Bournemouth University

Department of Design and Engineering

Design@BU

#BUopenday
#belongatbu

About BU

Talbot Campus

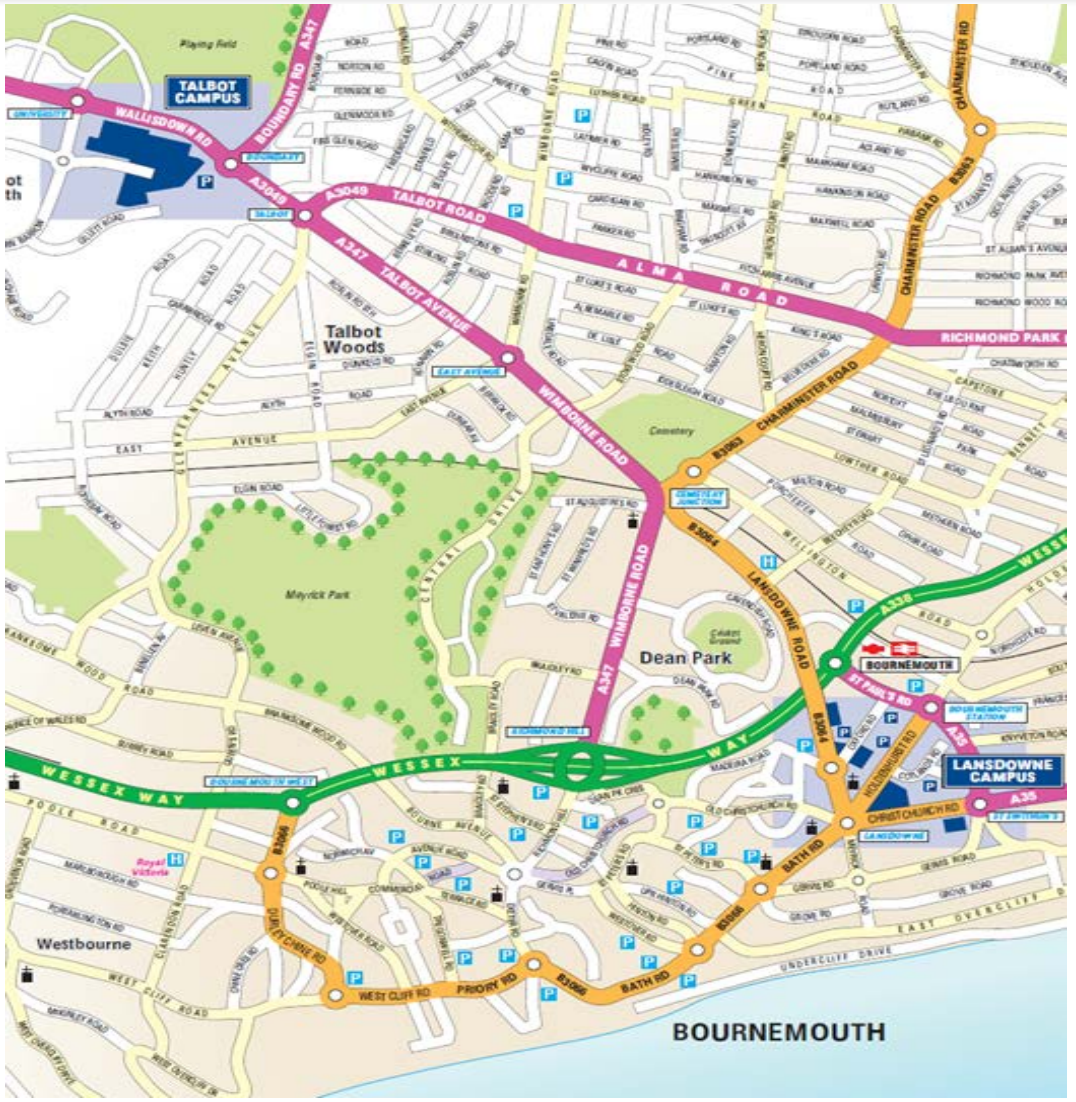
- Main teaching campus for BU's Academic Schools
- Key Support Services

Lansdowne Campus

- Town centre location
- Accommodation and administration
- Postgraduate Business School
- Health Sciences

Around 17,000 students in total

- Approx. 2,000 international students
- Over 100 nationalities



Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Facilities to Support Your Study

- Library and Learning Centres with books, e-journals & e-books

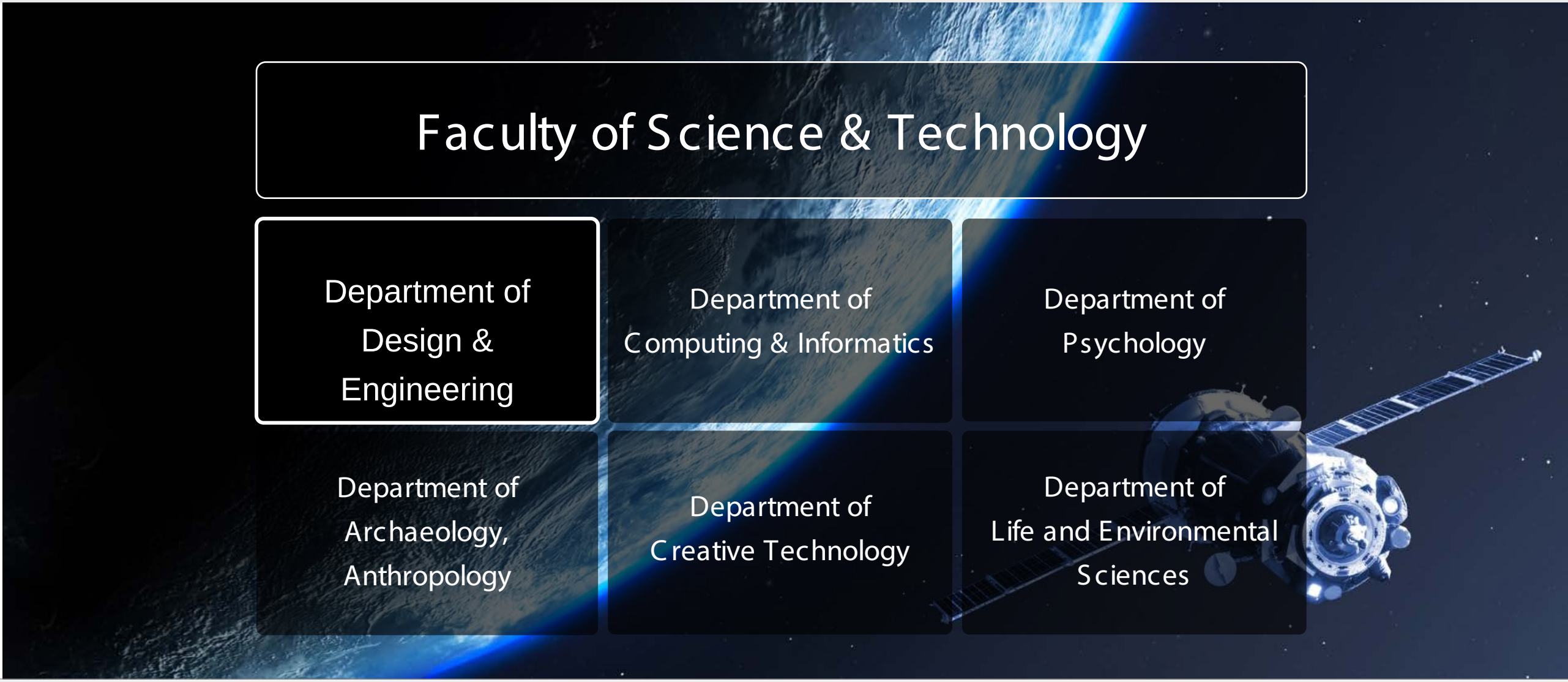
  (The best 2007 higher education libraries in national and university institutions)
- 24 hour computer labs
- New Student Centre
- New Academic Fusion Building
- New Poole gateway building

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Academic Centres at BU

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Design and Engineering



Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Learning at BU

- Lectures, small seminar groups & tutorial system
- Continuous assessment & examinations
- Peer Assisted Learning System
- Virtual learning environment website called Brightspace
- Programme Leader
- Academic Advisors
- Student Support & Engagement Co-ordinator

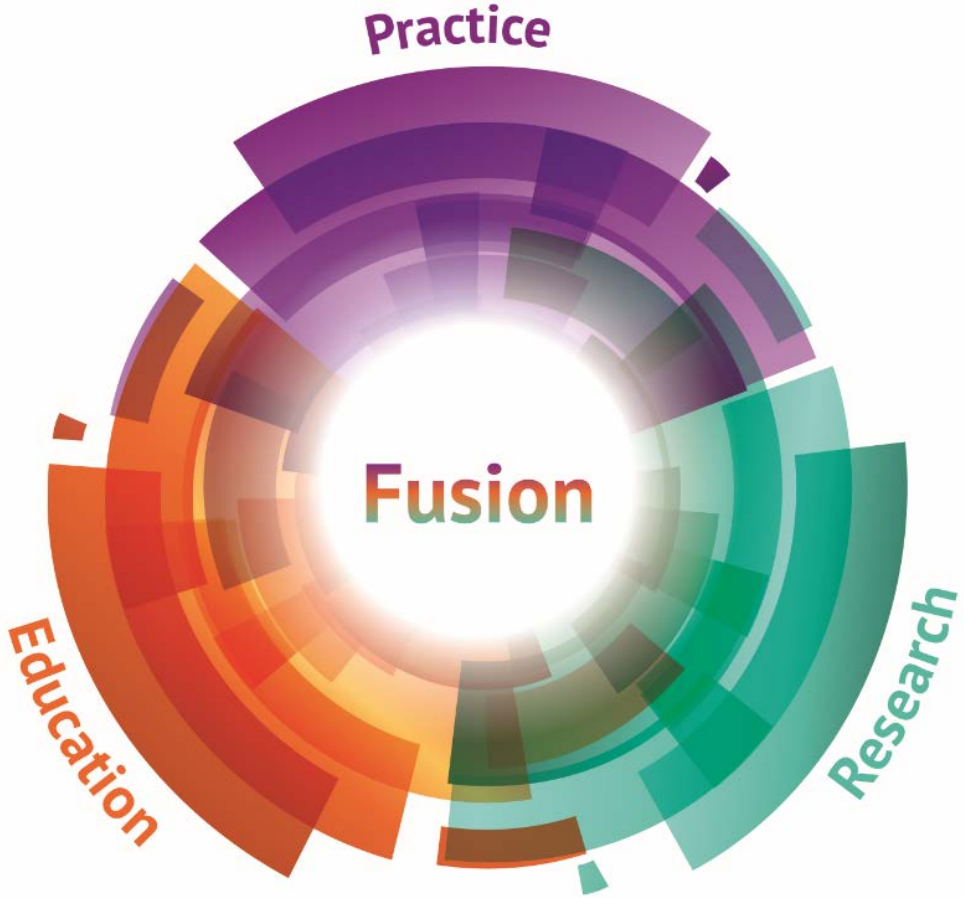
Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Create at BU

- We have been in design education for over 25 years!
- All our courses (new and established) are based on this long history of design education and an understanding of what industry requires

