

FANG BIN GUO

DESIGN
PRINCIPLES

Design is a creative activity and also a visual problem solver or form of communication, therefore, creative thinking skills and aesthetics knowledge are essential. Industrial design is a multidisciplinary subject that requires team-based skills. Currently, the demand of leadership and communication skills are increasingly expected by the contemporary design industry. The student-centred teaching and learning is popular in design education, where the methods emphasise working studio-based and design workshops rather than lecture-orientated; aims at creating an equal platform for students and encouraging creative thinking. In another word, design education values a transmissive way of teaching, but expects interactions between students and tutor.

Design Principles is a curriculum developed for BSc Product Design Engineering programme at Level Four. The curriculum takes students' prior knowledge into account, and values the students' world views and/or conceptions of the subject matter rather than the teachers' own conception or the texts' concepts. The curriculum design is seeing the teacher as helping the students to acquire these concepts and relations between them and/or facilitating the students develop their concepts in terms of further elaboration and extension (Prosser & Taylor, 1994). This teaching and learning method combines transmissive lecture, personal tutorial and working studio-based approach at different stages, aiming to help the students to learn knowledge in a practical way and bridges new concept to their previous experience and perception.

The module seeks to expand your understanding of design (aesthetics) theory as it relates to the three-dimensional world. Working primarily in line, plane and solid materials, we will explore concepts of modularity, sequence and series, relief, contour, structure and symmetry, together with examining the function of space, volume, mass, plane, and line.

Sculptural issues will be explored through the solution of design problems. The main emphasis of this module is the development of creative thinking skills as they apply to three-dimensional forms and to help you gain a deeper understanding of aesthetics.

The module is a working-studio based studies. The knowledge and skills are expected:

Creative thinking Design aesthetics

- Three factors in design (Form Studies)
- Five principles of aesthetics

Developing your vocabulary in art (aesthetics) to be able to articulate visual ideas more fully

Articulating how the ideas in this module illuminate understanding of all three-dimensional art including sculpture, ceramics, products, space and architecture

The students are expected to create six modules that incorporate rectilinear and curvilinear forms.

FORM STUDIE THE PROJECT DESCRIPTION AND TOPICS TO BE COVERED

Creating the line, plane, solid forms, to explore and understand 'Form & Space relationship', 'Positive and Negative volumes', 'Forces and Movements, etc, and with the application of design aesthetics knowledge: 'The Five Principles'.

Conducting the visual researches and to sketch up some concepts; then decide or select the material and modelling approach. A variety of materials will be provided such as paper, matte paper card, wire, foam blocks, clay, plaster and wood. However, the students are encouraged to use any types of material for any unique concepts you may have and/or the particular effect you intend to achieve. Topics to be covered include:

Scoring, cutting, joining, etc.
Relief designs on wire, matte paper board,
Bristol paper and foam board, etc.
The Platonic solids
Archimedean solids
Stellated solids
Serial planes
Rectilinear
Curvilinear
Organic forms, etc.

The Three Factors

- Form
- Texture(material)
- Colour

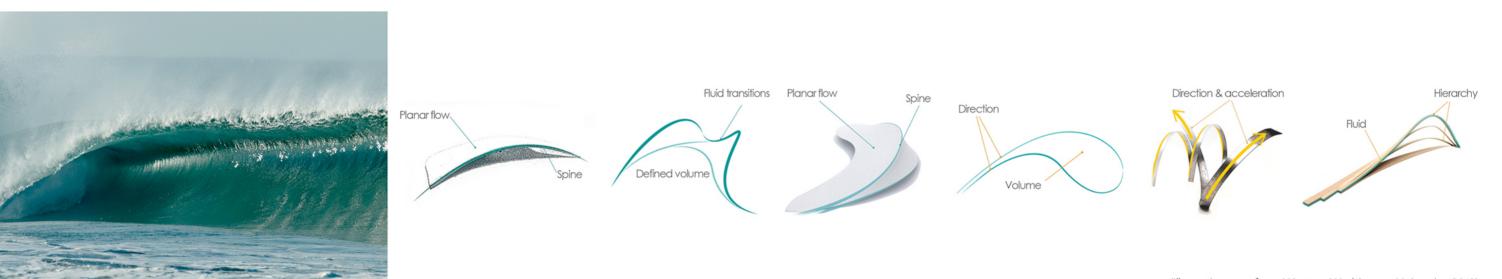
Five Principles of Aesthetics

- Symmetry / Balance
- Contrast / Harmony

- Rhythm / RepetitionUnity / VarietyProportion- Golden Ratio



FORCE & MOVEMENT



(Illustrations are from Western Washington University, 2018)

Force generates movement and presents direction/acceleration. Movement creates planar flow, fluid transition, transformation and rhythm etc. Planar flow and fluid transition definine volume.

