UNIVERSITY OF PASSAU

B.Sc. Artificial Intelligence

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 2025–26.

Contents

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

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. Students whose prior education was not completed in German should acquire German language skills for everyday life and professional competence (at least at level B1 CEFR) while studying the degree programme.

Study aptitude tests for applicants from non-EEA countries

Applicants who are not EU citizens *and* 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 when you apply for a place on 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.

The following **videos** are particularly helpful for new students and are available with English subtitles:

- 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 (except the “Counseling Module”, which is not graded). The final grade for your degree is calculated based on the module marks and the mark you attain on your Bachelor’s Thesis, each weighted according to their ECTS credit load.

If you complete more elective modules than are required, you have to indicate which elective modules you wish to have included in the final grade calculation. When you request your final documents (i.e. your degree certificate and transcripts) at the end of your studies, you can indicate one examination module from each required or elective module group (with the exception of module group “AIP, Seminar and Presentation”) to be omitted. These modules will not count towards your final grade.

The individual courses for the modules can be found in **Stud.IP**, the University's learning management system: Bachelor Artificial Intelligence (Version WiSe 2025)

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 subject-specific study and examination regulation under which you are studying the programme.

Compulsory modules

In the Artificial Intelligence compulsory area, you will complete **all** compulsory modules and accumulate a total of **107 ECTS credits**.

Module group *Foundations of Computer Science & Programming*

Course format	Module name	Type of assessment[1]	WCH	ECTS
(L) and (E)	Foundations of Computer Science	Written exam or oral exam	5	7
(L) and (E)	Programming I	Written exam or oral exam	4	6
(L) and (E)	Programming for Data Analytics	Written exam and portfolio	4	6
(L) and (E)	Algorithms and Data Structures	Written exam or oral exam	6	9
In total: 4 modules			**19**	**28**

Module group *Mathematics & Theoretical Computer Science*

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Mathematics for Computer Science I *or* Linear Algebra I	Written exam or oral exam	6	9
(L) and (E)	Mathematics for Computer Science II *or* Analysis I	Written exam or oral exam	6	9
(L) and (E)	Mathematics for Computer Science III *or* Introduction to Stochastics	Written exam or oral exam	6	9
(L) and (E)	Theoretical Computer Science	Written exam or oral exam	5	7
In total: 4 modules			**23**	**34**

Module group *Foundations of AI*

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Foundations of AI: Machine Learning	Written exam or oral exam	3	5
(L) and (E)	Foundations of AI: Deep Learning	Written exam or portfolio or oral exam	3	5
(L) and (E)	Foundations of AI: Probabilistic Machine Learning	Written exam or oral exam	3	5
(L) and (E)	Foundations of AI: Multiagent Systems	Written exam or portfolio or oral exam	3	5
In total: 4 modules			**12**	**20**

[1] The lecturer decides on the type of assessment used if the module catalogue provides for several types of examination for a module.

Module group *Responsible AI*

Course format	Module name	Type of assessment	WCH	ECTS
(L)	Ethical Aspects of AI	Written exam	1	3
(L)	Legal Aspects of AI	Written exam	1	3
In total: 2 modules			**2**	**6**

Module group *AIP, Seminar and Presentation*

Course format	Module name	Type of assessment	WCH	ECTS
(S)	AI Seminar	Portfolio (written elaboration and presentation	2	4
(P)	AI Project (AIP)	Portfolio	6	10
(L) or (E) or (S)	Counselling Module	Written exam	1	2
(Pr)	Presentation of the Bachelor's Thesis [2]	Oral exam	–	3
In total: 4 modules			**9**	**19**

Overall ECTS credits for the compulsory modules:	**107**

Compulsory elective modules

You will take **one** of the two compulsory elective module groups and complete modules amounting to a minimum of **16 ECTS credits**.

Compulsory elective module group *Advanced AI – Applied*

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Databases and Information Systems I	Written exam or oral exam	3	5
(L) and (E)	Software Engineering	Written exam or oral exam	3	5
(L) and (E)	Data and Knowledge Engineering	Written exam or oral exam	4	6
In total: 3 modules			**10**	**16**

Compulsory elective module group *Advanced AI – Theoretical*

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Analysis II	Written exam or oral exam	6	9
(L) and (E)	Mathematics of Machine Learning	Written exam or oral exam	4	7
In total: 2 modules			**10**	**16**

Electives

You will complete **three** electives and accumulate at least **45 ECTS credits**. Each elective group must comprise at least 10 ECTS credits.

You must choose **at least one elective from the Computer Science or Mathematics** areas.

