Nanobiology

Bachelor

20%	25%	25%	30%
Mathematics	Physics	Biology	Integrated courses

Nanobiology uses the language of mathematics in the context of physics to understand the complexity of biology. The field of Nanobiology is developing fast, bringing changes that will soon have an impact on our society in medicine and beyond. During this degree programme you will cross the boundaries of physics, nanophysics, biology and medical research. You will study at the frontier of an exciting new research field that combines physics and biology.

Admission requirements	VWO N&T with BIO / N&G with WI B and Physics
Language	English
Number of first year students	100
Binding Study Advice*	65%
Numerus Fixus	Yes
Average study week	
10-15 hours	Lectures
15-20 hours	Self-study
10 hours	Projects/ Practicals

* % of students who get a positive BSA

What does the programme look like?

From developing methods and techniques for the identification of heart failure before it leads to disease, to developing microscopes that help to analyse vital molecules in living cells: Nanobiology is a new field of research that borders on physics and biology. The programme focuses on the interactions between molecules, cells and organisms, based on fundamental principles of physics.

The Nanobiology Bachelor's degree programme teaches the fundamental knowledge and skills needed to describe and study the complexity of living systems. The emphasis of the programme is on learning to apply quantitative analysis based on the principles of physics. These skills and knowledge will bring about changes that will affect our society in the near future, not only in terms of medicine, but also in terms of energy, food and beyond. This Bachelor's degree programme gives you the best of both worlds, as TU Delft and Erasmus University Rotterdam have joined forces to bring you this unique programme.

The three-year Nanobiology programme is fundamentally interdisciplinary: it gives a thorough grounding in physics and mathematics, focusing on biomedical science and nanoscience. The courses feature lectures, workgroups and combinations of the two. The programme also includes laboratory-based lessons which provide an opportunity to work with advanced research equipment. You study in small groups at both Erasmus MC in Rotterdam and the faculty of Applied Sciences in Delft.

TU Delft

Erasmus

Nanobiology

What do you learn?

In the Nanobiology programme, students study in Delft and in Rotterdam. Normally students visit one university per day.

Year one: introduction to the field
The first year of Nanobiology will give you a strong foundation in theoretical knowledge and enable you to master basic research skills, laboratory techniques and scientific methods. In the first period you will follow the course on 'Introduction to studying Nanobiology', in which you will develop study and group research skills. Over the year you will take courses in cell biology, advanced mathematics, calculus, linear algebra, physics, biophysics, genetics and biochemistry. You will be introduced to computer programming for the simulation of biological systems, which will provide a basis for advanced programming courses.

Year two: in-depth study of the field
In the second year, you apply the fundamentals of mathematics and biology that you acquired in the first year to advanced mathematics, physics and biology. Throughout the second year these disciplines will be more and more combined in integrated courses. Second-year practical courses include Electronic Instrumentation, Microscopy/Nanoscopy practice and Computational Science.

Year three: elective space and graduation
In your third and final year of the Bachelor's in Nanobiology, you focus on doing laboratory research while applying all of the knowledge and skills you acquired in the first two years of study. As part of your studies, you follow a 'minor' – a short study project in a scientific field of your choice. In the second half of the third year, you take a selection of elective courses and you start working on your Bachelor's research project. This entails working in a research group for 20 weeks, conducting research that you design together under the direct guidance of an experienced researcher. The results of your research project form the basis for your Bachelor's thesis, which is a scientific report on your research findings.

What is the profile of an NB student?

- A high aptitude for mathematics, physics and biology
- You are a team player
- A good grasp of the English language
- You want to make a difference to the future of biomedicine

40% will continue with the Master programme

Follow-on Master's programmes

- Joint Master's programme Nanobiology
- Molecular Medicine at Erasmus MC
- Neuroscience at Erasmus MC
- Infection and Immunity at Erasmus MC
- Life Science & Technology at TU Delft
- Applied Physics at TU Delft

Joint Degree

Delft University of Technology
Faculty of Applied Sciences (TU Delft)
& Erasmus University Rotterdam
(Erasmus MC)

50%
50%
male & female

20% International students

What skills do you obtain?

- You are a trained, multidisciplinary analyst and problem-solver
- You can analyse complex problems
- You have the quantitative tools to address these problems
- Your excellent problem solving skills will be valued for many varied job opportunities!

Job prospects

- You can start work outside academia, follow another programme of study or embark on a scientific career
- You might choose a position at an industrial company, a scientific institution or a government agency
- You will also have a great foundation for a career as a teacher, science journalist or advisor

Smallest Challenges Nanobiology Greatest Solutions

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FEB_2019