POSITIVE & NEGATIVE ELEMENTS



ORGANIC FORMS

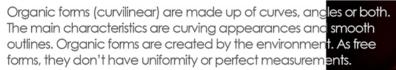
FORMS









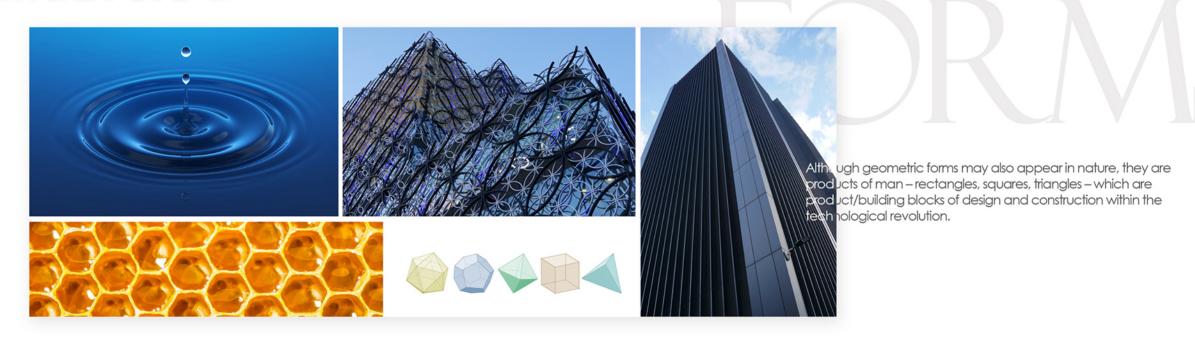






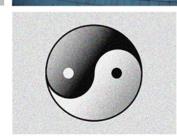


GEOMETRIC FORMS









SYMMETRY / BALANCE
CONTRAST / HARMONY
RHYTHM / REPETITION
UNITY / VARIETY
PROPORTION / GOLDEN RATIO





FIVE PRINCIPLES





ASSIGNMENT ASSESSMENT

SKILLS (40%)

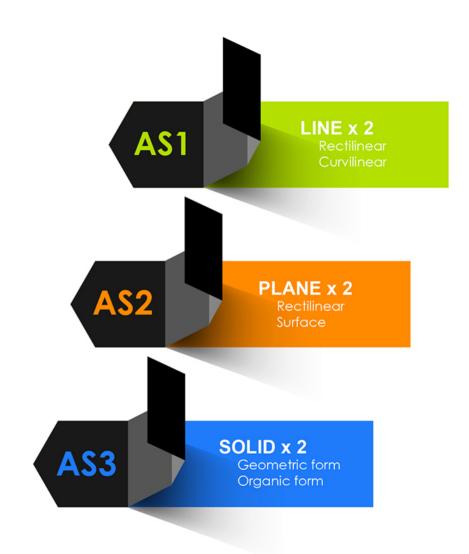
- CRAFT (HAND) BASED WORKSHOP SKILLS
- DIGITAL WORKSHOP SKILLS (CNC/3D PRINTING)
- DESIGN TRANSLATION / CONCEPT DEVELOPMENT
- PROTOTYPING SKILLS
- PRESENTATION SKILLS
- PROJECT MANAGEMENT

KNOWLEDGE (30%)

- DESIGN AESTHETICS

CREATIVITY (30%)

- NATURAL ABILITY TO INNOVATE
- NOVELTY OF MODEL MAKING APPROACH (MATERIAL SELECTION AND PRESENTATION)





