2024/25

Please note the year of validity of the module catalogue.

FACULTY OF MANAGEMENT, ECONOMICS AND SOCIAL SCIENCES

UNIVERSITY OF COLOGNE

VICE DEAN OF STUDIES DEPARTMENT

valid for students of the Examination Regulations 2021

(enrolment from winter semester 2021/22)

MODULE CATALOGUE

INFORMATION SYSTEMS

BACHELOR OF SCIENCE

IN ACCORDANCE WITH THE EXAMINATION REGULATIONS FOR THE SINGLE MAJOR BACHELOR PROGRAMME IN INFORMATION SYSTEMS

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Status	Taking effect on 01.10.2024

List of abbreviations

AM	Advanced module	PR	Project
AS	Assignment	PRES	Presentation
C	Course	SI	Studium Integrale
CC	Compulsory course	SM	Specialisation module
CM	Core module	SPM	Supplementary module
CH	Contact hours (= time spent in class)	SPW	Semester period per week
ECTS	Credit Points	SSt	Self-study
CS	Case study	TP	Term paper
EC	Elective course	TPF	Time required for preparation and follow-up
OE	Oral Examination	TR	Credit points transferred from another university
PRP	Project report	WL	Workload
PCR	Practical component report	WT	Written Test
PO	Portfolio		

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1 Information Systems

Information Systems is an independent, interdisciplinary field, which has its roots in informatics and economics, especially business administration.

The Cologne Institute of Information Systems (CIIS) is responsible for teaching Information Systems at the University of Cologne. In addition, the range of courses is supplemented by teaching assignments and practical contributions. There are extra-curricular workshops on current topics (for example App development, Big Data, Soft-Skills) held at irregular intervals, which are mostly financially supported by companies and are sometimes even hosted by them.

1.1 Content and objectives of the programme

Graduates have competences at level 6 of the German Qualification Framework or the bachelor's level of the German Qualification Framework for Higher Education Qualifications. Intended learning outcomes are shown in the table below. On the one hand, the intended learning outcomes comprise the overarching *learning goals* that the programme envisions for the graduates. On the other hand, they include *learning objectives*, which refer to concrete activities of the students during their studies.

	Graduates act…
Professional and analytical skills	**with a deep understanding of business issues to support organisations in digitalisation and in the development of IT capabilities.**
	Students develop criteria for business decisions in relation to application and information systems.
	Students analyse different concepts for management support and their use for different challenges in companies and other organisations.
	...with a sound specialist knowledge at the interface between business organisation and information technology in order to improve business processes effectively and sustainably.
	Students apply logical and theoretical foundations of computer science and information systems.
	Students independently write an academic paper on a practical information systems problem based on systematised literature/data.
	...as innovative software programmers to find creative software-based solutions to problems.
	Students use a programming language in a solution-oriented manner by independently creating application programs.
	Students develop practical solutions for different areas with digital technologies, taking into account situational environmental factors.
Communicative and cooperative skills	**...as information systems managers in a global and diverse world to address professional issues in information systems.**
	Students defend their independently developed position or solutions to problems.
	Students discuss subject-specific problems in German or English.
	Students work on problems in a goal-oriented and cooperative manner in diverse teams.
Personal skills	**...as responsible employees in order to face the social challenges of the future.**
	Students develop an understanding of the impact of technological decisions, taking into account ecological, social and/or ethical criteria.
	Students design their learning and working processes independently.
	Students evaluate their own action process in self- and external reflection.

Information Systems deals with the conception, development and application of information systems in economics, management and increasingly in our private life. The subject unites theoretical knowledge of several disciplines with application-oriented focus towards system solutions for operational challenges. In many contexts of work and living environment, it provides solutions to product and (business) process designing under economic framework conditions, with its innovative capacity. Information systems are indispensable in almost all conceivable economic, political and social contexts like resource management, energy, security, health and care, traffic, environment, production, finance, education, production as well as media. Information systems contribute towards decision-making, coordination, steering and control of value-added processes as well as their automation, integration and virtualisation. Information systems can affect product, process and business model innovations. Therefore, a degree course in business informatics opens up a wide operational spectrum for the interface of business management and informatics, especially in planning, development, introduction and operation of information systems. In the labour market, the frequently sought-after dual qualification in the areas of business administration and informatics can be applied in a wide spectrum of various business areas and industries. Here, IT business engineers adopt a translation function between business administration related world of ideas and voice on one hand and of a technically entrenched system world on the other. IT business engineers can accordingly perceive coordinating functions between IT specialists and subject specialists on the application side, whereby consultancy services and project management are paramount. Over and above that, IT business engineers are experts in structuring and modelling information systems and understand how to make a difference in IT non-expert domains, like healthcare. From an industry-related perspective, not only companies related to information technology like IT service providers or consultancies are considered employers, but in connection with corresponding specialisations like employers from the trade, logistics/transport, media, telecommunication or banking and insurance sectors also.

1.2 Requirements

Students must bring along the following professional, methodical and personal strengths and inclinations for a successful bachelor's degree:

- Good mathematical and analytical skills
- Abstract and conceptual thinking
- Good linguistic expressiveness in German and English
- Independent, target and result-oriented work
- Marked interest in economic and information technology issues

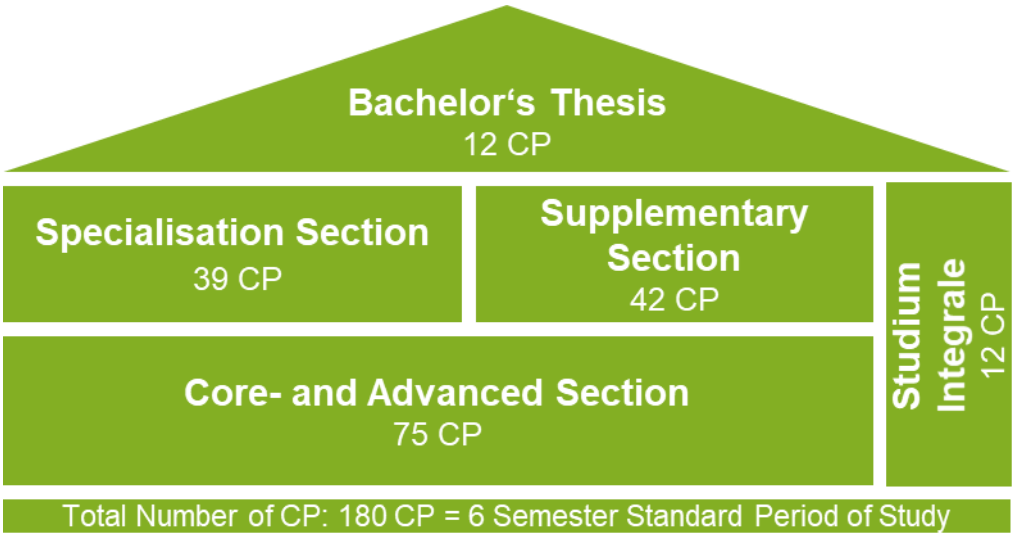
1.3 Programme structure and sequence

Enrollment from winter semester 24/25 onwards:

The degree course comprises of 180 CP and includes a Core and Advanced Section (72 CP), a Supplementary Section (36 CP), as well as a Specialisation Section (48 CP), Studium Integrale (12 CP) and the bachelor's thesis (12 CP). The Core and Advanced Section include compulsory modules in fundamentals and should be completed first for. In the Specialisation Section, students deepen their knowledge in Informatics and Business Informatics with an emphasis on applications, including through a programming project and a Capstone project. The Supplementary Section offers students the chance to acquire knowledge in the areas of Business Administration and ethics. Moreover, students must complete 12 CP from the university wide Studium Integrale. The degree course ends with the bachelor's thesis.

Enrollment before winter semester 24/25:

The degree course comprises overall 180 CP and includes a Core and Advanced Section (75 CP), a Supplementary Section (42 CP), as well as a Specialisation Section (39 CP). The Core and Advanced Section is again divided into a WiSo Core Section, Mathematics, Informatics and Business Informatics Section. It only includes compulsory modules in fundamentals and should be completed first. The Supplementary Section offers students the chance to obtain knowledge in Business Administration. Moreover, 12 CP from the wider range of Studium Integrale must be completed. Moreover, students must complete 12 CP from the university wide Studium Integrale. The degree course ends with the bachelor's thesis.



1.4 Study Abroad Option

The WiSo Faculty offers a broad range of study abroad options within an excellent network of prestigious partner universities worldwide. The Study Abroad Programme (STAP) includes ERASMUS exchanges and provides the opportunity for a single term stay at one of the WiSo Faculty's partner universities. Successful STAP applicants benefit from direct contact and organisational support at the partner university as well as organisational support by the International Relations Center (ZIB WiSo). Additionally, students on STAP are exempt from paying tuition fees at partner universities. The range of universities available depends on the bachelor's course in which the student is enrolled. Possible options, along with detailed information on each university, are listed on the WiSo Exchange (WEX) portal. The WEX portal is only accessible with a student's UoC account.

In addition to the STAP programme, the WiSo Faculty organises an exclusive short-term study option - WiSo@NYC - which takes place in New York City every year.

