[PROJECT 3. BRIEF]
[PROJECT 3. HYBRID STRUCTURES - SEATING (Groups)]
MATERIALS AND PROCESSES (11051) – 2022

MATERIALS AND PROCESSES (11051)

UNIVERSITY OF CANBERRA
Faculty of Arts and Design

COURSE IN INDUSTRIAL DESIGN

Component	: **Design Project**
Title	: **PROJECT 3. HYBRID STRUCTURES - SEATING (Groups)**
Industry Client	: **N/A**
Handout	: Week 7- WEDNESDAYS (1:30) W7
Submission	: Week 13- WEDNESDAYS (1:30) W7
Duration	: 6 Weeks
Value	: **50%**
Studio Lead	: **Sam Tomkins – sam.tomkins@canberra.edu.au**
Studio Tutors	: **Dr. Eddi Pianca** – **Eddi.pianca@canberra.edu.au**
W7 Technical Staff	: **Bill Shelley – bill.shelley@canberra.edu.au + Sam Shellard Sam.shellard@canberra.edu.au**

LEARNING AIMS

After successful completion of this unit, students will be able to:

1. Identify and describe materials and processes relevant to industrial design / manufacturing.
2. Select relevant manufacturing materials and processes, both traditional and digital to communicate design solutions; and
3. Critically evaluate and communicate the design process in manufacturing products with regard to sustainable and environmental responsibilities.

INTRODUCTION

This unit introduces the range of materials and manufacturing processes relevant to industrial designers. It explores the properties, use and selection of appropriate materials in the design and manufacture of products, using guidelines that include sustainability and environmental responsibility.

DOCUMENT CONTENTS.

1.1 BACKGROUND

Information is not knowledge, The only source of knowledge is experience, You need experience to gain wisdom." – Einstein.

A knowledge of physical materials can be acquired by study but embodying this knowledge through experiencing materials of the built environment will provide a deeper and more deployable understanding.

Within this unit, students will not only develop a hands-on understanding of a select material, but also contribute to the wider knowledge base. This is achieved through the dissemination of their own learning experiences in the form of exhibition and archiving of their works for future use.
This approach will be undertaken in three stages across three distinct projects.

STAGE 1. – Mono-material

- Demonstrate an understanding of a singular material through a simple manufacturing task.

OBJECT: "Archive Cubes" – Added to the Workshop7 material library.

STAGE 2. – Mono-material

- Apply the acquired material knowledge from P1 in the production of a designed object.

OBJECT: "Vessels"

STAGE 3. – Hybrids. (groups)

- Combine and rationalize the acquired design and manufacturing knowledge of a single material (P1/2) with another student to create a combined designed object.

1.2 DESIGN TASK

Design Task: Utilising material knowledge gained from Projects 1 + 2, combine, rationalise and negotiate with a second material (student groups of 2) to design and manufacture a functional contemporary seating object demonstrating a harmony between two dissimilar materials.

- Groups of two will be randomly selected in week 7. All groups are final.
- Emphasis is placed upon the **functional expression and harmony** of the two combined materials.
- Secondary emphasis is placed on **aesthetics and refinement** of the seating prototype.
- Students will aim to explore **new and novel ways atypical materials can be expressed** in the form of a simple, functional object.

PROCESS:

Students will;

1. Work as a team of two to conduct preliminary research into the available processes to inform their fabrication method(s).

2. Conduct thorough iterative design process to develop a refined contemporary seating prototype.

3. Fabricate a full size (1:1) seating prototype for review. (Week 13.)

4. Produce a concise but clear communication of their design and fabrication process in the form of a process folio (Digital copy, A3 landscape multi page.)

1.3 WORKSHOP 7.

The vast majority of prototyping would be expected to be completed within WORKSHOP 7.

2.1 ACCESS:

Students are required to complete a workshop induction before using the workshops facilities. If you have not yet completed a workshop induction.
Contact the workshop staff (details below) to arrange and induction before week 2. Class.

2.2 WORKSHOP 7. OPEING HOURS:

MONDAY-FRIDAY 9:30AM – 4:30PM

2.3 REQUIREMENT OF ENTRY: ENCLOSED FOOTWEAR.

All staff and students are required to wear enclosed footwear to gain access to WORKSHOP7, this is non-negotiable.

2.4 COVID19 CONSIDERATIONS:

For the health and well-being of all staff and students, mask wearing, social distancing (1.5m) and hand washing need to to be followed. Those feeling unwell should not attend class and inform staff as soon as possible.

