COURSE CONTENT

Course Code	DR3005
Course Title	Product Design IV
Pre-requisites	DR3006 Product Design III
No of AUs	3
Contact Hours	39 hours studio contact

Course Aims

In this advanced level course, you will investigate physical and digital devices, products, systems and environments and how technological advances allow for integration and embedding of technology. You will design for spatial environments and sustainable outcomes. This course will enhance your proficiency for designing devices, products, systems and environments and prepare you for a higher level of application in product design in year 4.

Intended Learning Outcomes (ILO)

By the end of the course, you should be able to:

1. Describe a range of product / industrial design, spatial and sustainable design methods used in the design of product concepts.
2. Generate and refine design concepts from idea to execution through various physical and/or digital media.
3. Apply product / industrial design, spatial and sustainable design methods to realize design projects based on various themes.
4. Present your design projects in a clear and cohesive manner through visual presentations and virtual/ physical models.
5. Constructively discuss and critique aspects of product / industrial design, spatial and sustainable design methods and presentation techniques employed in your own work and the work of your peers.

Course Content

Design for Spatial Environments
You will be introduced to the design process for spatial environmental designs with reference to scale, on site interaction, site environmental factors, structural & construction design, and drawing conventions for spatial environments.

Design for Sustainability
You will be introduced to the concept of Design for Sustainability as a whole system approach that considers the overall impacts of designs.
Tangible topics in systems thinking, biomimicry, renewable & natural materials, and dematerialization will be covered.

Design project
You will apply product/ industrial design, spatial and sustainable design methods to realize design projects based on various themes.

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Programme LO	Weighting	Team/ Individual
Continuous Assessment A single portfolio of work that demonstrates research development and outcomes in designing for sustainability	1,2,3,4	N.A	40	Individual
Design Project: Design for Spatial Environments and Sustainable Design Individual 40% As a team: - Individual contribution 20% - Team contribution 20%	1,2,3,4	N.A	40	Individual or Team
Continuous Assessment: Participation	5	N.A	20	Individual
Total			100%	

Reading and References

1. Benyus, Janine M. *Biomimicry: Innovation inspired by nature*. Harper Perennial, 2002
2. McDonough, William, and Michael Braungart. *Cradle to cradle: Remaking the way we make things*. North point press, 2010.
3. Negroponte, Nicholas. *Being digital*. Vintage, 1996.
4. Sterling, Bruce. *Shaping things*. The MIT Press, 2005
5. Thackara, John. *In the bubble: Designing in a complex world*. The MIT press, 2006.

Course Policies and Student Responsibilities

(1) General

You are expected to complete all assigned readings, activities, assignments, attend all classes punctually and complete all scheduled assignments by due dates. You are expected to take responsibility to follow up with assignments and course related announcements. You are expected to participate in all project critiques, class discussions and activities.

(2) Punctuality

You are expected to be punctual for all classes. If you are more than 30 minutes late, you will be deemed as absent and will not be able to sign on the attendance register.

(3) Absenteeism

In-class activities make up a significant portion of your course grade. Absence from class without a

valid reason will affect your participation grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Planned Weekly Schedule*

*Subject to adjustment by instructor according to the teaching situation, students' progress, public holidays and unforeseeable circumstances. A revised schedule will be issued to students at the start of the semester.

Week	Topic	Course LO	Readings/ Activities
1	**Introduction** Overview of course **Design Project** Project introduction	2, 3, 5	**Lecture:** Introduction to course, relevance within the scope of product design and expectations Design Project Introduction
2	**Design for Sustainability** Overview **Design for Sustainability assignment** Conduct a study of various sustainable design methods	1,2,3, 4, 5	**Lecture:** Systems thinking, cradle to cradle **Design for Sustainability assignment** Brief, case studies and discussion
3	**Site Visit**	1, 2, 3, 4, 5	**Site Visit:** Design project site visit
4	**Design for Sustainability** Biomimicry/ Materials	1, 2, 3, 4, 5	**Lecture:** Biomimicry, materials, dematerialisation

5-6	**Design Project** Spatial Environmental and Sustainable Design **Design for Sustainability assignment presentation** Verbal/ visual presentation of various sustainable design methods	1, 2, 3, 4, 5	**Continuous review of design project through various stages of completion** Continuous assessment and feedback throughout production. **Student Presentations** on Design for Sustainability
7	**Design Project: Concept Presentation** Spatial Environmental and Sustainable Design	1, 2, 3, 4, 5	**Student Presentations** on Design Concepts with critique and feedback
8	**Design for Spatial Environments and Sustainable Design**	1, 2, 3, 4, 5	**Lecture:** On site interaction, site environmental factors
9	**Design for Spatial Environments and Sustainable Design**	1, 2, 3, 4, 5	**Lecture:** Structural & construction design, and drawing conventions for spatial environments.
10-12	**Design Project:** Spatial Environmental and Sustainable Design **Design Refinement** **Model Making**	1, 2, 3, 4, 5	**Design Refinement** Form, usability, human factors, materials & manufacturing **Model Making** Discussion and practice on various object/ model making materials and techniques in studio/ workshop. Continuous assessment and feedback throughout production.
13	**Design Project: Final Presentation** Final verbal/ visual presentation of design project Physical objects/ models	1, 2, 3, 4, 5	**Student Presentations** on Design Project with critique and feedback