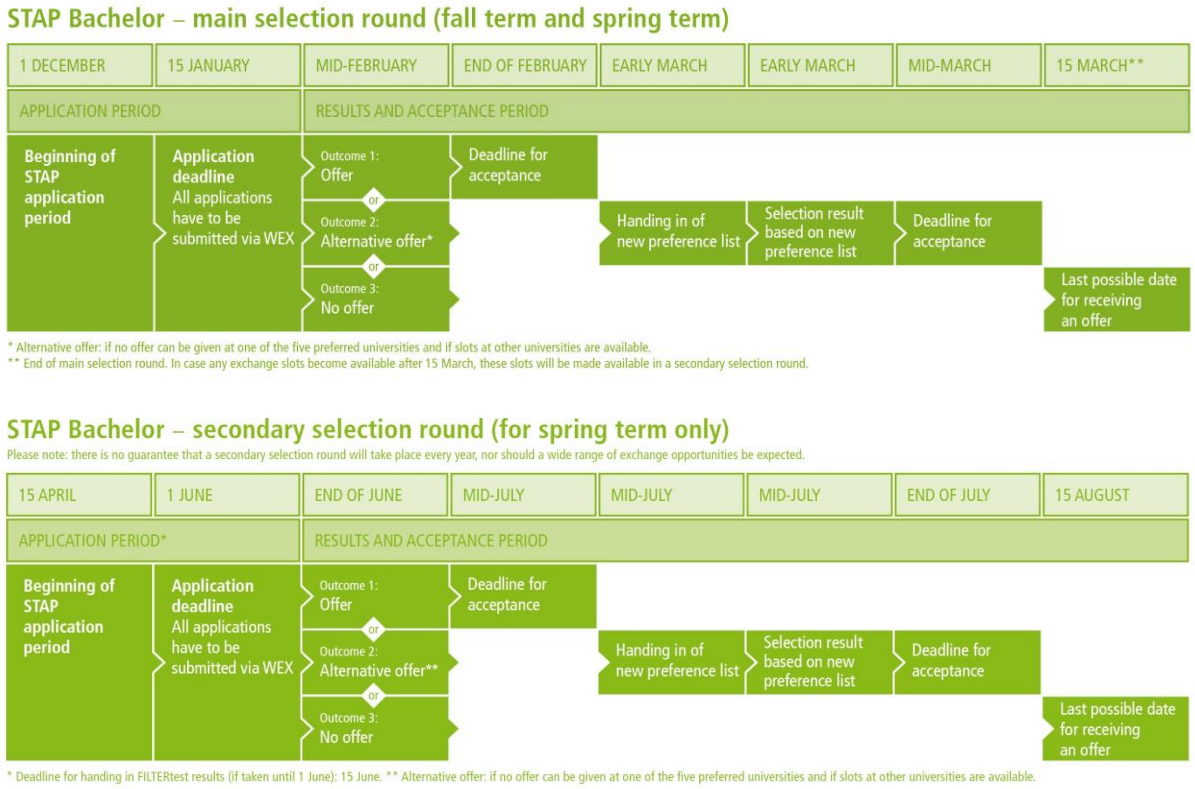
Beyond the WiSo-faculty options for studying abroad, there are non-WiSo exchange options available through the Central International Office of the University of Cologne (Dezernat 9 – Internationales) within the university-wide partnerships framework (link in German only).

Further possibilities include going abroad as a freemover (i.e. a student who organises their study abroad exchange individually) or participating in short courses or summer schools offered under separate terms and conditions.

1.4.1 The Faculty's Study Abroad Programme (STAP)

Bachelor's students should plan their application for a term abroad at the beginning of their studies. The main selection round for STAP takes place once a year, ending on 15th January of each year. It is possible to apply for an exchange in the fall term or spring term of the following academic year. Detailed information regarding selection criteria and the preparation for a STAP application can be found online.

If places are still available after the main selection round, another small, secondary selection round will be offered between April and 1st June. In this round, students can only apply for the following spring term.



1.4.2 Credit transfer options from studies abroad

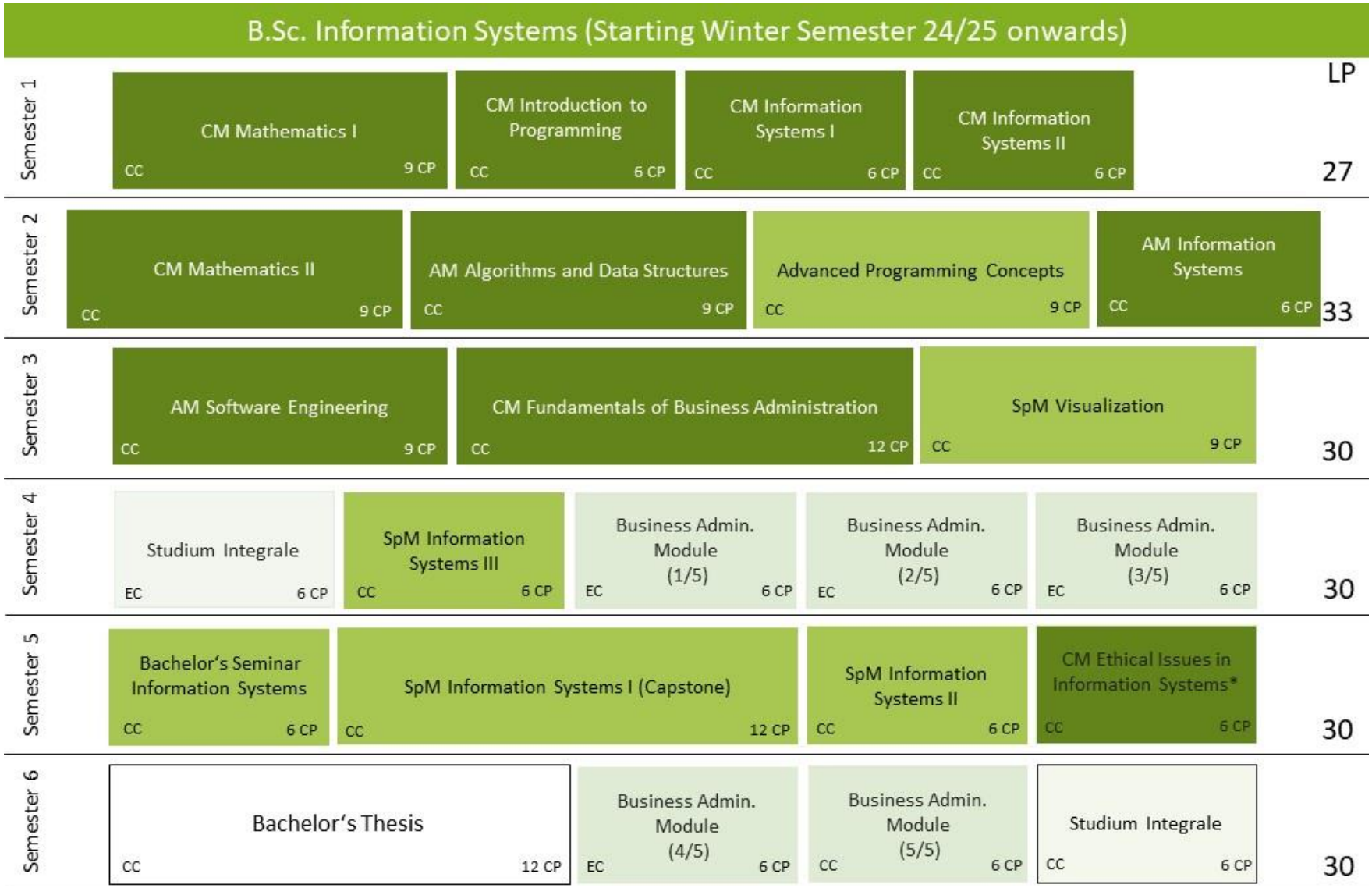
The WiSo-faculty has implemented at least one Studies Abroad module in each of the bachelor's programmes so that broad credit transfer options for all kinds of study abroad options are possible. If requirements are met, a single course-to-course credit transfer can be considered. Moreover, students have the option of crediting courses from their studies abroad as part of Studium Integrale.

Students can contact ZIB WiSo or the WiSo Credit Transfer Center for any questions regarding credit transfer.

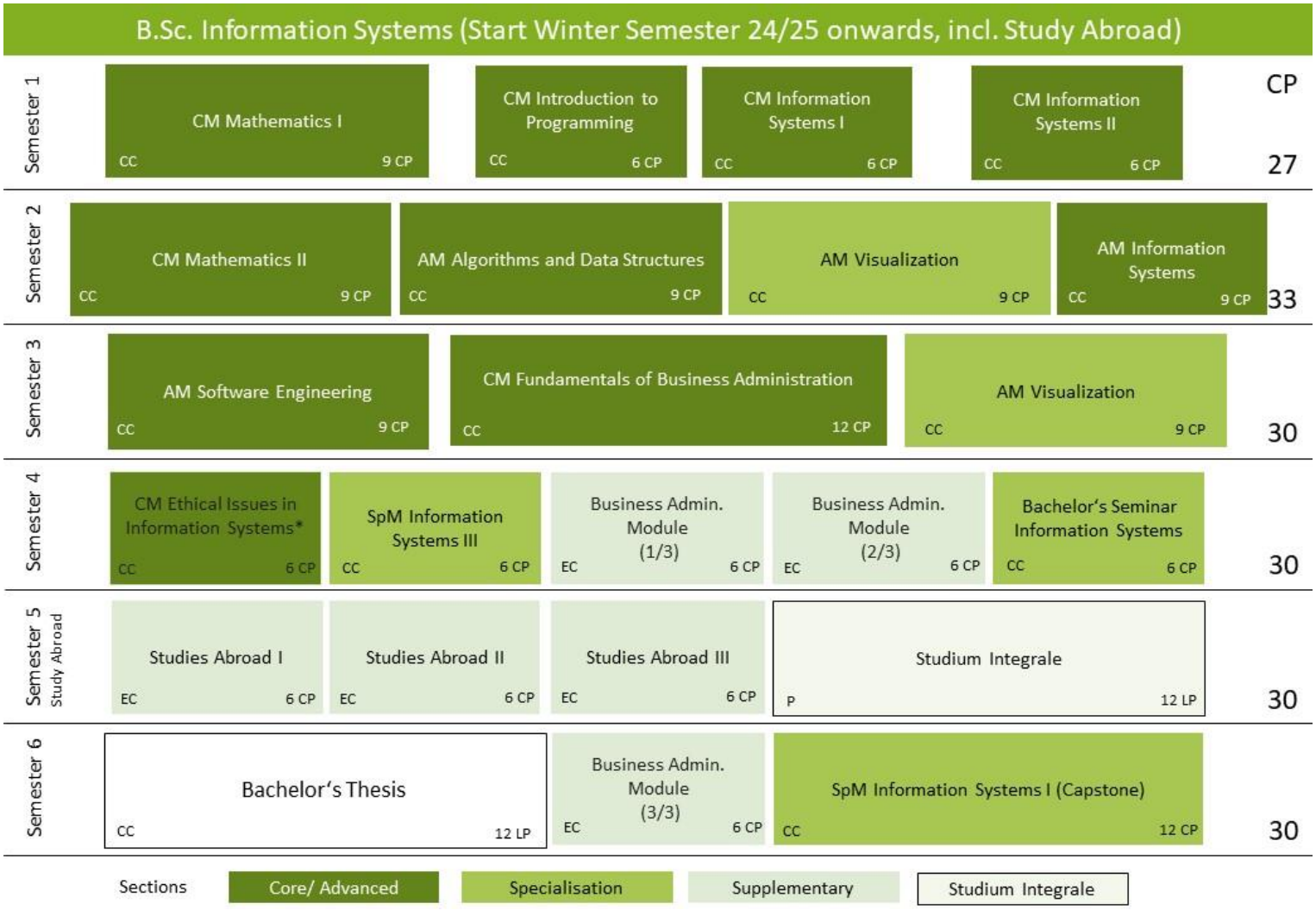
1.5 Study Plan

Students must plan their studies individually. This is due to various factors such as some specialisation modules not being offered every term or requiring more than one term to complete. Therefore, the following study plans are provided as recommendations from which students can or have to diverge from depending individual choices.

