

COURSE CONTENT

Course Code	DV9001
Course Title	Art, Design, and Science
Pre-requisites	3rd year students and above
No of AUs	3
Contact Hours	39 hours studio contact

Course Aims

This intermediate level course will familiarize you with the representation, principles and methods that define projects with a focus on the interrelation between art, design and science. Historical case studies on the subject will be critically analyzed as well as individual artist, designer and scientist's practices. You will be able to ask pertinent questions and to articulate and present your research and/or practice in this interdisciplinary field. This course will establish a foundation for future research or practice carried out in multidisciplinary and collaborative environments in general.

Intended Learning Outcomes (ILO)

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

1. Discuss the interrelations between art, design, and sciences in a given historical context.
2. Identify and investigate practices and research outcomes positioned in the intersections of art, design, and sciences.
3. Apply acquired knowledge to develop and present questions, research and individual projects whenever creative and scientist environments coexist.
4. Present, compare and discuss research findings, ideas and progress in the interdisciplinary art/design/science environment in a clear and convincing manner.
5. Participate in interdisciplinary class discussion, critique ideas and methods employed by yourself and your peers in a constructive manner.

Course Content

Historical summary and case study analysis

You will begin this course with historical and practical analysis of concepts, methodologies and case studies where art, design, and sciences interrelate. You will explore themes such as the innovation from Antiquity to Modernity; representation techniques influenced by the interrelations between visual arts, design, and sciences; and an overview of scientific materials and structures that influenced the development of the visual arts and design fields.

Field trips and collaborations with academic, cultural and/or research institutions

You will be able to share your ideas on topics of individual and collective interest and learn from invited guest professors from NTU and/or cultural and research institutions in Singapore.

Methodological approaches to the interrelations between the Visual Arts, Design, and Sciences

Through the relations between the specializations studied at NTU, you will closely inspect the artistic, design and science methodologies. The student cohort will determine the particular focus of this study. Some of the possibilities include:

- Art, Design, and Biological Sciences
- Art, Design, and Chemical and Biomedical Engineering
- Art, Design, and Physical and Mathematical Sciences
- Art, Design, and Environmental Earth Systems Science
- Art, Design, and Physics
- Art, Design, and Psychology
- Art, Design, and Medicine
- Art, Design, and Social Sciences

E.g. Art, Design, and Biological Sciences could also be ‘**Art** and Biological Sciences’, or ‘**Design** and Biological Sciences’. This example of binary relations can be applied to the full list.

Experimental projects on the interrelations between the Visual Arts, Design, and Sciences

You will carry out two to three experimental exercises during the semester based on a specific topic of your interest that will explore the interrelation between Art, Design, and Sciences.

Final assignment on the interrelations between the Visual Arts, Design, and Sciences

For the final assignment you will select one of two options:

1. Develop a final written research paper based on literature review, primary and secondary sources, and case studies comparison and analysis.
2. Develop a **practice-led research project** with art and/or design outcomes and a final written process report.

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Programme LO	Weighting	Team/ Individual
Continuous Assessment Experimental projects	1,2,3,4	--	40%	Individual
Final Project	1,2,3,4	--	40%	Individual and/or Team
Continuous Assessment: Participation	5	--	20%	Individual
Total			100%	

Recommended Reading and References

1. Creager, A. N. H.; Lunbeck, E.; Norton Wise, M. (Eds). *Science Without Laws: Model Systems, Cases, Exemplary Narratives*. Durham, London: Duke University Press, 2007.
2. Daston, Lorraine J. *Things that Talk: Object Lessons from Art and Science*. Cambridge, Massachusetts: The MIT Press, 2004.
3. De Regt, Henk W; Leonelli, Sabina; Eigner, Kai (Eds). *Scientific Understanding: Philosophical Perspectives*. Pittsburg: University of Pittsburg Press, 2009.

4. Evers, Frans. *The Academy of the Senses. Synesthetics in Science, Art and Education*. The Hague, Netherlands: ArtScience Interfaculty Press, 2012.
5. Kemp, Martin. *Seen | Unseen: Art, Science, and Intuition from Leonardo to the Hubble Telescope*. Oxford, New York: Oxford University Press, 2006.
6. Okasha, Samir. *Philosophy of Science. A Very Short Introduction*. Oxford, New York: Oxford University Press, 2002.
7. Turkle, Sherry (Ed). *Falling for Science: Objects in Mind*. Cambridge, Massachusetts: The MIT Press, 2008.
8. Wilson, Stephen. *Information Arts: Intersections of Art, Science, and Technology*. Cambridge, Massachusetts: The MIT Press, 1995.

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 you at the start of the semester.

Week	Topic	Course LO	Readings/ Activities
1	Introduction to the course	1, 2	Introduction: general overview, creative projects, policies, and grading. Assign readings and student's presentations schedule
2	The notion of innovation from Antiquity to Modernity. Experimental project starts	1, 2, 3	Lecture: The notion of innovation from Antiquity to Modernity; case studies analysis. Experimental project <ul style="list-style-type: none"> • Identify relationships and analyse collaborations. • Case studies and literature review starts
3	The notion of innovation from Antiquity to Modernity in relation to the experimental projects	1, 2, 3, 4, 5	Guest Speaker presentation Experimental project Case studies and literature review updates Critique sessions on work in progress
4	The notion of innovation from Antiquity to Modernity in relation to the experimental projects	1, 2, 3	Individual consultation hours Experimental projects development
5	Representation techniques influenced by the interrelations between visual arts, design, and sciences. Experimental projects	1, 2, 3, 4.	Lecture: Representation techniques influenced by the interrelations between visual arts, design, and sciences. Part 1 Student Presentations based on specific literature review and work in progress

6	Representation techniques influenced by the interrelations between visual arts, design, and sciences in relation to the experimental projects	1, 2, 3, 4, 5	Lecture: Representation techniques influenced by the interrelations between visual arts, design, and sciences. Part 2 Student Presentations based on specific literature review and work in progress
7	Experimental projects	2, 3, 4, 5	Experimental projects development Critique sessions on work in progress
8	Experimental projects	1, 2, 3, 4.	Individual consultation hours Experimental projects development
9	Overview of scientific materials and structures that influenced the development of the visual arts and design fields.	1, 2, 3, 4, 5	Lecture on Scientific materials and structures that influenced the development of the visual arts and design fields.
10	Field trip	1, 2, 3, 4, 5	Field trip
11	Overview of scientific materials and structures that influenced the development of the visual arts and design fields in relation to the experimental projects	1, 2, 3, 4, 5	Individual consultation hours Experimental projects development
12	Experimental projects	1, 2, 3, 4, 5	Student Presentations based on specific literature review and work in progress Critique sessions on work in progress
13	Experimental project due	1, 2, 3, 4, 5	Experimental project final presentations, critique session and conclusions