Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

MA-Eco-Social Design

Design & Production Course

SS 2021

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 & Production** **Area: Make & Intervene**
Course code	**96105**
Scientific sector	**ICAR/13 – Design e comunicazioni multimediali**
Degree	**Master in Eco-Social Design (LM-12)**
Semester	**II**
Year	**1st and 2nd**
Credits	**6**
Modular	**No**
Lecturer	Prof. Aart van Bezooijen, office C4.03, Webpage: https://www.unibz.it/en/faculties/design-art/academic-staff/person/38596-aart-van-bezooijen e-mail: Aart.vanBezooijen@unibz.it
Scientific sector of the lecturer	**ICAR/13**
Teaching language	**English**
Teaching assistant (if any)	-
Office hours	tba
Teaching language	**English**
Total lecturing hours	**60**
Total hours of self-study and/or other individual educational activities	**about 90**
Attendance	**strongly recommended**
Prerequisites	**-**

Course page	**https://www.unibz.it/en/faculties/design-art/master-eco-social-design**

Course description

The course will support the development of practical skills and hands-on experiences, aiming to build up a base of knowledge and understanding concerning production processes from self-built tools to industrial production systems in the context of design. In parallel, the course encourages the development a critical attitude towards traditional and emerging production techniques within industrial and bio-based economies.

The choice of an appropriate fabrication process is one of the most important decisions in the process of making physical things. What material is being used, what quantity of parts is to be produced and what sort of geometry do they have? Processes are selected depending on our needs. If an available process is not available for serial production, we might even need to create it ourselves, which will be the hands-on part of this course.

Together we will be documenting the landscape of selected manufacturing processes available as industrial solutions, in-house faculty workshops, and do-it-yourself solutions. Through a systematic overview by clustering, comparing and reviewing selected production methods we will consider how to adapt traditional processes and explore alternative ways of creation within a more eco-social future.

Students will be asked to create a series of physical objects with a self-developed process or self-built machine. The “machine project” is focused on getting a better understanding of, and working with, the variables of serial production. This exercise is less about creating an perfect end-product and more about the experimental setup to explore the role and methods of improvisation in design.

We are encouraging any form of collaboration, relations and synergies with other fields and courses as well as the yearly theme (‘Care’). The course program is adaptive and foresees a possible support in the processing/implementation aspects of the student’s main project.

Course Structure:

- **Research presentations**: After the project introduction, we will research and discuss selected manufacturing processes. Individual research results are gathered and shared with each other being the first (explorative) step towards the machine project.

- **Guest lectures**: Guest speakers will give us a better insight in the business practices of production. For example, through interviews with a design studios/labels producing in small series and (online) factory visits at industrial manufacturing companies.

- **Machine project**: Through self-developed processes or self-built machines we will make the first experiences with the process of serial production. An experimental setup will allow

design improvisation and understanding of processing on an industrial scale. Making the machine itself is part of the course documentation.

- **Skill sharing:** This course allows us to learn from lecturers, guests and each other. We 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 the dialogues, collaborations and dynamics of you as a group.

- **Learning by doing:** The approach of this semester project comes with an "Learning by Doing" approach. The hybrid (analog/digital) course structure should bring together the best of digital formats (online collaboration, remote lecturing) and analog practice (home/university studio, hands-on making).

- **Designer maker:** Unlike developing a final product the course focuses on getting to know different ways of making. We provide you with inspiring talks, hands-on exercises, group discussions and creative methods to for problem solving and solution finding 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 selected material samples to be documented in the university's material collection. A template will be provided during the course. Documenting and sharing this information will be useful at later stages in your (and others) studies.

Educational objectives

Students will be able to:

- Know how to make decisions related to production systems and processes and how to develop new ones with an eco-social mindset.
- Make critical reflections on their own design projects by analyzing the environmental, social, sustainable and economic impacts.
- Develop a personal way of thinking, leading to critical judgements and self-assessments.
- Communicate in a convincing way, through a variety of modalities (three-dimensional, written, oral, visual).
- Balance inspiration and systematic planning. Balance more intuitive ways of working with more analytical ones.
- Find and talk with experts about the project.
- Develop a shareable do-it-yourself manual.
- 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.
- Prototype of self-developed processes or self-built machines.
- Design and make materials and objects.
- Share skills with fellow participants.

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 processes, 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

Mass production, personalized production, peer production, distributed manufacturing, product service systems, bio fabrication, digital fabrication, do-it-yourself processes, open source documentation, product life cycle, circular design, material research, environmental and social impacts, urban mining, traditional crafts, sustainable futures.

Teaching format

Input lectures, workshop sessions, brainstorming sessions, mentoring sessions, practical hands-on exercises, material demonstrations, (online) excursions and interviews, group presentations and reviews.

Learning outcomes

Knowledge and understanding

Students will acquire knowledge of materials and technologies in relation to the design process, projects and products. They will 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 judgements

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.

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.

Learning by doing

Besides frontal lectures, students will learn knowledge and skills through hands-on exercises in which they experience how to deal with materials and various production techniques and processes.

Assessment
Oral:

- Physical presentation of the students' complete design process, artifacts and material samples produced in the different phases and parts and especially the final project.
- Holding a knowledgeable and critical discourse concerning on 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 as a 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.

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 marks

- Level of the acquired knowledge concerning material & Design in all aspects and perspectives as discussed in the course.
- Originality and coherence of the design project in relation to the use of materials and aspects of the production process.
- The ability of using the skills and knowledge learned through lectures and exercises
- Effectiveness in communicating the project
- Attitude, participation and active contribution to the course.

Recommended readings

- **"**Materiology : the creative's guide to materials and technologies" by MatériO
- "Cradle to Cradle: Remaking the Way We Make Things" by Michael Braungart and William McDonough
- "Design und Improvisation. Produkte, Prozesse und Methoden" by Annika Frye
- "Anton Alvarez – The Thread-Wrapping Machine" by Andreas Nobel, Richard Wentworth, Julie Cirelli
- "Radical matter: rethinking materials for a sustainable future" by Kate Franklin, Caroline Till
- "Werkzeuge für die Designrevolution" by the Institute of Design Research Vienna
- "Materials Experience: Fundamentals of Materials and Design" by Elvin Karana, Owain Pedgley, Valentina Rognoli

Further readings and articles will be given during the course.