

Faculty of Computer Science and Mathematics

**M.Sc. Computer Science**

**Information about the degree programme**

For more information, visit

[www.uni-passau.de/en/msc-computer-science/](http://www.uni-passau.de/en/msc-computer-science/)

## About the programme

Computer Science is one of the drivers of technological progress in all economic and social spheres. Those graduating from this M.Sc. Computer Science programme are specialists in at least one field of computer science with a wide-ranging science-based methodological expertise. They are able to define autonomously and comprehensively computer science problems and their applications, structure them and build abstract models. Moreover, they are able to define and implement solutions that are at the state of the art of technology and science.

Students enrolled in this programme have the option of completing a double degree programme with *Institut National des Sciences Appliquées (INSA) de Lyon*, *Ecole Supérieure des Communications de Tunis* or the *Higher School of Economics* in Moscow.

This degree programme may be studied entirely in English or German or in a mix of the two, as each module forming part of the programme is offered in one of the two languages. However, restricting oneself to a single language limits the available modules somewhat, whereas proficiency in both English and German allows students to choose from the full range of modules.

For details on the English-taught modules, see:

[www.uni-passau.de/fileadmin/dokumente/Studieninteressierte/Studienangebot/Computer\\_Science\\_MSc\\_English.pdf](http://www.uni-passau.de/fileadmin/dokumente/Studieninteressierte/Studienangebot/Computer_Science_MSc_English.pdf)

## Programme start

The programme starts in April (summer semester) and in October (winter semester) each year.

## Degree awarded

Master of Science (M.Sc.)

## Standard and maximum length of programme

Standard duration: four semesters (two years)  
Maximum duration: six semesters (three years)  
The coursework of the programme amounts to 120 ECTS credits.

## Career prospects

Continuous technological change and innovations create new exciting lines of work in trade and industry, in the services, financial services and consulting sectors, in public administration, and in the field of research. The M.Sc. Computer Science from the University of Passau qualifies you for the job market or to proceed with an academic career. As a computer science specialist, you are qualified to take up IT-related executive positions or undertake independent research, e.g. as part of doctoral study.

## Degree requirements

For the successful completion of your degree studies, you have to earn eight ECTS credits in the core modules, a minimum of 40 ECTS credits in one specialisation area and a minimum of 30 ECTS credits in modules from the other specialisation areas and/or the general modules area. Additionally you must attain a mark of 4.0 or better on your master's thesis. To gain the degree, you have to obtain 120 ECTS credits overall.

## How to apply

Please visit [www.uni-passau.de/en/apply](http://www.uni-passau.de/en/apply), answer the questions using the drop-down menus and then follow the link indicated after you press 'Submit' for details on the application process and required documents.

You are eligible for this degree programme if you have an undergraduate/first university degree (Bachelor's, Magister, Diplom, state examination or equivalent) in computer science or a related discipline with a computer science component of at least 110 ECTS credits, earned over a course of study of a standard length of three years, with a final average mark of 2.7 under the German marking system or the relevant equivalent average mark in a foreign marking system. If you have not attained this mark, you may still apply if you are among the best 70% of graduates in your cohort.

## How to apply (cont'd)

You have full access to all modules taught as part of this programme if you have both English and German language skills at level B2 (or higher) of the Common European Framework for Languages (CEFR). However, it is possible to gain the ECTS credits required to complete the programme by choosing **only English- or German-taught modules**. At the time of application, you should therefore provide proof of German **or** English language proficiency at level B2 CEFR or higher. Please note that international students should additionally have beginner's German (level A1 CEFR). If you have no German language skills at the time of application or matriculation you will not be rejected on these grounds; however, you will complete a compulsory, free German language course during the first two semesters of your programme.

The following counts as proof of language proficiency:

- a secondary school or university degree certificate showing that you have successfully this stage of your education in German or English (as the case may be)
- relevant German or English language certificates. Examples of accepted language certificates are:
  - **for German:** DSH-1, TestDaF TDN 3×4 or equivalent
  - **for English:** TOEFL (567 pBT, 87 iBT, ITP 543 'silver' or above), IELTS (score 5.5 or better), Cambridge English Language Assessment (CAE or CPE), or equivalent

If you cannot provide your final bachelor's (or equivalent) university degree certificate and transcript at the time of application or matriculation, you may submit a written request to the Board of Examiners, asking for an extension of the submission deadline by which you have to submit your first degree certificate and detailing the reasons why you are unable to provide them. The Board of Examiners will grant you a deadline up to no later than the fifth week of lectures of the first semester. This will only be approved if you have already completed all coursework and assessments for your first degree at the beginning of the degree programme at the University of Passau and have submitted a (preliminary) transcript showing an average (preliminary) mark of 2.7, or the foreign equivalent mark.