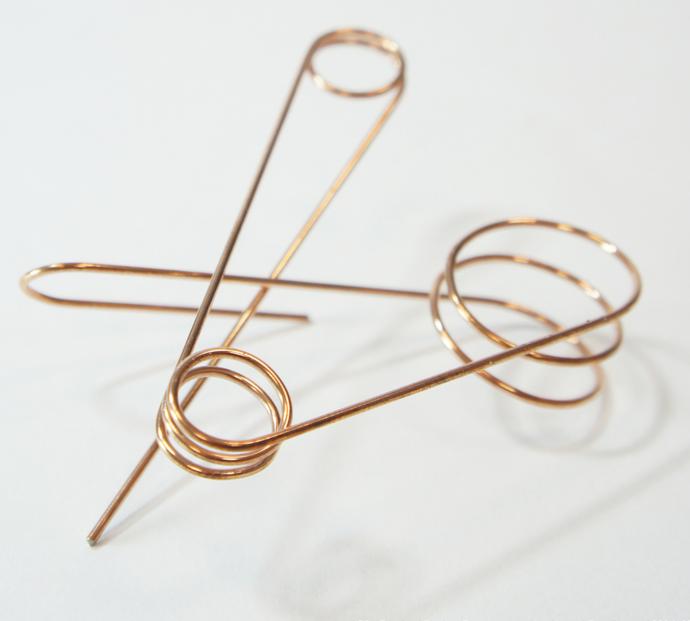
LINE

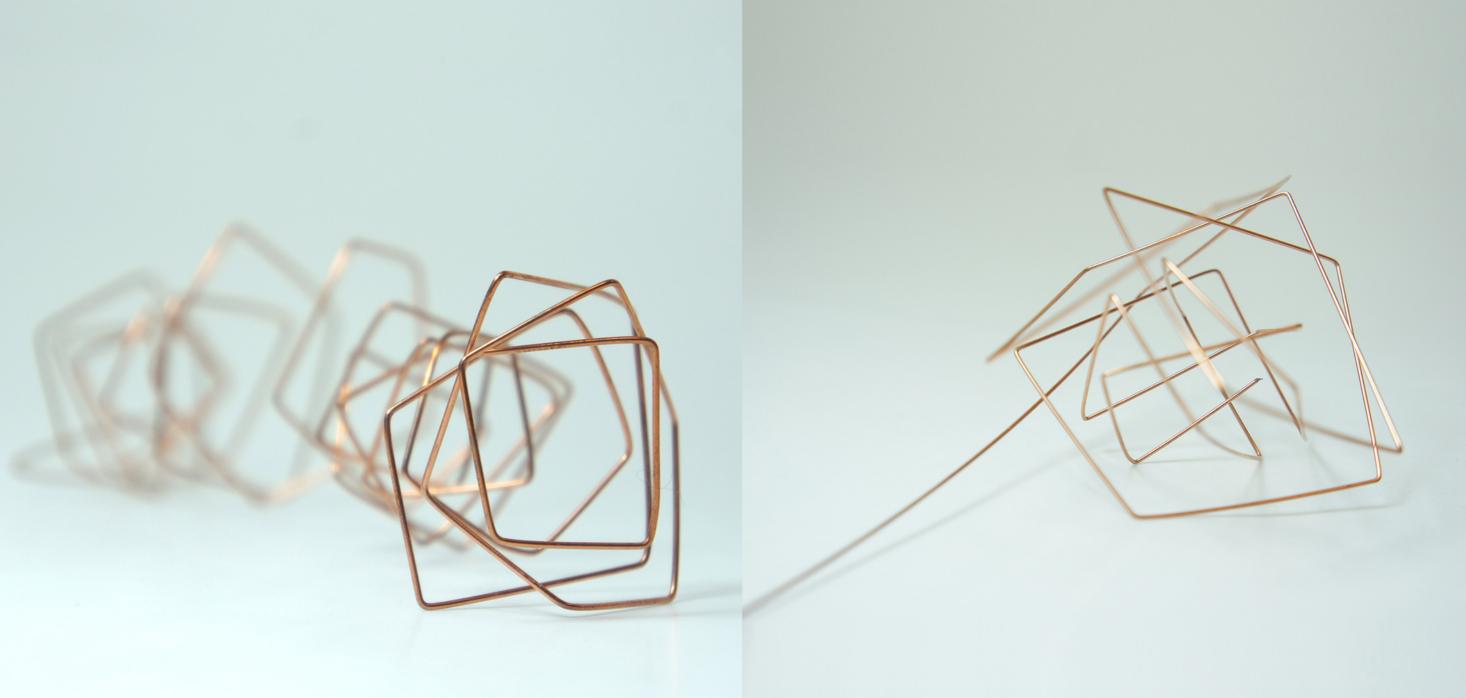
Creating two forms using wire or other linear materials. One should be a rectilinear form and another one should be a curvilinear form. These objects should not be larger than $500 \times 500 \times 500$ mm.





