Programme Specification

BSc (Hons) Design Engineering (Top Up)

1. Programme title	**BSc (Hons) Design Engineering (Top Up)**
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Details of accreditation by professional/statutory/regulatory body	
5. Final qualification	Bachelor in Engineering with Honours Design Engineering
6. Year of validation **Year of amendment**	
7. Language of study	English
8. Mode of study	FT/PT

9. Criteria for admission to the programme

This programme is aimed at applicants seeking qualify to degree level having successfully completed an HND or a Foundation Degree in a suitable subject.

International applicants whose first language is not English are required to have sufficient qualifications in English. The most common English Language requirements for international students are IELTS

6.0 or TOEFL (paper based) 550 or TOEFL (internet based) 79 with

specified minimum scores for each component.

Application from mature applicants with suitable life skills and experiences are also welcomed and will be considered on an individual basis.

10. Aims of the programme

This programme aims to produce competent Design Engineers capable of playing an active role in formulating, meeting the challenges and opportunities arising in contemporary industrial and commercial practice.

Design in this programme is seen essentially as a practice both in the sense as an approach to problem solving and as a working method. Students will develop core design capabilities, which are developed and enhanced progressively through the course.

This programme explores the principles underlying the design and implementation of up-to-date digital systems needed in a variety of problem domains and provides the opportunity of realising such systems.

The programme's educational aims are:

Instil design thinking in engineering problem solving;

Build confidence to develop products and systems incorporating up- to-date electrical and/or mechanical components along with the

associated software programmes;

Develop confidence in the application of analytical and technical skills to undertake detail level design informed by a sound understanding and knowledge of design engineering through the concept, embodiment and validation stages of electronic product or systems development;

Develop ability to apply these principles and methods in the practice of design engineering;

Prepare individuals to engage meaningfully with projects both individually as well as in a team setting;

Develop the ability to communicate ideas effectively, verbally, in reports and by means of active participation in industry sponsored live projects;

Raise awareness of the roles and responsibilities of Professional

Design Engineers and of social and commercial environments in which they work;

Develop practical knowledge of material properties, appropriate manufacturing processes and their cost effective use in the design and improvement of engineered products, processes and system

11. Programme outcomes

A. Knowledge and understanding

On completion of this programme the successful student will have knowledge and understanding of:

1. *Scientific principles and methods necessary* to underpin education in engineering, to enable the modelling and analysis of non-routine engineering systems, processes and products, and collect and interpret data and draw conclusions in the solution of familiar engineering design problems recognising their limitations.
2. Concepts, principles and theories of the design process and an appreciation of their limitations.
3. A systems approach to solving

Teaching/learning methods

Students gain knowledge and understanding takes place through a combination of lectures, seminars, exercise classes, design build and test projects, forensic deconstruction, CAE and IT workshops, laboratory classes, industrial visits, group and individual project work, experimenting, constructing, analysing, assessing and discussing and self study.

Assessment Method

Students' knowledge and understanding is assessed by technical reports, coursework assignments, essays, presentations, and practical in-class tests.

engineering problems within the context of Design Engineering. 4. Understand analytical techniques and engineering science relevant to Design Engineering. 5. The issues involved in systems engineering and the range of approaches used in industry to manage the resulting complexity. 6. Using new technologies and applications relevant to Design Engineering. 7. User-focussed design practice. 8. Working with clients. 9. Commercial and business practices in relation to new product development. 10. Management and business practices used in engineering. 11. Professional and ethical responsibilities of engineers.	
B. Cognitive (thinking) skills On completion of this programme the successful student will be able to: 1. Analyse and solve engineering problems using appropriate techniques and through critical thinking. 2. Model and analyse relevant engineering systems. 3. Engagement with the design process. 4. Use of appropriate computer based methods for solving design engineering problems. 5. Fully evaluate external influences on the design process. 6. Innovatively design appropriate systems, components or processes.	**Teaching/learning methods** Students learn cognitive skills through design projects, problem solving activities and through report writing. **Assessment Method** Students' cognitive skills are assessed by the products and systems design, with particular reference to their engagement with the design process and by coursework comprised of reports and essays.
C. Practical skills On completion of the programme the successful student will be able to:	**Teaching/learning methods** Students learn practical skills through design projects, specific skills inputs and set exercises.