All elective modules can be found in the module catalogue.

Only one of the elective subjects "German as a Foreign Language" or "English as a Foreign Language" can be chosen.

If the language of instruction for your prior education was not German, you should complete modules amounting to 20 ECTS credits from the elective "German as a Foreign Language".

[2] In order to register for the "Presentation of the Bachelor's Thesis" module, you must have already submitted your Bachelor's Thesis.

Computer Science and Mathematics area

Elective module group *Advanced AI – Applied*[3]

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Databases and Information Systems I	Written exam or oral exam	3	5
(L) and (E)	Software Engineering	Written exam or oral exam	3	5
(L) and (E)	Data and Knowledge Engineering	Written exam or oral exam	4	6
In total: 2 or 3 modules			**6–10**	**10–16**

Elective module group *Advanced AI – Theoretical*[3]

Course format	Module name	Type of assessment	WCH	ECTS
(L) and (E)	Analysis II	Written exam or oral exam	6	9
(L) and (E)	Mathematics of Machine Learning	Written exam or oral exam	4	7
In total: 2 modules			**10**	**16**

Elective module group *Theoretical Foundations of AI – Random Structures & Dynamics*

Theoretical foundations of probability theory, statistics, simulation and stochastics with reference to AI.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	3–9 each
In total:		**at least 10**

Elective module group *Theoretical Foundations of AI – Algorithms and Optimisation*

Theoretical foundations for basic optimisation methods and algorithms in the field of AI.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	3–9 each
In total:		**at least 10**

Elective module group *Natural Language Processing and Multilingual Computational Linguistics*

Principles of computer-aided analysis, comparison and processing of languages.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	3–9 each
In total:		**at least 10**

Elective module group *Software Engineering*

Basic knowledge in the areas of programming paradigms, software testing and parallel programming.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	5–9 each
In total:		**at least 10**

Elective module group *Visual Computing and Data Science*

Fundamentals of computer-aided imaging methods, algorithmic methods for large amounts of data and SQL-based methods.

[3] This is only available if you have not already chosen it as a compulsory elective.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	5–9 each
In total:		**at least 10**

Business, Legal Aspects and Languages area

Elective module group *German as a Foreign Language*

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.

If the teaching language for your prior education was not German, you are strongly encouraged to complete this elective. However, this elective is *not* available to you if the teaching language for your prior education *was* German.

Module	Type of assessment	ECTS
Language courses	Written exam or oral exam or portfolio or project report	5 each
In total:		**20**

Elective module group *English as a Foreign Language*

Based on your initial language level (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 scientific work.

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

Module	Type of assessment	ECTS
Language courses	Written exam or oral exam or portfolio or project report	5 each
In total:		**20**

Elective module group *Business Analytics*

Principles of econometrics and data-supported modelling and optimisation of business, financial and management systems.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	3–9 each
In total:		**at least 10**

Elective module group *Entrepreneurship*

Principles of entrepreneurship, with a focus on marketing strategies, market analyses, transformation processes and ethical aspects.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	5–10 each
In total:		**at least 10**

Elective module group *Regulation of AI and Data*

Legal foundations in the field of data, IT and AI, e.g. in the area of data protection, copyright law, media law or the use of AI in criminal law.

Module	Type of assessment	ECTS
Elective modules	Written exam or oral exam or portfolio or lab report	5–9 each
In total:		**at least 10**

Overall ECTS credits for the electives:	**45**

Bachelor's Thesis	
Bachelor's Thesis	12 ECTS

Overall ECTS credits for the degree programme:	**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 Thesis
(S): Seminar

During your studies

Counselling Module

The introductory lectures during the first semester will include a segment on orientation, in which the requirements of the degree programme are discussed. This will be done on a weekly basis. 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.[4]

Studying or completing an internship abroad

As part of your degree programme, we recommend that you spend time abroad to improve your language skills and gain experience in an international environment. This can, for example, take the form of an internship abroad or a period of study at a university abroad.

Bachelor's Thesis

The Bachelor's Thesis (completion time: three months) can be supervised by any professor of the Faculty of Computer Science and Mathematics who has the right to carry out examinations.[5] 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 Thesis, 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 Bachelor's Thesis.

Completing your degree studies

You have passed the bachelor's examination, and thus completed the programme, when have successfully completed all required modules, passed the Bachelor's Thesis 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.

[4] The General Study and Examination Regulation also requires you to complete a consultation session 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 and programme structure. Please take advantage of this offer, especially in the second year, to ensure your continued success in your studies after completing the Counselling Module.
[5] With the approval of the Board of Examiners, the Bachelor's Thesis may be supervised by an authorised examiner from another faculty of the University of Passau.