The deadline for applications for a place on the programme is 15 June for October entry or 15 January for the April entry. These are strict deadlines: any applications received after the relevant date will not be considered for the relevant semester.

**Please send an e-mail to [registry@uni-passau.de](mailto:registry@uni-passau.de) or call +49 851 509 1130 if you have any further questions about the application procedure and documents to be sent.**

## Consultation

During your first year of studies, there will be a compulsory consultation with one of the module convenors (i.e. with a professor in charge of a module). You will subsequently receive a letter confirming that you have participated in this consultation.

## Programme structure and assessments

The curriculum is modularised: Each module is a complete unit of study, consisting of one or more courses on the same or a closely related topic. Each module carries a specific ECTS credit value which reflects the time students should spend on coursework to successfully complete the module. Modules may span more than one semester. They usually conclude with an assessment, e.g. an oral presentation or written examination, which is carried out during or at the end of the semester in which you complete the module. In order to complete your programme in four semesters, you should aim to obtain approximately 30 ECTS credits each semester. The degree programme is divided into core modules and compulsory elective modules.

The **core modules** are:

- Computer Science Seminar (S) 5 ECTS credits
- Presentation of your thesis 3 ECTS credits

The **compulsory electives** consists of five specialisation areas and one general area. You will choose your specialisation from one of the following module groups (see appendix for details):

## Programme structure and assessments (cont'd)

- Algorithmics and Mathematical Modelling Specialisation (AlgMath)
- Programming and Software Systems Specialisation (ProgSoft)
- Information & Communication Systems Specialisation (InfComm)
- Intelligent Technical Systems Specialisation (ITS)
- IT Security and Reliability Specialisation (ITSecRel)
- and the 'general modules'

You will choose your specialisation from one of the above areas; however, 'general modules' cannot be chosen as a specialisation. If you wish to study this degree programme exclusively in English, you can only choose the specialisation areas InfComm, ITS or ITSecRel as your specialisation, as the other two do not offer a sufficient number of English-taught modules.

Please consult the module catalogue for the module descriptors, the mode of assessment and the ECTS credit values. To complete the programme you must obtain at least 40 ECTS credits in your chosen specialisation. A further 30 ECTS credits or more should be gained in modules taken from any of the other specialisation areas or the general modules area. Finally, your Master's thesis will contribute 27 ECTS credits and the remaining 3 ECTS credits are awarded for the presentation of your thesis.

## Study and examination regulations and module catalogue

The **module catalogue** contains detailed module descriptors, including required assessments. It can be found at:

[www.uni-passau.de/fileadmin/files/dekanat/Anrechenbarkeitstabelle/Modulkatalog-Master-Informatik.pdf](http://www.uni-passau.de/fileadmin/files/dekanat/Anrechenbarkeitstabelle/Modulkatalog-Master-Informatik.pdf).

For the study and examination regulations, which are currently only available in German, visit [www.uni-passau.de/studien\\_und\\_pruefungsordnungen/](http://www.uni-passau.de/studien_und_pruefungsordnungen/).

For further details, visit the website of the Faculty of Computer Science and Mathematics: [www.fim.uni-passau.de/en/study/](http://www.fim.uni-passau.de/en/study/).

## Master's thesis

To be permitted to commence writing the master's thesis, you need to meet the thesis requirements and need to have accumulated a minimum of 40 ECTS credits on the degree programme. You will write your master's thesis on a subject covered in your chosen specialisation. You are given six months to write the thesis, which should be written in German or English.

## Examinations and credit transfers

The Examinations Office is your primary contact for all examination-related matters, including the recognition of credits gained elsewhere. It also issues your final degree certificate once it has received your request. For enquiries, please contact:

Ms Gerlinde Lang  
Examinations Office 1  
Administration building  
Innstrasse 41  
94032 Passau  
Phone: +49 851 509 1198  
E-mail: [gerlinde.lang@uni-passau.de](mailto:gerlinde.lang@uni-passau.de)

For information and forms, visit [www.uni-passau.de/index.php?id=21061](http://www.uni-passau.de/index.php?id=21061) (please note that this page is only available in German).

