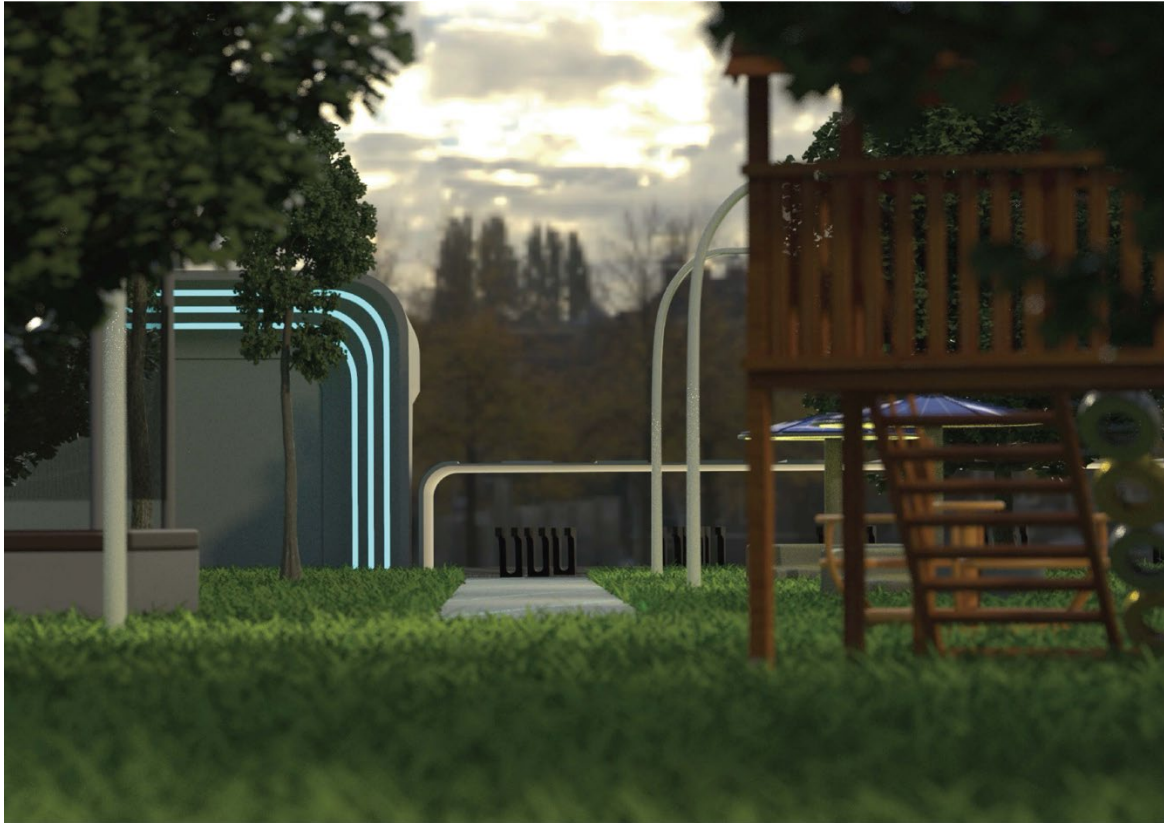


**Glasgow School of Art Course Specification**

**Course Title: Re/Design: biomimicry inspired design for complex ecosystems**



*Zero Carbon School Run: Power Play, Tianshuo Yang, 2023*

<b>Course Code</b>	<b>HECOS Code</b>	<b>Academic Session</b>
		<b>2024-25</b>

<b>Course Title</b>	<b>Re/Design: biomimicry inspired design for complex ecosystems</b>
<b>Course Contact</b>	<b>Stuart Bailey</b>

<b>Credits</b>	<b>20</b>
<b>SCQF Level</b>	<b>11</b>
<b>When Taught</b>	<b>Semester 2</b>