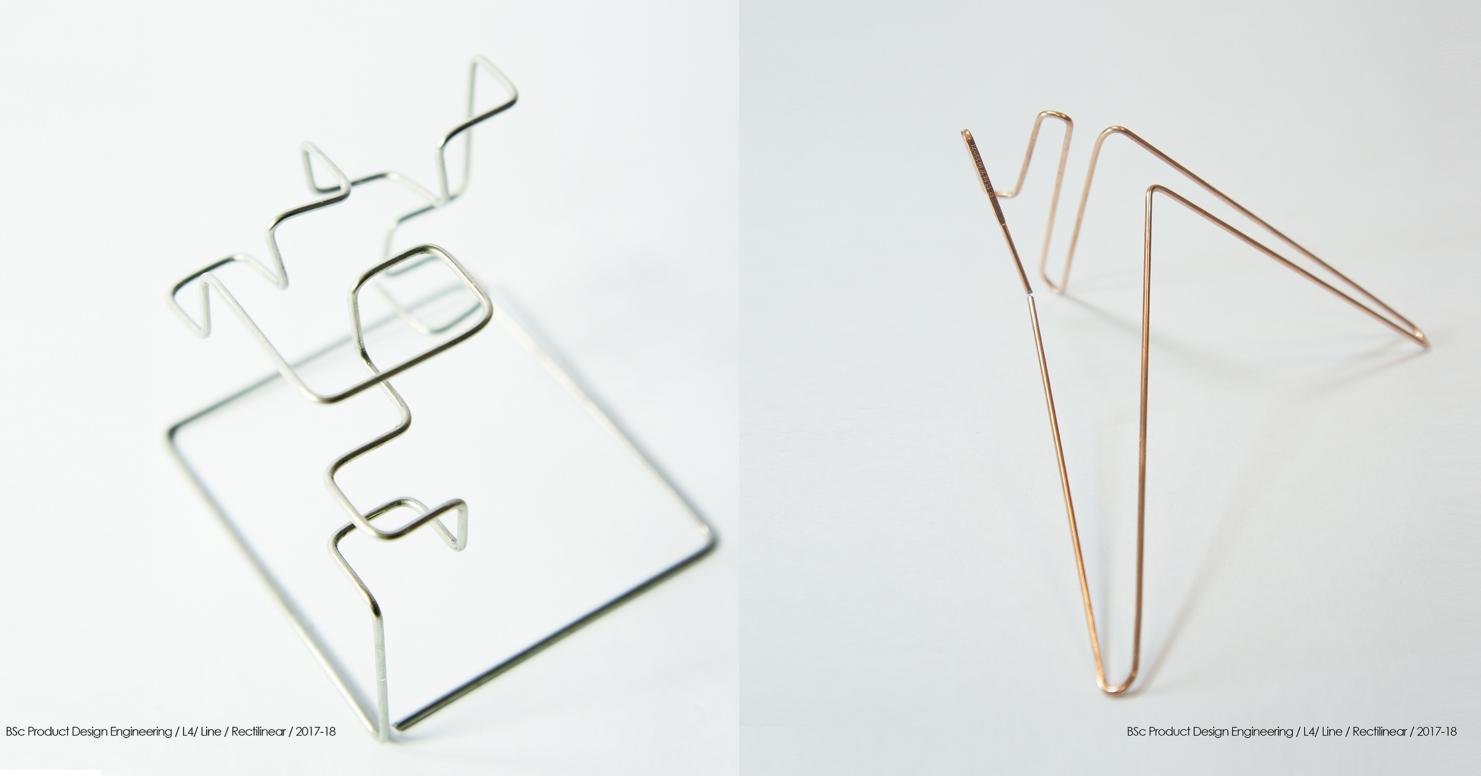










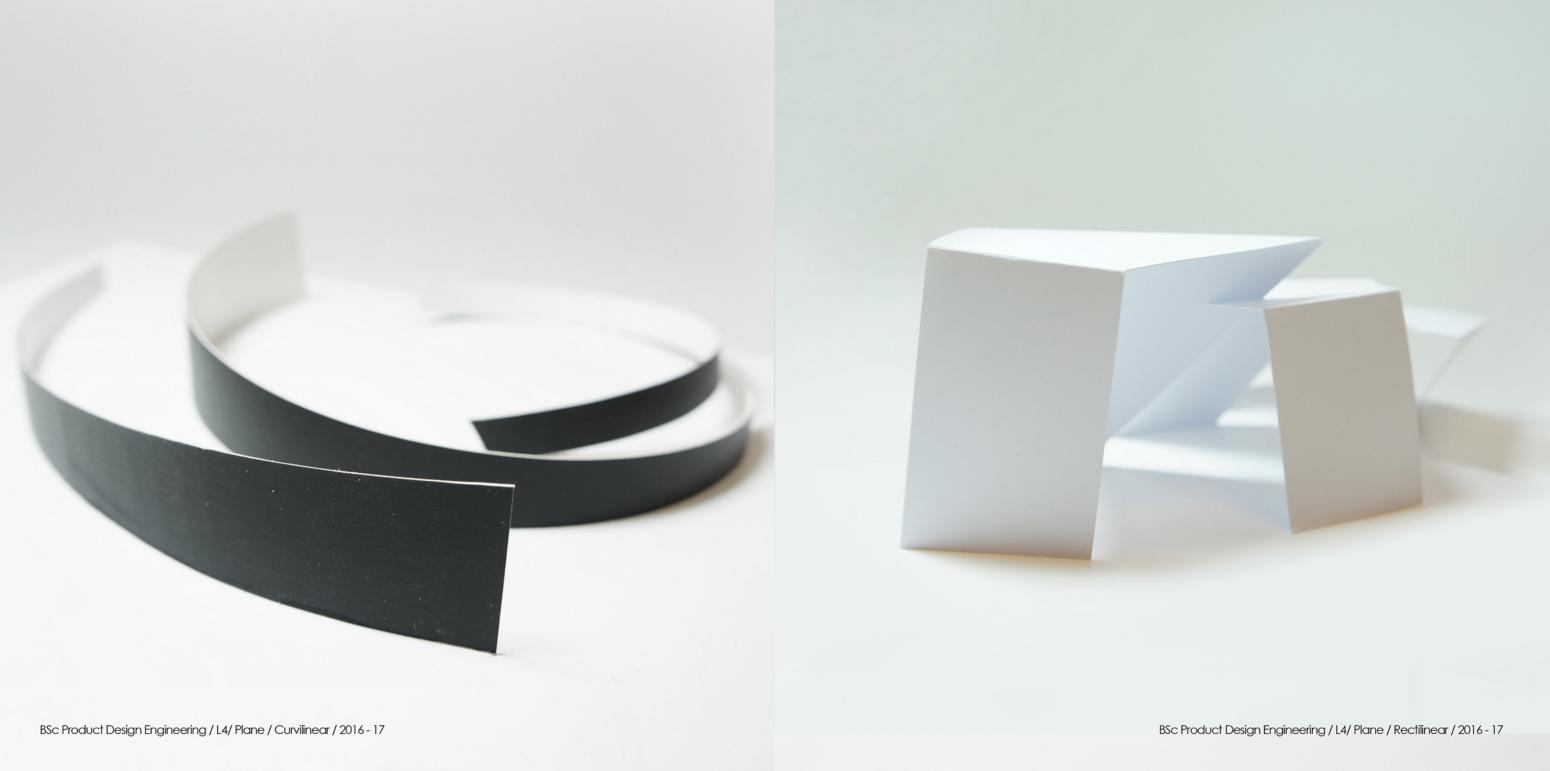


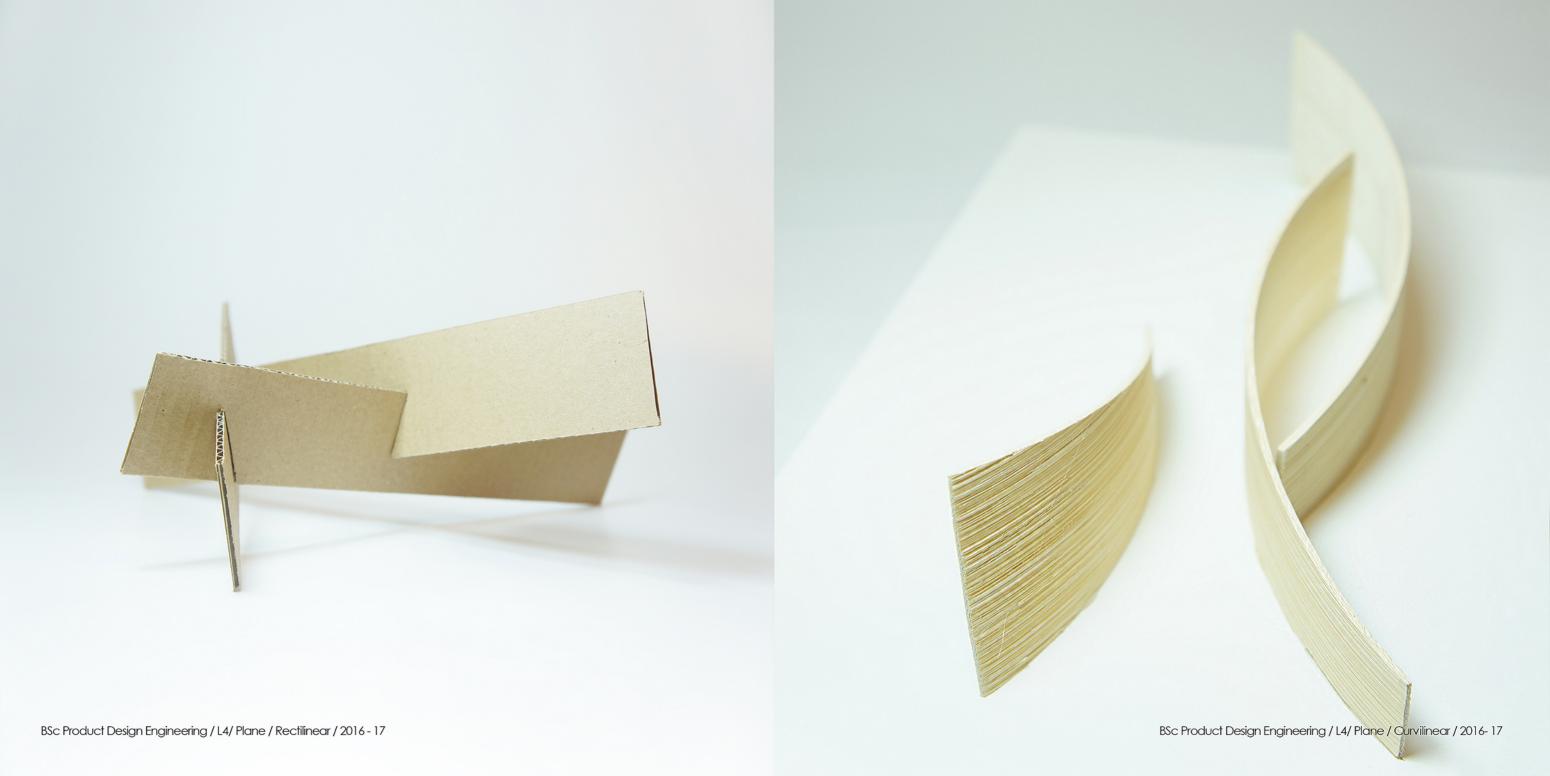


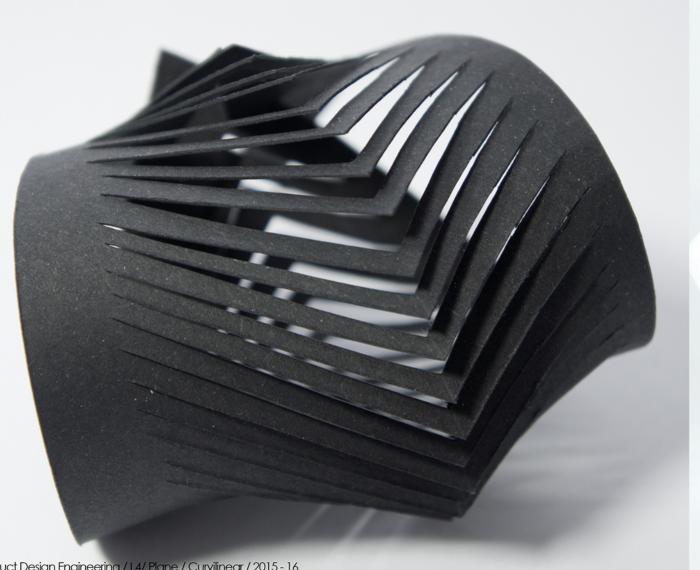