## Resits

You may resit failed module examinations up to two times. The resit must take place within one year. This resit deadline is not affected by semesters out or deregistration from the programme. It is also possible to attempt writing a new master's thesis if you fail the first attempt; however, this must be done on a new topic.

You may only resit failed examinations within the maximum duration of study of six semesters. If you have not passed all required examinations after the sixth semester, you will fail the degree programme; however, you then have a last chance of resitting the missing assessments within the subsequent two semesters. If you have not passed all required modules at the end of the eighth semester of the programme, you will fail the programme ('final fail').

<b>Resits (cont'd)</b>	You cannot voluntarily resit examinations for modules you have passed in an attempt to improve your mark.
<b>Additional qualifications</b>	If you complete additional modules that do not form part of the required modules under the degree programme, you may request that a separate report/certificate be issued. The marks completed for these additional modules do not count towards the final average mark of your degree.
<b>Double degree options</b>	<p>Students enrolled in this programme may complete a double degree programme with <b>Institut National des Sciences Appliquées (INSA) de Lyon</b>: You will then be awarded a Master of Science degree from Passau and a <i>Diplôme d'ingénieur INSA</i> from the <i>Département d'Informatique</i> at INSA. For more information see:  <a href="http://www.uni-passau.de/fileadmin/dokumente/Studieninteressierte/Studienangebot/Deutsch-Franzoesischer_Doppelmaster_Informatik.pdf">www.uni-passau.de/fileadmin/dokumente/Studieninteressierte/Studienangebot/Deutsch-Franzoesischer_Doppelmaster_Informatik.pdf</a>  (information in German only)</p> <p>Similarly, you may complete an English-taught double master's programme with <b>Ecole Supérieure des Communications de Tunis (SUP'COM)</b>, which gives you the degree of <i>Diplôme d'Ingénieur</i> in addition to the German master's degree.</p> <p>Moreover, an English-taught double degree option exists with the <b>Higher School of Economics Moscow (HSE Moscow)</b>, where you can study for a Master of Business Informatics in addition to the German master's degree. For more details on this programme, see:  <a href="http://www.uni-passau.de/index.php?id=1754&amp;L=1">www.uni-passau.de/index.php?id=1754&amp;L=1</a></p>
<b>Language placement tests</b>	<p>If you are planning to register for a foreign language course and have existing language skills, you have to take a placement test. The results will determine at which level you will join the relevant language course. If you have existing language skills for a language for which no placement tests are offered, you should arrange a face-to-face consultation with the relevant language lecturer well in advance of the course start.</p> <p>The placement test dates are published on the Language Centre website:  <a href="http://www.sprachenzentrum.uni-passau.de/en/placement-tests/">www.sprachenzentrum.uni-passau.de/en/placement-tests/</a>.  Please note that many placement tests are conducted online and that you can take these even before the Orientation Week (see below).</p> <p>Those with little or no German language skills are strongly encouraged to make use of our German language courses offered free of charge to international students enrolled on one of our degree programmes. Doing so will widen your course options on the programme.</p>
<b>Orientation Week ('O-Woche')</b>	An Orientation Week, organised by the Computer Science Student Committee ('Fachschaft Info'), will take place in the week before the start of lectures. During the 'O-Woche', as it is also called in German, you will receive help with drawing up your timetable, be given a guided tour of the library and the university facilities, including a tour of the computer facilities available to you as Computer Science students. New students are strongly encouraged to make use of this orientation offer. For more information on the O-Woche, visit: <a href="http://www.uni-passau.de/en/study/getting-started/orientation-weeks/">www.uni-passau.de/en/study/getting-started/orientation-weeks/</a> .
<b>Orientation Weeks for international students</b>	The International Office organises special Orientation Weeks for international students: <a href="http://www.uni-passau.de/en/intl-orientation-weeks/">www.uni-passau.de/en/intl-orientation-weeks/</a> .
<b>Course catalogue and virtual learning environments</b>	At German universities, students have to sign up for each course (e.g. seminar or tutorial) which they need to complete as part of their degree programme – this is not done automatically! The course catalogue lists all courses taught in the current semester: <a href="http://www.uni-passau.de/en/study/study-options/course-catalogue/">www.uni-passau.de/en/study/study-options/course-catalogue/</a> .

