THE GLASGOW SCHOOL OF ART	Programme Specification

1. Programmes:

Programme Title	UCAS Code (Completed by Registry post approval)	GSA Code (Completed by Registry post approval)
BEng/MEng Product Design Engineering	H3W2 / H3WG	DEBNGPD

Head of School	Irene McAra McWilliam
Head of Department/Programme Leader	Craig Whittet
Programme Contact	Craig Whittet

Minimum Duration of Study	BEng (48) MEng (60)
Maximum Duration of Study	Click here to enter text.
Mode of Study	Full-time
Award to be Conferred	Bachelor of Engineering in Product Design Engineering Master of Engineering in Product Design Engineering
Exit Awards	Stage 1 CertHE (Engineering Studies) Stage 2 DipHE (Engineering Studies) Stage 3 BSc (Ord) Stage 4 BEng / BSc (Hons) Stage 5 MEng
Source of Funding	Scottish Funding Council

2. Academic Session:
2011-2012

3. SCQF Level:
10/11

3.1 Credits:
480/600

4. Awarding Institution:
The University of Glasgow

5. Teaching Institutions:
The Glasgow School of Art and The University of Glasgow

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6. Lead School/Board of Studies:
School of Design

7. Programme Accredited By:
Institution of Mechanical Engineers (IMechE)
Institution of Engineering Designers (IED)

8. Entry Qualifications	
8.1 Highers	**BEng (4 year course)** **AAAB including Maths and Physics or** **Engineering/Technological Studies** **MEng (5 year course)** **AAAA or AAABB including Maths and Physics or** **Engineering/Technological Studies** **Faster Entry (Y2)** **Advanced Highers at AA in Physics and Maths, plus 2 other** **Highers at AB including an Art or Design subject or**
8.2 A Levels	**BEng** **ABB including Maths and Physics** **MEng** **A Levels at AAB including Maths and Physics** **Faster Entry (Y2)** **AAB in Maths, Physics and an Art or Design subject**
8.3 Other	Y2 Entry also requires applicant to complete a Design Engineering assignment and attend interview.
8.4 IELTS Score Required on Entry	IELTS 6.5 (with no subtest less than 6)

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9. Programme Scope:

The PDE programme's rationale is to meet a growing industry demand for confident design engineering graduates, able to deliver and demonstrate a comprehensive blend of sound theoretical technical understanding coupled with creative practical application in the development of products to meet human needs.

The integration of two distinctive educational cultures is the essence of PDE. This experience and mix of design studio work with engineering theory and labs provides an introduction to the requirements of working in industry.

The practical application of these skills is primarily through studio engagement, and students will develop skills in PRODUCT – What the Product you're designing on has to do and have. PROCESS – How you carry out the activity of designing products and PRESENTATION – Externalising and Representing your ideas.

Embedded in these will be an ever increasing application of Quality, Responsibility, Resolution and Relevance as students progress through the programme.

The PDE studio programme at the Glasgow School of Art is centred around design project activities. The overall approach of the PDE studio is 'Core-Explore'.

The early years (Core) are designed to build familiarity and skill with a variety of tools, increasing confidence in the design process, and to develop creativity and the exploration and expression of ideas.

The later years (Explore) of the degree focus on the acquisition of in-depth technical skills, and their application to substantial design engineering projects. The study of contextual issues within the studio programme relates work to entrepreneurial, economic, business, and social considerations.

10. Programme Aims:

The aims of the programme are:

The GSA PDE studio programme aims to:

- provide a sound education and broad basis for a career in design engineering, product development, the creative management of the development and manufacturing processes, and other related disciplines

- develop your awareness of the relationship between products and human users, and the ways in which product solutions can address human-centred opportunities and problems

- develop your knowledge base in and understanding of technologies, materials and manufacturing methods

- develop your confidence and competence in research and investigation, creative synthesis, evaluative judgement, visualisation, and the application of a wide range of other problem-solving methods to support the design engineering process

- develop critical, analytical, problem-based learning skills

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- develop your professionalism and general transferable skills, including communication and interpersonal skills, to prepare you for graduate employment

- through contact with industry, provide you with an understanding of the requirements, terminology and standards of the profession you are entering

- provide a curriculum which is accredited by the Institution of Mechanical Engineers (to Chartered status for MEng stage only)

- provide you with opportunities to develop skills required for both autonomous practice and team-working

Each year /stage of the course occupies one academic year.

Students are involved in a wide range of design activities including awareness of market, technologies, materials and manufacturing, human factors and aesthetics. Skills in communication, drawing and visualisation, model-making and prototyping, IT/CAD/CAM and project management are also developed.

Students are exposed to industry throughout the programme by means of visits, lectures, seminars and workshops, and the final years involve an individual major project often organised in close collaboration with industry or other external party/collaborator.

Throughout the programme, the studio at GSA is an environment in which the engineering sciences from the lectures and labs at GU are increasingly applied and integrated, together with the practical and imaginative application of manufacturing, marketing and business issues.

At the end of Year 3, if you meet the appropriate progression requirements, you can choose between the BEng pathway (Year 4), or the MEng pathway (Years 4 and 5).

10.1 Stage 1 Aims:

Stage 1 (CertHE/PGCert): Product Design Engineering 1 (PDE1)

- By the end of Year 1, you will be expected to have a developed awareness of, and confidence in the learning outcomes of an introductory programme of studio activity.

10.2 Stage 2 Aims:

Stage 2 (DipHE/PgDip): Product Design Engineering 2 (PDE2)

- By the end of Year 2, you will be expected to have developed the knowledge and skill base acquired at the previous year, and to have become conversant in the learning outcomes of an intermediate programme of studio activity.

10.3 Stage 3 Aims:

Stage 3 (BSc/Ordinary): Product Design Engineering 3 (PDE3)

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• By the end of Year 3, you will be expected to have developed the knowledge and skill base acquired at the previous years, and to have become proficient in the learning outcomes of an intermediate programme of studio activity with increased responsibility for your own learning.

