



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Bachelor's degree



BSc in Physics and Data Science

Constructor University • Bremen

Overview

Degree	Bachelor of Science
Teaching language	<ul style="list-style-type: none">English
Languages	<p>Language of instruction: English</p> <p>Language courses are offered in German, French, Spanish and Mandarin Chinese.</p>
Programme duration	6 semesters
Beginning	Winter semester
Application deadline	<p>To be considered for admission to an undergraduate programme, you need to apply by the following deadlines:</p> <ul style="list-style-type: none">Early decision: application due by 1 NovemberEarly action I: application due by 1 DecemberEarly action II: application due by 1 February <p>Rolling admission:</p> <ul style="list-style-type: none">Application due by 1 June for international students (who require a visa to enter and study in Germany)Application due by 20 July for EU/EEA citizens and citizens who do not require a visa <p>For more information, please check our website: https://constructor.university/admission-aid/application-information-undergraduate.</p>
Tuition fees per semester in EUR	10,000 EUR
Additional information on tuition fees	<p>Annual undergraduate 2023/24 tuition fees – 20,000 EUR</p> <p>Annual graduate 2023/24 tuition fees – 20,000 EUR</p> <p>Annual International Foundation Year 2023/24 tuition fees – 12,000 EUR</p>
Joint degree / double degree programme	No
Description/content	Physics has shaped our view of the universe and the world around us through the study of the basic concepts of space, time, and matter. Physics not only lays the foundation for other natural sciences and many engineering disciplines but is also a fundamental part of modern technology,

including transistors, lasers, or global positioning systems. Physics is also of fundamental importance for global challenges such as global warming, E-mobility, or renewable energies. Moreover, quantum computing is a rapidly emerging technology that harnesses phenomena of quantum mechanics to tackle problems too complex for classical computers.

The Constructor University Physics and Data Science major is a three-year BSc programme. Its physics content is oriented along the guidelines of the Konferenz der Fachbereiche der Physik (KFP) in Germany, the Institute of Physics (Britain) for BSc in Physics, and the topics required for the Graduate Record Examination (GRE) Physics test. The data science component is being developed and taught in close collaboration with the Computer Science faculty at Constructor University. The Physics and Data Science programme is frequently optimised and refined based on feedback from students and instructors and developments in research and teaching.

The scientific knowledge, international alumni network, problem-solving abilities, and social skills acquired through the study of Physics and Data Science at Constructor University ensure a pathway to success in our ever-evolving, technology-driven society. This is evident through the achievements of our many very successful graduates.

Course Details

Course organisation

The first year is characterised by a university-specific curriculum that offers disciplinary education tailored to build upon and enhance students' entrance qualifications. Students select introductory modules for a total of 45 credit points (CP) from the "CHOICE" area of a variety of study programmes, of which 37.5 CP will be from their intended major.

To pursue a Physics and Data Science(PhDS) major, the following "CHOICE" modules (30 CP) need to be taken as mandatory modules during the first year of study:

- "CHOICE" module: Classical Physics (7.5 CP)
- "CHOICE" module: Programming in Python and C++ (7.5 CP)
- "CHOICE" module: Modern Physics (7.5 CP)
- "CHOICE" module: Mathematical Modelling (7.5 CP)

Students can choose between the following two mandatory elective "CHOICE" modules in the second semester:

- "CHOICE" module: Core Algorithms and Data Structures (7.5 CP) or
- "CHOICE" module: Algorithms and Data Structures (7.5 CP)

The remaining "CHOICE" module (7.5 CP) can be selected in the first semester of study according to interest and/or with the aim of allowing a change of major.

In their second year, students take a total of 45 CP from a selection of in-depth, discipline-specific CORE modules.

To pursue Physics and Data Science, the following 45 CP mandatory CORE modules need to be acquired:

- CORE module: Analytical Mechanics (5 CP)
- CORE module: Electrodynamics & Relativity (5 CP)
- CORE module: Quantum Mechanics (5 CP)
- CORE module: Statistical Physics (5 CP)
- CORE module: Advanced Physics Lab I (5 CP)
- CORE module: Advanced Physics Lab II (5 CP)
- CORE module: Computational Modelling (5 CP)
- CORE module: Scientific Data Analysis (5 CP)
- CORE module: Machine Learning (5 CP)

In the third year of studies, students will take 15 CP from major-specific or major-related, advanced specialisation modules to consolidate their knowledge and be exposed to state-of-the-art research in their areas of interest.