Students should pay particular attention to the year they enrolled onto the programme when following the guidance of the following study plans.



For the Supplementary Modules in Business Administration, it is possible that the modules include mid-term examinations. Further information regarding mid-terms can be found in section 1.6 Modules with mid-term Examinations.
For CM Ethical Issues in Information Systems: Please check whether this module is offered in the current semester in KLIPS.



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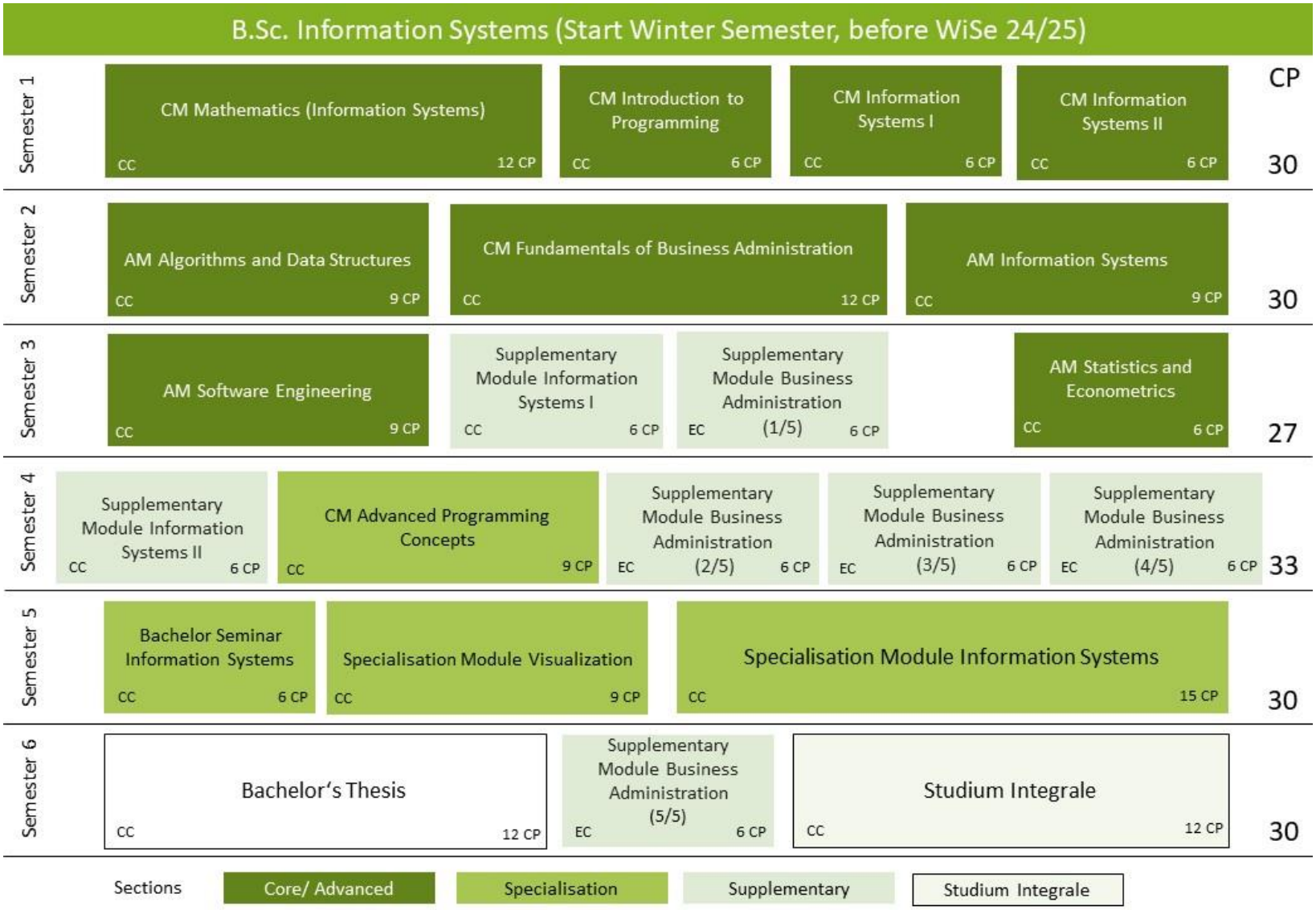

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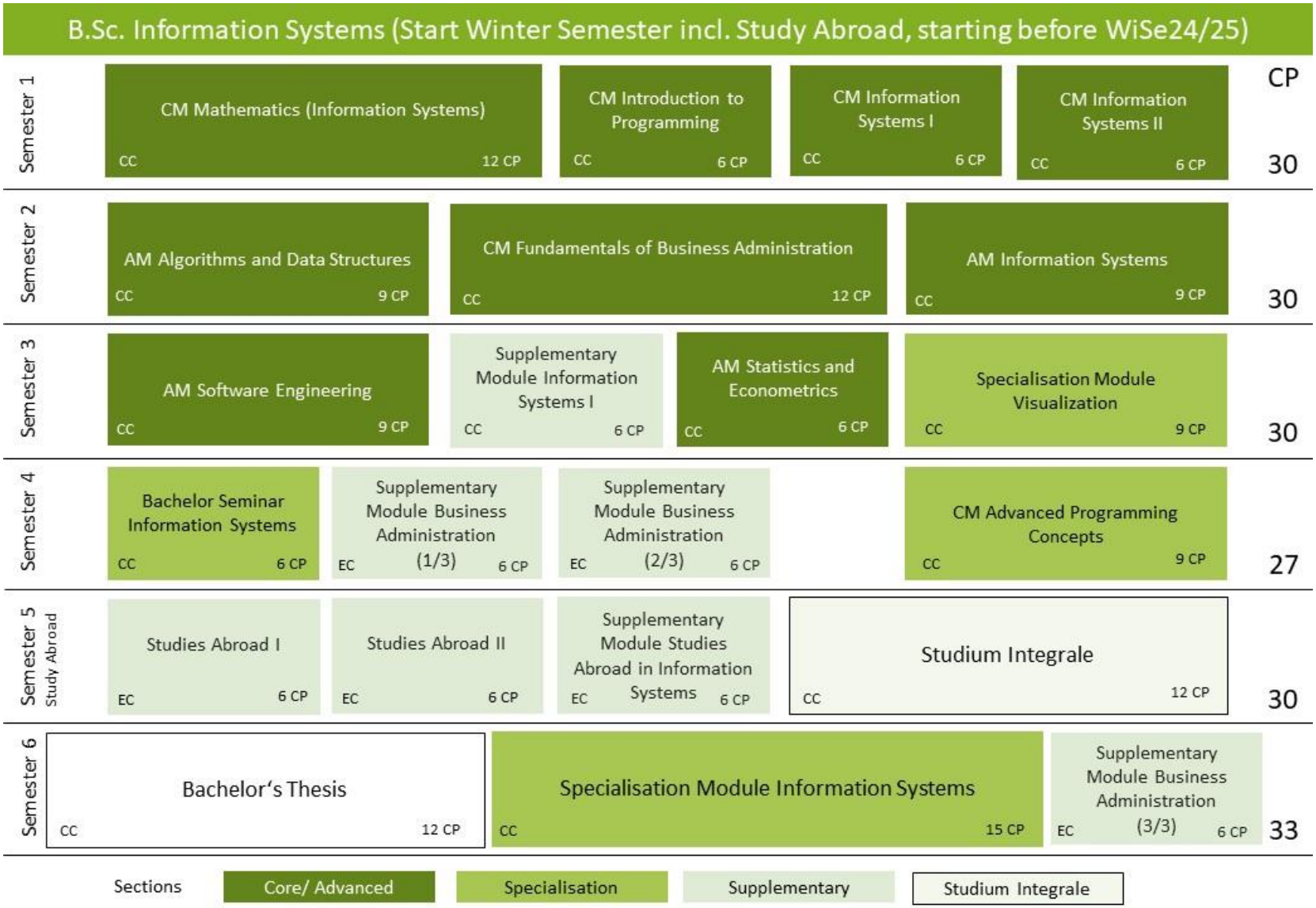


For the Supplementary Modules in Business Administration, it is possible that the modules include mid-term examinations. Further information regarding mid-terms can be found in section 1.6 Modules with mid-term Examinations.

Study plans including a semester abroad

General remarks

For questions about studying abroad, please contact ZIB WiSo.
It is possible to not request leave of absence (*Urlaubssemester*) for a semester abroad so that examinations can be taken upon return to the University of Cologne (if it is individually feasible).

1.6 Modules with mid-term examinations

Some modules have courses that only run for half a term and, often, with twice the number of classes per week. For these modules, the term is divided into two roughly equal halves. During the winter semester, the mid-term course usually ends at the beginning of December. During the summer semester, the first term usually ends in the middle or at the end of May. Often, the examinations for these courses are held mid-term, enabling students to reduce their examination load at the end of term.
Information regarding the dates of courses and examinations are provided in the campus management system (KLIPS).