10.4 Stage 4 Aims:
Stage 4 (BEng / BSc Hons): Product Design Engineering 4B (BEng) **or 4M** (MEng) **(PDE4B or PDE4M)** • By the end of Year 4, you will be expected to have developed the knowledge and skill base acquired at the previous years, sufficient to have undertaken negotiated self-directed studio activity of study to a professional level, potentially involving a degree of external collaboration.

10.5 Stage 5 Aims:
Stage 5 (MEng Hons): Product Design Engineering 5M (MEng) **(PDE5M)** • By the end of Year 5, you will be expected to have developed the knowledge and skill base acquired at the previous years, sufficient to have undertaken a negotiated self-directed enhanced programme of studio activity to an enhanced professional level potentially involving a high degree of external collaboration.

11. Intended Learning Outcomes of Programme:
Each year of the PDE studio programme, or phase or project within a year, will have Intended Learning Outcomes. At the completion of any particular phase or year of study, therefore, it is important that students can demonstrate that they have acquired the Learning Outcomes. At each level of the programme, studio staff will make clear which Learning Outcomes apply. The Learning Outcomes are the main focus of the studio experience. Further to these Learning Outcomes, staff will introduce: Responsibility, Resolution and Relevance. Embedded in all of these will be the drive to increase quality in all aspects of learning, experience and projects in Product Design Engineering. The list below is generic in that it applies, to a greater or lesser extent, to all years of the PDE programme. However, in the earlier years of the programme, students will clearly will not be expected to acquire as many Learning Outcomes, or to such depth, as at later years. **PRODUCT – What the Product you're designing on has to do and have.** At the end of this programme you should be able to demonstrate your application of and gain an increasing knowledge & understanding of: **Human Interaction:** Meeting the user's functional, aesthetic and emotional needs. Including but not limited to:User Cycle, Experience and Feedback, Aesthetics, Semantics, Symbology, Form and Colour

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Materials and Manufacturing:
Appropriate selection and specification

Technologies and Components:
Choosing and Selecting Appropriate Technologies and Components and incorporating their function within the product

PROCESS – How you carry out the activity of designing products.
As you progress through the programme, you should gain an increasing ability to apply your knowledge of Product in practical problem-solving situations, eventually in situations similar to those found in a professional working environment. Many of these skills are more 'hands-on' and specific to (but not limited to) the Product Design Engineering programme. At the end of this programme you should be able to demonstrate your application of:

Use of Applicable Engineering Theory:
Incorporating theoretical (e.g courses taught at the University of Glasgow) understanding into design engineering work

Economic & Commercial Issues:
Product Costs vs Volumes vs Manufacturing Methods

Environmental, & Societal Issues:
Ecological and sustainability & issues from Politics and Society that affect the development of products.

Professional and Ethical Responsibilities:
Evidence of appropriate engagement with users and external contacts demonstrating correct moral conduct

Contempary, Contextual Historical Design issues:
Past, present & future products, technologies and market influences that can inspire and influence your design

Creativity:
How creative your ideas are and how you use techniques to help

Design Process and Investigation:
Developing your design, concept generation & evaluation, iteration, detail development embedded in Design including:
Analysing:
Breaking down a variety of information, issues, structures & objects, from simple to complex, in order to understand the purpose, significance, characteristics and inter-relationship of their component parts.
Synthesising:
Creatively combining knowledge, ideas and physical objects to generate new knowledge, ideas or objects which fulfil a defined purpose
Evaluating:
Weighing-up knowledge, ideas and objects, against appropriate criteria, in order to decide their usefulness and relevance to the task in hand.

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Learning skills:
Response to staff input & feedback, learning from studio experiences; responding to staff advice.

Commitment and Energy:
Engagement with studio activity; attendance & personal timekeeping

Project and Time Management:
Managing & scheduling project activity

Research Activity:
Appropriate information gathering; analysis; extracting key issues & product requirements

PRESENTATION – Externalising and Representing your ideas.
A range of skills are important in many aspects of life, and across a variety of personal and professional situations. At the end of this programme you should be able to demonstrate your application of knowledge & understanding of:

Project Documentation:

Externalising, recording & developing ideas; Design Journal, Logbook, research findings

Presentation & Communication of Ideas:
Visual & verbal communication of ideas to others; presentation sheets & drawings

Contributory Skills

Freehand Drawing:
freehand sketching & drawing

Formal Drawing:
orthographic & 'technical' drawing, normally to scale, including isometric/perspective, by hand or computer

Physical Modelmaking:
appropriate use of physical modelmaking to assist design process

3D Digital Modelling (CAD):
e.g. Rhino, Solidworks

2D Digital Image Manipulation:
e.g. PhotoShop & similar programmes; scanning images

General IT Skills:
'office' applications such as word processing, spreadsheet, internet usage, network usage

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11.1 Intended Learning Outcomes of Stage 1

In addition to the 3P's, students will be reviewed or assessed on the work, as presented in their project documentation, that evidences level of engagement with and the quality of achievement of the intended learning outcomes for PDE1 listed here.

- **Demonstrate ability to take a problem or challenge and develop a solution that meets this problem or challenge.**

- **Demonstrate ability to use freehand drawing, desktop modelling, and workshop skills as part of an effective and creative design process.**

- **Demonstrate ability to combine images and text on paper as an integral part of your design process and as a way of presenting your work to others.**

- **Have an elementary awareness of the properties of different materials and components and their appropriate and efficient use.**

- **Demonstrate ability to manage your time, when working individually and in teams, in order to produce a given result in a specified time**

- **Demonstrate ability to properly use some assistive techniques for creativity, concept generation, evaluation and selection**

- **Demonstrate an awareness of the possibilities offered by embedded computing in products, and will have had experience in using the fundamental concepts of computer programming**

- **Apply the design process to a range of set design problems addressing user needs and technical requirements.**

11.2 Intended Learning Outcomes of Stage 2

In addition to the 3P's, students will be reviewed or assessed on the work, as presented in their project documentation, that evidences level of engagement with and the quality of achievement of the intended learning outcomes for PDE2 listed here.