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Create at BU



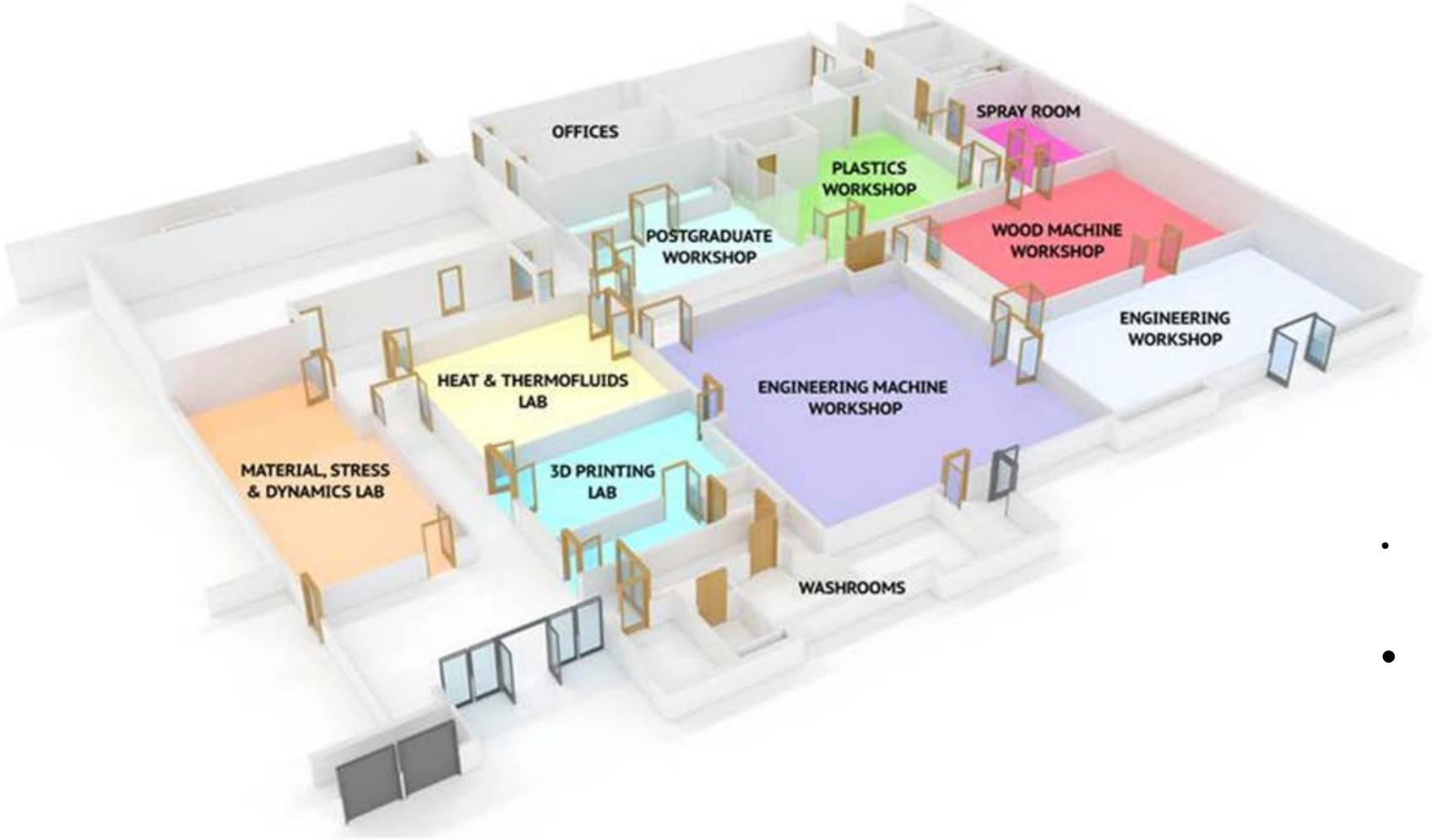
- Our research and enterprise activities inform our courses
- Projects being undertaken with B&Q, Anglepoise, Airbus, BAE Systems, Tank Museum, Gelert, Royal National Lifeboat Institution (RNLI), National Motor Museum…

Create at BU

All courses are accredited by the

Institution of Engineering Designers (iED)

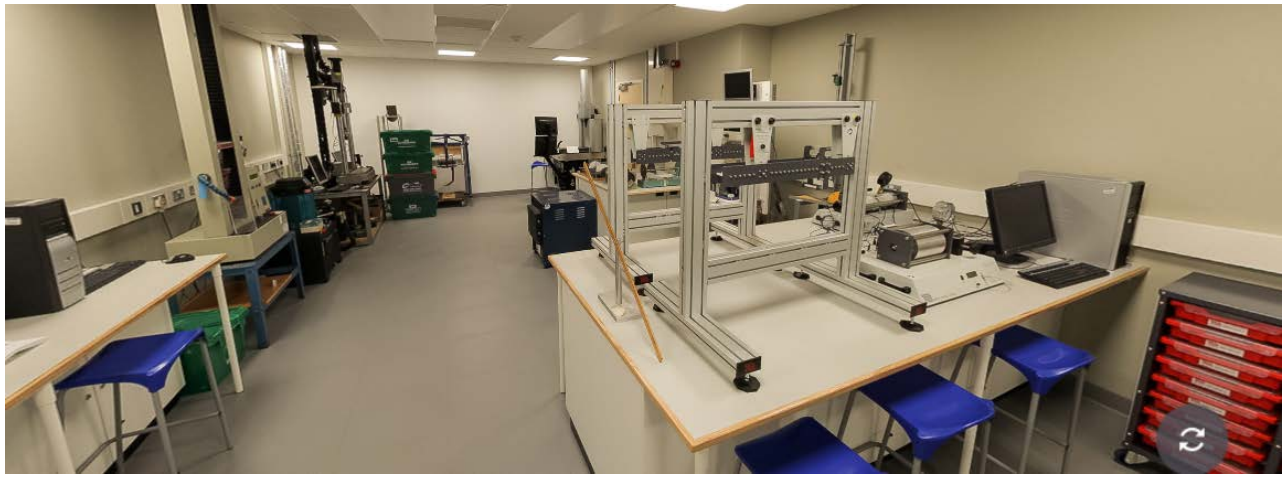
Create at BU



- Showcase Innovation Centre
- Extensive design facilities - from concepts to virtual and physical working prototypes

Create at BU

- Modern workshop environment with updated machinery
- Rapid Prototyping Centre
- Virtual Reality Centre
- Electronics Design and Manufacture Centre
- Mechanics, Dynamics and Materials and Heat and Thermofluids labs



Create at BU

- Room scale, wireless VR using HTC VIVE Pro headsets
- Allows for up to a 10m x 10m play space
- Creates immersive environments that can be used to showcase new designs
- Displays Computer Aided Design data in VR to allow multiple users to view the same model in a virtual collaborative environment

Student Employability

- Diverse industrial placements both nationally and internationally
- Dedicated Employability Coordinators
- Placement Development Advisors
- Placement year fee approximately £700 only
- High graduate professional employment within six months of graduation

Annual Events

Festival of Design & Engineering

(Bournemouth, June 2019)

https://www.bournemouth.ac.uk/fode

Annual Events

New Designers

2010 - Best Stand (runner-up)
2011 - Virgin Atlantic Prize for Product Design
2014 - Procter & Gamble Award
2016 - Foundry Associate Prize

Annual Events

ROYAL ACADEMY OF ENGINEERING

global grand challenges summit

Exploring collaborative approaches to tackling global grand challenges

In 2017, After a two-stage competition in the UK, BU competed in the GGC summit in Washington DC in July, against teams from the US and China.

Students are confronted with a global challenge and tasked to develop a challenge-led innovation and design and business development solution with engineering expertise.

The BU team came second!!

Student National Prizes

iED Prize 2011
(Greg Dussek)

iED Prize 2011
(Varun Kapoor)

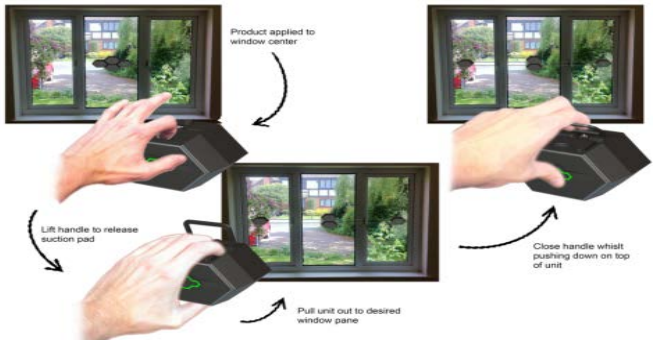
Virgin Atlantic Prize
for Product Design 2011
(Steven Green)

iED Prize 2012
(Mark Shaddick)

iED Prize 2012
(Luke Willoughby-Foster)

Student National Prizes

iED Prize 2014
(Martin Shutler)



iED Prize 2014
(Ross James)

iED Prize 2014
(Ryan Chu)

Procter & Gamble Award 2014
(Graham Friend)

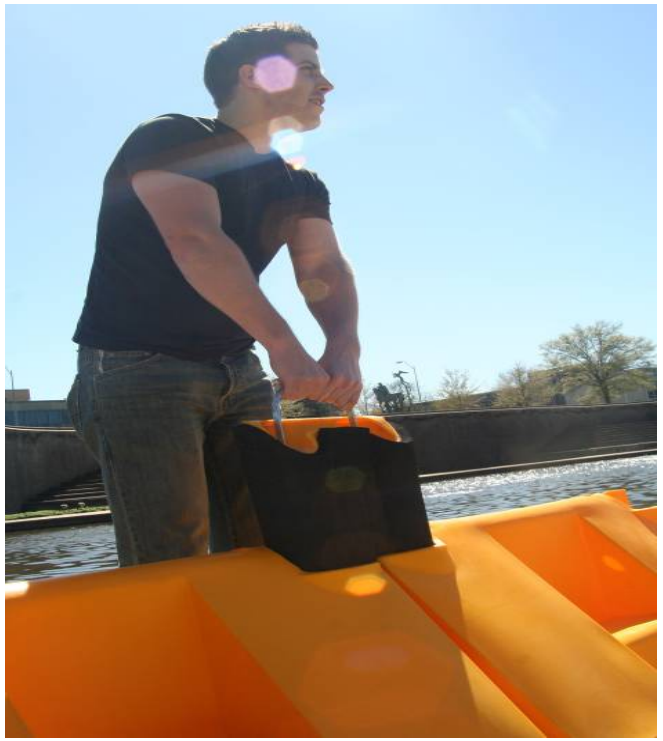
iED Prize 2014
(Dan Farmer)

Foundry Associate Prize 2016
(Chloe Moran)

Student National Prizes

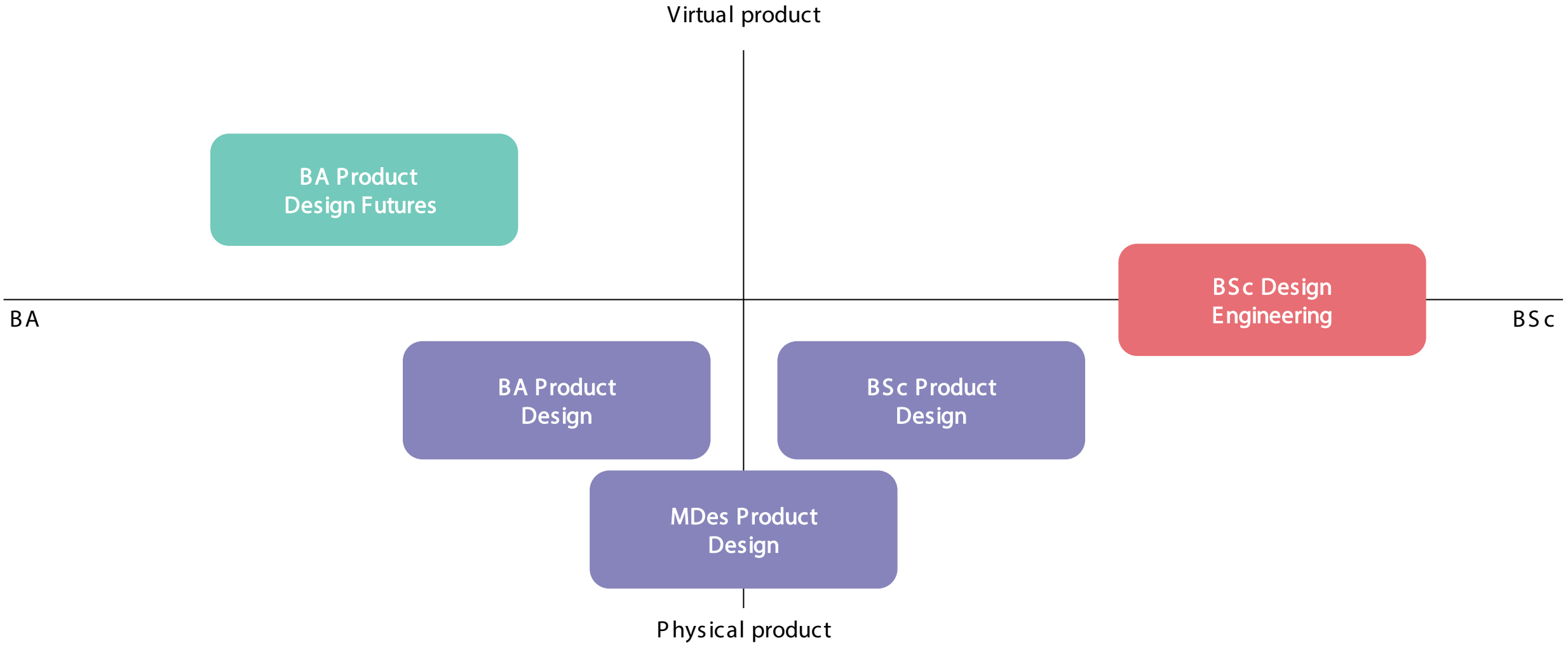
QuickPitch Tent
(Franziska Conrad)