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 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.

After completing your bachelor's degree, you can either start your career or expand and deepen your knowledge by pursuing a master's degree. The University of Passau offers many master's programmes.

Voluntary completion of additional modules

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; module catalogue

- General Study and Examination Regulation for the bachelor's degree programmes of the faculty
- Subject-specific Study and Examination Regulation (German)
- 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 up to **two times**.

If you have failed a module from a compulsory elective module group, you can choose another compulsory elective module group instead of the failed one. The same applies to the elective module groups.

You may re-attempt a failed Bachelor’s Thesis *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

If you wish to apply for a credit transfer, i.e. having coursework or assessments completed elsewhere or for a different programme counted towards your current degree programme, please contact the module convenor or the Board of Examiners of the Faculty of Computer Science and Mathematics. Module convenors are listed in the module catalogue. Credit transfer applications should be sent to the Examinations Office.

Credit transfers for language courses are carried out by the Language Centre.

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 or if you are thinking about changing your degree programme or degree subject, doing a double 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 Harks
Phone: +49 851 509 4695
E-mail: tobias.harks@uni-passau.de

Support for international degree-seeking students

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

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.

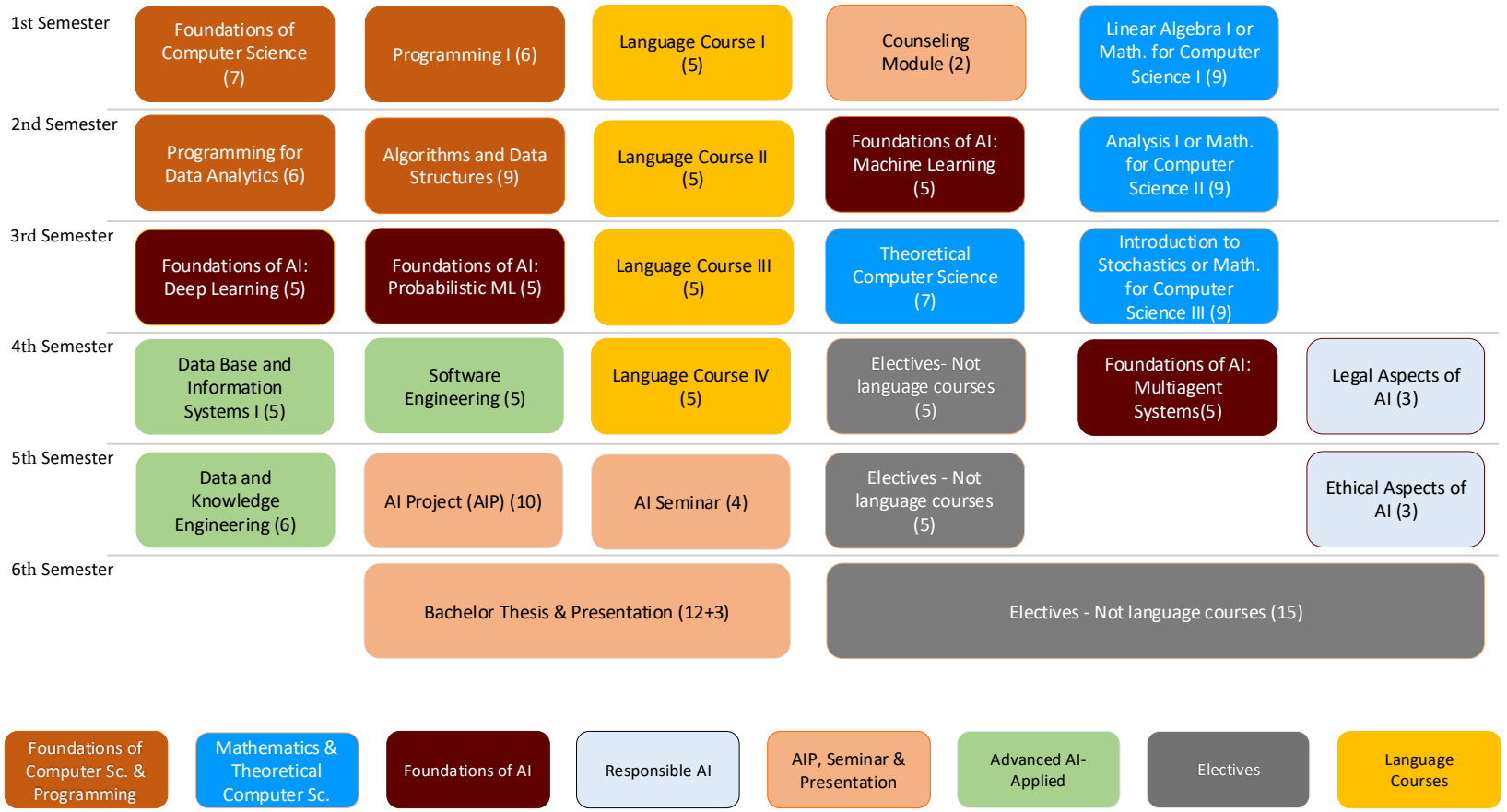
Room IM 244, Innstrasse 33
Phone: +49 851 509 3004
E-mail: fsinfo@fim.uni-passau.de