- **Apply the design engineering process to a range of set design problems addressing user needs and technical requirements.**

- **Design products that support a user experience within a specified context.**

- **Apply a range of engineering knowledge and technical skills to resolve a design problem in a *real* situation.**

- **Work effectively in a team as well as individually; exercising initiative and taking account of own as well as others' roles and responsibilities.**

- **Present and communicate your design project clearly and concisely through the appropriate use of text, visualisations and illustrations, models and prototypes.**

11.3 Intended Learning Outcomes of Stage 3

In addition to the 3P's, students will be reviewed or assessed on the work, as presented in their

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project documentation, that evidences level of engagement with and the quality of achievement of the intended learning outcomes for PDE3 listed here.

- **Apply the design process to a range of design problems addressing user needs and technical requirements.**

- **Design products that support a user experience within a social context.**

- **Apply a range of engineering knowledge and technical skills to resolve a design problem in a *real* situation.**

- **Work effectively in a team as well as individually; exercising initiative and taking account of own as well as others' roles and responsibilities.**

- **Present and communicate the design project clearly and concisely through the appropriate use of text, visualisations and illustrations, models, prototypes and engineering drawings.**

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11.4 Intended Learning Outcomes of Stage 4

In addition to the 3P's, students will be reviewed or assessed on the work, as presented in their project documentation, that evidences level of engagement with and the quality of achievement of the intended learning outcomes for PDE4 listed here.

- **Apply the design process to a range of design problems addressing user needs and technical requirements.**

- **Design products that support a user experience within a social context.**

- **Apply a range of engineering knowledge and technical skills to resolve a design problem in a real situation.**

- **Work effectively in a team as well as individually; exercising initiative and taking account of own as well as others' roles and responsibilities.**

- **Present and communicate design project clearly and concisely through the appropriate use of text, visualisations and illustrations, models, prototypes and engineering drawings.**

- **Demonstrate an appropriate/specific manufacturing processes, and present them fully detailed.**

- **Demonstrate how CAD/simulation tools can be applied to design concepts in order to refine, simulate and prepare data for manufacture.**

- **Demonstrate an understanding of the costs involved in manufacturing.**

- **Demonstrate an ability to develop questionnaires; interview and reporting skills and understand how engineers operate in industry.**

- **Demonstrate technical and environmental factors that influence the ability to innovate.**

- **Identifying and addressing relevant aspects of sustainability and environmental impact.**

- **To work collectively in a group and develop: present a project brief based on interviewing a client.**

- **Demonstrate understanding of the processes of successful implementation of innovative projects**

- **Demonstrate understanding of the management of risk.**

- **Demonstrate of skills and capability in: Critically engaging with and evaluating texts and journal articles and extrapolate from existing data and information, likely future trends of concern to product design engineers.**

- **Understanding the development of design ideologies and their influence**

- **Understanding the main influences on product development strategies**

- **Understanding the social, economic and environmental implications of technological**

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- **development**

- **Explaining how this knowledge is of value in the design of consumer and capital goods**

- **Carry out focused research and investigations.**

- **Apply the design process to a range of design problems addressing user needs and technical requirements.**

- **Design products that support a user experience within a social context.**

- **Apply a range of engineering knowledge and technical skills to resolve a design problem in a *real* situation.**

- **Design and evaluate concepts and take through to a final detailed design.**

- **Competently manage a project over an extended period of time and effectively manage relationships and communication with project collaborators.**

- **Present and communicate your design project clearly and concisely through the appropriate use of text, visualisations and illustrations, models, prototypes and engineering drawings.**

11.5 Intended Learning Outcomes of Stage 5

Intended Learning Outcomes
You will be reviewed or assessed on the work, as presented in your project documentation that evidences your level of engagement with and the quality of achievement of the intended learning outcomes for PDE5 listed here. In particular, by the end of this course you should be able to;

- **Carry out focused research and investigations.**

- **Apply the design engineering process to a range of design problems addressing user needs and technical requirements.**

- **Design products that support a user experience within a social context.**

- **Apply a range of engineering knowledge and technical skills to resolve a design problem in a *real* situation.**

- **Design and evaluate concepts and take through to a final detailed design.**

- **Competently manage a project over an extended period of time and effectively manage your relationship and communication with project collaborators.**

- **Present and communicate your design project clearly and concisely through the appropriate use of text, visualisations and illustrations, models, prototypes and engineering drawings.**

- **Understanding the issues and areas of human factors crucial to successful user-centred design**

- **Confidently using human factors methods and tools as a vital part of product research,**

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specification, development and refinement

- **Understanding current standard sources of human factors data**

- **Clearly demonstrating the use of human factors considerations in design project work through an iterative process**

- **Understanding and applying anthropometrics software packages**

- **Developing skills in user research methodologies**

- **Integrating human factors aspects alongside other engineering and design issues to create a successful project resolution.**

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12. Assessment Methods:

Students are encouraged to understand assessment as constructive and positive, and an essential guide to your learning experience. Remember that success is very often the result of learning from experience and mistakes!

At each level of the PDE studio programme, student work is organized on a project basis, which, particularly in the earlier years, may be in the form of skills development 'workshops'. Dependent on the year of study and the intended learning outcomes, projects will vary in number per session, in content, in duration, in degree of complexity, in individual and team response and in the nature of the 'deliverables' students are asked to submit for assessment.

Types of assessment

Within the PDE studio programme (and indeed throughout the GSA) a combination of **formative** and **summative** assessment methods are used.