Biologic ZorinPump
(Philip Robinson)



FLOODSTOP
(Simon Phelps)

Design Programmes



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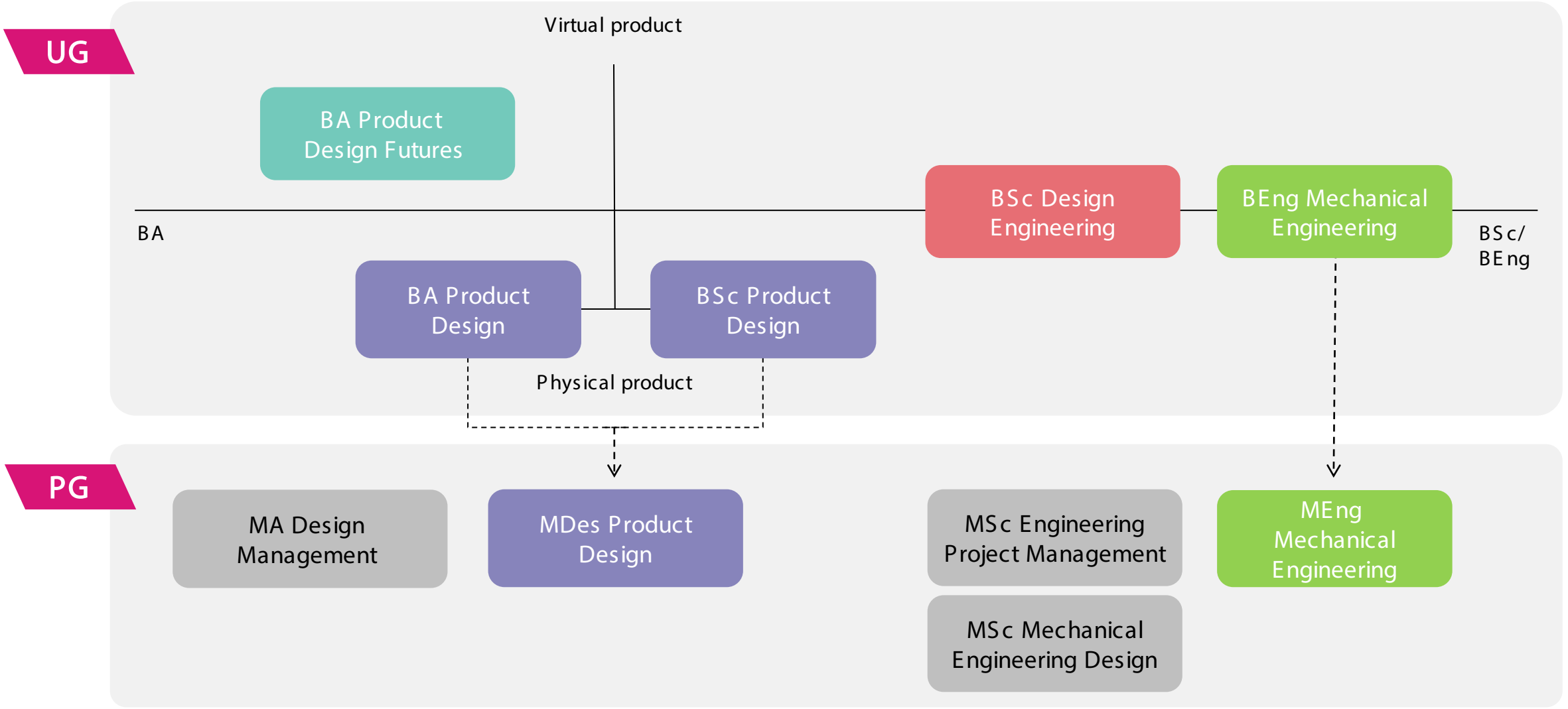
Design Programmes – Further opportunities



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Entry Requirements

Qualifications	Tariff Points*					
	96	104	112	120	128	136
A-levels	CCC	BCC	BBC ACC	BBB ABC A*CC	ABB A*BC	AAB A*BB
BTEC: Extended Diploma	MMM	DMM	DMM	DDM	DDM	DDD
BTEC: Diploma	DD	D*D	D*D*			
A-level & BTEC Diploma	A* / MP A / MP C / MM	A* / MP B / MM C / DM	A* / MM A / MM C / DM	A* / MM B / DM C / DD	A* / DM A / DM C / DD	A* / DM B / DD C / D*D
A-levels & BTEC Subsidiary Diploma	CC / M BB / P	CC / D BC / M AB / P	CC / D BB / M AA / P	CC / D* BC / D AB / M A*A / P	BC / D* BB / D A*B / M A*A* / P	BB / D* AB / D A*A / M
Access to HE	Any combination of Distinctions, Merits and Passes to make up the tariff points					

2021/22 entry:

104 - 120 points

Including a minimum of 2 A-levels or equivalent qualifications

GCSE English and Mathematics grade 4 (or grade C in the old grading system) or equivalent qualifications

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Entry Requirements

Some things to think about for your application

- Any work or other experience you have that is relevant to design
- Personal achievements
- The reference you provide with your application
- Your personal statement
- Your passion and enthusiasm for design

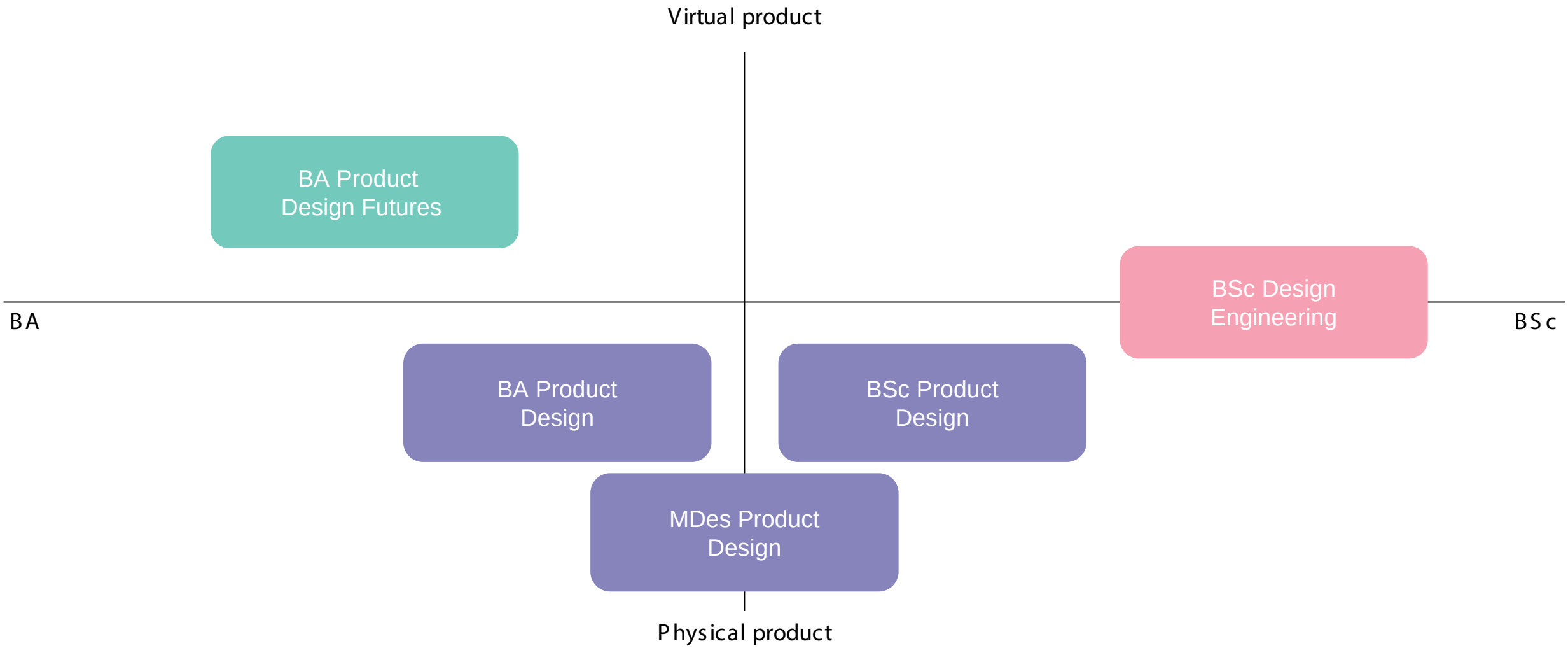
2021/22 entry:

104 - 120 points

Including a minimum of
2 A-levels or equivalent
qualifications

GCSE English and Mathematics grade 4 (or grade C in the old grading system) or equivalent qualifications

Design Programmes



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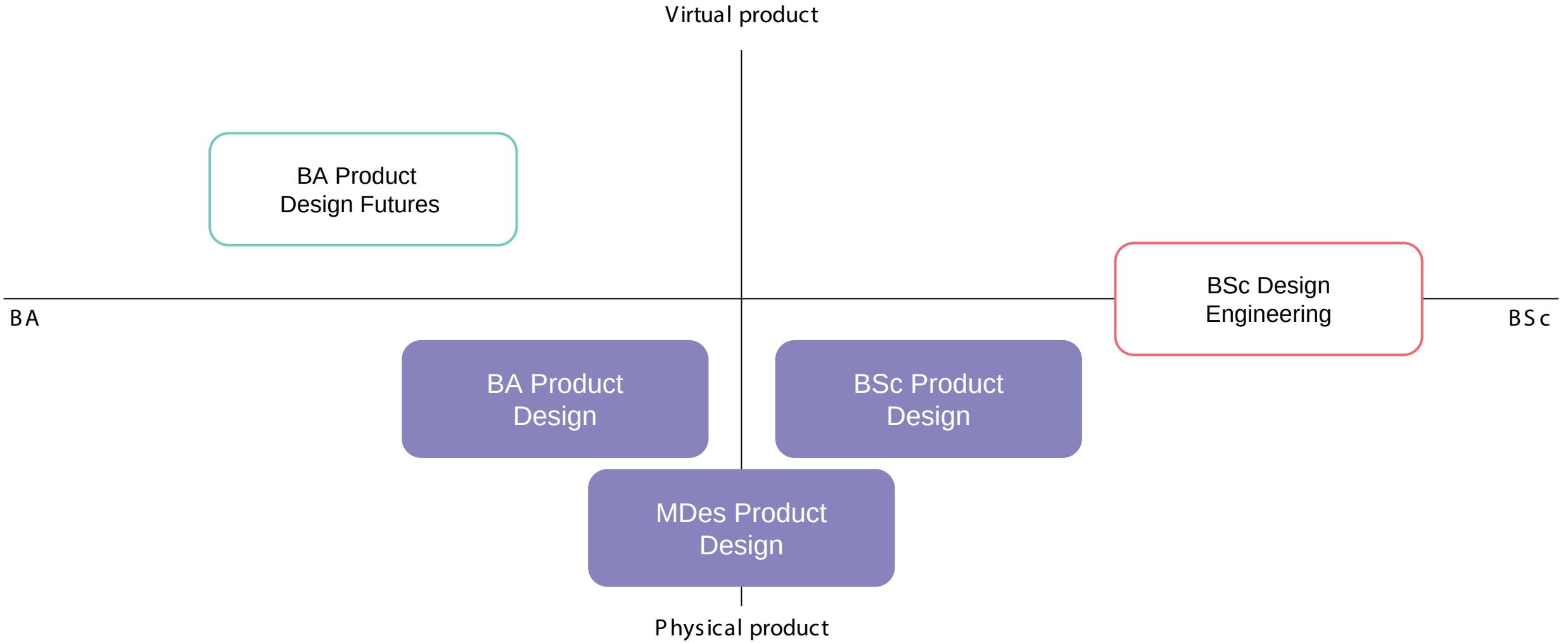
BA/BSc/MDes (Hons) Product Design

