UNIVERSITY OF PASSAU

B.Sc. Mathematics

A degree programme of the Faculty of Computer Science and Mathematics

The information in this infosheet is pertinent for the degree programme starting in winter semester 2026–27.

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Programme web page
Information for prospective students

Download the infosheet in PDF format

Last revised in December 2025

Admission requirements

Programme start: October (winter semester)

Language requirements: English-taught degree programme

The B.Sc. Mathematics is taught in English. For this reason, all students must provide proof of English language proficiency at level B2 of the Common European Framework of Reference for Languages (CEFR) in order to enrol.

Almost all courses are taught in English, with only a few minor exceptions. For this reason, all students must provide proof of English language proficiency at level B2 of the Common European Framework of Reference for Languages (CEFR) in order to enrol.

German language skills are not required at the start of the programme. We recommend that students whose language of instruction is not German acquire German language skills for everyday life and professional competence (at least level B1 CEFR) during the course of their studies. To do so, they should complete the elective "German as a Foreign Language".

Study aptitude tests for applicants from non-EEA countries

Applicants who are not EU citizens *and* who have *not* obtained their higher education entrance qualification in a member state of the European Economic Area must prove their aptitude by passing one of the following aptitude tests:

- Scholastic Assessment Test (SAT) with a score of at least 1240
- Digital or paper-based Test for Academic Studies (TestAS) with a percentile rank of 80 in the core module or in the specialised modules Mathematics, Computer Science and Natural Sciences
- American College Testing (ACT) programme with a minimum score of 25 in the overall assessment (composite) or in the STEM sub-area
- Joint Entrance Examination (JEE):
  - JEE-Main with an NTA score of at least 80 or
  - JEE-Advanced rated "qualified"
- College Scholastic Ability Test (CSAT; Suneung) with a score of "Grade 3" or better

The test result must be submitted as part of the application for the degree programme.

Information on applying for a place on the degree programme

Information for new students

Please visit our website to find out everything you need to know as you're starting out on your studies and for information on the Orientation Weeks.

Please also watch our **videos for new students**:

- At the start of the degree programme
- Semester cycle
- Important documents for your studies
- European Credit Transfer and Accumulation System (ECTS) and standard period of study
- Course types
- Language courses and placement tests
- Examinations
- Online portals for your studies
- Scientific methods
- Leisure activities
- Advice centres

Modules, module catalogue, overall grade calculation, courses

The curriculum is modularised, and each module carries a specific ECTS credit load. As a rule, when you pass a module exam, you acquire the associated number of ECTS credits. You will also get a mark on your exam; however, this does not affect the number of ECTS credits awarded. As this Bachelor's degree programme comprises a total of 180 ECTS credits, you should aim to accumulate **approx. 30 ECTS credits each semester** to complete the programme within the standard period of study.

In the **module catalogue**, you will find detailed descriptions of the content of all modules and courses, as well as any module prerequisites and information on the examination format.

All modules are examination modules and are graded (with the exception of the "Counselling Module"). The final grade is calculated from the ECTS-weighted average of the graded examination modules and the Bachelor's dissertation.

For each compulsory module group, you may specify one examination module that is not to be included in the final grade (with the exception of the compulsory module group “Counselling Module, Proseminar, Seminar and Presentation”). If you complete more compulsory elective modules or elective modules than are required for the degree, you must indicate which modules are included in the final grade.

The individual courses for the modules can be found in **Stud.IP**, the University's learning management system: Bachelor’s courses

OVERVIEW OF MODULES

When planning out your degree programme, please use the **module catalogue** and check that the modules are applicable to the specific version of the **study and examination regulation** under which you are studying the programme.

Compulsory modules

In the compulsory subject Mathematics, you will complete **all compulsory modules** and accumulate a total of **78 ECTS credits**.

Compulsory module group “Discrete Mathematics and Linear Algebra”

Course format	Module title	Type of assessment	WCH	ECTS
(L) and (E)	Introduction to Discrete Mathematics	Written or oral exam	2+2	6
(L) and (E)	Linear Algebra I	Written or oral exam	4+2	9
(L) and (E)	Linear Algebra II	Written or oral exam	4+2	9
In total: 3 modules			**16**	**24**

Compulsory module group “Analysis and Stochastics”

Course format	Module title	Type of assessment[1]	WCH	ECTS
(L) and (E)	Analysis I	Written exam or oral exam	4+2	9
(L) and (E)	Analysis II	Written exam or oral exam	4+2	9
(L) and (E)	Introduction to Stochastics	Written exam or oral exam	4+2	9
In total: 3 modules			**18**	**27**

Compulsory module group “Programming”

