

Module specification

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Module Code	ENG794
Module Title	CAD & Digital Production
Level	7
Credit value	20
Faculty	FAST
HECoS Code	100160
Cost Code	GAME

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc Innovative Design MSc Innovative Design with Advanced Practice	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	5 hrs
Placement tutor support	0 hrs
Supervised learning e.g., practical classes, workshops	25 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	30 hrs
Placement / work-based learning	0 hrs
Guided independent study	170 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	22 nd Aug 2022
With effect from date	Sept 2022
Date and details of revision	
Version number	1

Module aims

- The module aims to develop and enhance the student’s skills in working with industry standard computer aided design software and digital production methods.
- It will provide students with the application and appreciation of how to design and model products before evaluating them against product design requirements to enable them to be digitally produced.
- The module is an opportunity for students to show off their skills and utilise all aspects of digital fabrication methods available on at Wrexham Glyndwr University.

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

1	Critically evaluate the principles of identified CAD software for different digital production techniques.
2	Develop and analyse the processes used with reference to establish industry practice CAD and digital production and how engineering sustainability can be applied.
3	Critically reflect on the different methods of digital production available and how they can be used in industry and their limitations.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment One: An individually prepared portfolio consisting of a range of assessments such as case studies, laboratory work and Moodle Quiz, introducing the topic areas of each learning outcomes. Guidance material will be provided, which the students will use to generate a Portfolio of work. Assessment one is an individual prepared portfolio and represents 100% of the overall module mark.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-3	Portfolio	100%

Derogations

None

Learning and Teaching Strategies

A series of workshop style lectures with student-led seminars and small group activities. Directed learning using library and internet resources will be facilitated using Moodle and MS Teams. This module will also follow the ALF (Active Learning Framework) guidelines, which will include alternative methods of assessment and a blended approach to delivery, with some theory and software sessions being delivered online (depending on requirements and student experience).

Indicative Syllabus Outline

- 3D CAD sessions
- 3D printing processes and limitations
- Additive manufacture technologies
- 3D scanning and reverse engineering
- CNC machining

Indicative Bibliography:

Essential Reads

E. Riley and S. Martinez, *The Art of Digital Fabrication: STEAM projects for the Makerspace and Art Studio*. Torrance, CA: Constructing Modern Knowledge Press, 2019.

Other indicative reading

B. Hallgrímsson, *Prototyping and Modelmaking For Product Design*. 2nd ed. London, UK: Laurence King Publishing Ltd, 2019.

M. SENESE, *MAKE: Volume 66*. O'REILLY MEDIA, 2019.

G. Canizare, *Digital Fabrications: Designer Stories for a Software-Based Planet*. ORO Editions/Applied Research & Design, 2019.

P. Rodgers and A. Milton, A, *Product Design*. London: Laurence King Publishing Ltd, 2011.

M. Cagan, *Inspired: How to Create Tech Products Customers Love*. 2nd edn. John Wiley & Sons, 2018.

Plus, various others to be signposted on Moodle.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes

Engaged
Creative

Key Attitudes

Commitment

Curiosity

Resilience

Confidence

Adaptability

Practical Skillsets

Digital Fluency

Organisation

Critical Thinking

Communication