PLANE

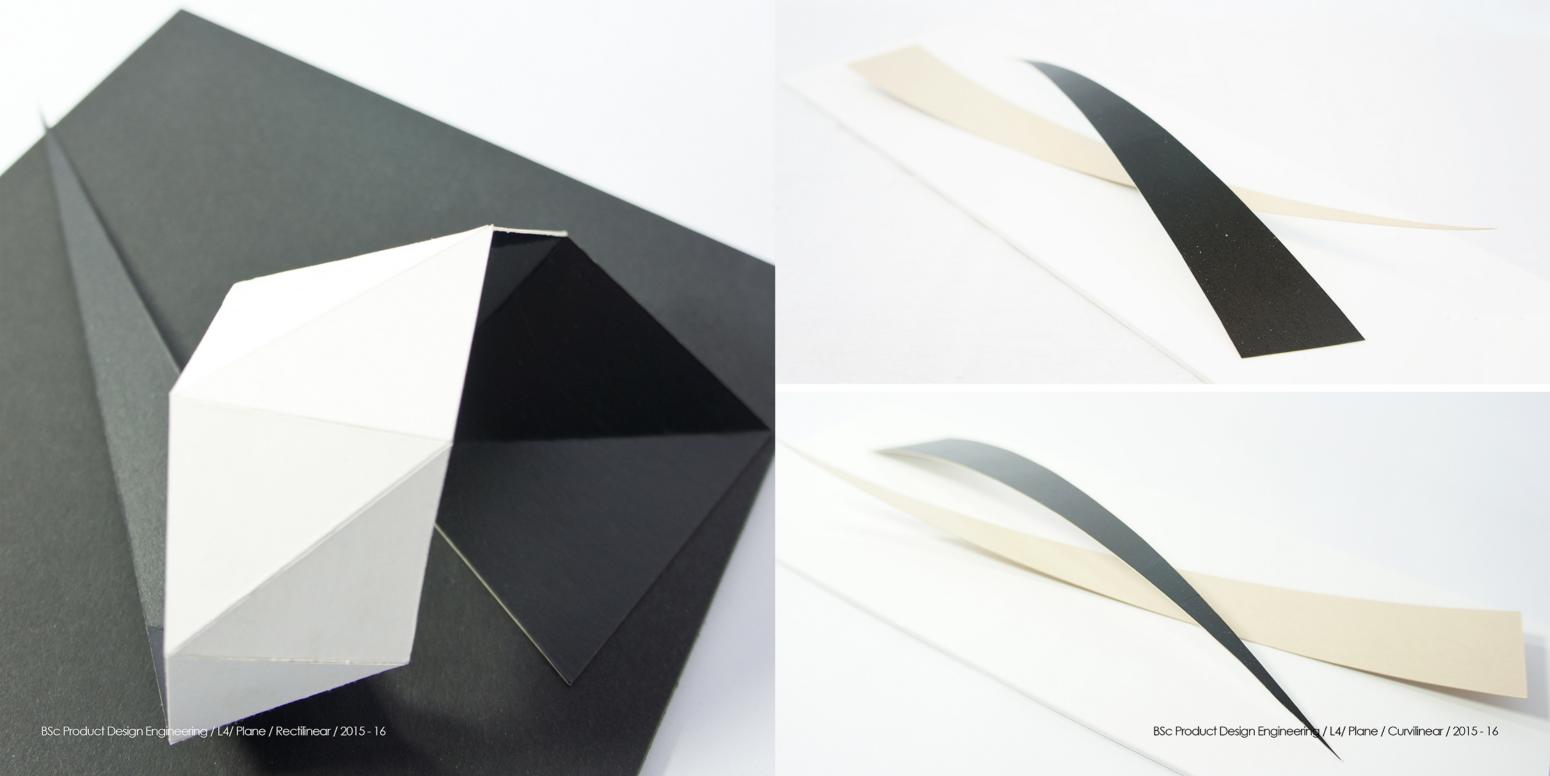
Creating two forms using paper, paper card, metal, plastics, wood and/or any forms of sheet materials. One should be rectilinear form of either Platonic / Archimedean / stellated solid or a serial planes; and one should be surface / curvilinear form. The object should not be larger than $500 \times 500 \times 500$ mm.

