Nottingham Trent University Course Specification

	Basic Course Information	
1.	Awarding Institution:	Nottingham Trent University
2.	School/Campus:	Architecture, Design and the Built Environment
3.	Final Award, Course Title and Modes of Study:	MSc Design: Products and Technology FT/PT
4.	Normal Duration:	FT 1 Year/PT 2 Years
5.	UCAS Code:	N/A

6. Overview and general educational aims of the course

MSc Design: Products and Technology

The MSc Design: Products and Technology course is designed to enable students to acquire advanced design, technological and manufacturing skills to enhance their potential to become leading professional product designers and technologists. The course encourages a broad and diverse range of approaches to design practice which include manufacturing, computer science and technology, artificial intelligence for control, robotics, project management, inclusive design and emerging technologies such as advanced internet techniques. The course provides opportunities to develop professional design and technology skills, and to acquire a critical understanding of the roles of advanced technologies in product development using modern tools and techniques within a manufacturing environment. In addition to providing a broader, analytical and integrated study of technologies and strategies, the course emphasizes the importance of independent learning, collaborative team working, creative problem solving and self-organisation skills. The course offers you the opportunity to develop advanced practice in your discipline and specialise in existing or emerging areas of the product design arena.

The key aim of this course is to provide you with the principles and techniques necessary for developing advanced product design and technological solutions to a range of practical problems. Utilising state of the art laboratories and prototyping workshops, computer suites and dedicated design studios, you will develop a broad understanding of emerging technologies and technological developments through an inter-disciplinary approach to the subject matter. This approach is reflected in the modules that provide a challenging and stimulating work environment to enable you to develop enhanced skills of imagination, creativity, enterprise, leadership, team building and communication.

The modules studied on the course offer students with a broad range of educational experiences, providing a grounding in Research Methods and Design Tools and providing opportunities to develop professional design research, implementation and

communication skills, and to build a critical understanding of the intersection of creativity, production and the evolving drivers of design practice. The course also benefits from the collaboration and support of both established and new links with commercial organisations, industry professionals and university experts. Industrially linked projects are strongly encouraged and supported.

The course emphasizes the importance of independent learning, collaborative team working, creative problem solving and self-organisation skills. All students develop a practice based project for their final Major Study Project via the creation of a Learning Agreement as part of the Design Research Methods module; this is written in consultation with tutors and informs the final learning outcomes for each student. Industrially linked projects are strongly encouraged and supported on an individual basis.

The main emphasis in MSc Design: Products and Technology is the exploration of the technological relationships, strategies and interfaces between the user and the product in a manufacturing context. With strong industrial relationships and input, the course aims to provide students with a rich design multidisciplinary experience, providing them with the tools, knowledge and critical thinking to drive process and practice in the commercial world.

As a student on the Product Design course, you will benefit from the internationally recognized research activities undertaken by the Product Design subject area, which has been supported by grants from variety of funding organisations including the European Union, UK Government and UK Research Councils, the Royal Society, the Arts Council, and industry. The Product Design group is regularly involved in international collaborative projects, and works closely with industry on different research and development schemes. The team also organise a number of high quality refereed international conferences and contribute to well respected research journals across the world, and liaise with policy and membership organisations for design, including the British Design Innovation and the Design Research Society.

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.

Knowledge and understanding

By the end of the course you should be able to:

- Situate your work within the context of design theory and practice and critically reflect on the wider social, ethical, economic, global, environmental and sustainability issues in your discipline.
- Demonstrate extensive knowledge appropriate to product design by applying creative and scientific design methods to the solution of product design problems.

- Demonstrate a holistic view of the design process encompassing understanding and application of the marketing, aesthetics, ergonomics, manufacturing, materials, commercial and technical aspects of product design practice.
- Demonstrate an advanced understanding of the functionality and capabilities of Computer Aided Design systems and the use of simulation or prototyping to explore and prove innovative solutions for complex design problems.
- Appraise and anticipate trends in design thinking through critical analysis of projected cultural, economic and technological developments.