IEEE Student Branch Passau

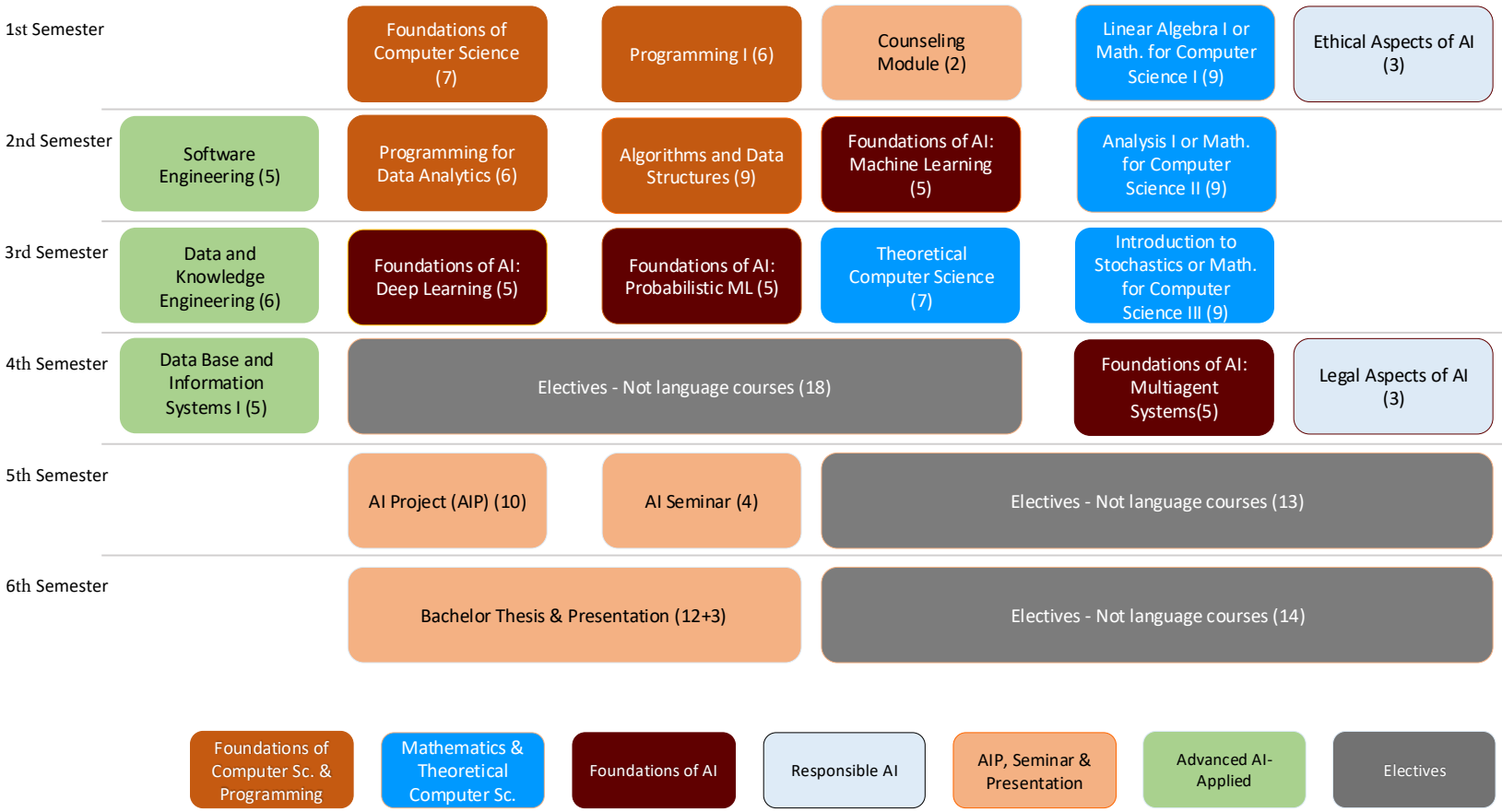
The Institute of Electrical and Electronics Engineers (IEEE), is the world’s largest professional association for electrical engineering and computer science. The IEEE Student Branch Passau organises first-semester events and workshops and establishes contacts with industry through excursions and company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