International elements	<ul style="list-style-type: none"> • International guest lecturers • Training in intercultural skills • International comparisons and thematic reference to the international context • Language training provided • Integrated study abroad unit(s)
Integrated study abroad unit(s)	The fifth semester includes a mobility window for study abroad options.
Integrated internships	<p>The internship programme is a core element of Constructor University's employability approach. It includes a mandatory internship (minimum eight weeks full-time), which provides insight into the labour market as well as practical work experience related to the respective area of study. Successful internships may initiate career opportunities for students. For more information, please contact the Career Services Center (https://constructor.university/student-life/career-services).</p>
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	10,000 EUR
Additional information on tuition fees	<p>Annual undergraduate 2023/24 tuition fees – 20,000 EUR</p> <p>Annual graduate 2023/24 tuition fees – 20,000 EUR</p> <p>Annual International Foundation Year 2023/24 tuition fees – 12,000 EUR</p>
Semester contribution	Approx. 330 EUR per semester, which includes public transportation
Funding opportunities within the university	Yes
Description of the above-mentioned funding opportunities within the university	<p>The Tuition Deferral Programme is an innovative way to finance a portion of your tuition fees at Constructor University:</p> <ul style="list-style-type: none"> • The deferral of tuition fees will be calculated automatically, and the option of deferring tuition fees will be available to you shortly after admission. • You decide whether you want to take advantage of this personalised financing option. • Granted independent of your financial situation • Flexible repayment plan based on your future income and personal circumstances

Requirements / Registration

Academic admission requirements

- Completed application form: <https://constructor.university/admission-aid/application-information-undergraduate>
- one recommendation letter from a school official (usually a school counsellor, teacher, or principal)
- school transcripts of the last two to three years
- results of a standardised test (SAT or ACT)
- results of a language proficiency test (TOEFL, IELTS, CAE, Duolingo, etc.)

Language requirements

A list of all accepted English language proficiency tests and the minimum scores can be found here: <https://constructor.university/admission-aid/application-information-undergraduate>.

Application deadline

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- Early decision: application due by 1 November
- Early action I: application due by 1 December
- Early action II: application due by 1 February

Rolling admission:

- Application due by 1 June for international students (who require a visa to enter and study in Germany)
- Application due by 20 July for EU/EEA citizens and citizens who do not require a visa

For more information, please check our website: <https://constructor.university/admission-aid/application-information-undergraduate>.

Submit application to

<https://constructor.university/admission-aid/application-information-undergraduate>

Services

Possibility of finding part-time employment

We offer a limited number of student jobs on campus as well as support in finding student jobs off campus.

Accommodation

Constructor University offers **on-campus** accommodation that includes room and board (full meal plan). This accommodation is offered to **undergraduate and International Foundation Year students**. The fee for one academic year (nine months) is 8,000 EUR.

Constructor University offers a variety of **off-campus** student housing options for **graduate students** in Bremen. You can reserve accommodation through Constructor University and take advantage of our housing support services, flexible lease terms, and full campus amenities. The fee for accommodation for one academic year (nine months) is 4,500 EUR.

Generally, the cost of housing in Bremen can be considered affordable compared to other German cities. Private rooms range from 300 to 500 EUR per month.

Career advisory service

The Constructor University Career Services Center accompanies students through all stages of their career development in order to enable them to become responsible leaders of tomorrow.

<https://constructor.university/student-life/career-services>

Support for international

**students and doctoral
candidates**

- Welcome event
- Specialist counselling
- Cultural and linguistic preparation
- Help with finding accommodation

**General services and support
for international students
and doctoral candidates**

As most of our students have an international background, we focus on your wellbeing.

Supervisor-student ratio

1:16

Contact

Constructor University

Student Marketing & Recruitment

Campus Ring 1
28759 Bremen

Tel. [+49 4212004200](tel:+494212004200)

✉ study@constructor.university

🌐 Course website: <https://constructor.university/programs/undergraduate-education/physics-and-data-science>

📘 <https://www.facebook.com/constructor.university/>

🐦 https://twitter.com/constructor_uni

🌐 <https://www.linkedin.com/school/constructor-university/>

📷 https://www.instagram.com/constructor_uni/

📺 <https://www.youtube.com/@constructor.university/about>

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International Programmes in Germany - Database

www.daad.de/international-programmes
www.daad.de/sommerkurse

Editor

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Section K23 – Information on Studying in Germany
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GATE-Germany

Consortium for International Higher Education Marketing
www.gate-germany.de

Disclaimer

The data used for this database was collected and analysed in good faith and with due diligence. The DAAD and the Content5 AG accept no liability for the correctness of the data contained in the "International Programmes in Germany" and "Language and Short Courses in Germany".

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