1.7 Calculation of the overall mark

The marks for core, supplementary and specialisation sections are calculated as the weighted arithmetic mean of the marks for the respective modules, based on the weighting system described in the examination regulations. If the result of a module examination is calculated based on several components, the mark is calculated based on a weighting given in the module description. For calculating averages, only the first decimal place after the decimal point is taken into account; all other decimal places are deleted without rounding.

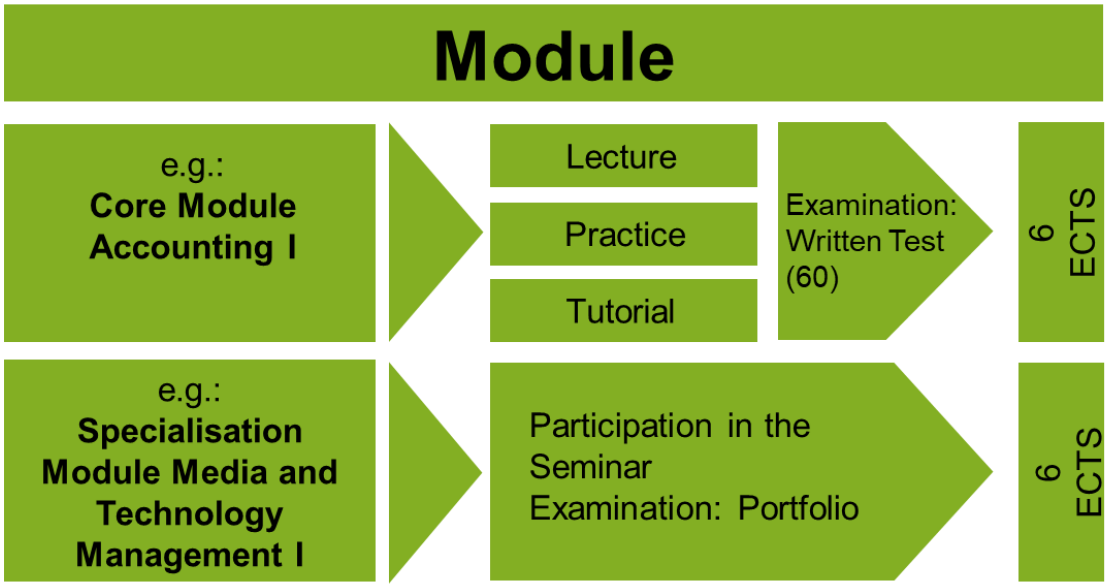
1.8 Modularity

Each section of the bachelor's programme is divided into modules, the contents of which are described in the module descriptions. These descriptions are found at the end of this bachelor's module catalogue. Students who pass the necessary examinations are awarded credit points as proof of their successful participation in a module. The module examinations are taken at regular intervals during the programme. Each module consists of various parts and can usually be completed in one or two terms (see the "duration" section in the module description). A module can consist of lectures, exercises and/or tutorials on the same subject. There are also modules that utilise one teaching format, e.g. a seminar. In some cases, modules offer students a choice between various courses, and they are required to take one

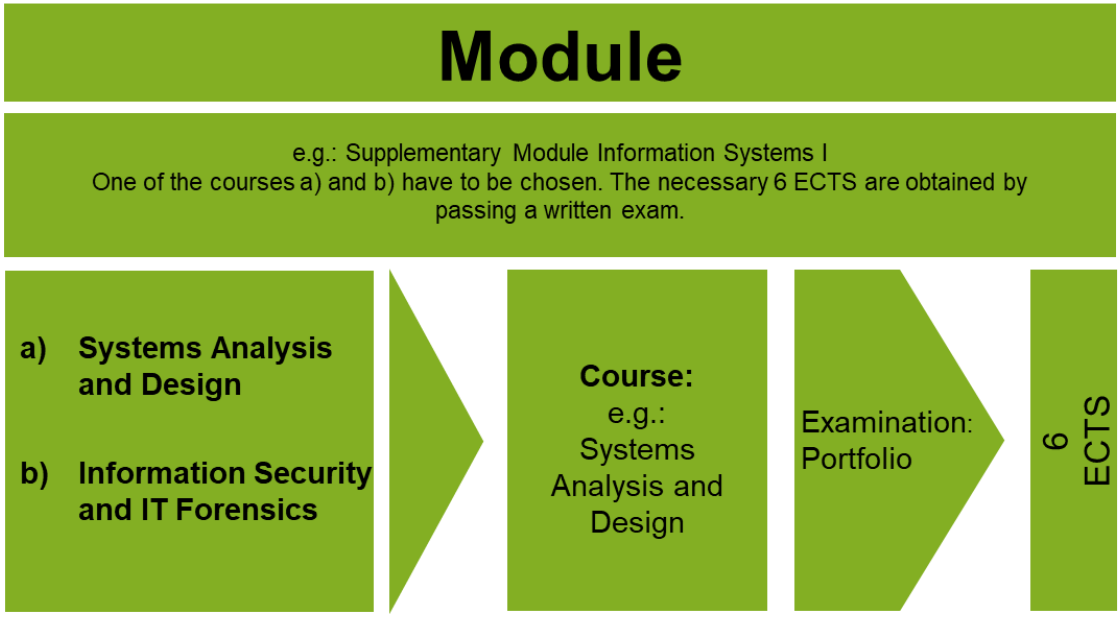
or more of them. In these cases, the examination can consist of two components (e.g. a written test in course one and a term paper in course two) or take the form of one, combined examination (a written test covering the content of courses one and two).

When planning your studies, please remember that not every module is offered every term. To find out whether a module is being offered, please refer to the “module availability” section of the module description.

The following examples are provided for purely illustrative purposes of individual scenarios; they do not necessarily include modules of the present study programme.



Scenario 1: The module can consist of one teaching and learning method or several complementary teaching and learning methods on the same topic.



Scenario 2: One of the two courses must be chosen and the exam must be passed.

1.9 Rules for failed attempts

Students may retake module examinations that they have failed. The number of attempts is limited to three per module.

Furthermore, three additional resit attempts can be granted to students at any point of the programme. Students who have accumulated at least 140 ECTS credits are granted a further additional attempt. If a student fails an examination having exhausted all additional attempts, they are deemed to have failed the programme at the final attempt. Students may only be eligible for additional attempts, beyond the initial three attempts, if none of the first three attempts were failed due to cheating or to an offence. If the candidate fails a module examination three times, they will receive a written notification informing them of the options available. We recommend to all students who fail the initial three attempts of an examination to seek advice from WiSo Student Service Point before embarking upon an additional attempt.

Where a module examination consists of several components, the candidate must obtain a “bestanden” (pass) mark, or at least an “ausreichend (4,0)“ (sufficient) mark, in all of the examination components. All components marked “mangelhaft (5,0)” or “nicht bestanden” (fail) must be retaken.

It is not possible to retake module examinations that have already been passed.

A failed bachelor’s thesis can be retaken once with a new topic. Students can only register for a second attempt after the result of their first attempt being announced.

2 Support for students

2.1 First Point of Contact for Questions and Counselling

The WiSo Student Service Point (WissPo) is the first, central contact point for students who have questions and problems during their studies. WissPo is also the first point of contact for further counselling offers, e.g. studying abroad, wellbeing, careers guidance. Students can contact WissPo via phone, email or visit in person. Please take note of the opening times and contact details on the website.

2.2 Course registration in KLIPS 2.0

KLIPS 2.0 is the central campus management system of the University of Cologne. At the WiSo Faculty, KLIPS 2.0 serves as a student organisation tool. Students should use it as an online course catalogue, for registration and deregistration of courses and examinations, as well as an overview of the complete study programme and calendar. Information on current dates and deadlines of the WiSo faculty, as well as video tutorials and FAQs about KLIPS can be found on the WiSo-KLIPS-Support website. If you have further questions, please contact WiSo-KLIPS-Support via this contact form. For questions regarding your KLIPS account, please contact the central KLIPS support team.

2.3 Exam registration in KLIPS 2.0

Examinations for the programme are always managed via KLIPS 2.0. Students must register for examinations by the specified deadlines. Please note that the registration for courses without restrictions on participation and the registration for the corresponding module examinations are two separate processes in KLIPS 2.0. In courses where participation restrictions exist, the examination registration is generally only possible if the course registration has been submitted beforehand. Most module examinations with a written test format are offered twice per semester. Often, this will be to “space out” the dates, i.e. students can choose the date that best fits their examination schedule. In some cases, however, the second examination may be a genuine repetition of the first, depending on the department/institute concerned.
All examination candidates at the faculty are entitled to see their examination papers after they have been marked. For more information, please visit the WiSo Examination Office website.
Legally binding information concerning examinations and examination procedures is provided by the WiSo Faculty Examination Office. It also issues transcripts of records in German and English, ranking certificates and letters of assignment to the appropriate term of the

programme. All the necessary information and contact details can be found on the examination office website.

2.4 Academic Practice

The University of Cologne offers various courses to support students with the process of academic practice for term papers and theses. The courses include:

a) Literature research: the WiSo Teaching Library offers various courses for researching literature and databases.
b) Writing skills: the Kompetenzzentrum Schreiben, the Professional Center, the Kölner Studierendenwerk and the programme SchreibArt offer advice as well as courses related to the issues that arise when writing an academic paper.

Students can register for the courses of the Professional Center and the SchreibArt programme within **Studium Integrale** under „Kompetenzen für das Studium" (competencies for studies) in KLIPS 2.0. In addition, the WiSo faculty offers the course "Wissenschaftliche Arbeitstechniken für Wirtschafts- und Sozialwissenschaft" (in German) within Studium Integrale. It is possible to receive ECTS credits for these courses.

2.5 Preliminary course in Mathematics

Students can compare their mathematics skills from school to the skills required for the mathematics course in the bachelor's programme by taking the online maths test in ILIAS (only in German).
Information Systems students also have the option to take a voluntary, preliminary course in mathematics (only in German) offered by the Faculty of Mathematics and Natural Sciences. **Information about the course** and registration can be found via the website of the **Mathematics Department**.