Skills, qualities and attributes
By the end of the course you should be able to:

- Work independently, demonstrating self-direction and the ability to learn independently and act autonomously to meet the creative and intellectual ambitions of your design practice.
- Display the initiative to drive team outcomes and engage collaboratively with peers/colleagues while managing your time effectively.
- Demonstrate your development as a reflective practitioner by applying increased critical judgment and originality in relation to solving problems and evaluating complex design solutions against conflicting constraints.
- Create conceptual design outputs with clearly defined parameters encompassing the whole of the design process from initial brief to manufacture of production prototypes or simulations.
- Communicate appropriately and effectively in spoken, written and visual media.
- Show inventiveness and independence of thought in the application of knowledge and skills in product design that identifies and creates new opportunities, furthers your professional development and demonstrates the advancement of your profession.

8. Teaching and Learning Methods

A learning and teaching framework has evolved within the Product Design courses within the School over a number of years. Via regular summative and formative feedback, review and reflection, best practices have been incorporated into the teaching and learning across all modules. This framework enables collaborative working, consultation and presentations between all students studying at postgraduate level within the subject area.

The learning and teaching strategies are designed to develop independent learning and research skills. Taught modules will be centred on lectures supported by seminars, workshops (following induction) and tutorials. A range of assessment and presentation methods are employed, and where possible or relevant are complimentary to other modules and projects.

The Product Design Community

The Product Design Subject Area places a great deal of importance on the development of a strong student design community, based around the utilization of studio based learning, one which aids supportive, peer-to-peer learning and helps to set work in a professional context. The design community is further supported through the provision of high quality workshop recourses and expert technical support available to all students. Product Design at NTU is open to a wide breadth of creative approaches, this enables you to explore and experiment with new methodologies, styles and techniques and develop your practice in a nurturing environment. The range of approaches to developing the design community includes:

- Structured Induction Events
- Structured Learning Agreement
- Skills Audit
- Team/Multidisciplinary Working
- Studio Working
- Established Student Support (Language & Student support services)
- Workshop Mentorship
- Dedicated regular postgraduate team meetings.
- Staff student liaison meetings (once per term)
- Group tutorial system

The Learning Agreement will enable you to make informed choices about your Major Study Project, and to foster a spirit of interdisciplinarity and teamwork. The content of the Major Study Project module is defined by your Learning Agreement and is agreed during the first element of the module, this ensures that you select a project based on your own aspirations and knowledge, which is driven and supported by key events and lectures within the postgraduate framework. The learning agreement is a negotiated document to be developed and agreed by you, your academic supervisors and other potential collaborating parties involved in the project. The learning agreement defines the Major Study Project module aims and objectives, its resource requirements and aids the planning of work relative to the learning outcomes for the module

The Skills Audit responds to the potentially disparate levels of knowledge and understanding of entrants into the course. The Skills Audit for each individual student ensures that modules incorporate the appropriate systematic and linear activities and support workshops to address your individual learning requirements. These audits appraise levels of understanding and knowledge in the context of your chosen course of study. Based on evidence gathered through early induction activities, it enables you to identify areas which need to be focused on, as well as emphasising the need for you to take responsibility for negotiating your learning; identify your strengths, weaknesses

and areas for development within various skills areas.

Learning and teaching methods will comprise lectures to introduce and develop concepts and to explore the application of these concepts; studio working, workshops and laboratories to develop skills and appreciate concepts; seminars and tutorials to provide academic support; case study and project work to develop a deeper understanding of concepts and applications; and project presentations by students to develop confidence and identity in professional practice.

Teaching materials will be available to support the learning process utilising new technologies for blended and e-learning where applicable. Such teaching materials will typically comprise written information, recommended reading, tutorial questions, self-assessment tests and computer based learning and teaching instructions. It is a normal practice of the School to invite external professional staff to contribute to learning material and to give lectures or run workshops. The Web and the University's own NOW system will also be used for communication between students and staff.

