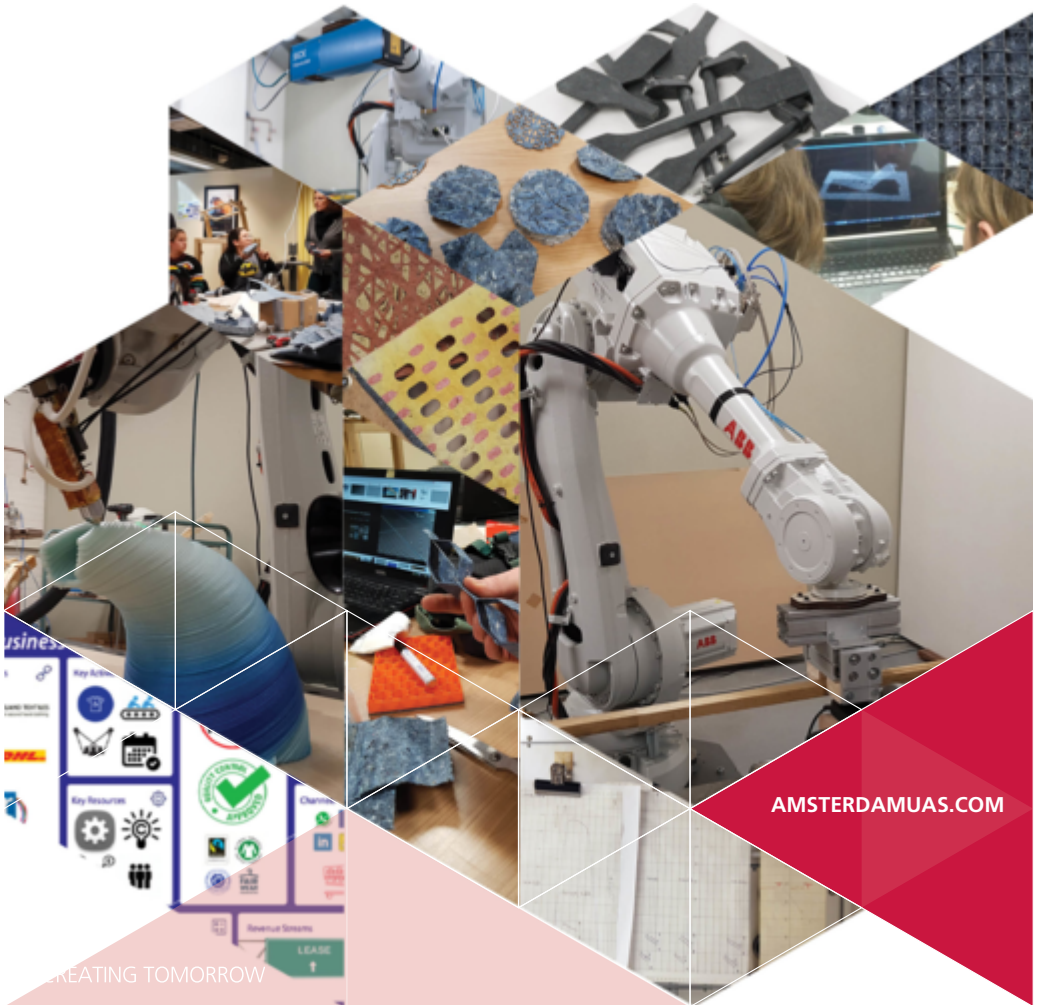


# NEW MATERIALS AND DIGITAL PRODUCTION

EXCHANGE PROGRAMME

INFORMATION FOR INTERNATIONAL STUDENTS



AMSTERDAMUAS.COM

CREATING TOMORROW

# NEW MATERIALS AND DIGITAL PRODUCTION

RETHINK AND ALTER THE CHARACTERISTICS AND PERFORMANCE OF EXISTING MATERIALS. INVESTIGATE INNOVATIVE MEANS OF PRODUCTION TO DESIGN AND MAKE NEW MATERIAL COMPOSITIONS. LEARN AND EXPLORE HOW THEY CAN ENCOURAGE SUSTAINABLE DESIGN AND PRODUCTION LEADING TO NEW BUSINESS MODELS FOR THE CIRCULAR ECONOMY.



