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Refer to guidance notes for completion of each section of the specification.

Module Code:	ENG558
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Module Title:	Ergonomics and Human Factors.
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Level:	5	Credit Value:	20
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Cost Centre(s):	GAME	JACS3 code:	J920/100052
		HECoS code:	

Faculty	FAST	Module Leader:	Martyn Jones
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Scheduled learning and teaching hours	20 hrs
Placement tutor support	0hrs
Supervised learning eg practical classes, workshops	10 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total contact hours	30 hrs
Placement / work-based learning	
Guided independent study	170 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
BA(Hons) Product Design	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Pre-requisites
N/A

Office use only	
Initial approval: 08/09/2020	Version no:1
With effect from: 01/09/2022	
Date and details of revision:	Version no:

Module Aims

This module aims to build upon the knowledge gained in Level 4 User Centred Design. Ergonomics and human factors relates to how the design of a product or system can be optimised to maximise productivity for the user by reducing fatigue, effort and discomfort during use. This will provide an insight into the physiological and psychological relationship between the product and end user.

Module Learning Outcomes - at the end of this module, students will be able to

1	Develop and analyse the different types of ergonomics approaches in product design.
2	Apply anthropometric data in design of products and evaluate a products effectiveness
3	Critically assess the suitability of current products in terms of ergonomics and recommend how they can be improved by human factor design.
4	Demonstrate critical understanding of methodologies on gathering and evaluation test data of human factor design

Employability Skills The Wrexham Glyndŵr Graduate	I = included in module content A = included in module assessment N/A = not applicable
CORE ATTRIBUTES	
Engaged	I
Creative	IA
Enterprising	IA
Ethical	IA
KEY ATTITUDES	
Commitment	IA
Curiosity	IA
Resilient	IA
Confidence	IA
Adaptability	IA
PRACTICAL SKILLSETS	
Digital fluency	IA
Organisation	IA
Leadership and team working	I
Critical thinking	IA
Emotional intelligence	IA
Communication	IA

Derogations

None

Assessment:

Indicative Assessment Tasks:

Students will be asked to undertake a reverse engineering process with respect to the ergonomic of a product of their choice. The final design will be assessed and tested for user experience in a human factor study.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-4	Coursework	100

Learning and Teaching Strategies:

- Lectures will allow students to understand the foundations of ergonomics and human factors and how they relate to the design of products, components and systems. The module will use traditional lectures, seminars, laboratories and CAD/ prototyping sessions.
- Assignments will allow students to analyse current design and recommend improvements in terms of designing for use.
- Technical demonstrations will enable students to acquire the technical skills needed to complete the assignments.
- Tutorial guidance, group critique and student seminars will underpin the student's skill development and understanding of the design and creation process.

Syllabus outline:

This module will investigate the psychological and physiological aspect of design. The relationship between the worker, their work and their environment will be discussed in relation to how products are designed for particular applications. Anthropometrical data and physical loading will be reviewed to allow designs to ease fatigue on the human body.

Students will be encouraged to find and critique current design of products from a human factors perspective and redesign to suit particular subsets of society as required for example people with limited mobility. Design, prototyping and testing will be developed for products so students can feel their design in practical use.

Indicative Bibliography:**Essential reading:**

Dul, J. (2008), *Ergonomics for Beginners*. Routledge.

Other indicative reading

Kroemer, K. (2005), *Extraordinary Ergonomics: How to Accommodate Small and Big Persons, The Disabled and Elderly, Expectant Mothers, and Children*. FL: CRC Press.

Kroemer, K., Kroemer, H., Kroemer – Hoffman, A. (2018), *Ergonomics: How to Design for Ease and Efficiency*. Academic Press.

Pheasant, S., and Haslegrave C.M. (2005), *Bodyspace: Anthropometry, Ergonomics and the Design of Work*. FL: CRC Press.

Wilson, J.R. and Sharples, S. (Eds) (2015), *Evaluation of Human Work*. CRC Press.

Guastello, S. (2006), *Human Factors Engineering and Ergonomics: A Systems Approach*. CRC Press.

Websites and Publications:

<https://www.ergonomics.org.uk/>

<https://www.ergonomics.co.uk/Blog>

<https://www.journals.elsevier.com/applied-ergonomics>

<https://www.journals.elsevier.com/international-journal-of-industrial-ergonomics>

<https://www.hse.gov.uk/humanfactors/topics/design.htm>