3 Module tables and descriptions (Enrollment until 23/24)

3.1 Core and Advanced Section

Im Basisbereich gemäß § 28 Absatz 12 Nr. 1 der geltenden Prüfungsordnung müssen die zu Prüfenden 75 LP erwerben.

Group	Module	CP	CC/EC	
CM Introduction to programming[1]	6	CC	57	75
AM Algorithms and data structures[2]	9	CC		
AM Software Engineering[3]	9	CC		
CM Information Systems I	6	CC		
CM Information Systems II	6	CC		
AM Information Systems	9	CC		
CM Fundamentals of Business Administration	12	CC		
CM Mathematics for students of Informatics I[4]	9	EC	18	
CM Mathematics for students of Informatics II[4]	9	EC		
CM Mathematics (Information Systems)[5]	12	EC		
AM Statistics and Econometrics[6]	6	EC		
CM Statistics[7]	6	EC		
CM Mathematics[7]	6	EC		

[1] The registration for the examination is not possible if the examination for the module "CM Computer Science" has already been successfully completed.
[2] The registration for the examination is not possible if the examination for the module "AM Computer Science I" has already been successfully completed.
[3] The registration for the examination is not possible if the examination for the module "AM Computer Science II" has already been successfully completed.
[4] This module is compulsory for students who have not successfully completed any other modules in the Mathematics group by the end of the winter semester 2024/2025.
[5] This module will be offered for the last time in 2024/2025 in accordance with the planned schedule.
[6] This module can no longer be taken if the "BM Mathematics (Information Systems)" has not been successfully completed by the end of the winter semester 2024/2025.
[7] This module cannot be specified independently. Only if only the module "AM Statistics and Econometrics" has been successfully completed in the Mathematics group by the end of the winter semester 2024/2025, this module must be taken from the summer semester 2025.

3.2 Supplementary Section

Im Ergänzungsbereich gemäß § 28 Absatz 12 Nr. 2 der geltenden Prüfungsordnung müssen die zu Prüfenden 42 LP in einer Gruppe erwerben.

Group	Module	CP	CC/EC	
CM Ethical Issues in Information Systems[1]	6	EC	30	42
CM Accounting I	6	EC		
CM Corporate Development I	6	EC		
CM Finance I	6	EC		
CM Marketing I	6	EC		
CM Supply Chain Management I	6	EC		
CM Corporate and Business Ethics	6	EC		
CM Decision Analysis	6	EC		
SpM Media and Technology Management I	6	EC		
SpM Media and Technology Management II	6	EC		
SpM Entrepreneurship	6	EC		
Studies Abroad I (Winfo)	6	EC		
Studies Abroad II (Winfo)	6	EC		
SuM Information Systems I	6	EC	12	
SuM Information Systems II	6	EC		
Studies Abroad in Information Systems	6	EC		

[1] This module will be a compulsory module from winter semester 2025/2026. This does not apply if the supplementary area has been successfully completed up to and including summer semester 2025.

3.3 Specialisation Section

Im Schwerpunktbereich gemäß § 28 Absatz 12 Nr. 3 der geltenden Prüfungsordnung müssen die zu Prüfenden 39 LP erwerben.

Group	Module	CP	CC/EC	
CM Advanced programming concepts[1]	9	CC	33	39
AM Visualization[2]	9	CC		
SpM Information Systems	15	CC		
Bachelor Seminar Information Science	6	CC	6	

[1] The registration for the examination is not possible if the examination for the module "Programming Project" has already been successfully completed.
[2] The registration for the examination is not possible if the examination for the module "SpM Computer Science" has already been successfully completed.

3.4 Studium Integrale

All of the Faculty's bachelor programmes include an interdisciplinary component, known as the Studium Integrale, in which students accumulate 12 credit points. The Studium Integrale is a university-wide and interdisciplinary component of the courses of study in which academic and professional competences are imparted. The Studium Integrale has both theoretical and practical content, enabling students to focus on more academic aspects or topics related to their future careers enhancing their employability. It aims to teach and develop skills that go beyond subject-specific knowledge or that are related to basic academic and personal traits: scientific curiosity, systematic and analytical thinking, and ability to deal with complexity, a solution-minded outlook plus other abilities such as teamwork and foreign language skills.

The Studium Integrale courses are run jointly by the faculties and the University's Professional Centre. They enable students to pursue their own interests in more depth, gain an insight into other subjects and departments, attend courses dealing with issues of relevance to society, acquire skills relevant to their future careers and attend language classes. The "Universitas" segment offers formats especially designed for the Studium Integrale, such as lecture series on societal issues with related workshops. In addition, the Studium Integrale offers students assistance with their learning and studying, helping them with such questions as how to write an academic paper or how to conduct literature reviews. Periods of training abroad and work experience can also be credited in the Studium Integrale. The Studium Integrale carries 12 credit points in total and formally counts as a module. There is no restriction on the number of attempts possible for Studium Integrale examinations.

Any credit points attained in the Studium Integrale over and above the 12 credit points specified in the study structure are shown on the transcript of records.

3.5 Bachelor's Thesis

The bachelor's thesis carries 12 CPs and is written at the end of the programme. Its aim is to illustrate that the candidate is capable of working and reflecting independently on a specific problem related to the subject matter covered on the programme, using the necessary methods and within a specified period. The topic of the bachelor's thesis must reflect one of the sub-categories: Core and Advanced Section, Supplementary Section or Specialisation Section.

To be allowed to register for the bachelor's thesis component, candidates must have acquired at least 100 credit points. In line with the number of credit points it carries, the workload allotted for the thesis is 360 hours, i.e. 12 weeks. Bachelor's theses should not be more than 40 pages long. Candidates who have earned all of the necessary credit points, except for the bachelor's thesis, must register within a period of one year to write their bachelor's thesis. Further and more detailed information concerning bachelor's theses can be found in the examination regulations.

Please note that the Cologne Institute for Information Systems (CIIS) offers Bachelor's theses in every semester. Each semester you can start working on your bachelor's thesis at **one fixed starting time** (in November in winter semesters and in May in summer semesters).

3.6 Module Descriptions

3.6.1 Core and Advanced Section

CM Introduction to programming					
Module Code 5751BEinPr	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Programming Course		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German
2	**Module Content** • Basic programming terms, e.g. variables, operators, modifiers, data structures, methods, comments • Algorithmic concepts, e.g. loops, control structures (conditional branching), recursion • Technical tools such as IDEs, SDKs, compilers, version control systems • Systematic approaches to efficiently solving simple problems, e.g. analyzing the problem, designing the solution (e.g. with pseudocode), using existing solutions (e.g. libraries), checking the developed solution (simple tests), troubleshooting methods • Paradigm and structure-specific concepts (e.g. classes, objects)				
3	**Learning Objectives** Students learn the basic concepts of programming. They are able to recognize these concepts and apply them to solve simple problems. This enables students to analyze simple programming problems and to design and implement their algorithmic solution. Students are also able to comment, test and debug the code they have created themselves.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				

10	**Miscellaneous**

AM Algorithms and data structures

Module Code	Workload	ECTS Credits	Module Language	Module Availability	Duration
5751AlgDat	270h	9	German	every 2nd term - summer term	1 Term

1	**Courses** Algorithms and data structures	**Contact Hours** 60h	**Self-Studies** 210h	**Course Language** German

2	**Module Content** After an introduction to the terminology and definition of computer science and the structure and functionality of computers, the lecture deals with basic contents of algorithms and data structures. The general design and analysis of algorithms are performed using examples from the fields of sorting and search methods as well as elementary graph algorithms. Furthermore, elementary graph algorithms can be treated. The presented elementary data structures include trees, graphs and Union-Find data structures.
3	**Learning Objectives** Students... ... design and implement basic algorithms and analyse algorithms with regard to correctness and their runtime behaviour depending on the data structures used. know and understand the relevant methods and theories for the points mentioned above under "Module content".
4	**Teaching and Learning Methods** lecture practice
5	**Module Entry Requirements** Recommendation:
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik
10	**Miscellaneous**

AM Software Engineering					
Module Code 5751BSoftw	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Software Engineering		**Contact Hours** 90h	**Self-Studies** 180h	**Course Language** German
2	**Module Content** After an introduction to the terminology and definition of computer science and the structure and functionality of computers, the lecture deals with basic contents of algorithms and data structures. The general design and analysis of algorithms are performed using examples from the fields of sorting and search methods as well as elementary graph algorithms. Furthermore, elementary graph algorithms can be treated. The presented elementary data structures include trees, graphs and Union-Find data structures.				
3	**Learning Objectives** Students... ... design and implement basic algorithms and analyse algorithms with regard to correctness and their runtime behaviour depending on the data structures used. know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				
10	**Miscellaneous**				

CM Information Systems I					
Module Code 1277BBWIF1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Information Systems Management		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** • Information systems as a science • Strategic role of information systems • Internal and inter-company business process integration • Electronic commerce and electronic business • Computer supported collaborative work • IT security • Ethical, social and political aspects • Information assets • Business process reengineering • Internet of things				
3	**Learning Objectives** Students... ... know and understand basic theories in the field of information management. ... apply theories in the field of analysis and structuring concepts in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... use methods in pre-structured contexts in a solution-oriented way in the field of analysis and structuring concepts. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... communicate continuously and purposefully within teaching and learning groups. ... establish and evaluate independently developed positions. ... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. ... question and critically reflect on current social developments. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems Bachelor of Arts Medienwissenschaft: Media and Technology Management				

	Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems
9	**Module Manager** Univ.-Prof. Dr. Detlef Schoder
10	**Miscellaneous** Mandatory accompanying reading: Laudon, K.; Laudon, J.; Schoder, D.: Wirtschaftsinformatik – eine Einführung, Pearson Verlag, 2015, 3rd Edition

CM Information Systems II					
Module Code 1277BBWIF2	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Database Systems		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** • Relational model and relational algebra • Relational query languages (SQL) • Conceptual data modelling (e.g., Entity Relationship Model) • Relational database design • Normalization (1.-3. normal form, BCNF) • Development process of database systems • Data organization, data management, data protection and privacy • Transactions, Concurrency Control, Indices				
3	**Learning Objectives** Students... ... know and understand basic theories in the field of relational databases and data management. ... apply theories in the field of relational databases and data management in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... use methods in the field of relational databases and data management in pre-structured contexts in a solution-oriented way. ... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Master of Science Gesundheitsökonomie: Specialisation Section Health Economics Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Informatik: Advanced Section WiSo Anteil				

9	**Module Manager** Univ.-Prof. Dr. Christoph Rosenkranz
10	**Miscellaneous** Mandatory reading is announced every semester. The written test may be in the form of an e-examination. Tutorials will be offered instead of exercise classes. The lecture will be conducted using a flipped classroom concept (videos and documents will be provided for self-study; repetition, discussion and consolidation will take place face-to-face in class).

