Unit Title	Innovation and the Unknown
FHEQ Level	Level 6
Unit Code	USE18302
Credit Value	30
Unit Type	Subject

Learning Hours

Staff – Student Contact Hours		**Independent Study Hours**	
Classes	60	Independent Study	120
Supervised access to resources		Preparation for Assessment	60
		Unsupervised Access to Resources	60
Total			**300**

Unit Description

This unit offers a counterpoint to the *Major Project* unit and focuses on creativity and originality through working in unfamiliar territory. A major strand of this unit is algorithmic design, which brings mathematical and software techniques to bear in solving design and engineering problems, and can lead to design solutions which would not be achieved through more conventional techniques of practice. Process and experimentation, including rapid prototyping, testing, and agile methods, are essential components of this unit, and the route to creating radical code-driven and/or code analysis-driven outcomes. (Originate Principle)

Traditional tools for working with materials in 2D and 3D are supplemented with pattern and code, and you are encouraged to think mathematically, and to become fluent in a new design medium where the design process is highly exploratory, often leading to surprising, but rewarding, results. (Originate Principle)

In this unit we investigate aspects of algorithmic design, potentially including genetic algorithms, generative grammars, parameter spaces, data transformation and software engineering techniques. (Integrate Principle)

You are encouraged to challenge your own and others' preconceptions of user experience, interaction and interface, how code and design relate to the production of outcomes, and comment or speculate on the role algorithms play in industry, society and possible futures. This is an opportunity to apply and extend expertise in a different context, and demonstrate the breadth of your understanding acquired during the program. (Cultivate Principle)

You will show professionalism and industry-readiness at the highest level through project ownership and authorship, and self-initiated practice and as such outcomes may be playful, issue-driven, speculative, entrepreneurial, industry-focused. (Integrate Principle)

The Five Principles underpin the Mindsets and Skillsets Manifesto and are the foundation

upon which all course curriculum frameworks and unit specifications are based. The relevant Principles as stated below have been mapped against the Learning Outcomes relevant to each course unit and at each level (see Programme Specifications for full description of the Five Principles):

1. Cultivate / Where the individual thrives.
2. Collaborate / Where disciplines evolve.
3. Integrate / Where education engages industry.
4. Advocate / Where purpose meets practice.
5. Originate / creativity meets technology.

Unit Indicative Content

- Critical engagement with UX and UI conventions
- Process-driven outcomes and experimentation leading to innovation
- Grasp of mathematical and software concepts (trigonometry, logic, design patterns) applicable to a code-based design process
- Application of algorithmic methods to digital media systems such as sound, video or fabrication

Unit Aims

To create a portfolio quality project

Introduce new ways of thinking about design as an algorithmic process

To demonstrate a wide range of abilities relating to UX and UI creative practice

To create original outcomes that challenge the conventions of UX/UI

To emphasise and explore the power of process and experimentation

To encourage agile and innovative working methods

To explore how user experience, design, code fundamentals can be applied to situations requiring rapid creative problem solving

Unit Learning Outcomes

LO 2 Concept/Ideation

Critically appraise and evaluate appropriate research materials to generate workable concepts or strategic project themes that inform and underpin project development.

Related Principle: ORIGINATE

LO 3 Development/Prototyping

Investigate potential pathways that result in appropriate solutions, informed by a systematic understanding of the principles of the creative process.

Related Principle: INTEGRATE

LO 6 Critical and creative mindsets

Evaluate a range of critical approaches in order to form an independent position. **Related Principle: ORIGINATE**
LO 8 Professional Identity Align our professional identity as a practitioner with a viable career context. **Related Principle: CULTIVATE**

Learning and Teaching Methods

Briefings
Lectures
Project work
Seminars
Workshops
Group work
Online activity
Individual Presentations and critiques
Self-directed independent study

Assessment methods and tasks

More detailed assessment tasks will be specified in the brief.

Assessment tasks	**Weighting (%)** *(one grade or multi-grade unit)*
Portfolio of work with supporting physical and digital material detailing project research, process and development.	Unit assessed holistically (100% of unit)

Indicative Assessment Criteria

Assessment criteria are the basis on which the judgment of the adequacy of the work is made. A more detailed assessment criteria will be specified in the brief.

- Deliver a portfolio-quality project (L02, L06, L08)
- Evidence a wide range of abilities relating to UX and UI creative practice (L02, L03, L06)
- Show original outcomes which challenge the conventions of UX/UI (L02, L03, L06, L08)
- Evidence a strong use of code-based process and experimentation (L02, L03, L08)
- Show skills in applying algorithmic methods to digital media (L02, L03)
- Show application of skills applied to situations requiring rapid creative problem solving (L02, L03, L06)

Essential Reading list

1. Agkathidis, Asterios (2015) *Generative design*, London: Laurence King
2. Basar, Shumon (2015) *The age of earthquakes,* London: Penguin
3. Christian, Brian & Griffiths, Tom (2017) *Algorithms to live by: the computer science of human decisions*, London: William Collins Books
4. Doctorow, Cory (2014) *Information doesn't want to be free: laws for the Internet age,* San Francisco: McSweeney's
5. Dunne, Anthony (2013) *Speculative everything: design, fiction, and social dreaming,* Cambridge, MA: MIT Press
6. Ito, Joi (2016) Whiplash: how to survive our faster future, New York: Grand Central Publishing
7. Maeda, J. (2001) *Design by Numbers*, London: First MIT
8. Reas, Casey (2010) *Form & code in design, art and architecture,* New York: Princeton Architectural
9. Shiffman, Daniel (2012) *The nature of code,* United States: D.Shiffman
10. Tedeschi, Arturo (2014) *AAD Algorithms aided design: parametric strategies using Grasshopper,* Italy: Le Penseaur