you study. This helps to bind together both the theoretical and practical elements of structural engineering and materials. Some modules include laboratory investigations and/or computer applications.

In association with other material, such as text books, technical papers and references to the internet, the study guide will typically comprise: a module programme, definitive notes, guide on the use of other material, tasks, model answers, self-assessment questions, preparatory material for examinations, and feedback questionnaires. You will be provided with the relevant and appropriate learning materials to support your studies for the duration of the course .

9. Assessment Methods

All course outcomes are assessed but not necessarily in every module. Your assessments within a module will be based upon the learning outcomes of that module.

Assignments and case studies form a significant part of the assessment process and are often the most appropriate way of assessing the higher-level learning outcomes associated with this course. They are particularly appropriate where skills to apply principles and techniques must be demonstrated. These methods help you develop an understanding of research processes during the taught modules which are developed in the Research Project/Dissertation module.

The role of 'traditional' examinations in assessing the course learning outcomes is limited but they are most appropriate for assessing specific module learning outcomes under time-restrained conditions.

Preliminary questions are often issued prior to attending the initial lectures and workshops. You can assess your own understanding and learning of specified topics and you will be able to raise any issues for clarification with the Module Leader either

prior to or during the lecture sessions. Preliminary Questions typically include a set of short-answer questions designed to reinforce the pre-reading of the learning material.

Learning portfolios contain evidence of your learning and typically might include: a study log showing the time spent on various activities related to the module; answers to self-assessment questions; small projects covering module learning outcomes not assessed in the other methods selected for the module; notes and critical reviews made whilst reading papers; articles, texts or readers together with identified queries to be raised with lecturers.

Assignments may be essays, case studies, reports and designs. They will be investigative in nature, testing understanding and application rather than just knowledge and will enable you to: develop principles; analyse, critically appraise and evaluate relevant issues; and to demonstrate creativity and sustainable thinking. Each module will have at least one major assignment where you can demonstrate your intellectual qualities, practical and personal skills as well as your understanding, application and development of module content.

Examinations assess outcomes but under time-constrained conditions and so enable you to demonstrate that you have the academic competencies and intellectual skills required at master's level.

The assessment type and methods used vary for each taught module depending on the requirements, content and learning outcomes of the module.

If you do not meet the University's regulation of a minimum aggregate pass mark and are referred you will be counselled concerning your deficiency.

10. Course structure and curriculum

The course is studied in a full time or part time mode.

Full time study will take 1 – 2 years and part time study 2 - 5 years.

Attendance will be by a combination of two different modes:

Midweek delivery. Up to 2 days a week for 13 weeks for modules which are delivered on a weekly basis. These modules will be run in parallel.

Weekend delivery. Other modules will be delivered over two intensive weekends. These modules will be delivered consecutively with a significant gap between successive weekend-delivered modules. These modules will be delivered in parallel with the midweek delivered modules.

Most of the taught modules delivered at weekends in one year will be delivered midweek the following year, and vice-versa.

This mixed mode of delivery will allow part time students, overall, to take most of their modules at weekends because different modules will be delivered at weekends in different years. From our experience of previous courses, this weekend delivery is very popular with employers.

The Research Project/Dissertation module will be studied over 40 weeks in full time study and one year and 40 weeks in part time study.

The masters award requires 180 credit points which equates to 1800 hours of study. The postgraduate diploma requires 120 credit points which equates to 1200 hours of study but does not include the Research Project/Dissertation. There are no optional modules.

The postgraduate certificate requires 60 credit points which equates to 600 hours of study. These are gained from selected modules but not the Research Project/Dissertation.

The course is modular and comprises eight taught modules including the Research Project/Dissertation. Each module carries 15 credit points, except the Dissertation which carries 60 credits.

- *Advanced Structural Engineering (15 credit points)

- *Research Project / Dissertation (60 credit points) under a new code DESN40016

- *Contemporary Themes in Structural Engineering (15 credit points)

- *Advanced Structural Analysis (15 credit points)

- *Finite Element Analysis (15 credit points)

- *Analysis and Design of Surface Structures (15 credit points)

- Advanced Strength of Materials (15 credit points)

- Advanced Construction Materials (15 credit points)

- Condition Assessment and Health Monitoring of Civil Infrastructure (15 credit points)

* These modules are shared with other courses.

The course of delivery will be given to you at the beginning of the year. The course team reserves the right to reschedule, but will give reasonable notice when that becomes necessary.

11. Admission to the course

You would typically have at least a second class honours degree honours degree or a postgraduate diploma or equivalent academic achievement in civil engineering or an appropriate built environment subject area.

Alternatively you would have proven experience in civil engineering and/or the built environment which demonstrates appropriate knowledge and skills at honours degree standard. If you are entering by this route you will need to submit comprehensive details of your achievements with evidence to substantiate your claim. This type of application will be considered with respect to the university's provision for 'accreditation for prior experiential learning (APEL). Consideration of accreditation for prior learning APL and APEL will be in accordance with the QAA's Guidelines on the accreditation of prior learning, available at:

<http://www.qaa.ac.uk/academicinfrastructure/apl/guidance.asp>

Decisions regarding the accreditation of prior learning are a matter of academic judgement. There is further detail in the university's document 'Accreditation of Prior Learning (APL)' available at:

https://ntu.ac.uk/CASQ/quality_assurance/standards_quality/44908gp.html

It is possible to use the Accreditation of Prior Learning (APL) and Accreditation of Prior Experiential Learning (APEL) to provide limited exemption of modules if you have extensive practical experience and a supporting letter from your employer. You will be required to submit a portfolio of accredited evidence matching your knowledge and skills against the specific module learning outcomes. The Course Leader and relevant Module Leader(s) will assess this portfolio and make recommendations to the Board of Examiners. APL can only be awarded for whole modules and all APL/APEL must be agreed before the course starts. This process will be used with caution until experience of your performance has been gained.