**Course catalogue and virtual learning environments (cont'd)**

Students should use Stud.IP, one of the University's virtual learning environment (VLE) systems, to register for the required modules. Moreover, Stud.IP gives you access to module-related content, timetable functions, updates on the module sessions and allows you to engage with lecturers and fellow students via the notice boards. Finally, Stud.IP is used for CampusCard (i.e. the student ID card) management functions. The username and password used for Stud.IP are identical to your campus computer network credentials.

[www.zim.uni-passau.de/en/systems-login/studip/](http://www.zim.uni-passau.de/en/systems-login/studip/).

HISQIS, another VLE system, is the platform students use to register for module and language examinations and to obtain student enrolment certificates and similar documents. The username and password used for HISQIS are identical to your campus computer network credentials. The Examinations Office has more details on HISQIS and how to use it:

[www.uni-passau.de/index.php?id=162](http://www.uni-passau.de/index.php?id=162)

**Academic Advice Service**

The Academic Advice Service provides information on the degree programme and advises students who are unsure which degree programme to apply for, those who are thinking of changing programmes or subjects, as well as students who wish to discontinue their studies.

Academic Advice Service, Innstrasse 41, 94032 Passau

Phone +49 851 509 ext. 1154, 1153, 1152, 1151 or 1150

Availability for telephone calls:

Mon – Fri 8:30 a.m. – 12:00 noon and Mon – Wed 1:00 p.m. – 3:00 p.m.

If you wish to talk to an adviser in person, please make an appointment or come by during our drop-in hours: Wed 9:00 a.m. – 12:00 noon

E-mail: [advice@uni-passau.de](mailto:advice@uni-passau.de)

[www.uni-passau.de/en/academic-advice/](http://www.uni-passau.de/en/academic-advice/)

**Programme convenor**

If you have more in-depth questions about the degree programme, e.g. about credit transfers or concerning the curriculum, particularly at the advanced stages of study, you should contact the programme convenor:

Professor Siegfried Handschuh

Room ITZ 109, IT Centre, Innstrasse 42

94032 Passau

Phone: +49 851 509 3390

E-mail: [siegfried.handschuh@uni-passau.de](mailto:siegfried.handschuh@uni-passau.de)

**Student committee**

The student committee (*'Fachschaft'*) of the Faculty of Computer Science and Mathematics is your first port of call for any questions concerning your student experience. Their office is located in room 244 of the IM building, Innstrasse 33; phone +49 851 509 3004.

[www.fim.uni-passau.de/index.php?id=17007](http://www.fim.uni-passau.de/index.php?id=17007)

**International Student Assistants**

International students at the Faculty of Computer Science and Mathematics receive support from the International Coordinator and the International Student Assistants. Ask them if you encounter any problems related to your studies at the University or life in Passau. The International Student Assistants can be reached via [master-help@fim.uni-passau.de](mailto:master-help@fim.uni-passau.de).

**Studying or working abroad**

If you need help preparing for your studying or working abroad, you should get in touch with:

The International Office

Innstrasse 41, 94032 Passau, Germany

+49 851 509 ext. 1160, 1162, 1163, 1165 or 1167

[www.uni-passau.de/en/international](http://www.uni-passau.de/en/international)



## Careers Service

The Careers Service is a central point of contact for students, institutions and companies. For you as a student, it is a valuable resource informing you about internships and other placements, temporary jobs and how to start your career in Germany or abroad. [www.uni-passau.de/en/careerservice](http://www.uni-passau.de/en/careerservice)

## AIESEC

Worldwide internship exchange is at the centre of the activities of AIESEC, the largest international student organisation. If you are interested in joining, get in touch with the Local AIESEC Committee: [www.aiesec.de/passau/](http://www.aiesec.de/passau/)

## Support for starting your own business

Passau is one of the leading regions in Germany in terms of business start-ups. Spin-outs from the University of Passau have already created a large number of jobs in the region. Students who are thinking about becoming entrepreneurs enjoy a large number of support services, such as:

- The 'Gründercafé' (Start-Up Café) is a forum for exchange with others willing to start up a business and experts on the topic.
- The '5-Euro-Business-Wettbewerb' (5-Euro-Business Competition) enables you to found a company under guidance and win exciting prizes.
- The 'Gründersprechstunde' (Start-up Consultation Hour) gives you valuable tips and advice on all matters related to starting a business.