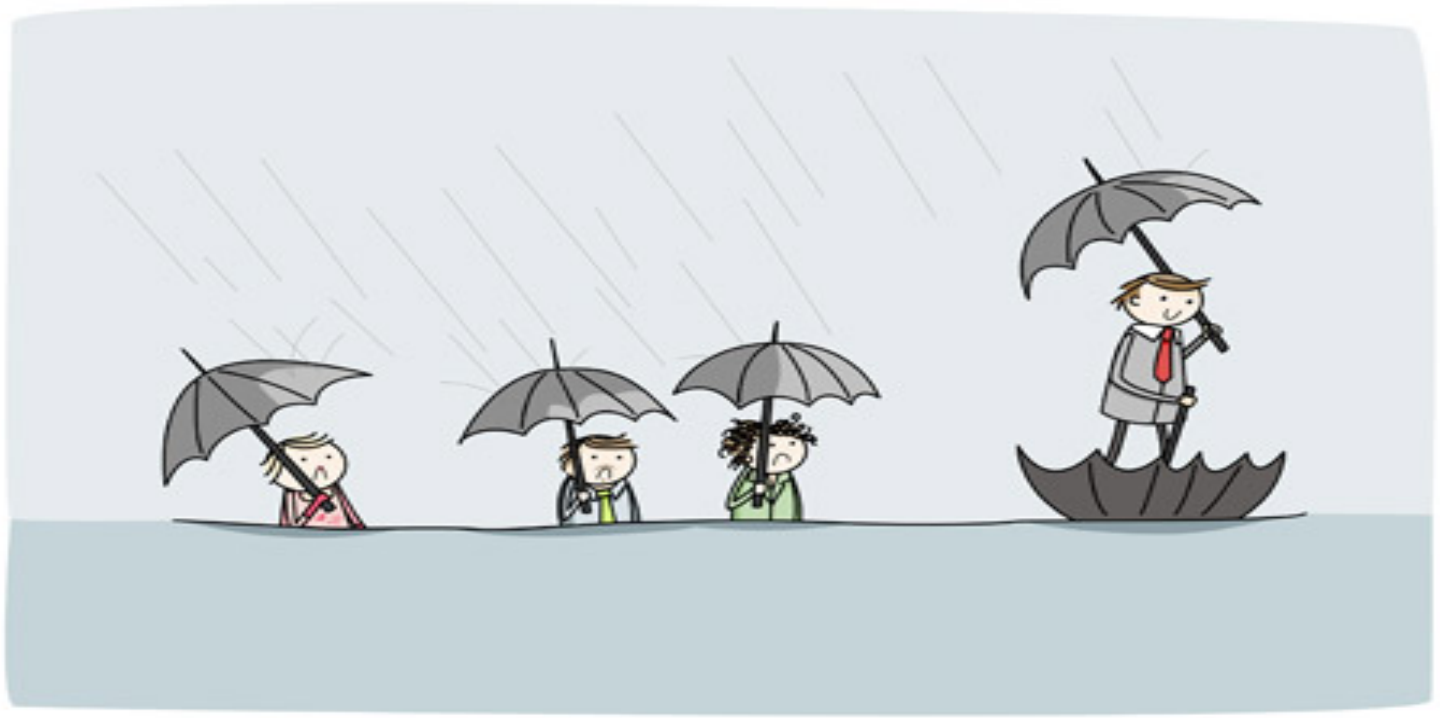


BA/BSc/MDes (Hons) Product Design

BA/BSc/MDes (Hons) Product Design

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

What does it take?



- Creativity
- Curiosity
- Commitment
- Confidence

"Designing is not a profession but an attitude" (László Moholy-Nagy)

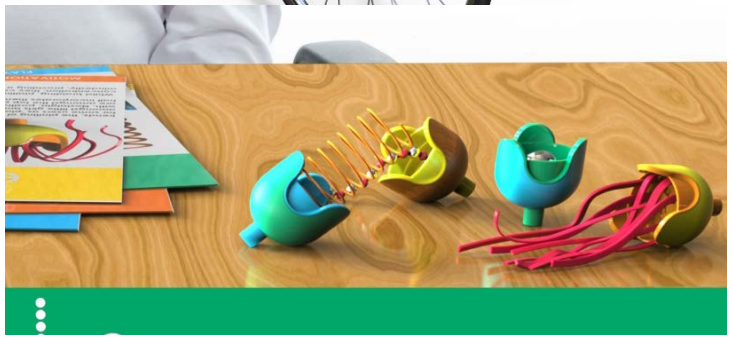
What is Product Design?

BA/BSc/MDes (Hons) Product Design

"Product Design is a structured process which produces a **creative three dimensional** object solution that encompasses **technical** and **humanistic** considerations with a clearly defined **user** and **commercial viability** to answer a specific problem." (IED, 2013)

The Scale of Product Design…

BA/BSc/MDes (Hons) Product Design



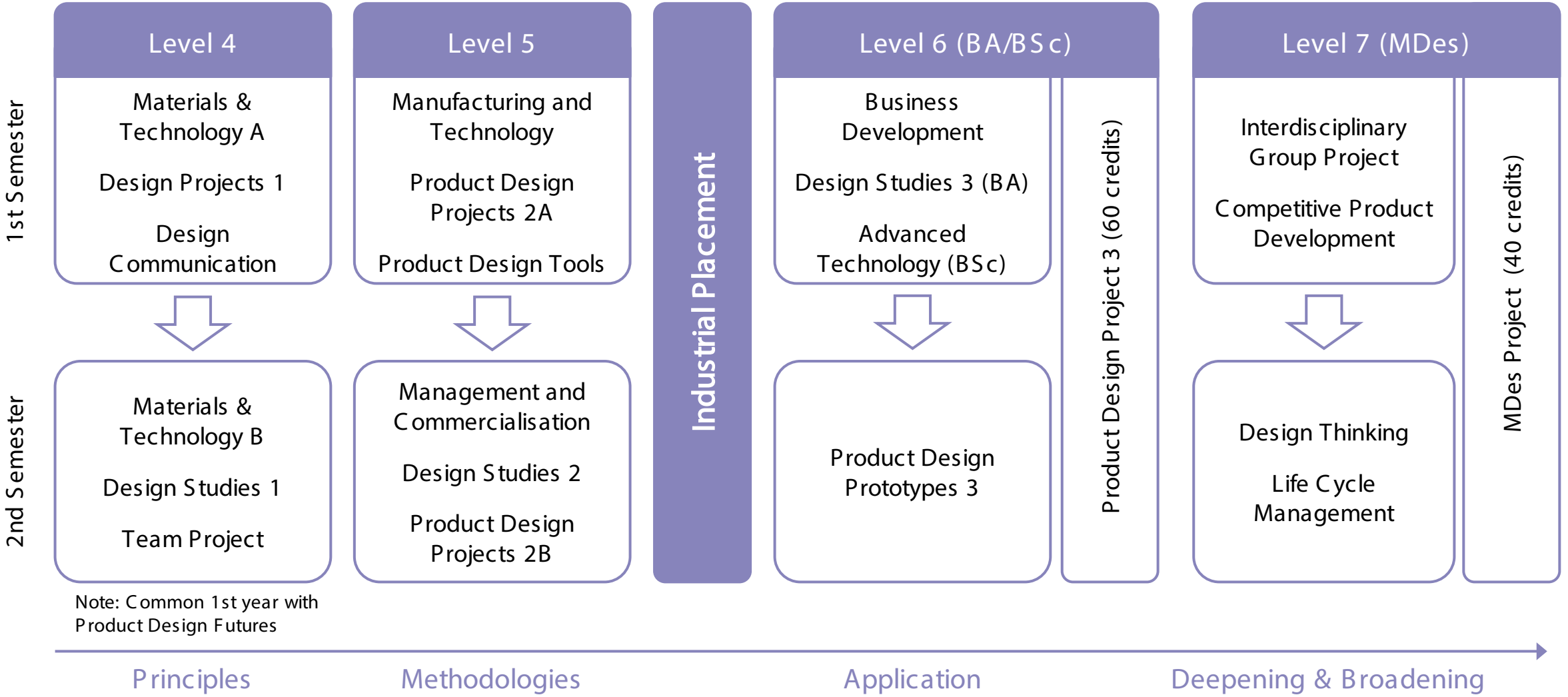
Your Journey

BA/BSc/MDes (Hons) Product Design

- **1st & 2nd year**: build design knowledge base & skills
- **Industrial Placement** - A year in industry allows students to apply their design skills in the real world.
- **Final Year / Major Project** – Choice of direction: BA or BSc?
- **Year 5 (MDes):** Gives the academic element for future registration as a Chartered Technological Product Designer (CTPD)

Course Structure

BA/BSc/MDes (Hons) Product Design



Note: Common 1st year with Product Design Futures

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Experiencing Design

BA/BSc/MDes (Hons) Product Design

- Design Brief
- Research
- Concept Development
- Testing
- More research…
- Design Concept Iterations
- Testing
- Hopefully final concept
- Presentation

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

1st Year Project

Technical Challenge:
Humane Mouse-Trap

2nd year Project

BA/BSc/MDes (Hons) Product Design

In future I need to think more about the complexity vs. time frame of the projects I do.

FINAL DESIGN

I am very pleased with my final design and how much I have achieved in such a short space of time. I have gained a knowledge of shoe/footwear design which I would like to pursue further in the future.

MATERIALS

+ **UPPERS**
  Adidas Primeknit
  Polyurethane Heel stiffeners, Logo's and support/wear reinforcements.
+ **HARDWARE**
  ABS (Y-buckle & Rear Toggle)
  Silicone (Sole Inserts)
+ **LACES**
  Nylon (standard components)
+ **PULL LOOPS**
  Nylon Webbing
+ **SOLE**
  Ethylene Vynil Acetate Sole
  Polyester Insole

Finding suitable materials was hard. I didn't leave myself enough time to fully explore the options.

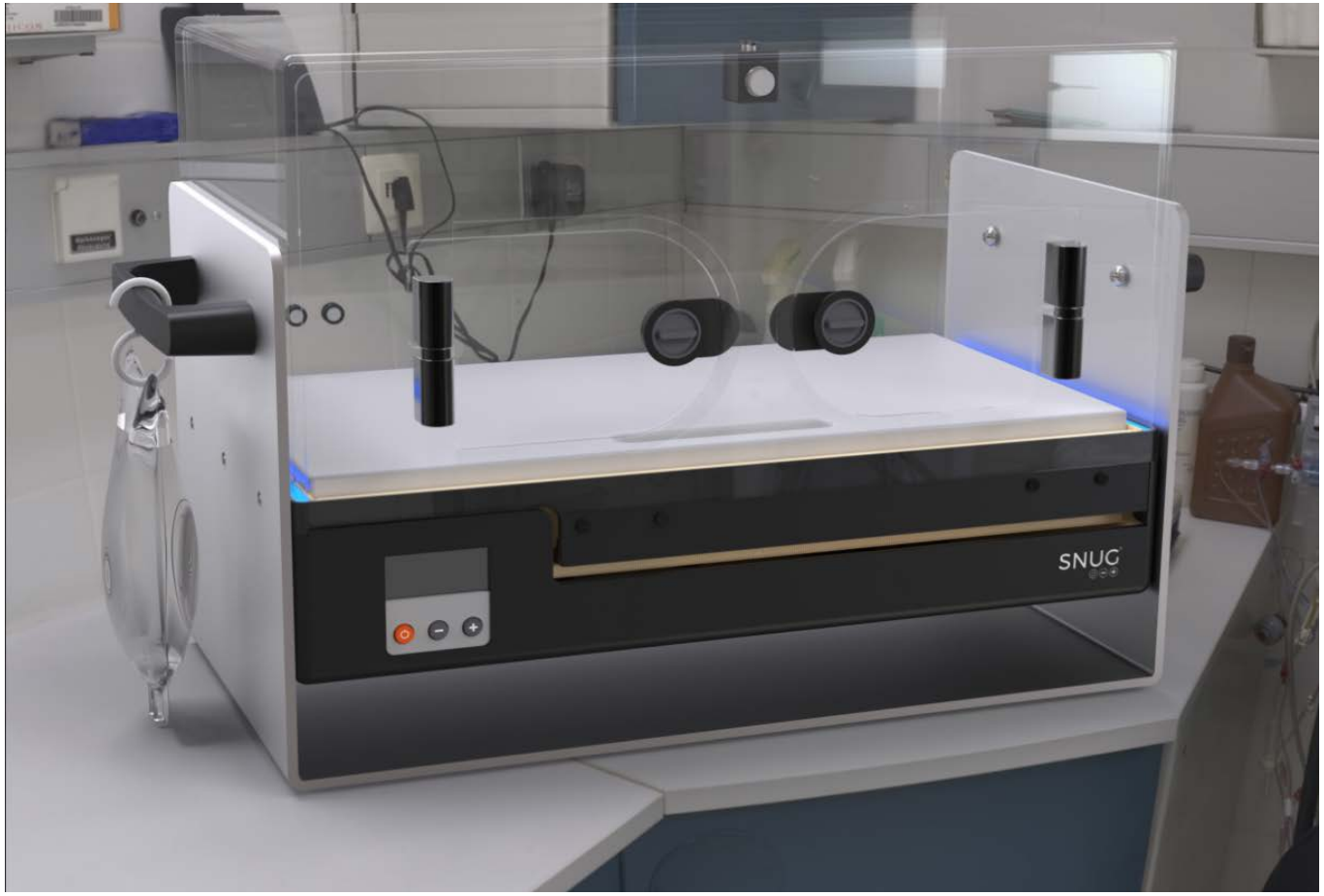
COLOURWAYS

I would maybe offer a white colourway in retrospect.