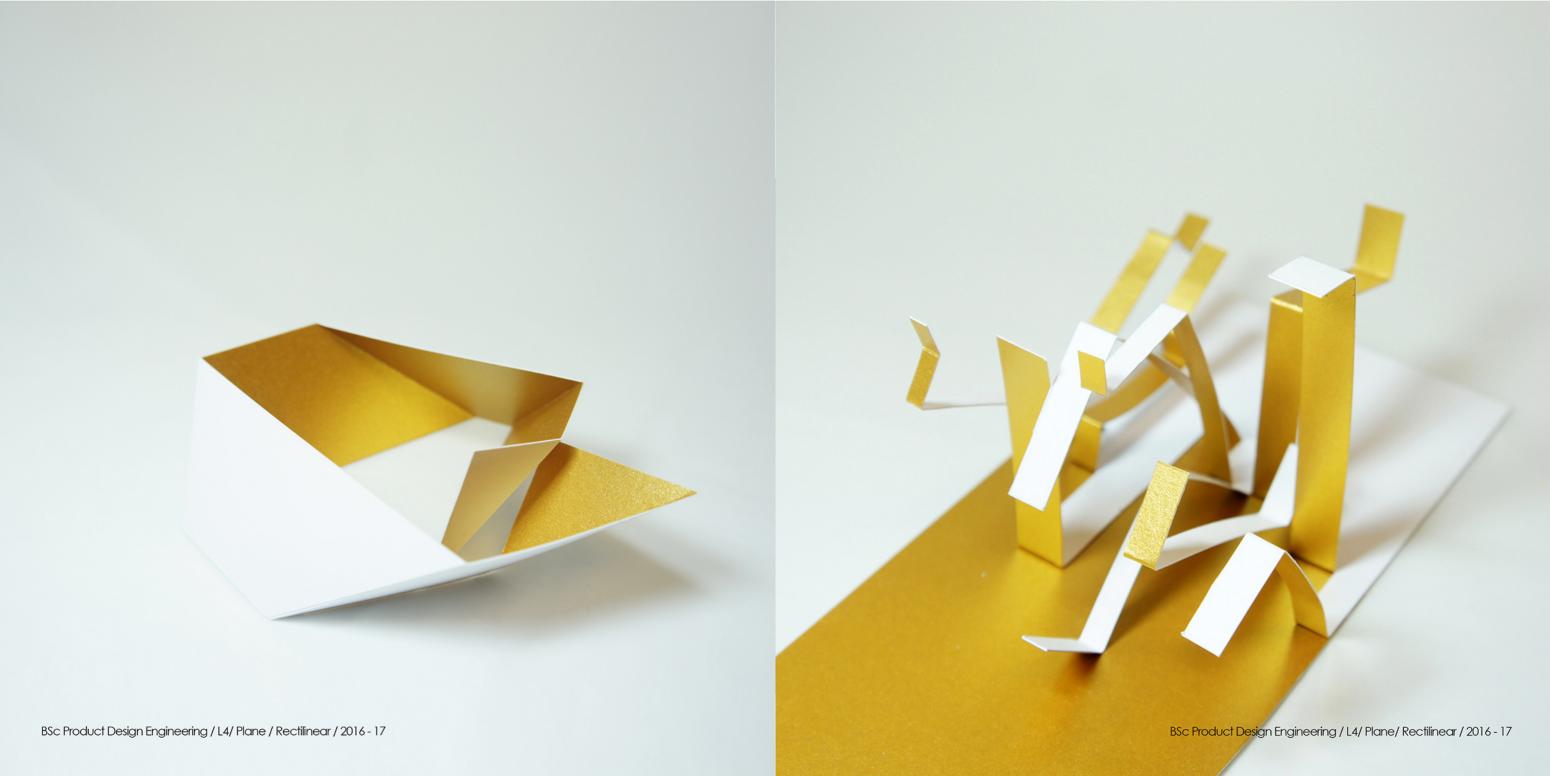














SOLID

Creating two forms using foam, wood and/or any types of solid material. One should be a geometric and rectilinear form; another should be an organic form. The object should not be larger than $500 \times 500 \times 500$ mm.



