

Biomedical Product Development (E092802)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0

Study time 180 h

Course offerings and teaching methods in academic year 2023-2024

A (Year)	English	Gent	lecture
B (Year)	Dutch	Gent	

Lecturers in academic year 2023-2024

Vansteenkiste, Ewout	WE05	lecturer-in-charge
Crispeels, Thomas	VUB	co-lecturer
Vandemeulebroucke, Jef	VUB	co-lecturer

Offered in the following programmes in 2023-2024

	crdts	offering
Master of Science in Biomedical Engineering	6	B
Master of Science in Biomedical Engineering	6	A
Master of Science in Industrial Design Engineering Technology	6	A

Teaching languages

English, Dutch

Keywords

Innovation, Product Development, Business Development, Creativity

Position of the course

The aim of the course is to present students an overview of all steps required to solve a biomedical problem by designing a product prototype. Students will be taught how to apply a methodical way of designing a product, which should lead to enhanced product quality. By creating several possible solutions to a problem the chance to find the optimal solution is enlarged. All parts of the methodical design process will be practiced as group assignments (groups of 5 to 6 students). Since group work is very important part of product development, this will also be taught and practiced. In addition, lectures will be given on aspects of intellectual property rights (patenting), quality assessment and assurance, patient safety regulations, business development, green product developments. Lectures will also include presentations and testimonies from biomedical engineers in SME startup companies.

Contents

Designing biomedical products requires a specific methodical design process because of the diversity of the stakeholders, the different background of the project participants, the limitation of the amount of background information, and the complexity of the working environment. During this course tools are taught about:

- the methodical design process
- teamwork
- communication methods for a good cooperation between medical and technical experts
- application of selection processes
- project management
- intellectual property
- quality assurance, notified bodies
- basic financing

- business plan

Initial competences

Final competences

- 1 Being capable to analyse, synthesize and manage an innovation process.
- 2 Being capable to implement a feasibility study.
- 3 Being capable to write a business plan.
- 4 Being capable of presenting and defending a project.
- 5 Having no fear to start an innovation project (spin-in, spin-off or start-up).
- 6 The students are evaluated according to their knowledge, comprehension and skills.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, Independent work

Extra information on the teaching methods

Weekly plenary followed by weekly reporting, intermediate reporting through presentations at week 12 and week 24. Team work on a 2-weekly basis around 1 novel medical device

Learning materials and price

Syllabus + lecture notes

References

Course content-related study coaching

2-weekly feedback on project status, 15 minutes per group on average

Assessment moments

continuous assessment

Examination methods in case of periodic assessment during the first examination period

Examination methods in case of periodic assessment during the second examination period

Examination methods in case of permanent assessment

Oral assessment, Participation, Peer and/or self assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

The assessment is based upon the written report, presentation, and the operation within the group. In addition to a description of the designed product and the road to the final design, the report will also include the results of patent search study as well as a business feasibility plan for a small company around a biomedical product of choice.

Calculation of the examination mark

20% innovation, 80% process (operation - permanent evaluation, presentation, written report)