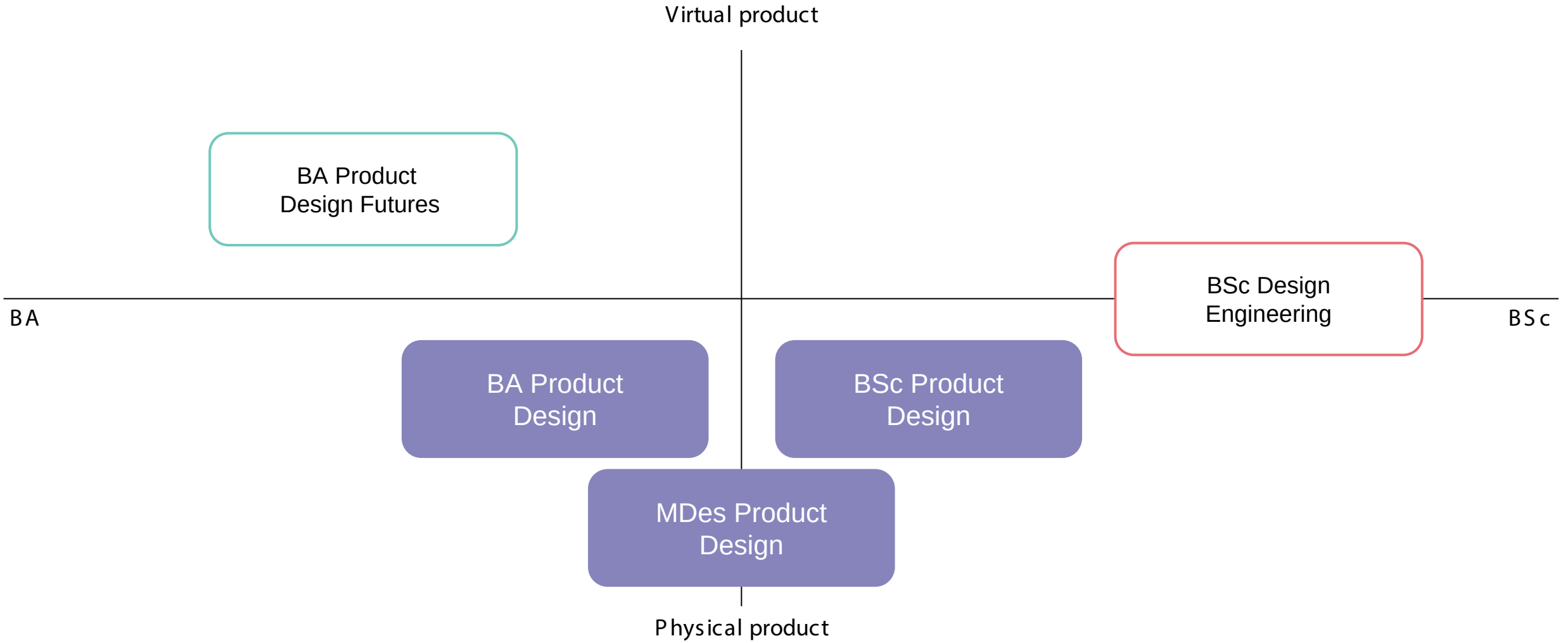
Final Year BSc Project

Snug - exhibited at New Designers 2017

BA/BSc/MDes (Hons) Product Design



BA/BSc/MDes (Hons) Product Design



Final Year BSc Project

OPTIMUM - exhibited at New Designers 2017

BA/BSc/MDes (Hons) Product Design

Winner of IED Student Award 2017

iED support inspire achieve

Final Year BA Project

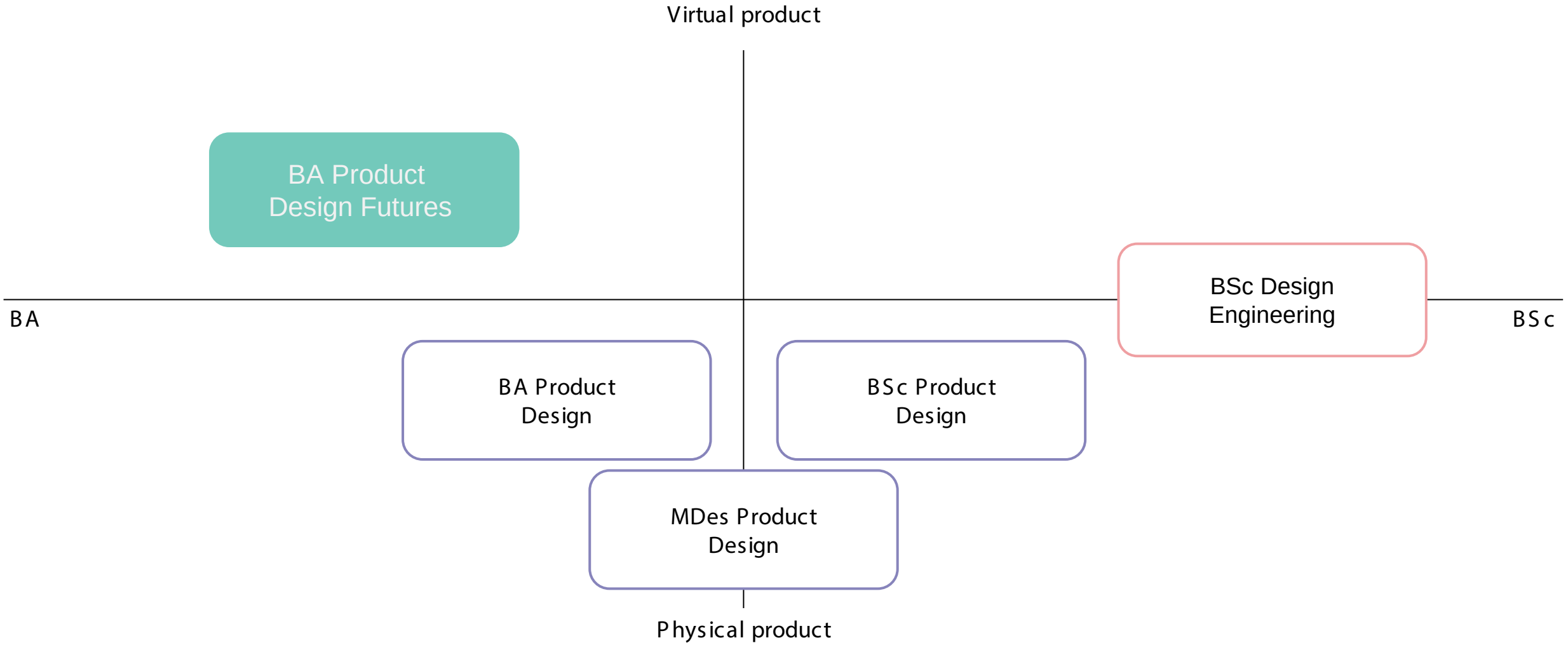
Poppet - exhibited at New Designers 2017

BA/BSc/MDes (Hons) Product Design

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

BA (Hons) Product Design Futures

BA (Hons) Product Design Futures



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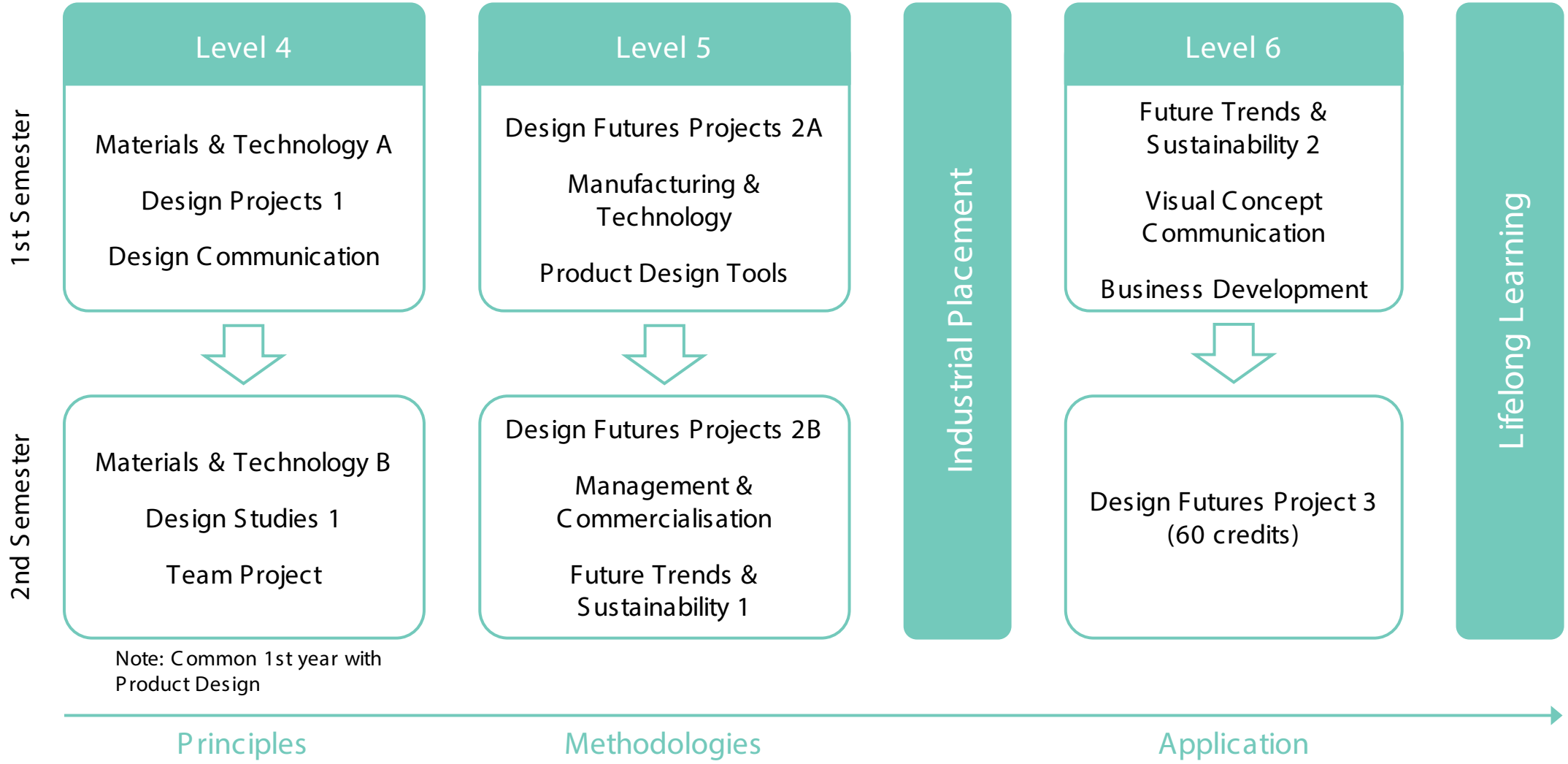
Course Structure

