

Design & Materials Course

WS 2022-23

SYLLABUS

course description

The course belongs to the class “caratterizzante” (alternativa) in the MA in Eco-Social Design (LM-12). This course is a compulsory optional subject in the area “**Make & Intervene**”.

| | |
|--|---|
| Course title | Design & Materials Area: Make & Intervene |
| Course code | 96107 |
| Scientific sector | ICAR/13 – Disegno industriale |
| Degree | Master in Eco-Social Design (LM-12) |
| Semester | I |
| Year | 1st and 2nd |
| Credits | 6 |
| Modular | No |
| Lecturer | Aart van Bezooijen Office: C4.03, Email: Aart.vanBezooijen@unibz.it , Webpage: https://www.unibz.it/en/faculties/design-art/academic-staff/person/38596-aart-van-bezooijen |
| Scientific sector of the lecturer | ICAR/13 |
| Teaching language | English |
| Office hours | 18 |
| Teaching language | English |
| Total lecturing hours | 60 |
| Total hours of self-study and/or other individual educational activities | about 90 |
| Attendance | highly recommended |
| Prerequisites | - |

Course description

The course will support the development of practical skills and knowledge, aiming to build up a base of knowledge and understanding concerning the world of materials in general as well as taking a closer look towards specific materials and production techniques in the context of design. In parallel, the course encourages the development of a critical attitude on the eco-social impact of our material choices here and now, and how to look differently at the relationships between humans, objects, materials and systems running our planet.

Understanding materials requires personal engagement with matter. Due to the transformable character of materials, we cannot rely on general understanding or indirect knowledge. *“Plastics can be as clear as glass, as sharp-edged as stone, and as metallic as aluminium. Aluminium can look like quicksilver, wood can look like plastic”* (Paola Antonelli, *Mutant Materials in Contemporary Design*, 1995). Therefore, the course focuses on the creation and adaptation of materials and material qualities exploring the mutable character and formability of matter.

Just like the shape of a product, materiality can be designed. To go beyond surface and finishing, this course involves the creation of so-called do-it-yourself materials (working with ingredients and recipes) and the adaptation (changing the material properties) of existing materials in order to understand their (mutable) character. This hands-on approach of working with materials will support our sensorial skills to better understand, create and select appropriate materials for future design projects.

The industrial processing of materials (involving extraction, production, distribution, consumption, disposal and/or recycling) will be reviewed in the context of bio-based cycles where composting often closes the cycle. The course includes a special focus on the lifecycle of materials based on the principles of a circular economy including the elimination of waste and pollution, circulating products and materials and the regeneration of nature.

Every semester includes hands-on exercises with a different family/kingdom of materials – this semester the focus will be on mineral-based materials (e.g. marble and other types of rocks). Besides this focus we are encouraging any form of collaboration, relations and synergies with other fields and courses (e.g. design research) as well as the yearly theme (*“Staying with the trouble – ref. Donna Haraway”*). The course program is adaptive and foresees possible support in developing the material aspects of the student’s main projects.

Course Structure:

- **Input lectures** : Focusing on diverse material topics for discussion. Topics: “Material activism / Introduction to DIY Materials” – “Recycling materials / Urban mining” – “Bio-based materials / Back to nature?” – “Social materials / Inclusive ways of making” – “Circular design / The lifecycle of materials”.
- **Guest lectures**: Diverse guest speakers will give us a better insight in the business practices of materials. First, from the perspective of young creatives starting their own material-driven design studio. Second, with entrepreneurial input from a materials manufacturing company. Finally, we

learn more from material experts about the role and importance of documenting and sharing materials within “Material Libraries”.

- **Material tinkering:** DIY-Materials are materials created through self-production, often by techniques and processes of the designer’s own invention, as a result of a process of tinkering with materials. We will make first experiences with this kind of work and investigate / tinker one or more recycled and growing materials. Including the further development of (raw) materials through processes involving shaping, colouring and surface treatments.
- **Excursions:** We will be visiting and/or reviewing materials-related events and exhibitions. Through on-site excursions and online presentations we will take a closer look at the role(s) of circular and bio-based materials in design. Small summaries of these excursions are part of the final documentation.
- **Skill sharing:** This course is not only about learning from the lecturers and guests. We also put high value on the dialogue between the participants and will support this process of skill sharing. The content and format of the courses will be fine-tuned according to the dialogues, collaborations and dynamics of you as a group.
- **Learning by doing:** Learning by doing: The approach of this semester project is very much on “Learning by Doing”, also for its lecturers. Hands-on exercises at the university workshops and fab lab should support you in becoming more skilled and independent in materialising your ideas. Parts of the course should be seen as an experimental teaching formats and will adapt according to your needs.
- **Materials and methods:** Unlike designing a final product the course focuses on materials and methods. We provide you with inspiring talks, hands-on exercises, group discussions, creative methods and skill sharing will give you a strong (materials) foundation for current and future design projects.
- **Project documentation:** The course process and exercises should be documented along the course. The personal documentation format will be discussed at the start of the course. This documentation is the main deliverable of the course and will be developed step-by-step along the course (not in the end).
- **Material samples:** Besides the process documentation - results will include material samples to be documented in the unibz material collection. A template will be provided during the course. Documenting and sharing material information will be useful at later stages in your (and others) studies

Educational objectives

Students will be able to:

- collaborate with experts and other designers to develop and implement an integrated project;
- prototype.
- take into account the environmental, social, sustainable and economic impacts occurring within the tension between global and local dimensions.
- develop a personal way of thinking, leading to critical judgements and self-assessments.
- balance inspiration and systematic planning.
- balance more intuitive ways of working with more analytical ones.