Course format	Module title	Type of assessment	WCH	ECTS
(L) and (E)	Programming I	Written or oral exam	2+2	6
(L) and (E)	Algorithms and Data Structures	Written or oral exam	4+2	9
In total: 2 modules			**10**	**15**

Compulsory module group “Counselling Module, Proseminar, Seminar and Presentation”

Course format	Module title	Type of assessment	WCH	ECTS
(L)	Counselling Module	Portfolio or written exam	1	2
(S)	Proseminar in Mathematics	Portfolio	2	3
(S)	Seminar in Mathematics	Portfolio	2	4
(Pr)	Presentation of the Bachelor’s dissertation[2]	Oral exam	–	3
In total: 4 modules			**5**	**12**

In total:	**78**

[1] The lecturer decides on the type of assessment used if the module catalogue provides for several types of examination for a module.
[2] In order to register for the “Presentation of the Bachelor’s dissertation” module, you must have already submitted your dissertation.

Compulsory elective modules

You will complete the two compulsory elective module groups **“Applied Mathematics”** and **“Pure Mathematics”,** accumulating **at least 18 ECTS credits in each group**. You must accumulate at least **50 ECTS credits** in the compulsory elective modules. Suitable courses can be found in the **module catalogue**.

Module group “Applied Mathematics”

Fundamentals from the field of applied mathematics, e.g. optimisation, probability theory or numerics

Module	Type of assessment	ECTS
Compulsory elective modules “Applied Mathematics”	Written exam or portfolio or oral exam	2–9 each
In total: At least 2 modules		**At least 18**

Module group “Pure Mathematics”

Fundamentals from the field of pure mathematics, e.g. algebra, discrete mathematics or logic

Module	Type of assessment	ECTS
Compulsory elective modules “Pure Mathematics”	Written exam or portfolio or oral exam	2–9 each
In total: At least 2 modules		**At least 18**

In total:	**At least 50**

Elective

You will complete **one elective,** accumulating at least **35 ECTS credits**. Suitable courses can be found in the **module catalogue**.

Elective module group “German as a Foreign Language”

If your previous language of study was not German, we strongly recommend that you take the elective "German as a Foreign Language" and complete modules in the amount of 20 ECTS credits. However, this elective is *not* available to you if the teaching language for your prior education *was* German.

Based on your initial language level (as determined in a placement test), you should aim to increase your German proficiency by two levels in order to better understand and write German texts and to enable you to present and discuss in German, which will also boost your employability on the German labour market after you graduate. In order to apply your language skills, the elective also includes courses from the electives Computer Science, AI and Data Science or Business Administration and Economics.

Course format	Module title	Type of assessment	ECTS
(E)	Compulsory elective modules “German as a Foreign Language” (language courses)	Written exam or portfolio or oral exam	At least 20
(L) (+E)	Compulsory elective modules from the electives Computer Science, AI and Data Science or Business Administration and Economics	Written exam or portfolio or oral exam	At least 15
In total:			**At least 35**

Elective module group “Computer Science”

Core aspects of computer science, e.g. theoretical computer science or databases. The module “Foundations of Computer Science” is compulsory.

Course format	Module title	Type of assessment	WCH	ECTS
(L) and (E)	Foundations of Computer Science	Written exam or oral exam	3+2	7
(L) (+E)	Compulsory elective modules	Written exam or portfolio or oral exam		In each case 3–7
In total:				**At least 35**

Elective module group “AI and Data Science”

Core aspects from the fields of artificial intelligence and data science, e.g. Foundations of AI or Data Science

Course format	Module title	Type of assessment	ECTS
(L) (+E)	Compulsory elective modules “AI and Data Science”	Written exam or portfolio or oral exam	In each case 3–7
In total:			**At least 35**

Elective module group “Business Administration and Economics”

Core aspects of business administration and economics

Course format	Module title	Type of assessment	ECTS
(L) (+E)	Compulsory elective modules “Business Administration and Economics”	Written exam or portfolio or oral exam	In each case 5–9
In total:			**At least 35**

Elective module group “English as a Foreign Language”

Based on your initial language level of B2 CEFR (as determined in a placement test), you should aim to increase your English proficiency by two levels in order to better understand and write English texts and to enable you to present and discuss in English, which will be beneficial for your academic work.

This elective is *not* available to you if the teaching language for your prior education was English.

Course format	Module title	Type of assessment	ECTS
(E)	Compulsory elective modules “English as a Foreign Language” (language courses)	Written exam or portfolio or oral exam	At least 20
(L) (+E)	Compulsory elective modules from the electives Computer Science, AI and Data Science or Business Administration and Economics	Written exam or portfolio or oral exam	At least 15
In total:			**At least 35**

Module group “Occupational Skills”

You can voluntarily take one or more elective modules worth **a maximum of 5 ECTS credits** from the areas of “Subject-Specific Language Programmes in English” (if you are not taking the elective "English as a Foreign Language"), “Transferable Skills” related to IT, or “Internship”.