<table>
<tr><th colspan="7">AM Information Systems</th></tr>
<tr><td colspan="2">Module Code
1277BAWIF1</td><td>Workload
270h</td><td>ECTS Credits
9</td><td>Module Language
German</td><td>Module Availability
every 2nd term - summer term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
Integrated Information Systems</td><td>Contact Hours
90h</td><td>Self-Studies
90h</td><td>Course Language
German</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Integrated information processing
• Business Process Management
• Business Process Modelling
• Intra-organizational application systems (Enterprise Resource Planning (ERP) and Enterprise Systems)
• Inter-organisational application systems (Supply Chain Management (SCM) and Customer Relationship Management (CRM))
• Service-oriented architectures (SOA), Cloud Computing and Micro-Services
• Enterprise Application Integration (EAI)</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand basic theories in the field of integrated information systems and business process management.
... apply theories in the field of integrated information systems and business process management in pre-structured contexts (e.g. case studies) in a solution-oriented way.
... know and understand common methods in the field of integrated information systems and business process management.
... use methods in the field of integrated information systems and business process management in pre-structured contexts in a solution-oriented way.
... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
lecture
tutorial</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
Recommendation: CM Information Systems I, CM Information Systems II</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Written test: WT (90)</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing the module examination</td></tr>
<tr><td>8</td><td colspan="6">Other Programmes that Use the Module
Bachelor of Science Wirtschaftsinformatik:
Core Section Information Systems</td></tr>
<tr><td>9</td><td colspan="6">Module Manager
Univ.-Prof. Dr. Christoph Rosenkranz</td></tr>
<tr><td>10</td><td colspan="6">Miscellaneous
Mandatory texts can be indicated, which must be read before the lecture. The degree of preparation</td></tr>
</table>

	is checked in the lectures and exercises. Case studies and exercises can be prepared in group work, which must be presented in the plenum by students. The solutions presented will be analysed and discussed. Mandatory reading will be announced each semester. The exam may take the form of an e-examination. Tutorials will be offered instead of practices.

CM Fundamentals of Business Administration					
Module Code 1230BBGDB1	**Workload** 360h	**ECTS Credits** 12	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Fundamentals of Business Administration		**Contact Hours** 120h	**Self-Studies** 240h	**Course Language** German
2	**Module Content** • Management structures and models • Strategy and target systems of companies • Corporate functions and processes and their interrelationships • Analysis and design of service provision, in particular the deployment of personnel • Main features of the operational cost and performance accounting • Main features of the annual accounts • Main features of operational investment and financing decisions				
3	**Learning Objectives** Students... ... analyse market and environment conditions for entrepreneurial action and their influence on corporate decisions. ... reflect and justify basic positions and basic standards (competition, freedom, social justice) of companies in a social market economy. ... structure corporate actions according to different process categories and differentiate between management, business and support processes. ... design individual management processes with the help of procedures and instruments (values, strategy and corporate goals, coordination and motivation, information and control system). ... make decisions for the design and optimization of business processes (customer attraction, customer loyalty, brand management, service delivery, service innovation) and use them to shape relationships with sales and procurement markets. ... select adequate financial management procedures for various business decisions and apply them in extracts (external accounting, internal controlling, investment and financial accounting). ... assess the success of corporate decisions with the help of key performance indicator systems and draw conclusions from them. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Mathematik: Nebenfach WiWi Bachelor of Science Wirtschaftsmathematik: Nebenfach WiWi Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems Bachelor of Science Gesundheitsökonomie:				

	Core and Advanced Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Geographie: Nebenfach BWL Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Informatik: Nebenfach Wirtschaftswissenschaften
9	**Module Manager** Geschäftsführende*r Direktor*in des Instituts für Berufs-, Wirtschafts- und Sozialpädagogik
10	**Miscellaneous**

<table>
<tr><th colspan="7">CM Mathematics for students of Informatics I</th></tr>
<tr><td colspan="2">Module Code
5751BMath1</td><td>Workload
270h</td><td>ECTS Credits
9</td><td>Module Language
German</td><td>Module Availability
every 2nd term - winter term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
Mathematics for students of Informatics I</td><td>Contact Hours
84h</td><td>Self-Studies
186h</td><td>Course Language
German</td></tr>
<tr><td>2</td><td colspan="6">Module Content
The topics include:
Basics:
Proofs, proof principles and reasoning (incl. full induction)
Basic concepts of sets, relations and functions
Elementary number theory
Geometry basics

Linear algebra:
Algebraic structures (groups, rings, solids, Boolean algebras)
Complex numbers
Vector and matrix calculus
Linear systems of equations
Vector spaces
Linear combinations and bases
Dimension
Linear mappings and representation matrices
Determinants
Eigenvalues, eigendecomposition
Singular value decomposition

Analysis:
Numbers, sequences, series
Continuity
Important function classes (polynomials, rational functions, exponential function and logarithm, trigonometric functions)</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... The students...
... know and understand the relevant methods and theories for the points mentioned above under "Contents of the module".
... learn basic proof techniques as well as elementary mathematical terms and methods
... are able to formulate problems analytically
... are able to solve mathematical problems independently
... can present and communicate their solutions in an understandable way
... gain an understanding of linear and algebraic relationships
... train their mathematical intuition</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
lecture
practice</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
none</td></tr>
</table>

6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Prof. Dr. Andreas Vogelsang
10	**Miscellaneous**

CM Mathematics for students of Informatics II					
Module Code 5751BMath2	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Mathematics for students of Informatics II		**Contact Hours** 84h	**Self-Studies** 186h	**Course Language**
2	**Module Content** The topics include Analysis Differential calculus: Differentiation, extreme values, mean value theorem and consequences, higher derivatives, Taylor polynomial and series, applications of differentiation Integral calculus: definite and indefinite integral, integration of rational and complex functions, improper integrals, Fourier series Ordinary differential equations Probability theory Probability space, distribution Conditional probabilities Expected value, variance, random variables, Markov, Chebyshev, Chernoff inequality Hypothesis tests Markov chains Bayesian statistics				
3	**Learning Objectives** Students... ... The students... ... know and understand the relevant methods and theories for the points mentioned above under "Contents of the module". ... are able to formulate problems analytically ... are able to solve mathematical problems independently ... can present and communicate their solutions in an understandable way ... learn how to deal with real and complex numbers, sequences and series ... acquire knowledge and learn methods of differential and integral calculus ... can deal with elementary functions and carry out mathematical reasoning ... familiarise themselves with basic concepts of probability theory and can apply these independently				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommended: Mathematics for Computer Scientists I				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				

8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Prof. Dr. Andreas Vogelsang
10	**Miscellaneous**

CM Mathematics (Information Systems)					
Module Code 5722BMMa00	**Workload** 360h	**ECTS Credits** 12	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Mathematik		**Contact Hours** 120h	**Self-Studies** 240h	**Course Language** German
2	**Module Content** • real and complex numbers • introduction to structures and functions, sequences, series, limit values • basics of differential and integral calculus, sets and representations, groups, bodies, vector spaces • linear spaces and linear representations • bases and dimensions				
3	**Learning Objectives** Students... ... know and understand basic concepts and methods of mathematics, familiarity with the associated techniques and knowledge of the applications. ... gain a deep insight into the methods of abstract mathematical argumentation independent of the substance. ... translate facts into the abstract language of mathematics and explain abstract terms. ... can recognize the connections and similarities of the different mathematical areas. ... independently solve mathematical problems and present the solutions in an understandable way for fellow students. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Mathematisches Institut Mathematisch-Naturwissenschaftliche Fakultät				
10	**Miscellaneous** Mandatory reading is announced every semester.				

AM Statistics and Econometrics

Module Code	Workload	ECTS Credits	Module Language	Module Availability	Duration
1314BAMST1	180h	6	German	every term	1 Term

1	**Courses** Statistical Inference and Econometrics	**Contact Hours** 120h	**Self-Studies** 60h	**Course Language** German

2 Module Content

- Continuation of probability theory from the Core Module
- Fundamentals of statistical inference
- Fundamentals of econometrics

3 Learning Objectives

Students...
... use methods in the area of statistics and econometrics in pre-structured contexts in a solution-oriented way.
... systematize and synthesize data.
... communicate continuously and purposefully within teaching and learning groups.
... design their learning and working processes independently.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".

4 Teaching and Learning Methods

lecture
practice
tutorial

5 Module Entry Requirements

Recommendation: CM Statistics or CM Mathematics (Information Systems)

6 Mode of End-Of-Module Examination

Written test: WT (90)

7 Prerequisites for Awarding of Credit Points

Passing the module examination

8 Other Programmes that Use the Module

Bachelor of Science Mathematik:
Nebenfach WiWi
Bachelor of Science Wirtschaftsmathematik:
Nebenfach WiWi
Bachelor of Science Mathematik:
Nebenfach VWL
Bachelor of Science Wirtschaftsmathematik:
Nebenfach VWL
Bachelor of Arts Regionalstudien Ost- und Mitteleuropa - Volkswirtschaftslehre:
Ergänzungsbereich VWL
Bachelor of Arts Regionalstudien Lateinamerika - Volkswirtschaft:
Ergänzungsbereich VWL
Bachelor of Science Betriebswirtschaftslehre:
Core and Advanced Section Business Administration
Bachelor of Science Volkswirtschaftslehre:
Core and Advanced Section Economics
Bachelor of Arts Regionalstudien China - Volkswirtschaftslehre:
Ergänzungsbereich VWL
Bachelor of Science Informatik:
Nebenfach Volkswirtschaftslehre

	Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Prof. Dr. Rainer Dyckerhoff Dr. Bastian Gribisch
10	**Miscellaneous** In the self-study phase, tutorials are offered.

