

COURSE CONTENT

Course Code	DA3000
Course Title	Thinking and Communicating Visually III
Pre-requisites	DA1000 Thinking & Communicating Visually I
No of AUs	3
Contact Hours	39 hours studio contact

Course Aims

This is a studio-oriented workshop where students are given the opportunity to experience the creative design process and be exposed to different skill sets required towards the development of new products and devices. Students are guided with appropriate precedent studies engaging them in studio projects involving the 'hard' and 'soft' skill of the 3d visualization technique.

Through a series of exercises and assignments, students are introduced to stages of the conceptual design from 3-dimensional modeling in digital environment to creative thinking and analysis of product in terms of syntactic, pragmatic and semantic.

Intended Learning Outcomes (ILO)

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

1. Define the fundamentals of product design elements and principles
2. Demonstrate the skill and ability to develop 3-dimensional forms in digital environment
3. Develop the ability to conduct product research
4. Present findings and insights into product design data collected in a clear and cohesive way
5. Critique ideas and techniques employed by yourself or your peers in a constructive manner

Course Content

The subject will be conducted in a studio-classroom.

Teaching methods will consist of a short lecture/presentations and demonstrations presented in each class, followed by practical exercises that reflect the concepts introduced in the lecture.

Throughout each class there will be individual and/or group critiques.

Course content includes:

- **Product Design Process & Principles**

1. The fundamental of product design elements and its application
2. Design principles and the perceptual process by which the visual world is constructed and its application

- **Development of 3-Dimensional Form in Digital Environment**

1. Introduction to Inventor 1
 - File Types
 - Interface Basics
 - Part Creation
2. Introduction to Inventor 2

- Assembly
 - Place Parts
 - Constraint Parts
 - View Parts/ Assembly
 - Modeling an Object (assignment 1)
3. Introduction to Keyshot
- Interface Basics
 - Assign Material
 - Render
- **Conceptual ability through Research and Analysis of data**
1. Investigate and analyse the composition of a product in terms of its structure, component details and respective material (assignment 2 – Syntactic Analysis)
 2. Investigate and analyze the use functions and ergonomics of a product through user observation (assignment 3 – Pragmatic Analysis)
 3. Demonstrate the appreciation and application of how context, form analogies and spirit is projected in an object (assignment 4 – Semantic Analysis)
- **Creative thinking**
1. Demonstrate the ability to visually communicate research data
 2. Generate creative design thru the application of design principles (assignment 5 – Conceptual Sketches of Deformed Objects)
 3. Critically analyze a product as a communication tool in conveying a desired idea (Final Assignment – Development of New Designed Object)

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Programme LO	Weighting	Team/ Individual
Continuous Assessment				
3D Modelling of Object	1,2,3,4,5	--	10%	individual
Syntactic Analysis	1,2,3,4,5	--	10%	individual
Pragmatic Analysis	1,2,3,4,5	--	10%	individual
Semantic Analysis	1,2,3,4,5	--	10%	individual
Conceptual Sketches of Deformed Objects	1,2,3,4,5	--	10%	individual
Final Project: Development of Designed Object	1,2,3,4,5	--	30%	individual

Continuous Assessment: Participation	5	--	20%	individual
Total			100%	

Reading and References

Online Journals:

Gallery Websites

Books:

Lewalski, Zdzislaw Marian, *Product Esthetics An Interpretation for Designers*, Design & Development Engineering Press, Carson City, Nevada 1988, ISBN 0-944327-04-4

Johannes Itten, *The Art of Color*, Jon Wiley & Sons. In,

Wucius Wong, *Principles of Form and Design*, John Wiley & Sons, Inc. 1993.

Hannah, Gail Greet, *Elements of Design: Rowena Reed Kostellow and the structure of visual relationships*, Gail Greet Hannah, 2002, ISBN 1-56898-329-8

Boucharenc, Christian. *Design for a Contemporary World*, A textbook on fundamental principles, NUS Press 2008, ISBN-13: 978-9971-69-347-3 (pbk)

Laura Slack, *What is Product Design?* Rotovision Sa 2006, ISBN 981-245-460-8

Curtis Waguespack, *Mastering Autodesk Inventor 2014*: Autodesk Official Press, ISBN-13: 978-1118544860

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 to Course Module Design Process Introduction to Inventor 1 <ul style="list-style-type: none"> - File Types - Interface Basics - Part Creation 	1,2	Items to bring for week 2 <ol style="list-style-type: none"> 1. Object/ Product 2. Vernier Caliper (if not Ruler) Small Flat Head and Philip Head Screw Driver
2	Introduction to Inventor 2 <ul style="list-style-type: none"> - Assembly - Place Parts - Constraint Parts - View Parts/ Assembly 	1,2	Assignment 1 - Modeling an Object
3	Introduction to Keyshot	1,2	
4	Syntactic Analysis <ul style="list-style-type: none"> - Develop a rational approach to the syntactic analysis of product designs. It is a method to analyse how a product or an object is composed in terms of structure, component details and respective materials 	1,2,3,4	Assignment 2 – Syntactic Analysis of Object

5	Syntactic Analysis Continue with the analysis and critique for submission	1,2,3,4,5	Submission of Assignment 1 & 2
6	Pragmatic Analysis - To analyse in detail the use function of a particular existing design and its ergonomic rapport with the user - Develop awareness of the factors linked to the use and ergonomics for each project	1,3,4,5	Assignment 3 – Pragmatic Analysis of Object
7	Semantic Analysis - Develop curiosity to understand the origins of emotions brought about by an object, and the symbols convey by the object - Analysing the context, form analogies and the spirit projected by an object, according to different cultures	1,3,4,5	Submission of Assignment 3 Assignment 4 – Semantic Analysis of Object
8	Deformation in Design - Develop creativity and originality by conceptualizing a lamp	1,2,4,5	Submission of Assignment 4 Assignment 5 – Concept Sketches of Deformed Object Design
9	Final Project - Development of New Improved Object Design in 3D	1,2,3,4,5	Briefing on Final project Submission of Assignment 5
10	Final Project - Development of New Improved Object Design in 3D	1,2,3,4,5	Consultation of design base on research findings and 3D Design Development
11	Final Project - Development of New Improved Object Design in 3D	1,2,3,4,5	Consultation of design base on research findings and 3D Design Development

12	Final Project - Development of New Improved Object Design in 3D	1,2,3,4,5	Final Submission
13	Final Critique	5	Final Submission