Formative assessments are essentially advisory. They are intended to:

• be constructive and supportive reviews
• indicate your areas of strength and weakness
• identify students at risk of failure
• provide you with feedback and advice for your future direction
• involve your own self-assessment

Summative assessments are essentially final, and are used for establishing grades which will be submitted to an examination board. They are intended to:

• assess your suitability for progression to the next academic year
• indicate your areas of strength and weakness
• if scheduled during a session, or if you are continuing-on to the next session, provide you with feedback and advice for your future direction
• if necessary (for continuing students), provide advice for the re-submission of project work

Depending on the structure of a level or a project, a formative assessment may also be referred to as an Interim Review; a summative assessment may be referred to as a Final Assessment.

The exact timing of formative and summative assessments within a particular level of study will depend on its structure and timetable. The final assessment at the end of Semester 2 of any session will always be summative. It is also likely that Semester 1 will end with either a formative or summative assessment. If a project continues for some weeks, it may well have a formative assessment part-way through, which would act as a progress review to assist and direct students during the next part of the project.

If a summative assessment is scheduled during a session, the mark from it will be carried forward to the end of the session and combined with other studio marks to give an overall result for the session (and the year).

The main methods of assessment in PDE are:

Course work and project outputs

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Reports, Including Technical, Laboratory and Project Management
Exams

Elements of PDE study will include all of the above and staff will explain the balance at the beginning of an academic session, or no later than the beginning of the relevant semester. It will also be made clear whether or not any particular assessment weighting will be applied (for instance, a team project might carry different weighting from an individual project).

The staff team for each level of study will make clear what assessments will take place, when they will occur, and whether they are formative or summative.

The assessment team will be drawn from members of full-time or part-time staff or others who have familiarity with the PDE programme.

Code of Assessment

Your PDE studio work is assessed in accordance with the GSA and University of Glasgow Code of Assessment.

http://www.gla.ac.uk/services/senateoffice/academic/assessment/#d.en.129990

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13. Learning and Teaching Approaches:

The joint nature of the PDE programme delivers a curriculum with two distinct elements which are complementary and integrated: studio practice at the GSA, and engineering theory lectures and labs at the University of Glasgow.

The GSA studio programme is essentially skill-and project-based, and learning and teaching methods are devised to develop and enhance creativity and individual thinking processes, and to promote self-motivation and independent learning

The University of Glasgow programme is primarily delivered through lectures, tutorials and laboratories.

Teaching and Learning Methods
Throughout the programme the following learning and teaching methods may be used:

Project work

Project work, is the primary means for the development of design and specialist practice within the PDE studio programme. It may be based on team or individual activity, but in either case, you are encouraged to make the most of the studio environment to promote shared learning with peers, as well as receiving structured or informal teaching from staff.

Written project briefs with aims and learning outcomes, timescales and assessment criteria are set for all projects and normally conclude with a group and/or individual critical review focused on individual outcomes.

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In the earlier years of the programme, projects are staff-directed, but as students progress through the years, they will be given a greater level of choice, and will be expected to be increasingly self-directed, both in the selection of project topic, and in the means of pursuing investigation and outcomes.

Project briefings are staff-led introductions, at formally-timetabled class or group meetings. Reviews of work-in-progress and completed project outcomes are normally part of the project structure.

Lectures

Formal presentations by staff or by visiting practitioners or experts, which provide a context for course work and enable you to become familiar with the issues of design practice, theory and history, within a broader professional and cultural context.

Seminars

Structured group discussions, either staff- or student-led, on a prepared topic or a range of issues. The importance of seminars lies in your making use of the interchange of knowledge and expertise, which already exists within the group (students, staff and external experts). Appropriate preparation and full participation from all students is expected.

Discussion groups

Staff-led structured groups which are designed to underpin learning gained in lectures or about project-related topics.

Practical workshops, Laboratories & demonstrations

These are used to introduce practical processes or thinking methods and to develop technical knowledge and transferable skills. They are led by tutors, and/or visiting staff and supported by technical staff where appropriate. At some levels of the programme, industry workshops may complement project activity to facilitate a particular focus and development.

Presentations

Students will be asked to prepare and present work for consideration, evaluation and discussion with peers and staff.

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14. Relevant QAA Subject Benchmark Statements and Other External or Internal Reference Points:

http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement---Art-and-design-.aspx

http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement-Engineering-.aspx

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15. Additional Relevant Information:

Students on the PDE programme may collaborate with undergraduates so long as the nature and the extent of the collaboration is negotiated and agreed by the undergraduates Head of Department.

Students on the PDE programme may wish to source/employ manufacturers/outworkers, again this must be made explicit and accountable as part of the Project Documentation and requires the authorisation of the Head of Department and Programme Leader.

Archives and Collections Centre (ACC) The School has one of the largest and most important museum and archive collections of any UK art school and these provide an excellent study resource.

The institutional archive dates back to the School's foundation in 1845 and documents over 150 years of art, design and architectural education at the School through official papers, correspondence, photographs and press cuttings relating to the School, its staff and students. Together with over 30 Deposited Archive Collections, the size and significance of the archive continues to grow.

Cross GSA workshops Students on the PDE programme also have access to specialist workshops across GSA, however the formal mechanism for accessing these facilities is via the Programme Leader who will negotiate with the relevant Head of

University of Glasgow Mechanical Engineering workshops Students on the PDE programme also have access to specialist University of Glasgow, Mechanical Engineering workshops, however the formal mechanism for accessing these facilities is via the Programme Leader who will negotiate with the relevant Head of Department.