Working as a member of a small team, the Professional Collaboration module will provide challenging simulated work environments to enable you to engage in the design and management of real-world design projects with industrial partners. As a result of this collaborative project you will be able to demonstrate skills in team work, strategy for the creative industries, leadership, problem solving and decision making.

The MSc Major Study Project module that runs across the whole course will allow you to integrate new knowledge gained in the taught modules, and through a range of activities and outcomes, to demonstrate your ability to bring business acumen and design flair together in the creation of new forms of entrepreneurial activity.

Modules are designed to expand student's awareness and understanding of Product Design while developing a wider appreciation of design's role within modern society, and the impact of new thinking in business on the design industry. A core competency of a designer at this level is for them to develop a reflective approach to their practice necessitating independent, critical thought, inquiry, analysis and creative problem-solving. All these courses will promote intellectual curiosity and the development of designers as multi-faceted professionals, confident in interdisciplinary practice. The course also focuses on the needs of future professional design practice and work to promote the understanding of both local and international business and support entrepreneurial approaches to developing products and services, and the development of strategic design for business success.

9. Assessment Methods

The course uses a variety of methods of assessment to ensure that you can demonstrate the range of higher-level learning outcomes and these are tested through a series of coursework submissions. Assessment will take place at the conclusion of each module or element.

Assessment throughout the courses is based on the submission of coursework. Tasks and briefs, often multiple, are set within modules and structured to enable students to address the course learning outcomes, ensuring that assessment is directed towards the achievement of those outcomes and are discipline specific. Assessment methods are selected such that they are the most effective in enabling students to demonstrate achievement of outcomes. All module learning outcomes are aligned to assessment and grading criteria that describe the level of learning being achieved against each learning outcome. Individual modules create learning opportunities which encourage, reinforce and enhance students' learning processes, developing their ability to think, evaluate, create, make judgements, communicate and act. The courses use a variety of assessment techniques so that a team of academic assessors may evaluate the quality of your output for the modules and elements; evidenced by project development work and outcomes. These assessments are derived from the following forms of evaluation:

- Presentations: Oral, Audio/Visual (group/individual)
- Reports and reflective journals (group/individual)
- Reviews of design development work and models/prototypes (realised in 2D, 3D or 4D formats)
- Exhibitions of work/project outcomes
- Technical Thesis

All modules on the PG Design: Products programmes are assessed through 100% course work.

In order that student work is appropriately judged and marked consistently, assessments are panel marked (typically by 2-3 academic staff) for presentations, reviews of design development work and assessment of exhibitions or sample marked and checked ('moderated and verified') by other academic colleagues for the reading of reports, journals and technical thesis.

The ethos of combining theory and practice is strongly reflected in the nature of assessments. All, are coursework based, requiring students to undertake practical work together with research and critical evaluation in order to demonstrate the link between theory and practise.

You will receive regular verbal and written feedback about the progress you are making at each tutorial through discussion with staff and peers and via completion of tutorial

record forms. You will also receive feedback from staff and students during presentations, workshops and seminars. At the end of each module you will receive written feedback supported by tutorial contact where you can discuss the outcomes of the assessment in more detail.

10. Course structure and curriculum

The MSc Design: Products and Technology course can be undertaken either on a full-time basis over one year (53 weeks), or on a part-time basis over two years (106 Weeks). The course learning outcomes and curriculum for the full-time and part-time modes of study are the same regardless of the attendance mode. There is a single start date for the course (for both FT & PT routes) which commences annually in October. The year is broken into three fifteen week terms (six for PT route) and includes breaks for public holidays, University closure days and a summer study period.

