



# Study guide

International  
Bachelor in  
Natural Sciences

**2023**





Photo: Lisbeth Holten

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This study guide shows the range of bachelor's programmes and bachelor's subjects per 1 January 2023. We reserve the right to make changes to our range of study opportunities and entry requirements after this date.

Check [ruc.dk](https://ruc.dk) for updated information.

# International Bachelor in Natural Sciences

The International Bachelor in Natural Sciences is an interdisciplinary research-based programme with a specialisation in two subjects.

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**Natural Science is about describing and understanding natural phenomena based on empirical observation and experimentation. As a student at International Bachelor in Natural Science, you will study natural science in an international environment in close connection to the university's leading professors and researchers within natural science.**

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International students make up 80% of the programme's participants, so you will become part of an exciting, international environment which will prepare you to work with a broad range of nationalities in international companies and organisations.

From the very first day, the project work will teach you to think and work based on research. Each term, you will formulate a specific science problem in collaboration with your group. At the end of the term, you must present a research-based solution that is based on scientific literature and preferably on your own experiments. Each of your projects will have a professor assigned, who will act as your supervisor throughout the process.

During the first year, you will receive training in key scientific theories, methods and models. Through your project work and courses, you will learn the basic methods for how to examine nature using experiments, analyses and models. You will also select courses in biology, computer science, physics, geography, chemistry, mathematics, environmental studies and statistics.

In the final two years, you will specialise in two bachelor subjects. You can choose among a number of combinations, either with two natural science subjects, or with one subjects from natural science and one from the humanities or social sciences.

Some examples of issues which you can work on in your projects are:

- How do we fight antimicrobial resistance?
- How can a mathematical model be used to cure depression?
- How can the CO<sub>2</sub> emission of cars be reduced using less rolling resistance and improved asphalt?
- Can machine learning be used for developing new drugs?
- How was the germ theory of disease developed?
- How do dye-sensitized solar cells work?

## Admission requirements

- English at Danish B-level
- Mathematics at Danish A-level
- One of the following subject combinations: Physics at Danish B-level and Chemistry at Danish B-level or Physics at Danish B-level and Biotechnology at Danish A-level or Chemistry at Danish B-level and Geoscience at Danish A-level or Chemistry at Danish B-level, Biology at Danish A-level and Physics at Danish C-level

Read more about admission requirements and deadlines for international students:

[ruc.dk/en/admission-bachelors-programmes](https://ruc.dk/en/admission-bachelors-programmes)





Photo: Lisbeth Holten



# Why study International Bachelor in Natural Sciences?



**You get an interdisciplinary education with a specialisation in two bachelor subjects**

Interdisciplinarity is central to all programmes at Roskilde University. The International Bachelor in Natural Sciences gives you the opportunity to specialise in two subjects. The problem-oriented project work encourages students to think interdisciplinary. As a student at Roskilde University you will analyse complex, real-life issues by applying an interdisciplinary approach where traditional, academic boundaries between subjects is not upheld.



**You learn to manage projects and solve real-life problems**

Problem-oriented project work is the guiding framework for learning at Roskilde University. This approach to teaching and learning is a way to investigate and solve complex problems involving natural science. Project work constitutes 50% of your studies. In your project work, you can choose to work with a company or other types of organisations to investigate and solve a real-life problem. Problem-oriented project work is about identifying a problem and using the existing knowledge in an academic field and then carry out your own research together with your project group, thereby creating new knowledge yourself.



**You will be taught and guided by professors**

International Bachelor in Natural Sciences is a research-based programme. Academic staff, who carry out cutting-edge research, will teach you and they will bring the latest knowledge into both courses and project supervision. Moreover, your project group will have a supervisor, who will give guidance and give you feedback on your project ideas and discuss your project progress.

# Programme structure

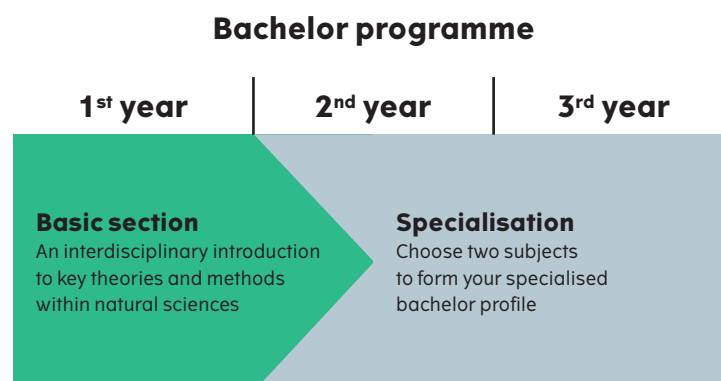
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**Your bachelor programme starts with studies of fundamental theories and methods within the scientific field of natural sciences. From your third semester you will specialise in two bachelor subjects.**

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You will be introduced to the main theories and methods within natural sciences during the first half of your bachelor programme. At the same time, you will carry out project work, where you investigate natural science problems using theories and methods from your courses together with 3-4 fellow students. Working together with other students enables you to discuss the project, give each other feedback and learn from each other. Group work facilitates your learning and is an important part of studying at Roskilde University.