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16. Programme Structure and Features:

Ref No	Title of Course	Semester	Indicative workload (Hours)	SCQF CREDIT			Assessment Weightings		Prerequisite Subject Course
				SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework	
Level 1									
	Compulsory Courses								
EXT1019	Product Design Engineering 1	1&2	200	20	1	10		100	
ENG1023	Engineering Mathematics EE1X	1	200	20	1	10	100		
ENG1024	Engineering Mathematics EE1Y	2	200	20	1	10	100		
ENG1007	Applied Mechanics 1	2	200	20	1	10	85	15	
ENG1012	Communication 1	1&2	100	10	1	5	75	25	
ENG1033	Materials M1	1	100	10	1	5			
ENG1038	Thermo & Fluid Mechanics	1	200	20	1	10			
Total				**120**					

Ref No	Title of Course	Semester	Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework	Prerequisite Subject Course
Level 2	**Semesters 1 and 2**								
	Compulsory Courses								
ENG2058	Product Design Engineering 2	1&2	300	30	2	15		100	EXT1019
ENG2005	Applicable Mathematics 2A	1	100	10	2	5	100		
ENG2006	Applicable Mathematics 2B	2	100	10	2	5	100		
ENG2007	Applied Mechanics 2	2	200	20	2	10	75	25	
ENG2030	Engineering Computing M2	1	200	20	2	10	75	25	
ENG2024	Electrical Power Engineering 2	1	100	10	2	5	90	10	None
ENG2045	Power Electronics 2	2	100	10	2	5	90	10	None
ENG2039	Materials 2	1	100	10	2	5			
ENG2053	Thermodynamics M2	1	100	10	2	5			
Total				**120**					

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Level 2	Compulsory Courses		Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
Year 1 Accelerated Route										
ENG2058	Product Design Engineering 2	1&2	300	30	2	15		100		
ENG2005	Applicable Mathematics 2A	1	100	10	2	5	100			
ENG2006	Applicable Mathematics 2B	2	100	10	2	5	100			
ENG2007	Applied Mechanics 2	2	200	20	2	10				
ENG2030	Engineering Computing M2	1	200	20	2	10				
ENG2024	Electrical Power Engineering 2	1	100	10	2	5	100			
ENG2045	Power Electronics 2	2	100	10	2	5	90	10		
ENG2039	Materials 2	1	100	10	2	5				
ENG1029	Fluid Mechanics M1F	1	100	10	1	5	100			
Total				**130**						

MEng Accelerated Route Years 2, 3,4
Following the curriculum of the MEng in Product Design Engineering Year 3, 4 and 5

BEng in PDE and BSc Hons in PDE
Years 1, 2 and 3 follow the curriculum of the MEng in Product Design Engineering Year 3, 4 and 5

Level 3			Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
	Compulsory Courses									
EXT3013	Product Design Engineering 3	1&2	400	40	3	20		100	ENG2058	
ENG3022	Dynamics, Control M3	2	200	20	3	10	100		ENG2005 ENG2006	
ENG3032	Heat Transfer M3	2	100	10	3	5				
ENG3037	Mechanics of Materials and Structures M3	1	200	20	3	10				
ENG3036	Mathmatical Modelling and Simulation M3	1	100	10	3	5	100		ENG2005 ENG2006	

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			Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
ENG3035	Materials and Manufacturing M3	1	100	10						
MGT2003	Marketing E1	2	100	10	1	5		100	None	
Total				**120**						

Level 4 BEng	Semesters 1 and 2		Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
	Compulsory Courses									
ENG4004	Advanced Materials Technology P4	2	100	10	4	5	100		ENG3037	
ENG4098	Microelectronics in Consumer Products P4	1	100	10	4	5	90	10		
ENG4094	Mechanics of Solids and Structures M4	1	200	20	4	10	75	25	ENG3037 ENG3035	
ENG4142	Design for Manutacture	1	200	20	4	10		100		
ENG4149	Product Design Engineering 4B	1&2	600	60	4	30		100	EXT3013	
Total				**120**						

Level 4 MEng	Semesters 1 and 2		Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
	Compulsory Courses									
ENG4004	Advanced Materials Technology P4	2	100	10	4	5	100		ENG3037	
ENG4098	Microelectronics in Consumer Products P4	1	100	10	4	5	90	10		
ENG4094	Mechanics of Solids and Structures M4	1	200	20	4	10	75	25	ENG3035 ENG3037	
EXT4005	Design and Technology Studies P4	2	100	10	4	5		100		
ENG4085P	Integrated System Design Project	1&2	200	20	4	10				
ENG4170P	Product Design Engineering 4M	1&2	500	50	4	25		100	EXT3013	
Total				**120**						

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Level 5 MEng	Semesters 1 and 2		Indicative workload (Hours)	SCQF Credits	SHE 0 Level	ECTS Credits	Exam	Coursework		
	Compulsory Courses									
ENG4024	Applied Design Systems P5	2	200	20	5	10	60	40		
EXT4010	Human Factors M5	1	100	10	5	5		100		
ENG5223	Mechanics of Solids and Structures M5	2	100	10	5	5	75	25	ENG4094	
EXT4020	Product Design Engineering 5M	1&2	600	60	5	30		100	ENG4170P	
ENG4088	Lasers and Electro-Optic Systems M4	1	200	20	4	10	80	20		
Total				**120**						

17. Can exemptions be granted?

Yes ☒   No ☐

If yes, please explain: In exceptional cases, at the discretion of the department

18. Does the programme comply with GSA APEL policy?

Yes ☐   No ☒

If yes, please explain:

19. Are there any arrangements for granting advanced entry?

Yes ☒   No ☐

If yes, please explain: Please refer to section 8. If the level of entry is Y3, the applicant will be expected to demonstrate an appropriate level of knowledge and understanding and be requested to complete a Design Engineering assignment.

20. Are there any arrangements for allowing students to transfer into the programme?

Yes ☒   No ☐

If yes, please explain stating requirements and levels to where this can apply:
Depending on Student knowledge and understanding the PDE department may request that any student wishing to transfer completes a Design Engineering assignment.

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21. Are there any arrangements for allowing students to transfer into other programmes?