Demonstrate knowledge and understanding of the role and limitations of common ICT tools and to specify requirements for computer-based engineering design tools to solve problems. *Ability to apply engineering design and design management techniques, taking account of a wide range of commercial and industrial constraints in engineering projects.* *Plan, manage and undertake a design project, team or individual, including establishing user needs and technical specification, concept generation and evaluation, embodiment and detail design work, verification and review.* *Ability to evaluate technical risk with an awareness of the limitations of possible solutions.* *Use relevant laboratory and test equipment.* *Use 2D and 3D CAD to prepare models.* *Physical model making and prototyping.* *Interfacing and system integration.* .	**Assessment Method** Students' practical skills are assessed by individual and group projects, lab reports, coursework assignments and practical tests.
D. Graduate skills On completion of this programme the successful student will be able to: 1. Communicate effectively in writing, verbally, graphically and through presentations to groups. 2. Apply mathematical methods to solving problems. 3. Demonstrate leadership skills and the ability to work effectively as a member of a team. 4. Plan and manage projects effectively 5. Write computer programmes and use CAE software and general IT tools and provide technical documentation. 6. Apply a scientific approach to the solving of problems.	**Assessment methods** *Students' graduate skills are assessed by coursework assignments including design reports, laboratory reports, other written reports, problems sheets, case studies, software programs, industrial placement, group and individual project reports.* .

7. Learn independently and to adopt a critical approach in investigation. 8. Develop initiative and creativity in problem solving. 9. Autonomous practice. 10. Design research methods.	

12. Programme structure (levels, modules, credits and progression requirements)
12. 1 Overall structure of the programme
See page 20

12.2 Levels and modules		
Level 3 (Year 3/4)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS

Students must take all of the following: PDE3253 Design Dissertation (30 credits) PDE3440 Design and Innovation Management (30 credits) PDE3400Design Engineering Major Project (60 credits)		Student must pass ALL modules to graduate.

12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)	
Module level	**Module code**
3	PDE3400

13. Curriculum map
See attached.

14. Information about assessment regulations
Please refer to the University Regulations for generic guidance and the PDE Programme Handbook, under section “Assessment”, for additional information.

15. Placement opportunities, requirements and support (if applicable)

Thick Sandwich placement is not available for the BSc Design Engineering (Top Up)

16. Future careers (if applicable)

Whilst on the programme students are encouraged to develop a commercial approach to design engineering via supported live projects with industrial partners and industrial placements. They undertake contextual studies into the nature and contexts of the profession. They interact with a variety of guest lecturers with professional backgrounds. They are supported in developing their exit portfolio, a CV and a career entry plan.

Through these experiences they come to understand design in a commercial context, the nature of the design industries and to plan for their own career entry development

17. Particular support for learning (if applicable)

Meeting the learning outcomes of this programme requires active participation in the subject and the development of autonomous practice in meeting design objectives. Supporting this level of active participation and autonomous practice is achieved via regular tutorial contact with academic staff, productive and informed support from technical staff and the use of online, resource-based learning materials where appropriate.

The subject provides extensive studio, laboratory and workshop facilities where students can engage with their coursework assignments in a supported and productive environment.

18. JACS code (or other relevant coding system)	*H150 – Engineering Design*
19. Relevant QAA subject benchmark group(s)	Engineering

20. Reference points

The following reference points were used in designing the programme:

- Subject Benchmark Statement: Engineering, The Quality Assurance Agency for Higher Education, 2006.

- Middlesex University Regulations
- Middlesex University and School of Engineering and Information SciencesTeaching Learning and Assessment policies and strategies

University policy on equal opportunities.

21. Other information

NA

Appendix 2: Curriculum Map