Module group “Occupational Skills”

Course format	Module title	Type of assessment	ECTS
(E)	Subject-specific language programme in English 1	Written exam	3
(E)	Subject-specific language programme in English 2	Examination and oral exam	3
(S)	Elective modules in “Occupational Skills”	Written exam/final report and/or presentation/oral exam	1–6 each
(P)	Occupational Internship	Internship report and presentation	4
In total:			**Up to 5**

Bachelor’s dissertation

Bachelor’s dissertation	12

Overall:	**180**

Abbreviations used

ECTS credits: Credit points under the European Credit Transfer and Accumulation System (ECTS)
WCH: Contact teaching hours per week during the semester
(L): Lecture
(E): Exercise course
(P): AI project
(Pr): Presentation of the Bachelor's dissertation
(S): Seminar

During your studies

Counselling Module and orientation interview

The introductory lectures during the first semester will include a segment on orientation, in which the requirements of the degree programme are discussed. You will learn to structure and plan your studies independently, enabling you to study in a goal-oriented manner. The topics discussed include creating a timetable, working in study groups and as part of a team, handling exams and exam preparation, and understanding the structure of the degree programme. You will also have the opportunity to ask questions about your studies.

The General Study and Examination Regulation additionally requires you to complete an orientation interview in the first year, and another in the second year, with a module convenor (i.e. a professor responsible one of your modules), where you will be discussing your study progress. Please take advantage of this offer, especially in the second year, to ensure your continued success in your studies after completing the Counselling Module.

Internship

In the B.Sc. Mathematics programme, an internship of 240 hours (six weeks of full-time work) can be credited ungraded with four ECTS credits (module group “Occupational Skills”). At least 50% of the internship content must be related to the degree programme in order for the internship to be credited, and the internship must be project-related. Please consult the **module catalogue** or the internship guideline for information on acceptance for credit and the acceptance process. Our Future: Careers and Competencies Section (ZKK) is on hand to support you in your internship search. Please contact the academic adviser with any questions you may have about the internship.

Studying or working abroad during your studies

You can spend part of your degree programme abroad to gain experience in an international environment. This can, for example, take the form of an internship or a period of study at a university in another country.

Bachelor’s dissertation

The Bachelor's dissertation (completion time: three months) can be supervised by any professor of the Faculty of Computer Science and Mathematics who is authorised to take up the role of examiner. It must be written in English or German; however, it can be written in another language if this has been approved by the chairperson of the Board of Examiners and agreed with the supervisor beforehand. Before you can commence writing the Bachelor's dissertation, you must show that you have accumulated 120 ECTS credits on the programme.

You will receive **12 ECTS credits** when you attain a pass mark on your dissertation.

Completing your degree studies

You have passed the Bachelor's examination, and thus completed the programme, when you have successfully completed all required modules, passed the Bachelor's dissertation and earned a total of 180 ECTS credits. You will then be awarded the degree **Bachelor of Science (B.Sc.)**.

At that time, you should send a written request for your final degree documents (i.e. the final transcript, degree certificate etc.) to the Examinations Office.

Key competencies and career planning

With the so-called ZKK courses, which are offered by the Future: Career and Competencies Section, the University of Passau offers you a range of free transferable skills seminars and computer courses for free. The ZKK also offers a wide range of careers and internship advice services (such as the careers portal) that make it easier for you to find an entry-level position later on.

As a first degree, the Bachelor's degree qualifies you for career entry-level positions; alternatively, you may proceed to study for a Master's degree to broaden and consolidate your knowledge. The University of Passau offers a wide range of Master's degree programmes.

Additional qualifications and certificates

If you earn more than the required 180 ECTS credits in your degree programme, these additional credits will be listed separately in your final transcript. However, the marks attained in these additional modules do not count towards the final grade for your degree.

Moreover, you can acquire various additional qualifications and certificates, and all students enrolled at Bavarian universities can take advantage of the virtual course offers of the Bavarian Virtual University (Virtuelle Hochschule Bayern).

Important examination-related rules and regulations

Study and examination regulations and module catalogue

- General Study and Examination Regulation for the Bachelor's degree programmes of the faculty
- Subject-specific Study and Examination Regulation
- Module catalogue

Exceeding the deadline after the 3rd or 4th semester

You have to acquire at least 30 ECTS credits by the end of the third semester. If this requirement is *not* met, you must gain at least **40 ECTS credits** by the end of the **fourth** semester. If you are unable to fulfil these requirements by the end of your fourth semester, you will be **de-registered** from the programme and lose your right to take examinations.