Yes ☒   No ☐

If yes, please clarify: Via GSA and GU internal transfer process (dependent on evidence of aptitude and potential and space availability)

22. What are the requirements for progressing from each stage?

BEng
To successfully progress students must meet the following requirements:
120 Credits
GPA 9.00

MEng
To successfully progress students must meet the following requirements at Level3&4:
120 Credits
GPA 14.00

In addition, candidates for admission to year 4 of the Curriculum for MEng must have completed Product Design Engineering 3 with a minimum grade of B3.

Further details:
http://www.gla.ac.uk/media/media_205301_en.pdf

23. Please confirm that the programme follows GSA Board of Examiner policy and procedures, including External Examiner participation:

Yes ☒   No ☐

If no, please explain:

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24. Please explain programme management and committee arrangements up to, but not including, Boards of Study:
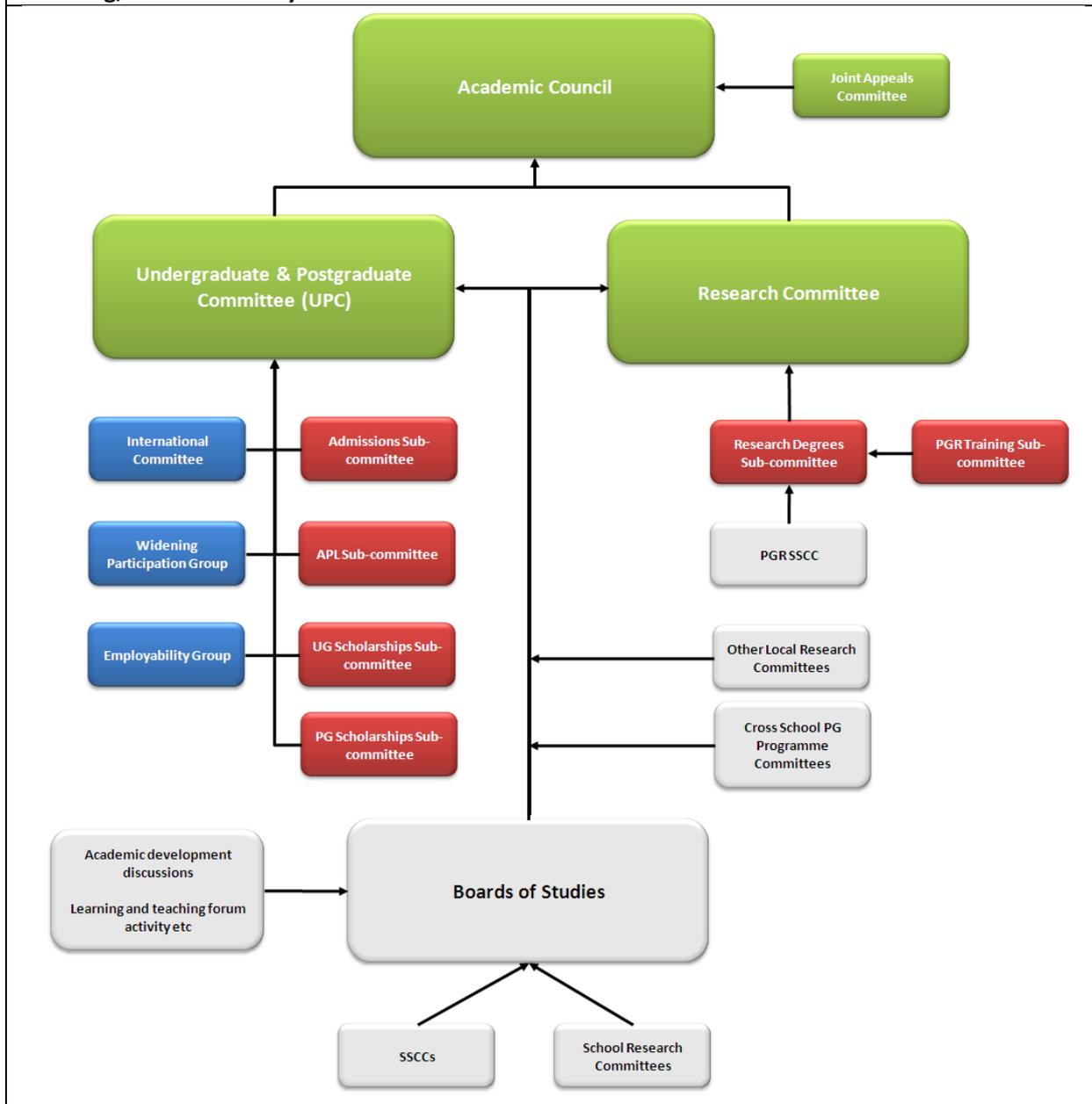
25. Please explain the systems and arrangements regarding:

a) Quality assurance of the management, operation and monitoring of the programme

Head of School
The Head of Design has executive authority and is responsible for all programmes offered through the School of Design including academic leadership, programme design, planning, review; allocation of resources; designation of staff roles and responsibilities; co-ordination of staff development and research. The Head of Design also chairs the School of Design Board of studies, the Internal Exam Board, and represents the School of Design at Academic Council and any other such committees as agreed by the Director to whom he or she is accountable.

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Head of Department/Programme Leader

The Programme Leader has the overall responsibility for all aspects of the academic content, planning, management and operation of the programme. This includes responsibility for Admissions, Curriculum, Learning and Teaching, Student Support, Quality Enhancement and Quality Assurance and Management within the Programme. The Programme Leader of the MEng/BEng (Hons) PDE Programme chairs the PDE Team, made up of tutors, technicians, Heads of Department and the Administrative Officer, and may delegate tasks under her/his responsibility to other staff members.

The Heads of Department is responsible for day-to-day management of academic, administrative and technical staff, physical and financial resources, and the organisation and delivery of the PDE Studio course within each specific subject area. They ensure that students are familiar with the aims and learning outcomes of the Programme and the specific subject area, and inform the departments about relevant academic and professional activities and opportunities in and outwith the School.