After the initial phase of your bachelor programme, you will specialise in two bachelor subjects, and you will work with these two subjects for the remaining time of the programme. You can choose between different subjects and different combinations. For example: Environmental Biology combined with Chemistry. See page 10 for an overview of the available subjects and combinations.



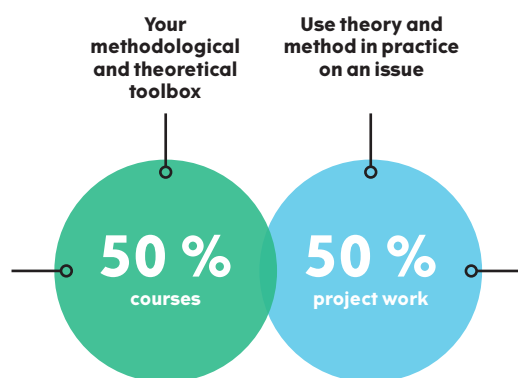


## Courses and project work

International Bachelor in Natural Sciences consists of 50 % courses and 50 % project work.

The **courses** take place as lectures, lab exercises, teaching in smaller groups or classroom teaching. You will have fewer on-campus classes than you have been used to. As a university student you are expected to work independently and take responsibility for your own learning. This includes preparing for class and working in your project group.

You can expect to spend approximately 2 hours of preparation time for each course session.



The **project work** is where you and your group of fellow students work to identify, illuminate, understand, explain and solve problems that may arise theoretically or from society or the environment. In the project work you learn to apply the theoretical and methodological tools that you have learned during your courses – possibly also in cooperation with companies and organisations outside the university.

The characteristics of this way of learning is that you and your fellow students create new knowledge yourselves – based on scientific investigation – rather than just adopting knowledge created by others.

# Bachelor Subjects at Bachelor in Natural Sciences

**When you have completed the initial fase of your bachelor programme, you will choose your two specialisation subjects.**

**Here is a short introduction to the subjects which you can choose.**

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## **Bioprocess Science**

At Bioprocess Science you study the biological and technical aspects of bioprocesses and how to utilize the biological and chemical world that surrounds us, without harming it, in a way so, both we and nature get the maximum benefit, in e.g. producing biofuels or therapeutic drugs from natural resources.

[ruc.dk/bachelor/bioprocess-science](https://ruc.dk/bachelor/bioprocess-science)

## **Chemistry**

The bachelor subject Chemistry and the chemistry research at Roskilde University aim at doing chemistry in a green way. This means studies in second generation bioethanol, optimization of solar cells, synthesis of new bioactive compounds, synthesis of new and useful natural products, clever use of surface active compounds and development of biosensors.

[ruc.dk/bachelor/chemistry](https://ruc.dk/bachelor/chemistry)

## **Computer Science**

The main focus of the bachelor subject Computer Science is on software development and the design of IT systems. You will learn to plan, analyse, implement, test and document a programming assignment.

[ruc.dk/bachelor/computer-science](https://ruc.dk/bachelor/computer-science)

## **Environmental Biology**

The bachelor subject Environmental Biology focuses on the interaction between living animals, plants and micro-organisms and their physical, chemical and biological environment.

[ruc.dk/bachelor/environmental-biology](https://ruc.dk/bachelor/environmental-biology)



# SUBJECT DESCRIPTIONS

## Mathematics

In the bachelor subject Mathematics you will learn about the core elements of mathematics and how to work with basic research in mathematics, mathematical didactics and mathematical models in areas such as physics, epidemiology and physiology.

[ruc.dk/bachelor/mathematics](https://ruc.dk/bachelor/mathematics)

## Molecular Biology

The bachelor subject Molecular Biology is the part of biology that concerns itself with macromolecules' properties and interactions, and examines the function of genes and the function of the proteins that are formed. You will acquire a solid understanding of the key theories of biochemistry, cell biology, genetics and microbiology.