Standard and maximum duration of study

The standard period of study is **six semesters (180 ECTS credits).**

The maximum duration of study is eight semesters. If you have not passed all required examinations after the eighth semester, you will fail the degree programme in the first instance; however, you will then be given an additional two semesters in which to complete the missing assessments. This period is not interrupted by a leave of absence or de-registration.

If you have not passed all required modules by the end of the tenth semester, you will fail the programme without the possibility of re-sitting the examinations. It is important to understand that this *endgültig nicht bestanden* status, which means “final fail”, also bars you from enrolling in the same degree programme at other German universities.

Resits

You may resit failed module examinations (marked *nicht ausreichend* or *nicht bestanden*) up to **two times**. If you fail a compulsory elective module or elective, you can choose a different compulsory elective module or elective instead.

You may re-attempt a failed Bachelor's dissertation *once***;** however, you must do so with a new topic.

It is not possible to resit examinations you have passed to improve your grade.

Credit transfers

The respective module coordinators (in the case of language courses, the Language Centre) and the Board of Examiners of the Faculty of Computer Science and Mathematics decide on acceptance for credit of coursework and examinations ("credit transfers"). Credit transfer applications should be sent to the Examinations Office.

Illness and inability to attend examinations

If you fall ill before an examination, you must decide before the examination whether you want to withdraw from the examination due to illness. You will need a medical certificate. If you become ill during an examination and have to abort the examination, you also have to provide a medical certificate.

In either case you must submit the completed Inability to Attend Examinations Due to Illness Form at the earliest opportunity. You should submit the form and medical certificate to the Examinations Office as described in the information sheet on inability to attend examinations.

If you fall ill for a longer period of time during the semester, it may be expedient for you to take leave of absence for the whole semester. If that is the case, please seek advice from the Student Registration Office and the Advice Centre for Students with Disabilities and Chronic Illnesses.

Academic adjustments and exam access arrangements

If you have a disability or suffer from a chronic or psychological illness, you may be able to apply for academic adjustments, including access arrangements (e.g. extra time for written exams). Please get in touch with the Student Disabilities Officer, who will be happy to advise and support you with your application.

Service and advice centres

Academic Advice Service

The staff of the Academic Advice Service provide general advice on all degree programmes and on questions that may arise during your studies. They can help you, for instance, if you have difficulty making a decision, if you have questions about how to organise your degree studies or any other personal concerns; they are also there for you if you are thinking about changing your degree programme or degree subject, embarking on a second degree programme in parallel with your first degree programme or if you are considering terminating your studies. Please make an appointment if you wish to talk to us – in person, by telephone or online.

Academic Advice Service, Innstrasse 41, 94032 Passau
Drop-in hours: Wednesdays 9:00–12:00
Phone: +49 851 509 1154
E-mail: advice@uni-passau.de
www.uni-passau.de/academic-advice

Programme adviser

For more in-depth questions about the degree programme you should contact the programme adviser:

Professor Tobias Kaiser
Innstrasse 33, Room 228, 94032 Passau
Phone: +49 851 509 3138
E-mail: tobias.kaiser@uni-passau.de
www.fim.uni-passau.de/en/professorship-pure-mathematics

Support for international degree-seeking students

International students at the Faculty of Computer Science and Mathematics receive support from the International Coordinator (internationalcoordinator@fim.uni-passau.de) and the International Student Assistants. You can contact them directly if you have questions or encounter any problems related to your studies at the University or life in Passau.

iStudi Coach: Advice service for international students

The iStudi Coach of the University of Passau advises international degree-seeking students and helps them with all questions concerning their studies, career orientation and everyday life in Passau.

Examinations Office

The Examinations Office has overall responsibility for all exam-related matters. Visit the Examinations Office website for important information and applications concerning your degree programme.

Student committee (FS Info)

FS Info, the student committee ("Fachschaft") of the Faculty of Computer Science and Mathematics, can help you with matters related to student life from a student perspective. Together with the faculty, it organises the Orientation Week before the start of studies, represents student interests in the University's policy committees and organises a range of leisure activities.

Room IM 244, Innstrasse 33
Phone: +49 851 509 3004
E-mail: fsinfo@fim.uni-passau.de

IEEE Student Branch Passau

The Institute of Electrical and Electronics Engineers (IEEE), is the world's largest professional association for electrical engineering and computer science. The IEEE Student Branch Passau organises first-semester events and workshops and establishes contacts with industry through excursions and company presentations.

All advice services and student societies can be found on our website.