CM Statistics					
Module Code 1314BBMST1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Descriptive Statistics and Probability Theory		**Contact Hours** 120h	**Self-Studies** 60h	**Course Language** German
2	**Module Content** • Fundamental methods of descriptive statistics • Fundamentals of probability theory				
3	**Learning Objectives** Students... ... know and understand common methods in the areas of statistics and probability. ... discuss results with teaching staff and other students. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Arts Regionalstudien Ost- und Mitteleuropa - Volkswirtschaftslehre: Ergänzungsbereich VWL Bachelor of Arts Regionalstudien Lateinamerika - Volkswirtschaft: Ergänzungsbereich VWL Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Volkswirtschaftslehre: Core and Advanced Section Economics Bachelor of Arts Regionalstudien China - Volkswirtschaftslehre: Ergänzungsbereich VWL Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Prof. Dr. Rainer Dyckerhoff Dr. Bastian Gribisch				
10	**Miscellaneous**				

CM Mathematics					
Module Code 1314BBMMA1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Mathematical Methods		**Contact Hours** 105h	**Self-Studies** 75h	**Course Language** German
2	**Module Content** • Repetition of relevant school knowledge • Combinatorics • Basic concepts of linear algebra • Basics of financial mathematics • Functions of several variables • Differential calculus for functions of several variables and their economic applications • Optimization with and without constraints for functions of several variables • Integral calculus for functions of one and several variables as well as their application in statistics				
3	**Learning Objectives** Students... ... use methods in mathematics for business and economics in pre-structured contexts in a solution-oriented way. ... communicate continuously and purposefully within teaching and learning groups. ... design their learning and working processes independently. ... reflect their own performance during their electronic homework and implement feedback constructively. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Management, Economics and Social Sciences: Specialisation Section Management, Economics and Social Sciences Bachelor of Arts Regionalstudien Ost- und Mitteleuropa - Volkswirtschaftslehre: Ergänzungsbereich VWL Bachelor of Arts Regionalstudien Lateinamerika - Volkswirtschaft: Ergänzungsbereich VWL Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Volkswirtschaftslehre: Core and Advanced Section Economics Bachelor of Arts Regionalstudien China - Volkswirtschaftslehre: Ergänzungsbereich VWL Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL				

	Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Dr. Christoph Scheicher
10	**Miscellaneous** After lectures, electronic homework should be completed. Bonus points towards the final exam can be achieved through completing e-homework. The contents of the lecture are to be reviewed before exercise classes (if necessary, with the help of the linked video tutorials). The e-homework has to be completed individually before exercise classes and the material is assumed to be known for these classes. Interactive exercise classes take place in larger groups, interactive tutorials in smaller groups. Required reading (in German): Mosler, Dyckerhoff, Scheicher (current edition): Mathematische Methoden für Ökonomen. Video tutorials (in German): https://www.youtube.com/MathematischeMethoden

3.6.2 Supplementary Section Information Systems

CM Ethical Issues in Information Systems					
Module Code 1277BEETH1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Ethics and Responsibility in a Digital World		**Contact Hours** 45h	**Self-Studies** 135h	**Course Language** German
2	**Module Content** This module highlights the critical interface between ethics and the field of Information Systems (IS) and provides students with the opportunity to acquire relevant knowledge and skills to better navigate the complex ethical landscape of modern information technologies. In particular, it aims to foster three key competencies - ethical awareness, ethical analysis and value-based action - that are essential for professional and responsible action throughout one's academic and professional career.				
3	**Learning Objectives** Students... ... know and understand the relevant methods and theories for the points mentioned above under "Module content". ... know and understand basic ethical concepts and theories. ... analyze and evaluate (current) ethical issues and challenges in practical contexts (e.g. case studies, simulation games). ... justify and evaluate independently developed positions and present and/or discuss them with teaching staff and other students. ... develop an understanding of the impact of decisions taking into account ecological, economic, social and/or ethical criteria. ... question and critically reflect on current social developments.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems				
9	**Module Manager** AD B.Sc. Wirtschaftsinformatik				
10	**Miscellaneous** This module will be a mandatory module starting in winter semester 2025/2026. This does not apply				

	if the supplementary section has been successfully completed up to and including summer semester 2025.

CM Accounting I					
Module Code 1016BBMAT1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Accounting I		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** • Introduction to Accounting • Fundamentals in Financial Accounting • Fundamentals in Managerial Accounting • Book Keeping • Case Studies				
3	**Learning Objectives** Students... ... know and understand basic theories. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods. ... use methods in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Economics Specialisation Section Track Business Administration Specialisation Section Track Social Sciences Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

	Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems
9	**Module Manager** Area Accounting and Taxation
10	**Miscellaneous** Courses take place in first part of the semester (1. midterm).

CM Corporate Development I					
Module Code 1253BBMCD1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Corporate Development I (2. Midterm)		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** This course first introduces foundations of Corporate Governance and Corporate Strategy. Building on this, concepts of Organizational Design and Instruments of Human Resource Management are presented and analysed.				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of corporate governance, business strategy, organizational design and HR-management. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... establish and evaluate independently developed positions. ... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr.‘ Anne Burmeister Univ.-Prof. Dr. Matthias Heinz Univ.-Prof. Dr. Bernd Irlenbusch Univ.-Prof. Dr. Dirk Sliwka
10	**Miscellaneous**

CM Finance I					
Module Code 1259BBMFI1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Finance		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** Fundamentals of capital budgeting • Fundamental questions related to terminology and decision theory • Capital budgeting under certainty • Prospects of capital budgeting under uncertainty Fundamentals of financing • Internal financing • External financing				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of finance. ... apply theories in the area of finance in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods in the area of finance. ... use methods in the area of finance in pre-structured contexts in a solution-oriented way. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft:				

	Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems
9	**Module Manager** Univ.-Prof. Dr. Alexander Kempf Dr. Alexander Pütz Univ.-Prof. Dr. Heinrich R. Schradin
10	**Miscellaneous**

CM Marketing I					
Module Code 1266BBMMA1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Introduction to Marketing (1. midterm)		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** The module covers theories and methods to analyse key marketing decision problems and to develop sound recommendations how to solve these decision problems. To this end, it looks at (i) consumers' responses to marketing activities and the underlying psychological mechanisms (consumer behaviour), (ii) the collection and analysis of data about markets and key stakeholders (e.g., consumers) which serves as the empirical basis for decision-making (market research), (iii) the marketing planning process (strategic marketing decisions), and (iv) marketing mix decisions (e.g., brand/product, price, etc.).				
3	**Learning Objectives** Students... ... know and understand basic theories of a market-oriented management of businesses. ... know and understand common marketing planning methods, including strategic marketing decisions and marketing mix decisions. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr. Werner Reinartz Univ.-Prof. Dr.‘ Franziska Völckner
10	**Miscellaneous**

CM Supply Chain Management I					
Module Code 1271BBMSC1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Operations Management		**Contact Hours** 75h	**Self-Studies** 105h	**Course Language** German
2	**Module Content** • Fundamentals of Operations Management • Demand Forecasting • Inventory Management • Production Planning • Supply Chain Management • Location Planning • Process Design				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of supply chain management. ... know and understand common methods in the area of supply chain management. ... use methods in the area of supply chain management in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... present and/or discuss results with teaching staff and other students. ... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt:				

	Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems
9	**Module Manager** Area Supply Chain Management Univ.-Prof. Dr. Ulrich W. Thonemann
10	**Miscellaneous**

CM Corporate and Business Ethics					
Module Code 1253BBMUW1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Corporate and Business Ethics		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** • Normative approaches to moral decision-making (teleology, deontology, virtue ethics) • Moral decision making from a psychological perspective (e.g. determinants of moral behaviour, bounded ethical behaviour, moral disengagement) • Ethics of economics (e.g. moral criteria of markets, competition and corruption) • Moral decision making within a company (e.g. discrimination, fairness and justice, lying and cheating, whistleblowing) • Application to examples from compliance management, accounting, corporate development, finance, marketing, supply chain management				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of normative and descriptive ethics. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... establish and evaluate independently developed positions. ... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration				
9	**Module Manager** Univ.-Prof. Dr.‘ Anne Burmeister Univ.-Prof. Dr. Matthias Heinz Univ.-Prof. Dr. Bernd Irlenbusch Univ.-Prof. Dr. Dirk Sliwka				

10	**Miscellaneous**

CM Decision Analysis					
Module Code 1282BBEDT1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Decision theory		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** • Fundamentals of rational decision-making • Structuring and differentiation of complex decision situations with regard to different characteristics • Description of theoretical prerequisites for the application of decision theoretical methods • Application of methods to practical examples • Determination and justification of optimal alternatives using formal procedures				
3	**Learning Objectives** Students... ... know and understand basic theories. ... know and understand common methods. ... use methods in pre-structured contexts in a solution-oriented way. ... communicate continuously and purposefully within teaching and learning groups. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Gesundheitsökonomie: Core and Advanced Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Univ.-Prof. Dr. Ludwig Kuntz				
10	**Miscellaneous** The event is offered in the second term. An exam is offered both after the second term and during the semester break.				