- communicate in a convincing way, through a variety of modalities (three-dimensional, written, oral, visual).
- talk with experts about the project.
- read experts' articles, studies and reports related to one's own project issues and integrate those analyses with one's own project design.
- take into account the sustainability requirements of the objects; integrate the sustainability requirements in the project and in one's own design.
- use relevant software and hardware tools and systems productively.
- share skills.
- design and make materials and objects.

Knowledge will be acquired in the following fields:

- systems, techniques, processes and materials of production, with particular attention to the impacts on the environment and on the society due by the production, distribution and the complete life cycle of an object.
- Experiment with materials and techniques, both traditional and digital, in order to gain a thorough understanding of the process and the object (learning by doing).
- Document the complete process in a professional and continuous way.

List of topics covered

Do-it-yourself materials, recycling materials, superuse, growing materials, material recipes, circular design, material flows, material classification, material selection, material libraries, product life cycle, material research, environmental and social impacts, industrial production, biological production, growing as making, urban mining, traditional crafts, digital crafts, sustainable futures.

Teaching format

Input lectures, workshop sessions, brainstorming sessions, mentoring sessions, practical hands-on exercises, material demonstrations, group excursions, group presentations and reviews, life cycle assessment (LCA) methods, certification and labelling related to environmental and social aspects of material sourcing and production.

Learning outcomes

Knowledge and understanding

Students will acquire knowledge of materials and technologies in relation to the design process, projects and products. They would gain personal experience and understanding as to the complexity and possibilities DIY and growing materials hold and will see them into a more system-based context. Overall, the students would build a solid foundation towards the world of materials and their relation to production technologies and final context, strongly relating to the social and environmental aspects.

Applying knowledge and understanding

Students will be able to apply acquired knowledge in the current and future development of their own projects.

Making judgments

Students will acquire the ability to critically reflect on the appropriation and selection of materials and techniques to meet the goals of future projects. Keeping a hands-on approach, they will be as well asked to review other projects.

Communication skills

Students will be able to communicate their designs bringing on point arguments. They will be asked to use specific terminology. They'll be tested in order to understand whether to stand for their projects or renegotiate them.

Hands-on skills

Students will learn how to create and/or select materials and how to process them with the given manufacturing possibilities at the university workshops in developing material experiments and functional prototypes.

Learning skills

Students will learn how to approach questions related to materials and production processes. They will know how to be in charge of their own design decisions, mostly production related ones.

Assessment

Oral:

- Physical presentation of the students' complete design process, artefacts and material samples produced in the different phases and parts and especially the final project.
- Holding a knowledgeable and critical discourse concerning both the final developed project and more generally towards the world of materials in Design and the related product logic and sustainability aspects as discussed in the course.
- The presentation takes place separately from the semester project.
- Students have to deliver a complete documentation of the semester work. The format of the documentation will be defined and communicated semesters' end at the latest.

Additionally, the shared documentation has to be submitted. It communicates the project together with design research, enriched by outcomes from all courses. Format of the documentation will be defined and communicated during the first meetings of the course. Selected material samples and/or recipes will be documented and shared within the university's material collection.

Non-attending student assessment

Non-attending students have the same assessment criteria as Attending students.

- All assignments and projects need to be done, and the required knowledge has to be acquired.
- The exam of non-attending students may take longer (max. 20 minutes) in order to test specific knowledge in relation to manufacturing and material aspects of the presented project, and beyond.

Assessment language: English

Evaluation criteria and criteria for awarding mark

- Level of the acquired knowledge concerning material & Design in all aspects and perspectives as discussed in the course.
- Originality, coherence and aesthetic qualities of the design project, in relation to the context and the aims of the project; in particular, related to the use of materials and aspects of the production process.
- Effectiveness in communicating the project.
- Attitude, participation and active contribution to the course.

Recommended readings

Radical matter : rethinking materials for a sustainable future, Kate Franklin, Caroline Till 2019

Materialogy : the creative's guide to materials and technologies, MatériO, 2009

Material Alchemy, Studio Aikieu, 2014

Material Loops (Reader), Claudia Banz, Barbara Lersch, Katja Ninnis, 2021

(Download as PDF in English or German: www.hanssauerstiftung.de/material-loops-reader)

Supplementary readings

Tools for the design revolution : design knowledge for the future by [Editors: IDRV - Institute of Design Research Vienna, Harald Gruendl, Marco Kellhammer, Christina Nägele ; Authors: Harald Gruendl ... [et al.], 2014

The Story of Stuff: The Impact of Overconsumption on the Planet, Our Communities, and Our Health-And How We Can Make It Better, by Annie Leonard, 2011

Superuse: Constructing New Architecture by Shortcutting Material Flows, Ed van Hinte, Césaire Peeren, Jan Jongert, 2007

Further readings and articles will be provided during the course.