The Programme Leader and Head of Department functions are carried out by the same person.

Level Tutors

Year Tutors are responsible for the co-ordination of the delivery of the subject area's programme of study at a specific year level. Year Tutors provide both pastoral and academic support to the students of the year level, and work with the Head of Department to devise and develop curriculum, and deploy learning resources and staffing to the timetable. Year Tutors work across the programme with Year Tutors of other levels to develop and evaluate Programme curriculum and delivery.

Studio Tutors/Lecturers

Tutors and lecturers are responsible for delivering the programme, enabling students to achieve the learning outcomes at each stage of study. Tutors and lecturers are the main point of contact for the individual student and year group and are responsible for the teaching of the programme at course (specific subject) level. They ensure that students are familiar with the aims and learning outcomes of the specific programmes and participate in relevant academic and professional activities and opportunities in and outwith PDE.

Visiting Design Engineers, Practitioners and Scholars

Visiting Design Engineers, practitioners and scholars are employed to share their specific expertise, knowledge and experience to support the main teaching and learning activities of the programme. They provide an external professional context and perspective to the learning and teaching of the specific subject.

Technical Staff

Technicians support the delivery of the academic programme, and are responsible for the induction and provision of technical instruction in the use of technical workshops or areas. They are, in the main, also responsible for the maintenance of equipment and workshop/area facilities.

Product Design Engineers in Residence

PDE has a number of PDE in Residence. They provide skill based input at all levels of studio and are at times involved with department events and activities.

Board of Studies

The Board of Studies carries overall responsibility for the management of the School of Design and all standing committees of PDE report to it. It is responsible for all Programme Committees and

Consultative Committees within the School. The Board of Studies then reports up to the GSA Undergraduate Committee. The Board of Studies meets once per term.

The Board is responsible to the GSA Undergraduate Committee for all policies and procedures relating to the taught Programmes, for quality assurance and enhancement, including: Annual Programme Monitoring, periodic and thematic reviews, proposals for new Programmes or modifications to existing ones, assessment arrangements, nominations for new External Examiners, and for responding to External Examiners' reports action and student feedback. It is responsible to the GSA Research Committee for all academic matters relating to research.

Joint Board
PDE also has a Joint Board with the University of Glasgow. It comprises of University of Glasgow: Clerk of Senate (Convenor), Head of School, Head of Discipline. GSA: Head of School, Head of Department/Programme Leader, elected senior student representatives.

Student Representatives
Two student representatives for each level are elected by their peers within the first two weeks of the session. They should discuss issues within their stage groups and with relevant tutors before raising them at the committee. The elected representatives are briefed on their role by the President of the GSA Students' Association. There is also student representative training offered by the University of Glasgow.

Curriculum Planning
The academic staff involved hold regular Curriculum Planning and Management meetings throughout the session.

In order to ensure that quality standards are monitored and the quality of provision continually enhanced the BEng & MEng Degree Programme will undertake the following:
- regular Programme Team meetings

- student/ staff consultative committee

- Annual Programme Monitoring

- Periodic Review

Institutional review in accordance with the Quality Assurance Agency (QAA) and the Scottish Credit and Qualifications Framework (SCQF)

b) Student feedback and representation

Student Staff Consultative Committees, questionnaires, end of session meetings and studio contact are the main methods of obtaining feedback from students.

Student representatives are elected for each Year, to represent the views of fellow students on Programme Committees and Boards of Studies, and to act as an important means of communication between staff and the student body. Essentially, the role of student representative is one of encouraging students to enhance the quality of the School's learning and teaching provision, and of ensuring student participation has a positive effect on developments within the School. Student representatives are offered an induction into the roles and responsibilities of the position, and are offered a programme of training by the Student Representative Council.

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The department cohort elects student representatives for each year-stage of the programme who attend a Student/Staff Consultative Committee meeting once a semester. The agenda of the Student/Staff Consultative Committee meetings are set primarily by students. Student representatives arrange meetings with year groups prior to the meeting of the Committee to help form this agenda. While the concerns of students regarding the programme at subject area level can be discussed with the tutors at any point, it is through this meeting that such concerns should be brought formally to the attention of staff. From this committee, student views are taken up through the committee structure via the School of Design Boards of Studies and to the Undergraduate Committee. The minute from all SSCC meetings are available to the students of the department.

Student feedback and participation is also encouraged by additional student meetings held to discuss issues that inform the enhancement and quality of learning and teaching provision within the Department/School. Annual meetings/questionnaires are used to seek feedback from the students that informs the programme quality enhancement process at all levels; delivery of courses, provision of equipment and resources, learning environment and student support.

Students are represented within the academic committee structure via: Student/Staff Consultative Committee, GSA/University of Glasgow Joint Board and the School of Design Board of Studies.

c) Programme based student support

The joint nature of the PDE programme delivers a curriculum with two distinct elements which are complementary and integrated: studio practice at the GSA, and engineering theory lectures and labs at University of Glasgow.

Teaching and Learning Methods
Throughout the programme the following learning and teaching methods may be used:

Project work
Project work is the primary means for the development of design, engineering and specialist practice within the PDE programme. It may be based on team or individual activity, but in either case, you are encouraged to make the most of the studio, lab and workshop environments to promote shared learning with peers, as well as receiving structured or informal teaching from staff.

Written project briefs with aims and learning outcomes, timescales and assessment criteria are set for all projects and normally conclude with a group and/or individual critical review focused on individual outcomes. Project Briefs are regularly supported by weekly notes and seminar topics.

In the earlier levels of the programme, projects are staff-directed, but as you progress through the course, you will be given a greater freedom of choice, and you will be expected to become increasingly self-directed, both in the selection of your project topic, and in the means of pursuing investigation and negotiating key project outcomes.

Project briefings are staff-led introductions, at timetabled class or group meetings. Reviews of work-in-progress and completed project outcomes are normally part of the project structure and set out in the briefing document.