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

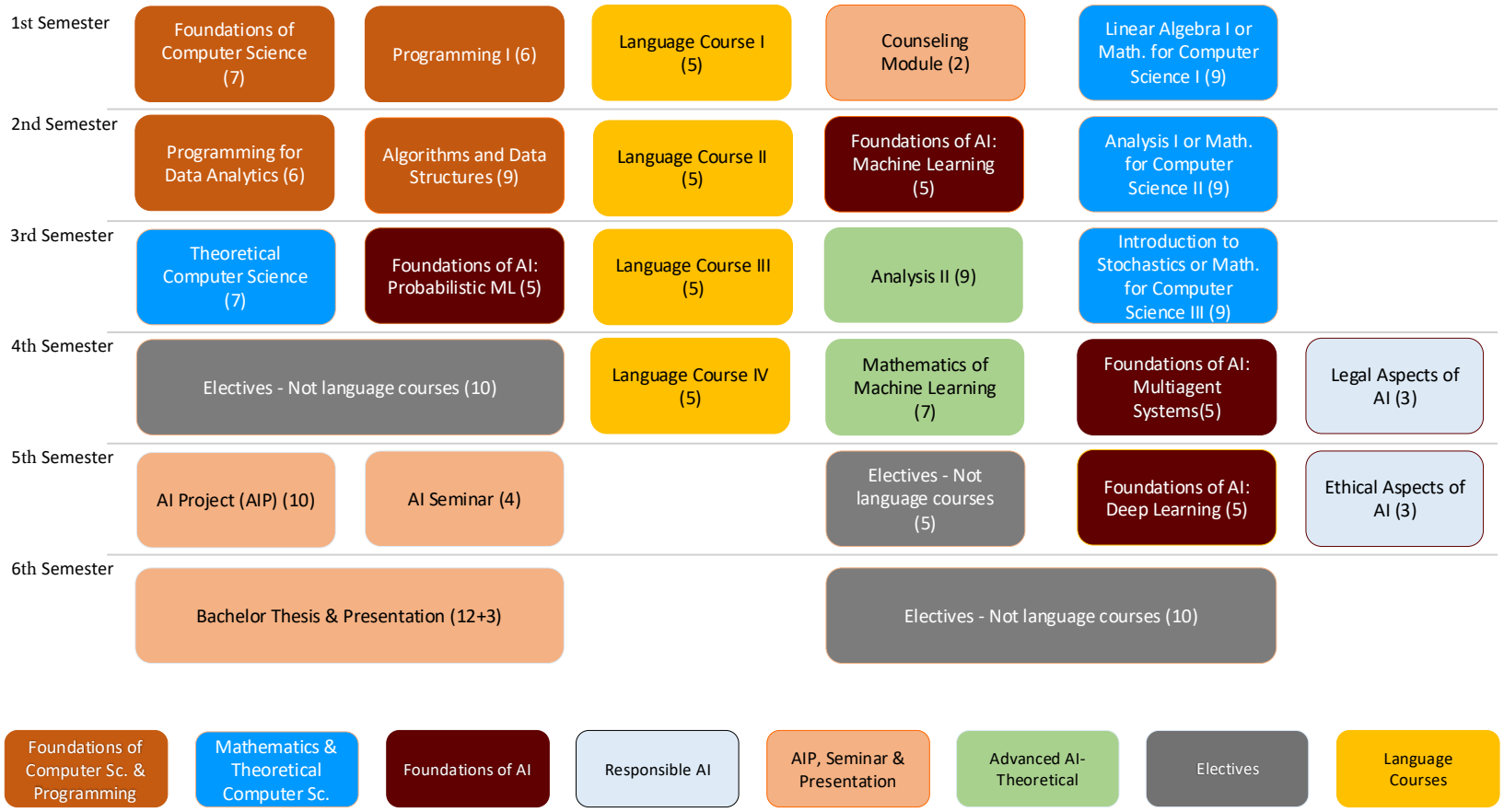
Sample Study Plan for Applied Track With Language Courses



Sample Study Plan for Applied Track Without Language Courses



Sample Study Plan for Theoretical Track With Language Courses



Sample Study Plan for Theoretical Track Without Language Courses