Your contact person for start-up support:

Mr Stefan Jelinek

Phone: +49 851 509 1583

[stefan.jelinek@uni-passau.de](mailto:stefan.jelinek@uni-passau.de)

[www.uni-passau.de/wissenstransfer/gruendungsfoerderung/](http://www.uni-passau.de/wissenstransfer/gruendungsfoerderung/)

## Centre for Key Competencies (ZfS)

Every semester, the Centre for Key Competencies offers courses on social and communication skills, research methods as well as computer literacy. These are free of charge for students and are usually held on weekends as block seminars. More information: [www.zfs.uni-passau.de](http://www.zfs.uni-passau.de)

## Accommodation

The Student Services Association runs the refectory, cafeterias, halls of residence, BAföG loans/grants and student welfare advice: [www.stwno.de/en](http://www.stwno.de/en)

If you are an international student and wish to **arrange accommodation for the first semester** through the University, get in touch with Ms Alexandra Winterkorn of the International Office:

Administration building

Room 106

Innstrasse 41

94032 Passau

E-mail: [alexandra.winterkorn@uni-passau.de](mailto:alexandra.winterkorn@uni-passau.de)

Phone: +49 851 509 1161

Fax: +49 851 509 1164

For information about **hotels, B&Bs and guest houses**, contact:

Tourist Information Passau

Rathausplatz 3

94032 Passau

Phone: +49 851 955980

E-mail: [tourist-info@passau.de](mailto:tourist-info@passau.de)

[www.passau.de](http://www.passau.de)

Further information: [www.uni-passau.de/en/accommodation](http://www.uni-passau.de/en/accommodation) and [www.uni-passau.de/en/study/campuslife/accommodation/](http://www.uni-passau.de/en/study/campuslife/accommodation/)

## Programme structure

The curriculum is divided into core and compulsory elective modules: you are awarded a predefined number of ECTS credits for passing a module. The core modules consist of the Computer Science Seminar and your thesis presentation.

The compulsory elective modules are distributed across five specialisation areas:

- Algorithmics and Mathematical Modelling (AlgMath)
- Programming and Software Systems (ProgSoft)
- Information and Communication Systems (InfComm) – this can be studied entirely in English
- Intelligent Technical Systems (ITS) – this can be studied entirely in English
- IT Security and Reliability (ITSecRel) – this can be studied entirely in English

and the 'general modules' area. You will choose your specialisation from one of the above specialisation areas. If you wish to study this degree programme exclusively in English, please note that you can only choose the specialisation areas InfComm, ITS and ITSecRel as your specialisation, as the other two do not offer a sufficient number of English-taught modules. Please consult the module catalogue for the module descriptors, the mode of assessment and the ECTS credits. To complete the programme you must obtain at least 40 ECTS credits in your chosen specialisation. A further 30 ECTS credits or more should be gained in modules taken from any of the other specialisation areas or the 'general modules' area. Achieving a pass mark on your master's thesis will contribute 27 ECTS credits, plus 3 ECTS credits for your thesis presentation (core module). You will also complete a Computer Science seminar (core module) for 5 ECTS credits. For the remaining 15 ECTS credits, you are entirely free in your choice of modules. (Overall 120 ECTS credits for the programme).

### **Algorithmics and Mathematical Modelling (AlgMath) specialisation area**

This module area deals with deterministic and stochastic algorithms and how they are implemented, evaluated and optimised as well as modelling and complexity analysis of discrete and continuous problems.

### **Programming and Software Systems (ProgSoft) specialisation area**

In this module area you will become acquainted with modern methods for constructing large-scale software systems as well as creating and using software authoring, analysis and optimisation tools.

### **Information and Communication Systems (InfComm) specialisation area**

You will study the interactions of the classic subjects of information systems and computer networks. This specialisation presents an answer to the problem of increasing volume and complexity of worldwide information distribution and networks, and for the growing demands on quality and performance of computer communication.

### **Intelligent Technical Systems (ITS) specialisation area**

This module group teaches you the necessary knowledge in systems theory, machine learning and signal and image processing to explore the theory and practical application of intelligent, self-learning systems.

### **IT Security and Reliability (ITSecRel) specialisation area**

This subject area is concerned with the security and reliability of IT systems, e.g. in hardware circuitry, communication protocols or complex, networked application systems. To ensure the secure operation of these systems you will learn design methods, secure architectures and technical implementation of the underlying components.

### **General modules area**

In the 'general modules' area you will find additional computer science modules that have now been associated with a specialisation.