Lectures
Formal presentations by staff or by visiting practitioners or experts, which provide a context for course work and enable you to become familiar with the issues of design practice, theory and history, within a broader professional and cultural context.

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Seminars
Structured group discussions, either staff or student-led, on a prepared topic or a range of issues. The importance of seminars lies in you making use of the interchange of knowledge and expertise, which already exists within the group (students, staff and external experts). Appropriate preparation and full participation from all students is expected.

Discussion groups
Staff-led structured groups which are designed to underpin learning gained in lectures and/or about project-related topics and progress.

Practical workshops & demonstrations
Workshops are used to introduce you to practical processes, prototyping and/ or thinking methods and to develop technical and transferable skills. These are led by tutors and/or visiting staff and generally supported by technical staff. During all levels of the programme, workshops will complement project activity to facilitate and focus your response and development as a product design engineer.

Presentations
For these you will be asked to prepare and present aspects/summary of your work for consideration, evaluation and discussion with peers and staff. This is also an opportunity to gain feedback from staff and peers.

Enrichment of Learning Experience
Students on the PDE programme may collaborate with other undergraduate students so long as the nature and the extent of the collaboration is negotiated and agreed by the respective Heads of Department.

Students on the PDE programme may wish to source/employ manufacturers, again this must be made explicit and accountable as part of the Project Documentation and requires the authorisation of the Head of Department and Programme Leader.

Project Briefs
Project briefs are integral to the PDE studio experience. Project briefs are discussed in detail at the outset of a project. Staff will also ensure that you are made aware of learning outcomes associated with the project brief. Weighting of project briefs may at times be introduced and this will also be explained. Current project briefs and associated support materials are available for viewing on the VLE. This is the main portal for all PDE documentation and supporting materials.

In anticipation of the learning and teaching support needs of a cohort which is likely to include ESL students and, dyslexic students, the programme team's policy is to provide a clear understanding of the teaching and learning experience.

Briefs will be dyslexia-friendly and use plain language (therefore clearer for all students). Contact time will be made explicit at the launch of any project. Students will be aware of with whom and when they can expect contact. Reading lists and online resources will be identified to encourage students to use independent study time effectively. Aims and level learning outcomes of the brief will be made clear and relate directly to those listed in programme and course specification. Project requirements and assessment criteria will be made explicit and will relate to the specified aims. Briefs will include a suggested timetable for students (highlighting key dates) to assist them manage their studio and independent study time effectively.

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Support for International Students and Pastoral Care
The Glasgow School of Art provides a comprehensive student network and specified support staff for international students. In addition, the language facilities at the University of Glasgow are available to students both pre-sessional and during term time.

The School also offers an orientation programme for all new international students allowing them to meet other international students and staff at the beginning of their stay.

Additional support for international students will be provided throughout the programme by a designated tutor, who will be available to students in this capacity. He/she will also be the designated pastoral tutor for all students on the programme. Students may contact him/her if they are experiencing problems of a personal nature or relating to general welfare which may be affecting their academic progress.

The University of Glasgow also provides a wide range of services for International Students and is very proud of the diverse community. This provides a rich cultural, social and educational mix which appeals to students and staff from all over the world. International Officers will be available to assist with any enquires from International Students.

Archives and Collections Centre
The School has one of the largest and most important museum and archive collections of any UK art school and these provide an excellent study resource.
The institutional archive dates back to the School's foundation in 1845 and documents over 150 years of art, design and architectural education at the School through official papers, correspondence, photographs and press cuttings relating to the School, its staff and students. Together with over 30 Deposited Archive Collections, the size and significance of the archive continues to grow.

Cross GSA workshops
Students on the PDE programme also have access to specialist workshops across GSA, however the formal mechanism for accessing these facilities is via the Programme Leader who will negotiate with the relevant Head of Department.

University of Glasgow Mechanical Engineering workshops
Students on the PDE programme also have access to specialist University of Glasgow Mechanical Engineering. workshops, however the formal mechanism for accessing these facilities is via the Programme Leader who will negotiate with the relevant Head of Department.

Guest lectures
PDE is fortunate to have a network of experts that are willing to provide input to the studio. All taught courses/lectures are opened to other PDE students. GSA also offers a number of lectures and events that PDE students can attend. These lectures and events are normally posted on the VLE. In some case, lectures and events are also recorded and streamed.

Study Visits
Experiencing design, engineering and manufacturing first hand is an important part of the department's philosophy. Study Visits offer a valuable opportunity to also experience a city, its culture, and, at times, to meet members of its design engineering community - practitioners and students.

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There are two types of study visits: those that are to a location of general interest, and those to places that relate directly to the project at hand and/or offer access to a centre of excellence.

Students are encouraged to attend Study Trips where possible, but alternative provisions are made for those who are unable to do so. Prior briefing and subsequent discussion are the related teaching input and a range of staff accompany the trip. Students are expected to keep a record and document the trip.

Ethics
The Glasgow School of Art and University of Glasgow is committed to the ethical conduct of teaching and research and has developed policies and procedures to ensure that the importance of individual and corporate responsibility is communicated to staff and students, and that ethical approval is sought where appropriate, particularly in the case of human subject research.

In case of an ethical concern arising from their individual projects of research (e.g. research involving human participants), students will be asked to seek the advice of the programme team, where appropriate. They may also be required to complete the GSA Application Form for Ethical Approval, for consideration by the programme team and, where appropriate, the GSA Ethics Committee.

Exhibitions
The department has a strong record of placing student work in exhibitions and is involved in showing work through the web.

Exchange Programmes
PDE Students are able to take part in exchange with the NTNU Troinheim, Norway. Students will normally study for an academic session at level 4M of the programme. Please contact the Head of Department for further information.

EXTERNAL EXAMINER:
Professor Miles Pennington
Head of Programme, Innovation Design Engineering, Royal College of Art

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