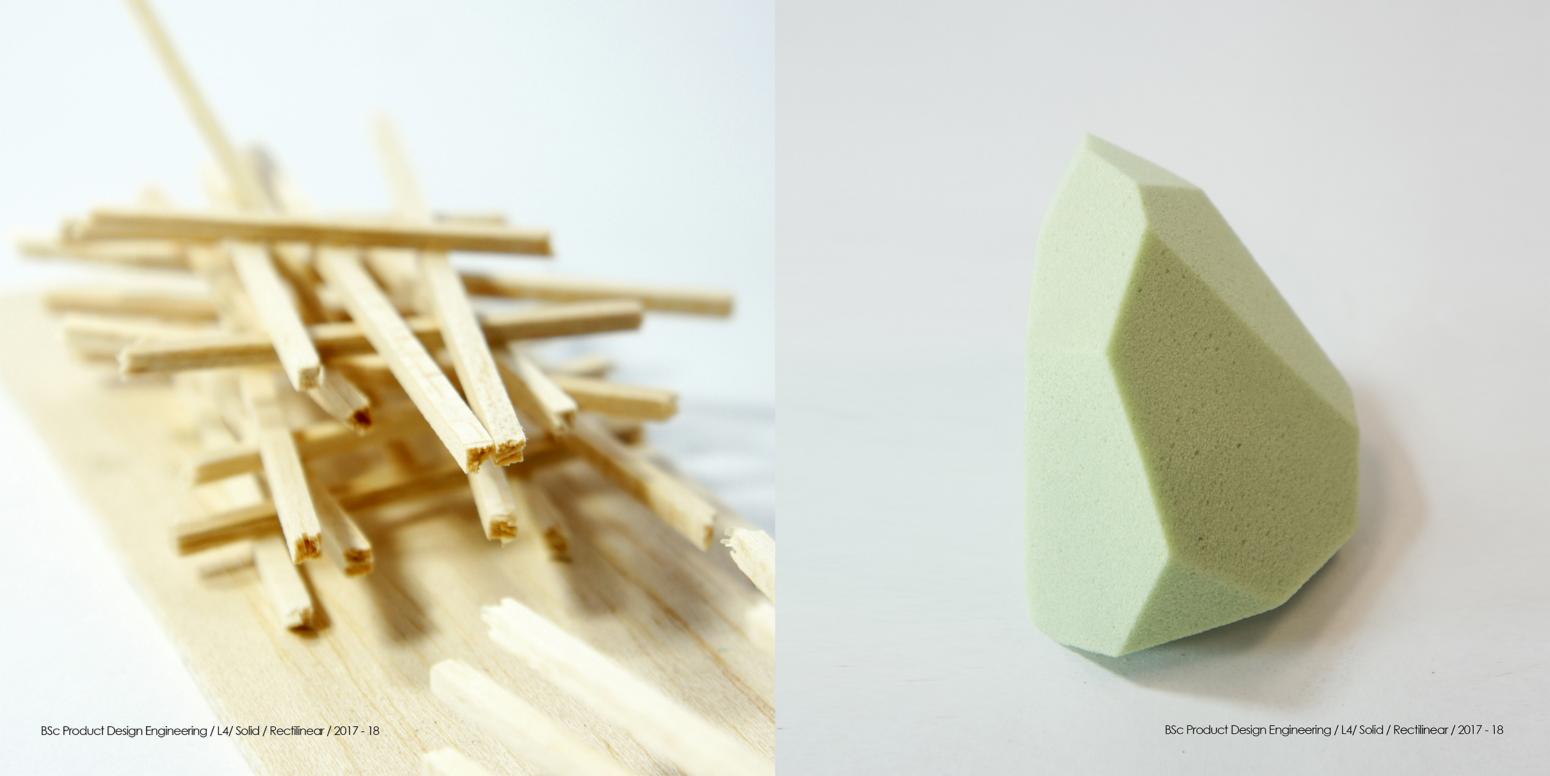














THANK YOU

to all the students who worked hard on their projects. The work examples contained in this book are selected from the Product Design and Presentation module. The copyrights are reserved by the students & Liverpool John Moores University. Other images are collected from various sources for educational purpose and the copyrights belong to original authors and/or organisations.

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