BA (Hons) Product Design Futures

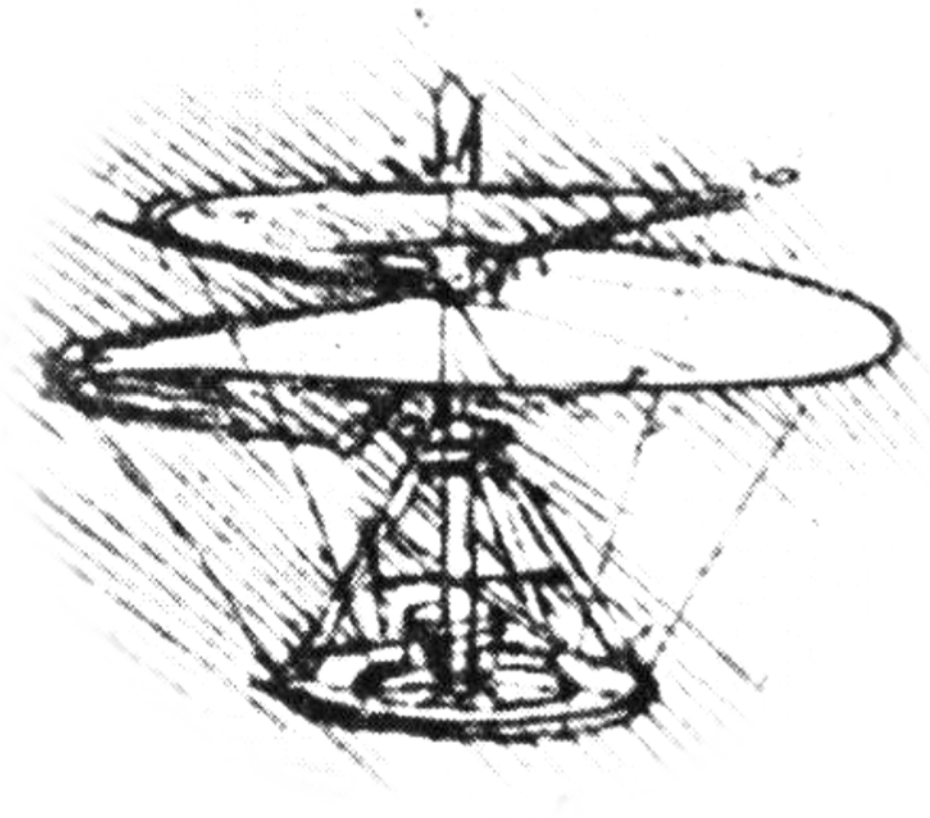


Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Course Philosophy

While Product Design is for the 'now', Product Design Futures aspires to look to the *'future of design'*

- Incorporate the latest design thinking & technological tools
- Understand global trends & challenges to find design opportunities
- Advance innovation, and shape the future of the design industry & environment
- IED Accredited to Registered Product Designer (RProdDes)



What you can expect from this course

BA (Hons) Product Design Futures

Study of Global Trends

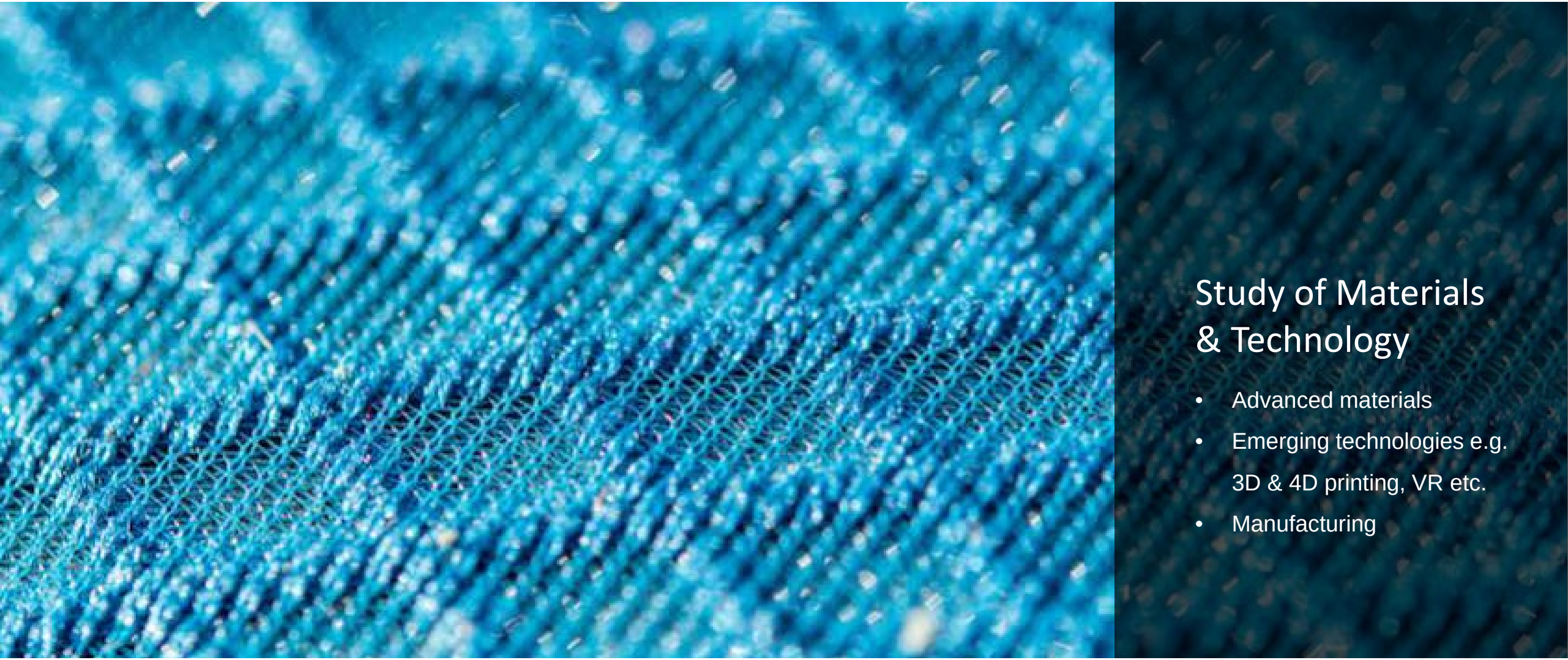
- Design Trends
- Climate change
- Human Centred Design
- Societal change
- Series of internal & external guest lectures

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Ref. https://www.ipsos.com/en-dk/global-trends-2020

What you can expect from this course

BA (Hons) Product Design Futures



Study of Materials & Technology

- Advanced materials
- Emerging technologies e.g. 3D & 4D printing, VR etc.
- Manufacturing

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Ref. shutterstock

What you can expect from this course

BA (Hons) Product Design Futures

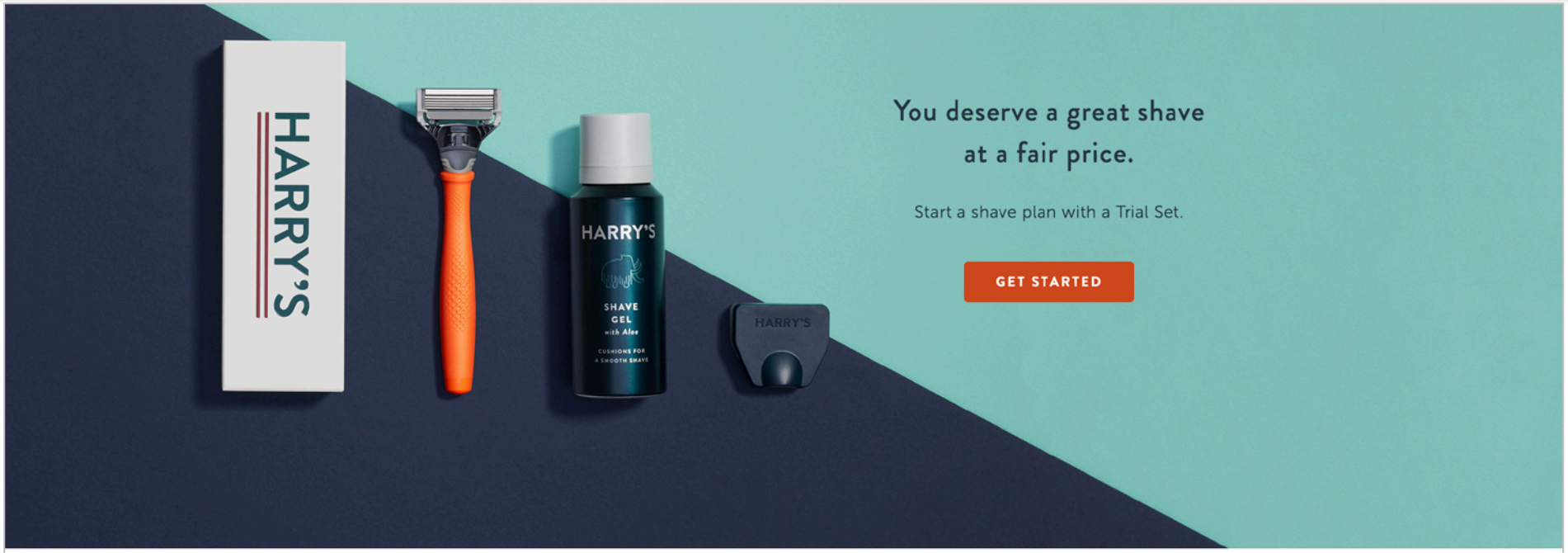
Utilisation of High-Quality Visualisation

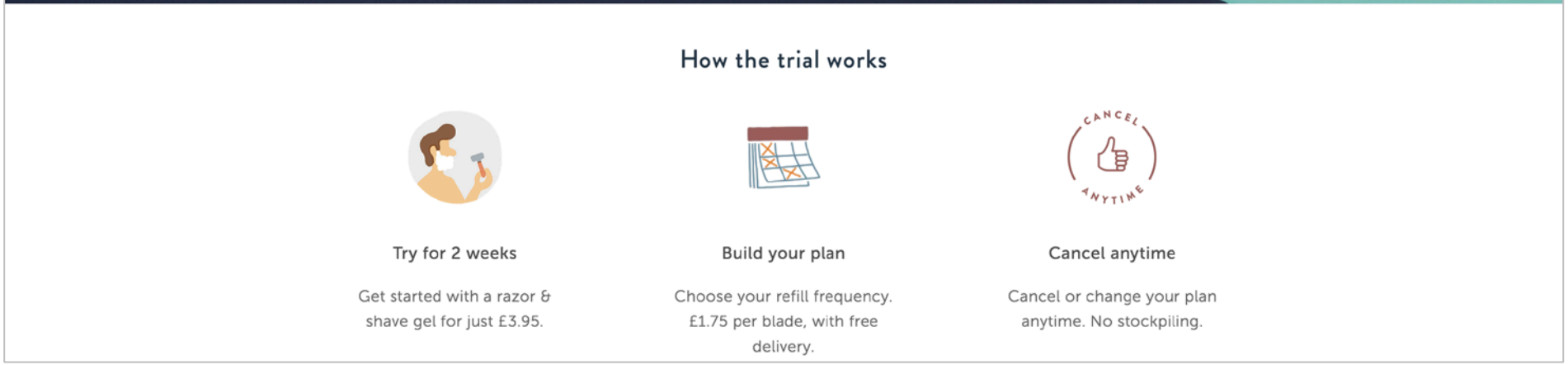
- 3D CAD programmes
- Photoshop & Illustrator

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

What you can expect from this course

BA (Hons) Product Design Futures





Study of Service & System

- Circular economy
- Life cycle analysis
- Stakeholder analysis
- Subscription model

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Ref. https://www.harrys.com

What you can expect from this course

BA (Hons) Product Design Futures

Utilisation of Additive Manufacturing

- FDM (Fused Deposition Modelling)
- SLA (Stereolithography)
- Carbone fibre
- DMLS (Direct metal laser sintering)

What you can expect from this course

BA (Hons) Product Design Futures

Utilisation of Virtual Reality

- VR Headset
- Motion controllers

Our Mission

BA (Hons) Product Design Futures

Designing for a Sustainable Future

Achieving the Sustainable Development Goals by DESIGN

Career prospects

BA (Hons) Product Design Futures

Beyond traditional product design:

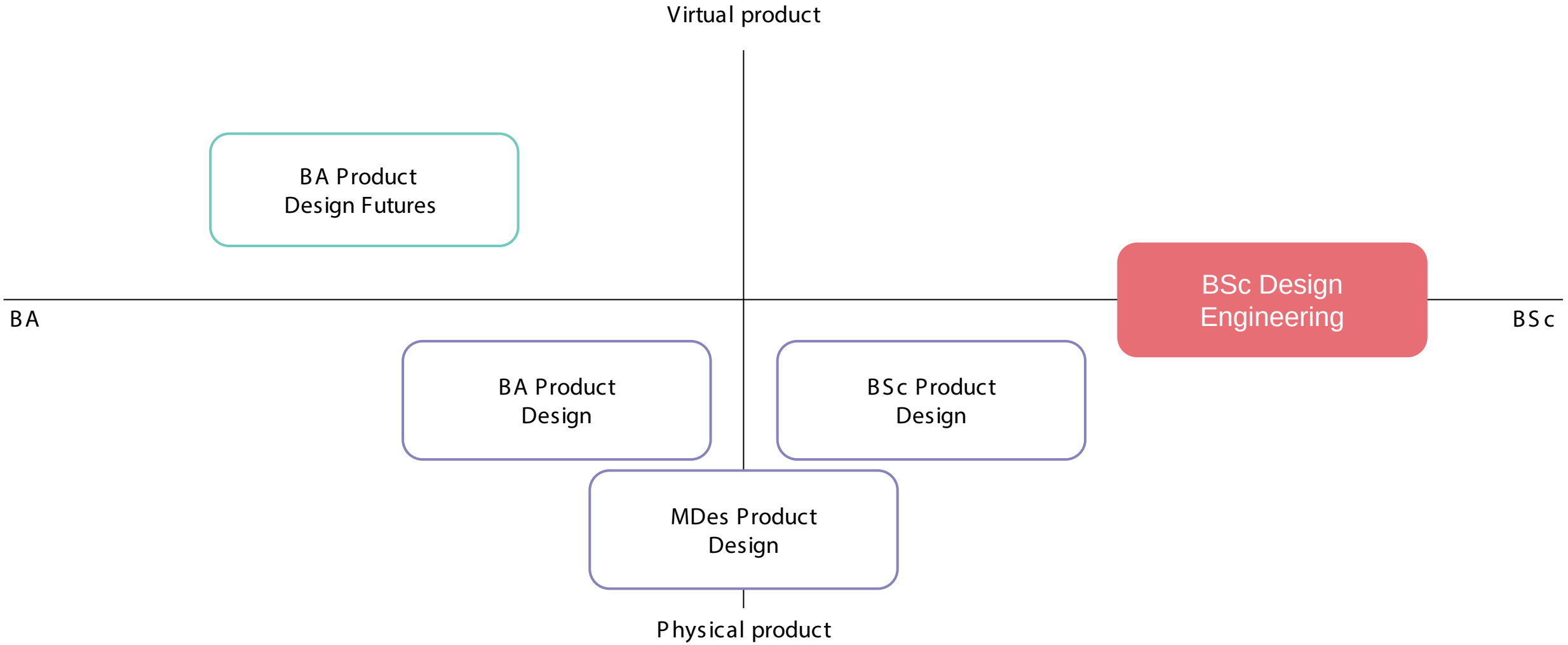
- Product developer
- Service/System designer
- UX designer
- Design consultant
- Design researcher
- Futurist
- Entrepreneur

Please see www.bournemouth.ac.uk/courses for the latest information about this course.

Ref. http://www.soissonandassociates.com/services/meeting-facilitation-group-process-design.html

BSc (Hons) Design Engineering

BSc (Hons) Design Engineering



Please see www.bournemouth.ac.uk/courses for the latest information about this course.

The Design Engineer

BSc (Hons) Design Engineering

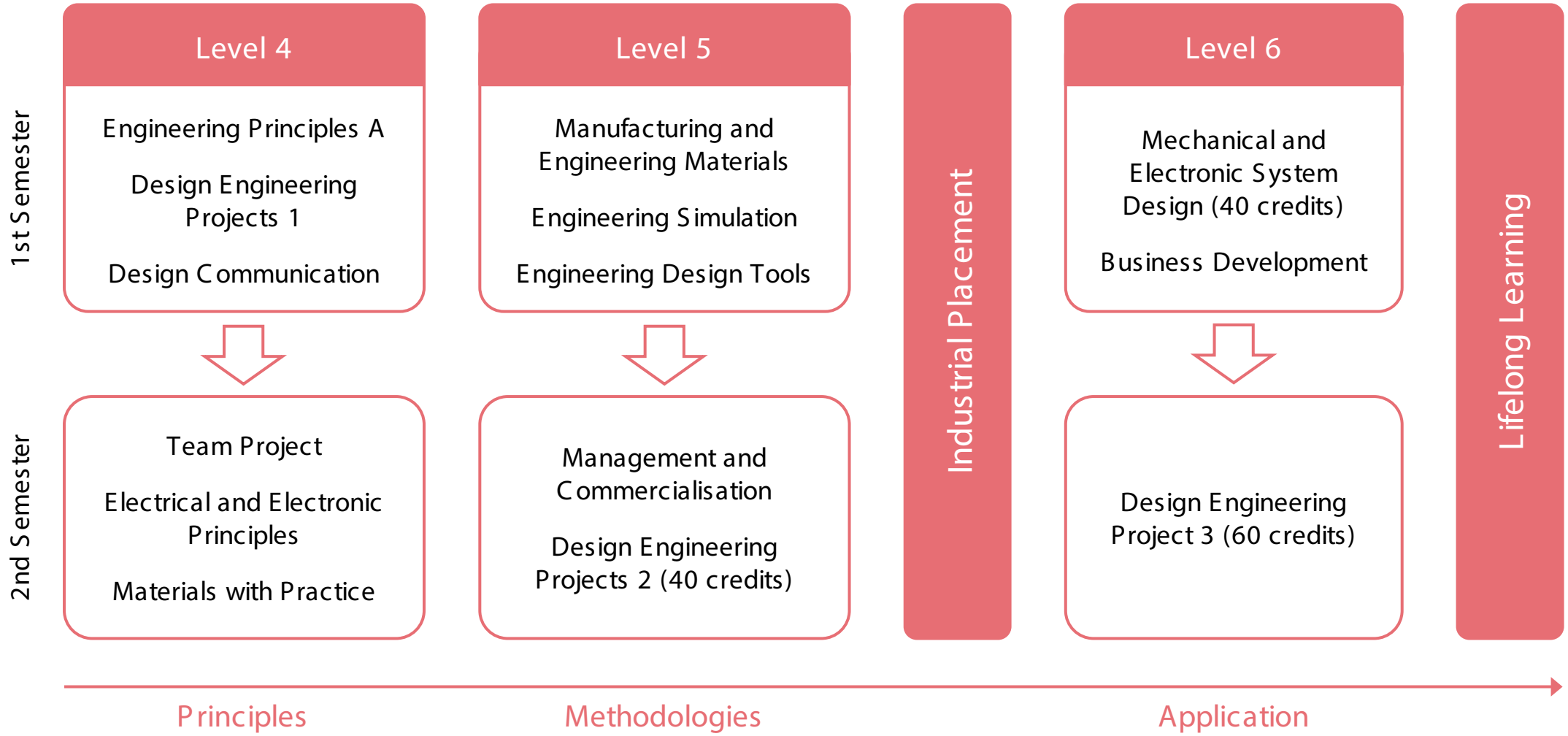
- Works with a team of marketers, engineers and designers
- Directs the design process
- Drives innovation
- Deploys a range of engineering disciplines to solve design problems
- Ensures a product functions, performs and is fit for purpose.

Course Philosophy

- Devise engineering solutions to design problems
- Design for the mass & niche market
- Utilise advanced computer tools:
  - innovate technological solutions
  - optimise materials selection
- IED Accredited to Incorporated Engineer (IEng)

Course Structure

BSc (Hons) Design Engineering



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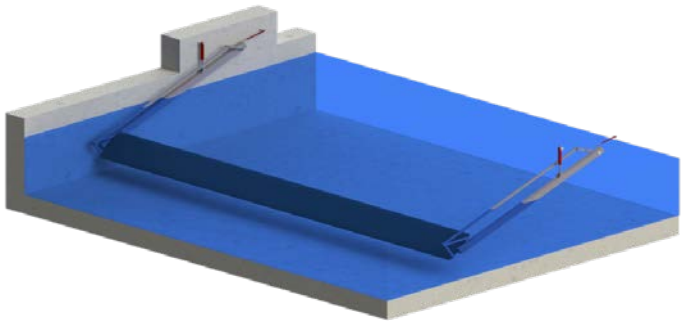
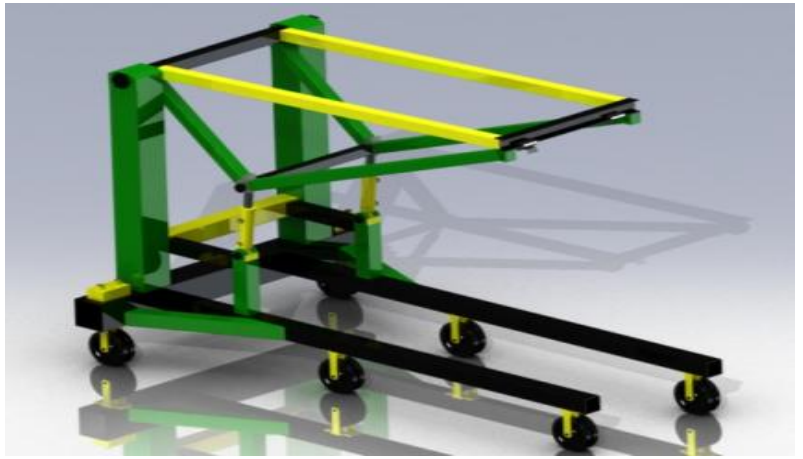
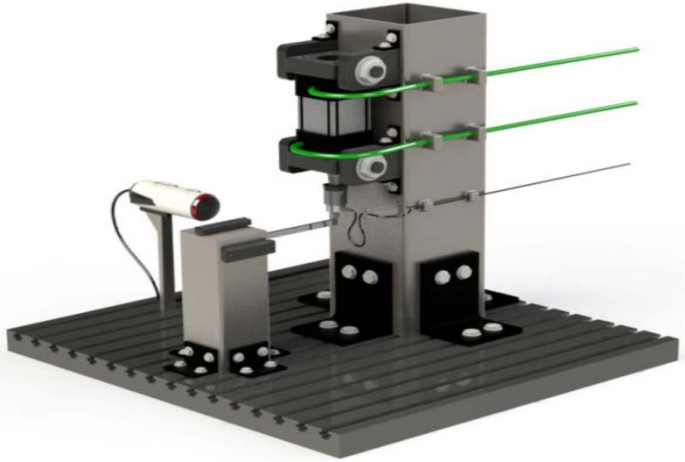
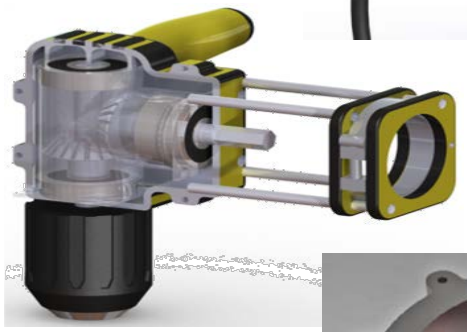
Niche & Mass Market