<table>
<tr><td colspan="3">1 Year Full-Time Route (3 x 15 week Terms)</td></tr>
<tr><td>Term 1.</td><td>Term 2.</td><td>Term 3.</td></tr>
<tr><td>Research Methods
20 Credits/Core</td><td>Professional Collaboration
20 Credits/Core</td><td rowspan="3">Products and Technology: Major Study Project
Element 3:
Realisation & Evaluation
Core</td></tr>
<tr><td>Design Tools
20 Credits/Core</td><td rowspan="2">Products and Technology: Major Study Project
Element 2:
Management & Manufacture
Core</td></tr>
<tr><td>Products and Technology: Major Study Project
Element 1:
Design & Emerging Tech
Core</td></tr>
</table>

<table>
<tr><td colspan="6">2 Year Part-Time Route</td></tr>
<tr><td colspan="3">Year 1 (3 x 15 week Terms)</td><td colspan="3">Year 2 (3 x 15 week Terms)</td></tr>
<tr><td>Term 1</td><td>Term 2</td><td>Term 3</td><td>Term 1</td><td>Term 2</td><td>Term 3</td></tr>
<tr><td>Research Methods
20 Credits/Core</td><td>Design Tools
20 Credits/Core</td><td colspan="2">Products and Technology: Major Study Project
Element 2:
Management & Manufacture Core</td><td colspan="2" rowspan="2">Products and Technology: Major Study Project
Element 3:
Realisation & Evaluation
Core</td></tr>
<tr><td colspan="2">Products and Technology: Major Study Project
Element 1:
Design & Emerging Tech
Core</td><td colspan="2">Professional Collaboration
20 Credits/Core</td></tr>
</table>

The course comprises of four modules, three of which are 20 credit point (15-week duration FT/30-week duration PT) dedicated to developing different aspects of the designer's skills, knowledge and experience while the fourth module is a larger 120 credit point module dedicated to the individual student's own personal specialist project. The Products and Technology: Major Study Project module runs for the entire duration of the course and is split into three Elements which are assessed at the end of each term (or the end of each second term for part-time students) and culminate in a

public exhibition at the end of the course.

Summary of Course Structure and Curriculum

1. Design Research Methods (20 Credit Point: Core Module/Shared with MA Design: Products and Furniture)
2. Design Tools (20 Credit Point: Core Module)
3. Products and Technology: Major Study Project, Element 1: Design & Emerging Technologies (part of the 120-credit point module/Core Module)

Assessment points for the above three modules/elements are held in week 15 for full-time students or week 30 for part-time students.

4. Professional Collaboration (20 Credit Point: Core Module/Shared with MSc Design: Products)
5. Products and Technology: Major Study Project, Element 2: Management & Manufacture (part of the 120-credit point module/Core Module)

Assessment points for the above two modules/element are held in Week 30 for Full-Time students or Year 2, Week 15 for Part-Time students.

6. Products and Technology: Major Study Project, Element 3: Realisation & Evaluation (part of the 120- credit point module/Core Module)

The final assessment point for the above module is held during the final weeks of the Postgraduate year (Year 2 for PT).
Achievement of 180 credit points at master's level leads to the award of a Master of Science in Design: Products and Technology.

11. Admission to the course

Entry requirements

For current information regarding all entry requirements for this course, please see the `Applying' tab on the course information web page.

12. Support for Learning

The School is committed to assisting you in achieving the best results possible during your studies, providing you with a wide range of academic support and advice.
A comprehensive learner support system is adopted by the course, which also can include input from the University and students' union, tailored to meet your needs.

The School is keen that all students, irrespective of background and characteristics such as age and nationality, have equal opportunities to succeed with their studies. There is a section in NOW for students within the school to access materials to help you with your studies.

Induction courses will run at the beginning of your studies and will ensure that you are made aware of the full range of support facilities in the University as well as giving you specific information about resources, procedures and practices needed to undertake the course. These include Health and Safety, workshop practices, and library induction. Welcome and induction courses are shared across the subject area postgraduate courses, encouraging a cross disciplinary student community.