THE MINOR FOCUS AREAS ARE:

## **Materials Research**

Learn how to test, describe and determine the physical characteristics and properties of materials, including their weaknesses and strengths.

Conduct literature research on new materials and learn how to perform a SWOT analysis to help you to assess the characteristics of your new material. Can they provide an advantage for a specific market or field of application?

## **Digital Production**

Learn how to alter the characteristics and performance of materials by engaging in the process of computational design. Acquire knowledge that is crucial in the process of creating a new material or making an adjustments to existing ones.

Learn about advanced digital production processes to help you create new material compositions. Specific technology, such as custom robot end-effectors and data, allow you to control and customise the materials characteristics. For your assignments you can use the school's production equipment: laser cutters, CNC mills, 3D printers and our industrial robotic arm with various end-effectors.

## **Business Modelling**

A good business model is commercially successful and future-ready. But it also contributes to a sustainable and circular economy. Society needs innovative business models that stimulate the re-use of existing materials and waste. In this minor you will discover and design these new models.

To develop a business model for your product, you have to be able to identify and understand the possible stakeholders. Involving parties such as material suppliers, producers and potential customers will help you to explore the potential application range of your material. In this minor you will learn how to determine which parties are important to you, as well as how to connect successfully with them. You will be drawing and presenting a specific business model canvas.

## Design

You will be developing a design application that constitutes a 'Proof Of Concept (PoC)'. This PoC requires integrating three aspects:

- ▶ The intrinsic properties of your material(s)
- ▶ Your capacity to adjust your material(s) with digital production means
- ▶ The most suitable solutions for a field or market question

You will be presenting the final product at scale 1:1 in a public setting (exhibition or other). Your presentation will include an explicit description and/or explanation of how it addresses contemporary societal challenges either directly or indirectly.

## EDUCATIONAL FORMAT

- ▶ Theoretical lectures, guest presentations, practical assignments, workshops, fieldtrips and professional events.
- ▶ Active testing time at the laboratories (for material and digital production research).
- ▶ Participatory coaching sessions for material production, design integration and business modelling.
- ▶ Full-time programme: 40 hours per week
- ▶ Average contact time: 12 hours per week

## LEARNING OUTCOMES

After completing this minor you will be able to:

- ▶ elaborate an integrated design process, which involves innovative material testing, advanced production technologies and sustainable business modelling;
- ▶ integrate multi-disciplinary knowledge from different educational areas;
- ▶ integrate this knowledge in a realistic application of your specific material solution;
- ▶ explore digital production methods to customise your material solution(s), such that you can creatively widen their field of application and/or market opportunities;
- ▶ draft a realistic and viable business plan for a specific product or application;
- ▶ incorporate your results in a database for further exploration by other students and/or researchers;
- ▶ collect and edit your findings in a professional report to present to stakeholders;
- ▶ put together a professional portfolio of the final group work and highlight your personal contribution to the development process and final outcome, which subsequently can be presented to future employers;
- ▶ present and defend your integrated design process and final prototype(s) in a public setting.



## PROGRAMME OUTLINE

- ▶ Credits: 30 ECTS
- ▶ Final portfolio, material samples and product prototype(s). Making-of compilation videos.

## ADMISSION REQUIREMENTS

You must be:

- ▶ be an undergraduate student in the 3rd or 4th year of your degree programme.
- ▶ curious and have an investigative attitude.
- ▶ able to interpret the research area sufficiently and correctly and explain your research path based on arguments.
- ▶ capable of acquiring relevant information at a sufficient level from a variety of sources, academic and otherwise.
- ▶ proficient in English (CEFR B1)
- ▶ in possession of at least 100 ECTS

## HOW TO APPLY

If you would like to enrol in this exchange programme, please visit [amsterdamuas.com/technology-courses](http://amsterdamuas.com/technology-courses) and complete the application form before the deadline.

Enrolment deadlines:

- ▶ Autumn semester: 1 May
- ▶ Spring semester: 15 October

## PRACTICAL MATTERS

- ▶ International office: [internationalofficeft@hva.nl](mailto:internationalofficeft@hva.nl) (visa, housing and other practical matters)
- ▶ Contact for minor: Marta Malé-Alemaný, [m.male-alemany@hva.nl](mailto:m.male-alemany@hva.nl)