[ruc.dk/bachelor/molecular-biology](https://ruc.dk/bachelor/molecular-biology)

## Physics

The bachelor subject Physics takes you through the basic disciplines of physics, including electrodynamics, thermodynamics and quantum mechanics. You will learn to structure and formalize physical problems and you will acquire the necessary skills to analyse the world with the approach and intuition of a physicist.

[ruc.dk/bachelor/physics](https://ruc.dk/bachelor/physics)

OTHER SUBJECTS WHICH YOU CAN CHOOSE:

## Business Studies

Business Studies will enable you to apply aspects of key business economics theories and methods in company analyses. You will develop and substantiate knowledge of company processes and business economics issues. Moreover, you will develop an understanding of interdisciplinary approaches, including financial, organisational and managerial aspects of companies and processes in the corporate field.

[ruc.dk/bachelor/business-studies](https://ruc.dk/bachelor/business-studies)

## Communication Studies

At Communication Studies you will acquire fundamental communication skills. Studying the whole communication circuit from senders to message to audiences, Communication Studies takes into account the social, cultural and technological contexts that both constrain and enable communicative processes.

[ruc.dk/bachelor/communication-studies](https://ruc.dk/bachelor/communication-studies)

For combination opportunities, see the next page >>>

# Combination op

Bioprocess Science	Chemistry	Computer Science	Environmental Biology	Mathematics	Molecular Biology	Physics
must be combined with one of the following subjects	must be combined with one of the following subjects	must be combined with one of the following subjects	must be combined with one of the following subjects	must be combined with one of the following subjects	must be combined with one of the following subjects	must be combined with one of the following subjects
↓	↓	↓	↓	↓	↓	↓
Chemistry	Bioprocess Science	Bioprocess Science	Bioprocess Science	Bioprocess Science	Bioprocess Science	Chemistry
Computer Science	Environmental Biology	Business Studies	Chemistry	Chemistry	Chemistry	Computer Science
Environmental Biology	Mathematics	Communication Studies	Computer Science	Computer Science	Computer Science	Environmental Biology
Mathematics	Molecular Biology	Environmental Biology	Mathematics	Environmental Biology	Environmental Biology	Mathematics
Molecular Biology	Physics	Mathematics	Molecular Biology	Molecular Biology	Mathematics	Molecular Biology
		Molecular Biology	Physics	Physics	Physics	
		Physics				

Please be aware that the combination options may change.  
Check [ruc.dk/bachelor/international-bachelor-natural-sciences](https://ruc.dk/bachelor/international-bachelor-natural-sciences)



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## COMBINATION OPPORTUNITIES

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See which of Roskilde University's master programmes that your bachelor degree + your subjects give you direct access to.  
[ruc.dk/en/master/preapproved-programmes](https://ruc.dk/en/master/preapproved-programmes)

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# Being a student at Roskilde University

At international Bachelor in Natural Sciences you will become part of a vibrant social community and academic network of students from Denmark and from around the world. From your first day, you will belong to a team of approximately 50 fellow RUC-students in the same “house” as you, where study environment coordinator and a team of tutors will support the social and academic environment.

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**It takes commitment,  
independence and  
responsibility to study  
International  
Bachelor in Natural  
Sciences**

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## **Become a part of International Community**

International Community is a student driven organisation that facilitates events and communities between Danish and international students at RUC. Join the workshop, the cooking-and-dining nights, the sport events, the game nights – or the virtual alternatives which help you stay in touch.

When you begin your studies at Roskilde University, you will encounter a different structure to your daily life compared to what you might have been used to before. You will have fewer on-campus lessons and you will be challenged with higher demands of independent preparation for your courses.

Concurrently, you will begin your project work together with your group of fellow RUC-students. It's up to you and the group to plan your own time and complete the necessary tasks in order to make progress throughout the semester – guided by one of the researchers from your programme.

It's your responsibility to schedule and carry out the work which you need to complete in order to contribute to the common goals in your project group.

Throughout the semester you will be guided by leading professors and lecturers, and you will be given assignments and tests as you make your academic progression. By the end of the semester, you and your project group will have an exam on the project report that you have handed in as a result of the semester's project work.

It requires independence and great responsibility to be a student at International Bachelor in Natural Sciences. In return you will develop the much needed knowledge, skills and competences that employers all over the world request to be able to solve present and future challenges.