2.5 COSTS:

Access to WORKSHOP7 is free to all students of university of Canberra.
Some machines have associated costs such as the CNC router, Laser cutter and 3D printer. These costs are detailed on the WORKSHOP7 canvas page and on-site.

It is expected students will need to purchase small amount of materials to complete their assessment, this is dependant on the process chosen and materials sourced.

Note: all materials that will be brought externally into Workshop 7 need to be approved by workshop staff to ensure safe practices can be followed.

3.1 PROJECT TIMELINE.

Week 7.
PROJECT 3. LAUNCH
Groups formed.

Week 8.
STUDIO: Class free.
OUTSIDE OF STUDIO: Working in groups / Design development .

Week 9.
STUDIO: Lecture + feedback and assistance from teaching staff.
OUTSIDE OF STUDIO: Design Development / Fabrication.

Week 10.
STUDIO: Lecture + feedback and assistance from teaching staff.
OUTSIDE OF STUDIO: Design Development / Fabrication.

Week 11.
STUDIO: Lecture + feedback and assistance from teaching staff.
OUTSIDE OF STUDIO: Design Development / Fabrication.

Week 12.
STUDIO: No lecture, feedback and assistance from teaching staff.
P3 – Manufacturing.

Week 13.
Presentation of final prototype (1:1)
In studio time. + 3-5 mins verbal presentation.
Upload of folio and images of prototype to CANVAS

5.1 FINAL PROTOTYPE REQUIREMENTS - CONSTRAINTS/ SPECIFICATIONS.

- Free Standing
  Must be unsupported by external structures.

- Seat platform Height.
  450mm +/- 20mm (z direction). Seat surface may undulate but must be within a 40mm envelope (z).

- Seat platform surface area.
  Min: 150mm x 150mm (x/y)
  Max: 400mm x 400mm (x/y)
  Note: Seat platform does not need to be rectangular / square in cross-section.

- **Maximum build volume.**
  X – 600mm Y – 600mm Z- 450mm

- **Maximum weight: 20kg**

- Materials use.
  Students must utilise their chosen material from P1/2. Materials can be purchased externally, from the WORKSHOP7 Stock, sourced from waste streams (safely).
  Note: Materials must be safe for human contact.

- Minimum required static load (applied to the seating platform).
  95kg (1 x lecturer, post lunch) +/- 2 kg

- Additional components (fasteners etc.)
  permitted, but students should aim to not require them.

- Ergonomics
  Final prototype must meet minimal ergonomic considerations. See: *"As comfortable as a bus-stop seat."*

- Note: The objects are categorised as seats, not chairs, stools or benches.

- Students will be individually assessed how there own material has been implemented into the design.

6.2 ASSESSMENT ITEMS / DELIVERABLES

PRODUCTION OF PROTOTYPE

LAUNCH : **WEEK 4.**
DUE : **WEEK 7. – In Tutorial Time. (Wednesday Studio).**
WEIGHTING : **80%**

DETAILS.

Production of a full sized (1:1) seating prototype produced through a hybrid of two materials.

Prototype:

- Scale 1:1
- Material: Project 1. Material choice.
- Meets all Design constraints/Requirements. (see **5.1 Final prototype Requirements**)

Verbal Presentation :

- 5-6 mins.
- Detailing the complete design process / design intention.

SUBMISSION DETAILS.

To be in allocated tutorial timeslot. Students must be present with works to be assessed.

6.3 ASSESSMENT ITEMS / DELIVERABLES

PHASE 3. – PROCESS FOLIO

LAUNCH : **WEEK 7.**
DUE : **WEEK 13. – Friday 5pm.**
WEIGHTING : **20%**

DETAILS.

Students will compile documentation "telling the story" of the complete design process and final outcome.

DELIVERABLES.

- FORMAT: **A3 Landscape** + **.PDF**
  Must include;
- Clear and through documentation of the complete process, weeks 4-7)
- At least 2 x full page High quality (professional grade) photos taken of the final prototype, taken on a clean white background. (These can be taken using the studio equipment in Workshop7.)
- 1 process folio per group. With title page containing both students' names.

SUBMISSION DETAILS.

1 x .PDF format, uploaded to the CANVAS dropbox before 5pm Friday, week 7.

2-3 x High quality images of the vessels

File size needs to be **limited to 100MB**