BSc (Hons) Design Engineering









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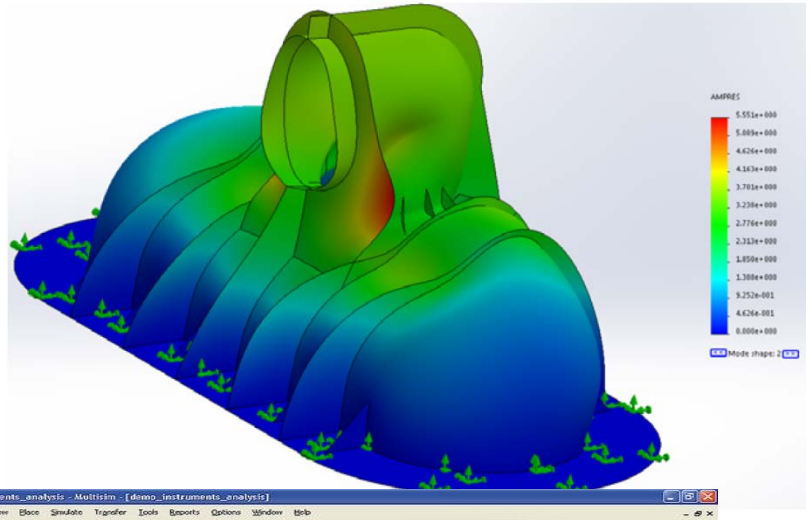
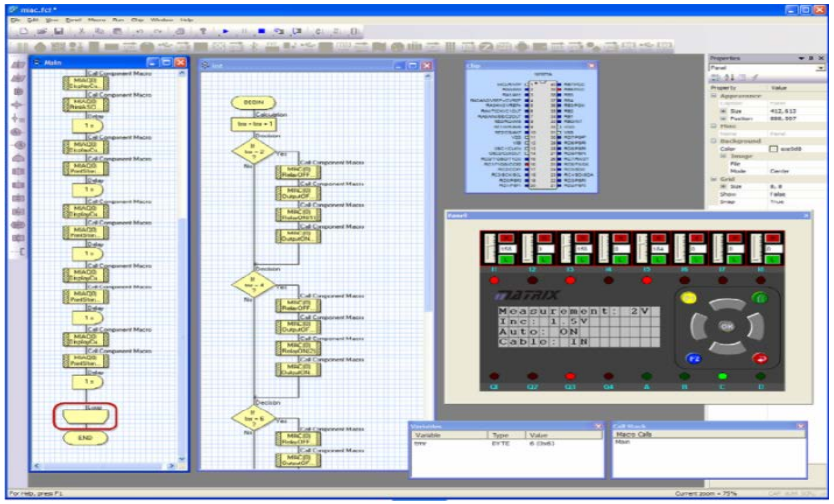
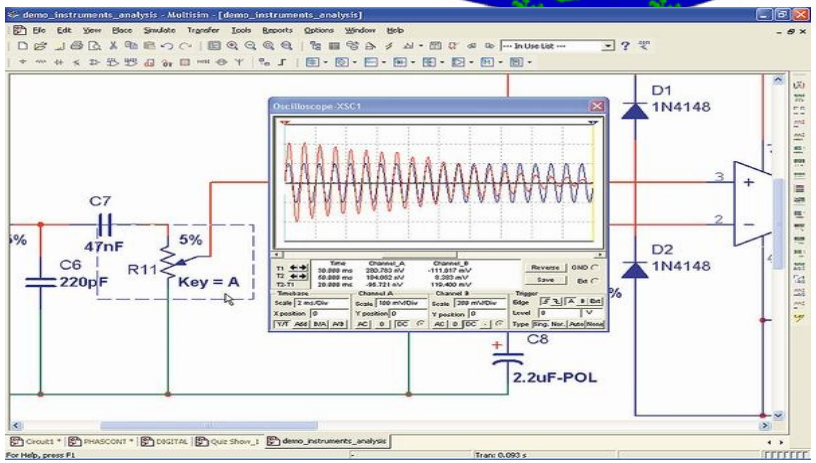
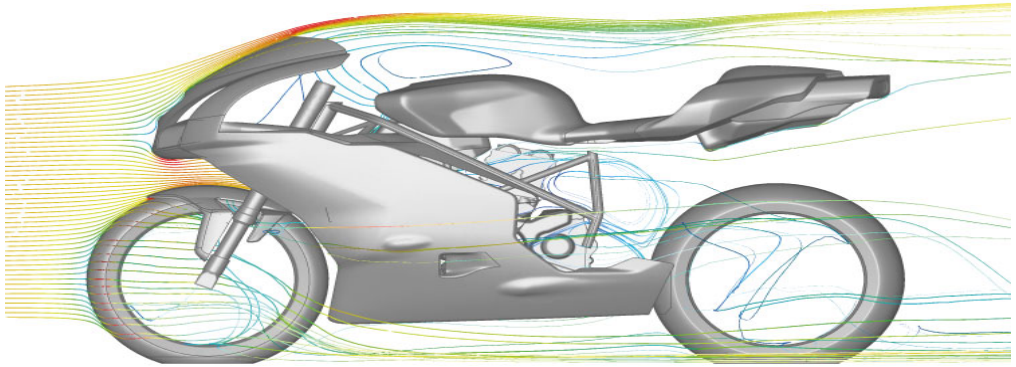
Design Analysis

BSc (Hons) Design Engineering









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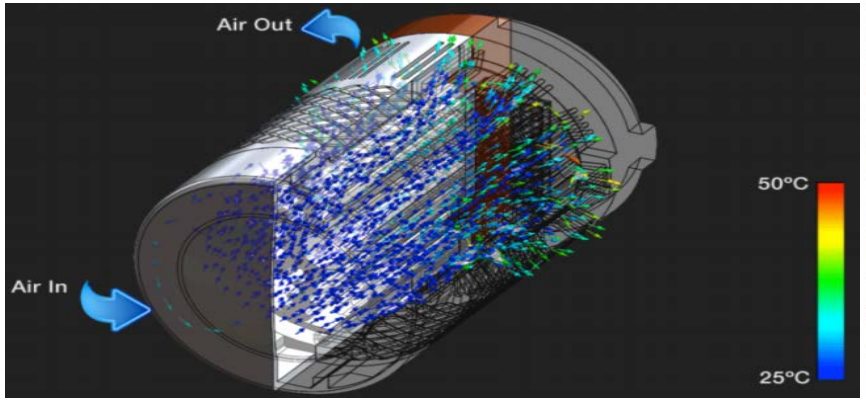
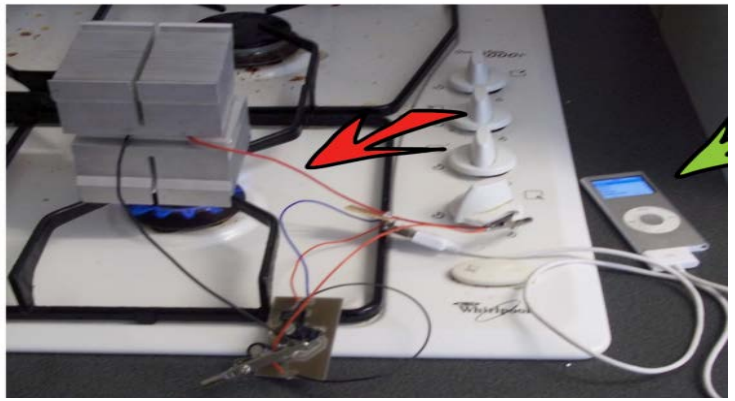
Final Year Projects

BSc (Hons) Design Engineering





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Final Year Projects

BSc (Hons) Design Engineering

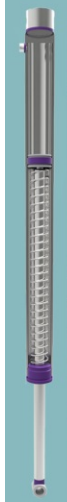
Bright Buoy

Helen Bermingham

THE JAMES DYSON FOUNDATION

Bright Buoy is a wave powered navigational aid which works alongside current solar powered competitors. The product utilises the rise and fall of waves. The piston remains stationary as the cylinder embedded within the buoy oscillates; forcing pressurised fluid through the hydraulic system.

Some of the following key components within the system:

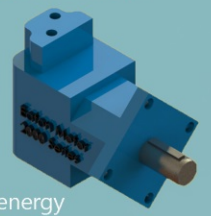


Hydraulic Spring Return Cylinder

A single acting cylinder forces pressurised fluid through the system, the spring enables the piston to return back to its original position.

Eaton Motor 2000

A hydraulic motor converts fluid power into rotational movement.

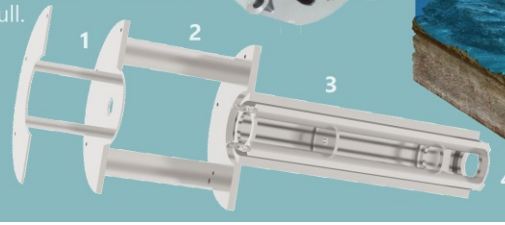


DC-520 Generator

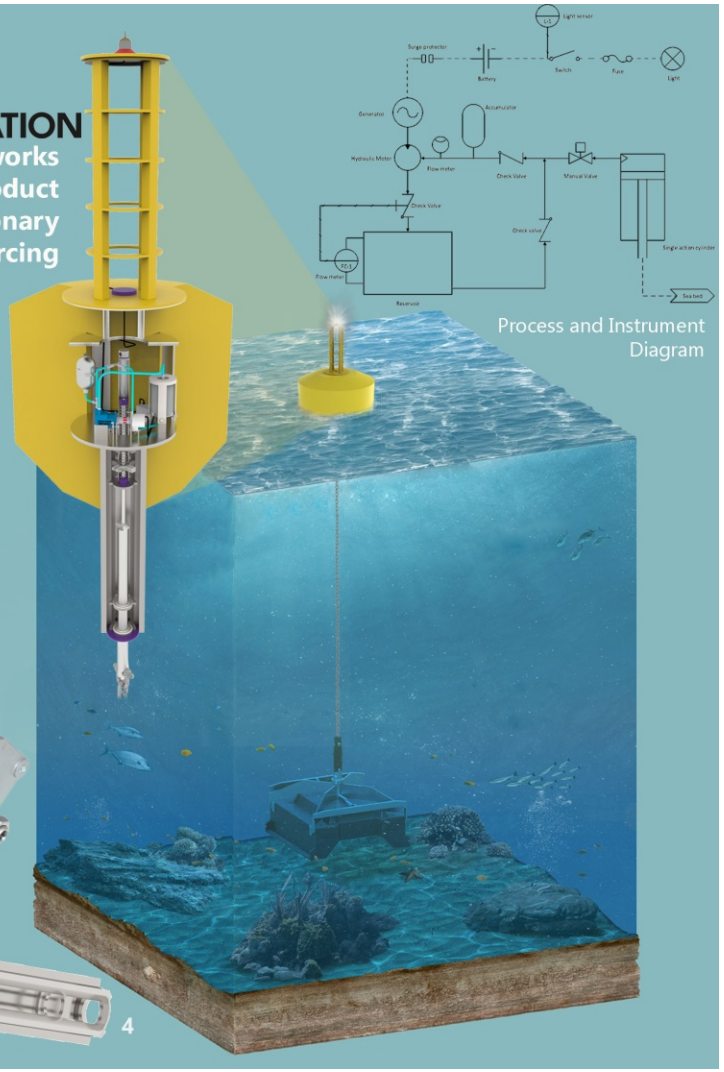
The electrical generator converts mechanical energy into electrical energy, this is then stored in a battery which has 70 hours of charge available.

Structural Components

Made from grade 316 Stainless Steel, the structure supports secures the hydraulic and electrical components and sits within the Hull.



1-Hull Chassis Extension
2-Hull Chassis
3-Tailpipe
4-Tailpipe Chassis



Process and Instrument Diagram

Final Year Projects

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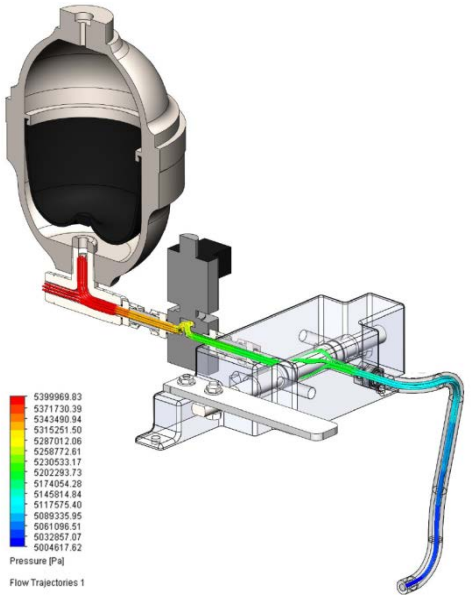

$$\Delta P = 5400053.51 - 5385638.08 \quad (25)$$

$$\Delta P = 14415.43\ Pa$$

Control Valve Total Pressure Loss

$$\Delta P = 14415.43 + 93739.15 \quad (26)$$

$$\Delta P = 108154.58\ Pa$$

Total System Pressure Loss

$$\Delta P_{Total} = 108155 + 88689 + 57314 \quad (27)$$

$$\Delta P_{Total} = 254158\ Pa$$

Hydraulic Motor Pressure

$$P = 5400000 - 254158\ Pa \quad (28)$$

$$P = 5145842\ Pa$$

$$P = 5.15\ MPa$$

$$K = \frac{K_1}{Re} + K_\infty \left(1 + \frac{K_d}{D_n^{0.3}}\right) \quad (22)$$

Tee Through branch as an elbow

As r/D = 1.5

$$K = \frac{800}{654} + 0.14\left(1 + \frac{10.6}{4^{0.3}}\right)$$

$$K = 2.34$$

90^0 Elbow

As r/D = 5 a long radius was used,

$$K = \frac{800}{654} + 0.066\left(1 + \frac{10.3}{4^{0.3}}\right)$$

$$K = 1.74$$

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Industrial Opportunities

BSc (Hons) Design Engineering

- Aerospace
- Automotive
- Chemical and Process
- Communication
- Electrical and Electronics
- Medical
- Military and Defence
- Rail and Marine
- Structural and Civil

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01202 961 916

askBUenquiries@bournemouth.ac.uk

Contact us

+44 (0)1202 961916
futurestudents@bournemouth.ac.uk

The university has consulted the latest available information in the production of this presentation for delivery in **January 2021**, but cannot be held liable for its accuracy.

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