# Example: Weekly schedule (September)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8.15-10.00	Course 2	Project preparation on your own	Project work with the group	Course 2	Project preparation on your own		
10.15-12.00	Course preparation	Course 2		Course 1	Project work with the group		
12.15-14.00	Course 1	Course preparation	Supervisor meeting	Course preparation			
14.15-16.00		Project preparation on your own	Project work with the group	Project preparation on your own			Project preparation on your own
16.15-18.00	Course preparation						
19.00-21.00			Project preparation on your own				

- On campus at Roskilde University
- On campus at Roskilde University, at home or elsewhere

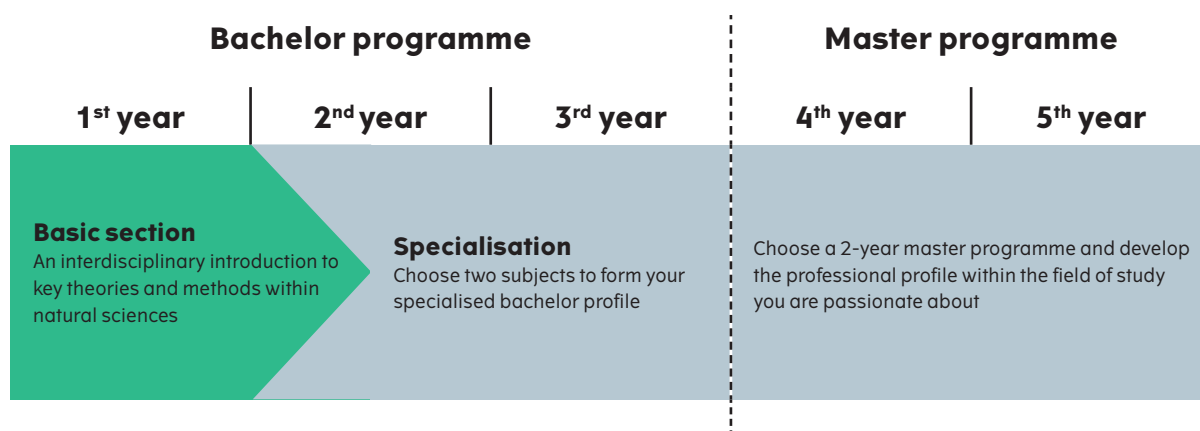
In the beginning of a semester, most of your study-time will focus on your courses. This changes and by the end of the semester you will be working full time – or more – on your project.

# Example: A fall semester

	September	October	November	December	January
<b>Project work</b>	Forming the project groups	Midterm-evaluation	Intensive project work	Handing in the project	Project-exam
<b>Courses</b>	3-6 courses a week in the form of lab exercises or teaching in smaller groups				Exams

# Master programmes

With a bachelor from Roskilde University, you have direct access to enroll in one of our master programmes.



**Most students from International Bachelor in Natural Sciences continue at one of the following master programmes:**

- MSc in Chemical Biology
- MSc in Environmental Science
- MSc in Mathematical Bioscience
- MSc in Physics and Scientific Modelling
- MSc in Computer Science

Other master programmes at Roskilde University:

- MSc in Business Administration and Leadership
- MSc in Global and Development Studies
- MSc in International Politics and Administration
- Ma in Media and Communication
- MSc in Nordic Urban Planning Studies
- MSc in Social Entrepreneurship and Management

Please note that the different master programmes have different admission requirements. More info about admission:

[ruc.dk/en/admission-masters-programmes](https://ruc.dk/en/admission-masters-programmes)

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See which of Roskilde University's master programmes that your bachelor degree + your subjects give you direct access to.  
[ruc.dk/en/master/preapproved-programmes](https://ruc.dk/en/master/preapproved-programmes)





# Need guidance?

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Talk to one of RUC's student counselors if you have questions about your choice of study programme. Maybe you need some advice on your options or how to choose a bachelor programme. In any case, you are always welcome to contact us, and we will do our best to help you.

Also, take the opportunity to participate in our workshops where you can get information on admission requirements and admission processes as well as information on our study programmes. You will find more information at [ruc.dk](https://ruc.dk).

Contact us if you are considering to study at Roskilde University.

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Study Guidance:

→ Write us  
[guidance@ruc.dk](mailto:guidance@ruc.dk)

→ Call us  
+ 45 4674 2424  
Monday-Friday:  
10–11.30

→ Meet us  
Student Hub  
Building 01  
Roskilde University  
Monday, Tuesday, Thursday and Friday:  
12–14

[ruc.dk/en/contact-study-guidance-bachelor](https://ruc.dk/en/contact-study-guidance-bachelor)





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