<b>Associated Programmes</b>	<b>MSc Product Design Engineering</b>
<b>Lead School</b>	<b>School of Design</b>
<b>Other Schools</b>	
<b>Date of Approval</b>	<b>PACAAG August 2024</b>

### Course Introduction

The Re/Design PGT elective enables students to develop new practical skills grounded in theory around regenerative, sustainable and responsible design for people and the planet. During this course, students will be encouraged to reflect on and then incorporate new methods and tools within their design process. Exploring beyond the Re's of sustainability (Rethink, Refuse, Reduce, Reuse, Repair, Recycle) and taking inspiration from living systems and biomimicry, this course enables students to explore regenerative ecosystems across their design disciplines and create future product-service-system scenarios for an Open-Source Circular Economy.

Visual storytelling is an important tool within the designer's skill set. The Re/Design elective offers hands-on sessions where students learn to visualise design narratives making sense of complex systems of relationships; facilitate collective sensemaking to enable collaborative thinking and decision making; visualise the layers and scales of regenerative design, zooming in and zooming out to identify opportunities for innovative design solutions. Developed from product-service-systems thinking, these tools and methods enable designers to explore, evaluate and design within complex systems with reference to living systems and biomimicry.

This course will be delivered through a blend of workshops/tutorials/lectures/seminars that inform and support a design project, the object of which is taken from within each student's design specialism. To supplement the design tools and methods, we employ Life Cycle Assessment and AI digital platforms to generate data that inform and validate regenerative and circular design practices with reference to the Right-to-Repair Directive and ISO standards on Circular Economy.

### Course Aims

In keeping with all Stage 2 Electives, this course broadly aims to:

- Encourage interdisciplinarity, critical reflexivity from within an open set of choices;
- Foster deep investigative approaches to new or unfamiliar areas of practice and theory;
- Cultivate self-directed leadership and initiative-taking in both applied and abstract modes of practice/study not necessarily associated with a student's creative specialism;
- Enable flexible, ethical exploration and connection of diverse knowledge and understanding within a specialist program of study.

In specific terms, the aims of this course are to:

1. Develop understanding of complex regenerative ecosystems by employing nature-inspired design strategies.
2. Introduce methods and tools adapted from product-service systems, circular design, and life-cycle assessment to help you map and visualise complex networks of stakeholder relationships and interactions.
3. Develop design narrative tools that enable students to communicate and share design research and analysis of complex ecosystems and identify design opportunities.
4. Develop design strategies for a project outcome incorporating principles from circular, sustainable, regenerative and responsible design in accordance with appropriate regulations and standards.

### **Course Intended Learning Outcomes**

By the end of this course students will be able to:

1. Apply nature-inspired design strategies drawn from biomimicry and living systems to investigate, understand and develop regenerative-ecosystems.
2. Identify, analyse and evaluate complex regenerative systems of production by applying mapping methods and tools adapted from biomimicry, service, circular design and life cycle assessment.
3. Generate regenerative-design opportunities evidenced and justified through visual design scenarios and narratives.
4. Propose and develop a responsible design outcome that demonstrates biomimicry, regenerative, circular and sustainable design thinking with reference to appropriate regulations and standards.

### **Indicative Content**

The course will introduce students to:

- Applying principles of biomimicry within a design project inspired by nature and living systems.
- Concepts of mapping and visualising regenerative, circular and product-service-systems to design within a circular economy.
- Communicating research, investigations and analysis through visual design narratives to facilitate collective understanding and sensemaking and encourage collaborative decision making.
- Visualising, analysing and identifying design opportunities within complex ecosystems.
- Evaluating and validating design decisions and concept development using data garnered from life-cycle assessment, reparability and measurement of circularity performance.
- Relevant regulations and standards such as the Right-to-Repair Directive, Reparability Index and ISO standards for the circular economy.
- Developing responsible product-service ecosystem outcomes relevant to the student's design specialism.