You will receive support throughout your studies from our experienced and committed teaching and technical support staff. Staff members teaching on the course are members of professional institutions and most are active researchers, many undertaking industrial consultancy.

The Course Leader is responsible for the day-to-day operation of the course, with Module Leaders in charge of the separate module learning activities and assessments. Course Managers are responsible for the overview of all post graduate provision within the subject area and works closely with Course Leaders to ensure parity and a high level of student experience across courses. You will as part of your studies be allocated a personal supervisor, who will provide academic and pastoral support as appropriate. School and University Resources, including dyslexia support, counselling services and language support, are available if required. Subject specialists from careers service, and library and learning resources are also available to support you during your studies.

Project work on this course is well supported by extensive resources including the machining and manufacturing workshop, well equipped laboratories of wide range of subject areas, modern CAD/CAM studios, and a dedicated studio for the Masters students in the Product Design department. The HIVE business incubator unit, based at Nottingham Trent University, works closely with this course to help the graduates to facilitate the formation of their own company and complementary product solutions. The staff will help secure any intellectual property rights resulting from the course activities.

In addition to email, social, online media and the University's virtual learning environment (NOW), are used by individual module and course leaders to communicate effectively with students.

If you are an international student and English is not your first language, language

support can be provided by the University where appropriate to enhance your learning experience and to improve your presentation skills. If necessary, English language classes are available from the University Language Centre. These classes form a course of English for Academic Purposes and are separate from the degree course. The University Student Support Services offer a range of general, specialist and professional support services for students.

13. Graduate destinations / employability

This course has been developed to meet the needs of industry in the UK and overseas. It is specifically designed to increase the employability of its graduates in a technological and engineering design context by identifying new product opportunities and conducting projects in collaboration with a range of industrial partners. You will become more strategically aware, technically literate; communicate concepts and outcomes at an advanced level in an ever-changing global market place. On completion, graduates will have acquired skills and knowledge to set up their own businesses, to work in manufacturing industries, consultancies, and research and development organisations, or to progress to PhD study by engaging in further research.

The University Employability Service is available to all students, offering individual consultation and support.

14. Course standards and quality

There are well-established systems for managing the quality of the curriculum within the School. The course is subject to, and fully complies with, the University's requirements in respect of course standards and quality; this involves:

1. The appointment of external examiners to the course. External examiners are appointed to each course and report annually on the appropriateness of the curriculum, the quality of student work and the assessment process.
2. Monitoring of the course and the production of an annual Interim Course Report. At the end of each year the Course Leader writes an evaluative report, informed by staff and student feedback. This is then discussed by the Course Committee and the School Academic Standards and Quality Committee and actions are identified.
3. Periodic review of the course. Periodic Course Review is the mechanism by which course teams reflect on the validity, currency, and the academic quality of the provision once every three years. This is a face-to-face discussion with external stakeholders and students centering on key data sets provided in advance of the meeting to enable appropriate consideration of the current and future quality and standards of the course. The outcome of the review is a three-year Course Development Plan.

4. A Course Committee covering all postgraduate courses within the department of Product Design are held three times a year, student representatives, elected by their peer group, attend and contribute to discussion.
5. Staff/Student liaison committees are held three times a year where all postgraduate students are invited to attend.
6. Formal module evaluation is gathered by anonymous questionnaire at the culmination of each module.

The course is referenced to the QAA generic descriptors for level 7 (master's level courses) taken from the QAA UK Quality Code for Higher Education October 2014 and informed by the Institution of Engineering Designers (IED) Competence and Commitment Standards for Chartered Technological Product Designer status.

15. **Assessment regulations**

This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and 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:	The course is referenced to QAA Benchmarks for Masters Level, NTU Postgraduate and Graduate Attributes and all learning outcomes are expressed at Masters Level (QSF Level 7)
Course recognised by:	
Date implemented:	
Any additional information:	

None