In addition, if you are an international candidate you will require an English language qualification, normally one of IELTS 6.5, TOEFL 550 or CBTOEFL 213.

If you are applying for the part-time mode you would typically have two to three years' postgraduate experience and have the support of your employer who will wish to integrate study and projects into your day-to-day work. You will probably be currently employed on significant infrastructure, and civil engineering and/or building works, either as a direct employee of local/national government, or in the private sector providing a service to local/national government and/or private sector clients.

You will probably have experience of developing and coordinating significant infrastructure, and civil engineering and/or building projects.

It is anticipated that your academic learning experience and your experience in the development and management of built environment projects, which of their nature are all prototypes, will have provided the necessary skills, application, and self-discipline

to enable you to successfully follow a programme of learning at master's level. Assessment of your experience if you are a non-graduate candidate will confirm that you have achieved the necessary skills in the course of your general experience.

The course welcomes applications from individuals from traditionally under-represented groups.

12. **Support for Learning**

At this university you will have full access to all student support services.

The university's on-line workspace / virtual learning environment (NOW) will be used to support the course's studies.

There is an induction programme which forms part of the Research Project/Dissertation module (including IT and library use) and you will receive a course handbook that provides all of the essential information about the course and the support we provide for your learning.

Most staff teaching on the course are members of one or more professional institutions applicable to civil engineering. Most staff participate in industrial activities, consultancy, research and/or the activities of their professional institutions.

The course leader oversees all students enrolled on the course and with the course administrator is easily contactable in person, by phone or by email.

The library and other learning resources are continually updated to ensure they are fit for purpose.

The University central Student Support Services offers a range of general, specialist and professional support services for students.

Whilst offering many advantages to employers and employees, one major disadvantage of part-time study can be procrastination and the sense of loneliness. Within the structure of the MSc courses a system of peer, employer, and lecturer support has been developed. This support mechanism is also fully available to full time students.

Module Leaders

You are encouraged to contact Module Leaders directly. Your queries can be submitted by telephone, mail, or e-mail.

Peer Support

At the start of each year the Course Administrator will, with your permission, circulate the telephone/fax/e-mail details of all students on the course to encourage the formation of self-support groups.

Module Programme

Each module study guide includes contact details for the Module Leaders. In addition and to help you manage your time effectively, Module Leaders will include a module programme which will set targets for the duration of the module.

13. Graduate destinations / employability

This course is designed to appeal to you if you are working in the broad civil engineering, architectural and construction industries but you aspire to a more senior positions in design practice and/or in management. This course will appeal to you if you seek to progress your career by satisfying the educational requirements necessary for advancement to Chartered Engineer status as accredited by the JBM (for the Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE) and the Institution of Highways and Transportation (IHT)). You should have much improved prospects in gaining employment with major structural engineering consulting practices or contractors.

If you are a part time student you are likely to continue with your current employer in current or more senior positions and with better prospects to move on.

If you are a full time student you would be expected to find employment in civil engineering and construction whether in structural engineering or architectural practices or contracting organisations at senior technical and middle/senior management positions.

At the end of your studies on this course you may wish to continue your academic study by undertaking a research degree programme such as a PhD.

14. Course standards and quality

This course complies with, and is subject to, the University's requirements with respect to course standards and quality. The course will have

External examiners

The Interim Course Report which provides an annual 'health check' of the course once a year. Primarily this activity serves to check everything is appropriately in place to assure the quality and standards of the provision for the next cohort of students. It also provides an opportunity to assess progress made on the Course Development Plan (articulated at the most recent Periodic Course Review) and update this where necessary. Full details are at Section 6 of the University's Quality Handbook available at http://www4.ntu.ac.uk/adq/quality_handbook/handbook_sections/index.html

Periodic Course Review –It is a mechanism to reflect on the validity, currency, and the academic quality of the provision. It is carried out once every three years involving external stakeholders and students resulting in a three-year Course Development Plan.

Course committee which monitors student feedback on module delivery.

The Course Committee is responsible for the operational management and coordination of the course. The Course Committee considers the course in term of the

statutes, regulations and provisions of the University.

The Course Committee meets at least three times each academic year, and is responsible for the monitoring and development of the course. Your cohort will be asked to elect two members of your student group to act as course representatives to this committee.

The Course Committee will be as follows:

The Head of Civil Engineering or his/her nominee

The Course Leader

The Course Administrator

Module leaders

Members of the academic staff of SADBE may be appointed as appropriate or as a reflection of their module contribution

A maximum of two representatives from each cohort of students enrolled on the Masters pathway elected by the cohort.

There are External Examiners, one of whom is an academic, and they submit an annual report on the standards and quality of the course.

The Joint Board of Moderators (JBM) of the Engineering Council accredits the course and complies with the Joint Board of Moderators' (JBM) requirements.

The subject benchmarks of the Quality Assurance Agency have been incorporated into the course's learning outcomes.

15. **Assessment regulations**

This course is subject to the University's Common Assessment Regulations located in its [Quality Handbook](#). Any course specific assessment features are described below:

There are no course specific exceptions from the University regulations.

16. **Additional Information**

Collaborative partner(s):	None
Course referenced to national QAA Benchmark Statements:	Engineering
Course recognised by:	Joint Board of Moderators
Date implemented:	September 2012, updated May 2016, Updated May 2017 for implementation 2017-18
Any additional information:	

Confirmed for 2017-18 delivery

See also the Course specification for the MSc Structural Engineering with Management.