### Description of Learning and Teaching Methods

This course follows a pattern of one three-hour weekly session for 10 weeks, taught on Wednesdays. Each session will provide two hours contact plus time for collaborative project work. A range of learning and teaching methods are used to support students engage in an explorative, collaborative and individual approach to learning. As an indication, these will include:

- practical in-person workshops
- a design project
- tutorials
- lectures
- interim presentation seminar
- final presentation seminar

Independent learning skills will be developed and supported through guided activities such as the workshops and tutorials supported by digital online learning resources available on Canvas.

Indicative Contact Hours	Notional Learning Hours
20	200

### Description of Formative Assessment and Feedback Methods

Students are supported in their learning through a range of workshop and tutorial activities with staff and peers that offer ongoing formative feedback as they progress through the course. Formative feedback will be provided from staff through tutorial discussion, workshop instruction and presentation seminars, and from peers as tutorial buddies and peer feedback during group tutorials and presentations.

Formative feedback offers students the opportunity to present the progress of their work to staff and or peers, receiving feedback to support the development and refinement of their work towards submission for summative assessment. The purpose of this continuous formative feedback is to support students in developing and refining their project work towards submission for summative assessment.

### Description of Summative Assessment arrangements

Summative assessment is designed to support students to review, collate, and communicate work produced in response to project briefs and learning and teaching activities associated with the course.

For this PGT elective the project submission will be assessed on a portfolio of work evidencing the design process employed and that clearly communicates the proposed design outcome. This will be submitted as a digital PDF document for assessment.

Submissions will be assessed and moderated in line with the Code of Assessment, which outlines reassessment opportunities where a student has not passed the course.

Description of Summative Assessment Method	Weight %	Submission week
<p>Students are required to submit a portfolio of work that evidences their design process and clearly communicates the proposed design outcome. The portfolio document will be an A3 landscape format PDF and will be a maximum of 15-pages.</p> <p>The portfolio of work collates and edits the work generated throughout the project into one digital PDF document to present a coherent visual narrative of the design process undertaken in response to your design brief, which defines the object of your investigation, the opportunity identified from investigations of that object's ecosystem, and the intended benefits to be delivered by a re/design.</p> <p>The portfolio of work submission will be assessed holistically against the intended learning outcomes for this course.</p>	100%	Week 11, Stage 2

Exchange/Study Abroad	
Can this course be taken by Exchange/Study Abroad students?	Yes
Are all the students on the course taught wholly by distance learning?	No
Does this course represent a work placement or a year of study abroad?	No
Is this course collaborative with any other institutions?	No
If yes, then please provide the names of the other teaching institutions	

Reading and On-line Resources
<p>The course indicative reading and online resource list is accessible via <a href="#">Key Links</a>.</p> <p>Indicative resources:</p> <ul style="list-style-type: none"> <li>• Banyus, J, M. (1997) Biomimicry: Innovation inspired by Nature. William Morrow.</li> <li>• Charters, M. (ed) (2019), Designing for the Circular Economy. Routledge, Abingdon, Oxon.</li> <li>• Foster, P.A. (2014), The Open Organization. Gower Publishing Limited, Surrey.</li> <li>• Kapsali, V. (2016), Biomimetics for designers: applying nature's processes and materials in the real world. Thames &amp; Hudson Ltd.</li> <li>• Polaine, A., Lølie, L. &amp; Reason, B. (2013), Service Design; From Insight to Implementation. Rosenfeld Media, LLC, Brooklyn New York.</li> <li>• Raworth, K. (2017), Doughnut Economics. Penguin, UK.</li> <li>• Sangiorgi, D. &amp; Prendiville, A. (eds) (2017), Designing for Service: Key Issues and New Directions. Bloomsbury, London.</li> <li>• Wahl, D. C. (2016), Designing Regenerative Cultures. Triarchy Press, Axminster.</li> <li>• ISO 59004:2024 Circular Economy, Also ISO 59010:2024 &amp; ISO 59020:2024 <a href="https://www.iso.org/standard/80648.html">https://www.iso.org/standard/80648.html</a></li> </ul>