SpM Media and Technology Management I					
Module Code 1284BSMTM1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Media and Technology Management I		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German and English
2	**Module Content** • Introduction to the management of digital and hybrid media and technology goods and services • Corporate strategies of various media genres in the fields of journalism and entertainment and their significance in a social context				
3	**Learning Objectives** Students... ... know and understand basic theories. ... use methods in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... establish and evaluate independently developed positions. ... design their learning and working processes independently. ... kennen und verstehen die relevanten Methoden und Theorien zu den zuvor unter "Inhalte des Moduls" genannten Punkten.				
4	**Teaching and Learning Methods** seminar				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Management, Economics and Social Sciences: Specialisation Section Management, Economics and Social Sciences Bachelor of Science Betriebswirtschaftslehre: Specialisation Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems Bachelor of Arts Medienwissenschaft: Media and Technology Management				
9	**Module Manager** Univ.-Prof. Dr.‘ Claudia Loebbecke, M.B.A.				
10	**Miscellaneous**				

SpM Media and Technology Management II					
Module Code 1284BSMTM2	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Media and Technology Management II		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German and English
2	**Module Content** • In-depth development of topics related to the management of digital and hybrid media and technology goods and services based on changing, industry-specific project content and case studies				
3	**Learning Objectives** Students... ... know and understand basic theories. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... communicate continuously and purposefully within teaching and learning groups. ... establish and evaluate independently developed positions. ... present and/or discuss results with teaching staff and other students. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** seminar				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Management, Economics and Social Sciences: Specialisation Section Management, Economics and Social Sciences Bachelor of Science Betriebswirtschaftslehre: Specialisation Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr.‘ Claudia Loebbecke, M.B.A.
10	**Miscellaneous**

<table>
<tr><th colspan="7">SpM Entrepreneurship</th></tr>
<tr><td colspan="2">Module Code
1253BEEnt1</td><td>Workload
180h</td><td>ECTS Credits
6</td><td>Module Language
German and English</td><td>Module Availability
every 2nd term - winter term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
Entrepreneurship</td><td>Contact Hours
60h</td><td>Self-Studies
120h</td><td>Course Language
English</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Strategies on Market Entry, Products, Markets and Value Creation
• Entrepreneurial Behaviour</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand basic theories.
... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way.
... analyse (current) questions and challenges within the framework of pre-structured contexts.
... present and/or discuss results with teaching staff and other students.
... develop an understanding of the impact of decisions that take into account environmental,
... economic, social and/or ethical criteria.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
lecture
practice</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
Recommended: CM Corporate Development I</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Written test: WT (60)</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing of the module examination</td></tr>
<tr><td>8</td><td colspan="6">Other Programmes that Use the Module
Bachelor of Science Betriebswirtschaftslehre:
Supplementary Section Business Administration
Bachelor of Science Wirtschaftsinformatik:
Supplementary Section Information Systems
Bachelor of Science Sozialwissenschaften:
Supplementary Section Social Sciences
Bachelor of Science Volkswirtschaftslehre:
Specialisation Section Track Economics
Specialisation Section Track Business Administration
Specialisation Section Track Social Sciences
Bachelor of Science Gesundheitsökonomie:
Supplementary Section Health Economics
Bachelor of Science Wirtschaftsinformatik (ab WS24/25):
Supplementary Section Information Systems</td></tr>
<tr><td>9</td><td colspan="6">Module Manager
Univ.-Prof. Dr. Christian Schwens</td></tr>
<tr><td>10</td><td colspan="6">Miscellaneous</td></tr>
</table>

Studies Abroad I (Winfo)					
Module Code 1277BESAb1	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subjects: Business Administration, Economics, Social Sciences or Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme′s curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** None				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depends on course selection				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

Studies Abroad II (Winfo)					
Module Code 1277BESAb2	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subjects: Business Administration, Economics, Social Sciences or Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme′s curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** None				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depends on course selection				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

<table>
<tr><th colspan="7">SuM Information Systems I</th></tr>
<tr><td colspan="2">Module Code
1277BEWIF1</td><td>Workload
180h</td><td>ECTS Credits
6</td><td>Module Language
German and English</td><td>Module Availability
every 2nd term - winter term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
a) Systems Analysis and Design
b) Information Security and IT Forensics</td><td>Contact Hours
a) 60h
b) 40h</td><td>Self-Studies
a) 120h
b) 140h</td><td>Course Language
a) German
b) German</td></tr>
<tr><td>2</td><td colspan="6">Module Content
a) Systems Analysis and Design
• Requirements analysis and survey
• System modelling
• Project planning
• Prototyping
• Unified Modeling Language (UML)
• Human-computer interaction
b) Information Security and IT Forensics
• Terms, protection goals, threat classifications
• Historical Case Studies and Conclusions for Future Situations
• Presentation of concrete attack techniques and threats
• Design of secure systems (consideration in the development process, frameworks, ISO/IEC 27001, risk analysis)
• Recognized frameworks (BSI Basic Protection, ISO 27001, Business Continuity Management, ...)
• Security models
• Fundamentals of cryptographic procedures
• Authentication procedures and identity management
• Mobile Security
• Incident Response and IT-Forensics
• Legal framework</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand common methods in the field of a) analysis and design of information systems; b) cryptographic procedures and protection requirements of information systems.
... communicate continuously and purposefully within teaching and learning groups.
... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria.
... design their learning and working processes independently.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
lecture
practice</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
none</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Written test: PO</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing the module examination of course a) or b)</td></tr>
</table>

8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems
9	**Module Manager** Sprecher des Fachbereichs Wirtschaftsinformatik
10	**Miscellaneous** a) Systems Analysis and Design: In some sessions case studies and exercises are prepared in group work and presented and discussed in the plenum by the students. Mandatory reading will be announced during the respective semester. b) Information security and IT forensics: The course is usually offered by a lecturer and is offered as a block course in the first or second half of the semester. Please note the course dates given in KLIPS. Within the scope of the exercise, practical work with IT security gaps within a laboratory environment (hacking and subsequent security) will take place. Previous knowledge of Linux is useful, but not necessary.

SuM Information Systems II					
Module Code 1277BEWIF2	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** a) Information Systems Development b) Introduction to Data Science and Machine Learning		**Contact Hours** a) 60h b) 60h	**Self-Studies** a) 120h b) 120h	**Course Language** a) German b) English
2	**Module Content** a) Information Systems Development • Processes and important challenges in the development of IS • Alternatives for the realization of IS ("Make or Buy", Outsourcing, Software as a Service, etc.) • Procedures for the development of IS (waterfall model, evolutionary development, agile software development) • Concept and forms of project management for IS development • Project control and evaluation methods • Communication and leadership • Time, team and project management • Ethics in the development of IS b) Introduction to Data Science and Machine Learning • The value of data from a business perspective • Data quality and data cleansing • Design of a data analysis process • Explanation vs. forecast • Data visualization • Use of data to support entrepreneurial activity • Introduction to machine learning • Programming language: Python				
3	**Learning Objectives** Students... ... know and understand common methods in the areas of (a Information Systems Development and (b Data Science and Machine Learning. ... use methods in the areas of (a Information Systems Development and (b Data Science and Machine Learning in pre-structured contexts in a solution-oriented way. ... communicate continuously and purposefully within teaching and learning groups. ... present and/or discuss results with teaching staff and other students. ... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				

7	**Prerequisites for Awarding of Credit Points** Passing the module examination of course a) or b)
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik
10	**Miscellaneous** Mandatory reading will be announced in the respective semester of the course. b) Python is used in the course.

Studies Abroad in Information Systems					
Module Code 1014BESAI1	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subject Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme's curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depending on course choice				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

3.6.3 Specialisation Section Information Systems

CM Advanced programming concepts					
Module Code 5751BWeiPr	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Advanced programming concepts		**Contact Hours** 56h	**Self-Studies** 214h	**Course Language** German
2	**Module Content** • Object-oriented programming concepts, such as classes, objects, inheritance, as well as comparison with other paradigms and other languages (e.g. Python, JavaScript) • Advanced programming topics such as multithreading, external libraries and their use where applicable • Deepening the knowledge already acquired in programming, e.g. testing, debugging • Structured writing, commenting and organizing of code (including annotations, interfaces, packages,...) • Possibilities of collaborative work with a version control system • Systematic approach to more complex problems ("from problem to program")				
3	**Learning Objectives** Students... ... In this module, students essentially deepen and expand the knowledge and programming skills they have already acquired. Students are thus enabled to solve more complex tasks with programs they have written themselves. In particular, they learn or deepen their skills in object-oriented programming and also become familiar with other programming paradigms and languages. This enables students to read, understand and implement simple programs in other programming languages and thus find their way around other programming languages.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommendation: CM Introduction to programming				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				

10	**Miscellaneous**

SpM Visualization					
Module Code 5751BVisua	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Visualization		**Contact Hours** 90h	**Self-Studies** 180h	**Course Language** German
2	**Module Content** The lecture focuses on the visual representation of data. Interactive visualisation is the communication of data in visual form. In the lecture, the fundamentals of visualisation are introduced. This includes selected topics from the areas of: the visualisation process, interaction, human perception, colour space, data types, data structure, transformation and processing, visual depiction of data such as 2D, 3D or multivariate data, time-specific data, space-orientated data, graphs. The foundation methods and their practical usages and purposes in current research areas will be introduced. Visual analysis can be used for exploration, analysis and communication in reports, presentations or online. Usage of visual analysis can be found in the areas of finance, economics, geo-sciences, meteorology, medicine, biology, transport or sport. In the exercise classes, the material from the lectures will be further discussed. Exercises will be discussed under the guidance of a tutor. The exercises serve to both expand technical knowledge and to develop communication and presentation skills.				
3	**Learning Objectives** Students... ... understand continuing, specialised theories and methods in the field of visualisation. ... analyse (current) questions and challenges in the area of visualisation. ...defend their independently developed position or solutions to problems. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommendation: CM Computer Science, AM Computer Science I, AM Computer Science II, AM Programming Project, CM Mathematics				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems				
9	**Module Manager**				

10	**Miscellaneous**

<table>
<tr><th colspan="7">SpM Information Systems</th></tr>
<tr><td colspan="2">Module Code
1277BSWIF1</td><td>Workload
450h</td><td>ECTS Credits
15</td><td>Module Language
German and English</td><td>Module Availability
every term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
Capstone Project Information Systems (PO 21)</td><td>Contact Hours
90h</td><td>Self-Studies
360h</td><td>Course Language
German</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Independent and autonomous development of an information system in a team in a project
• Project and team management
• Requirements analysis
• Draft
• Implementation
• Testing
• Customer communication and management</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... communicate continuously and purposefully within teaching and learning groups.
... establish and evaluate independently developed positions.
... present and/or discuss results with teaching staff and other students.
... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria.
... design their learning and working processes independently.
... reflect their own performance and implement feedback constructively.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
Research project</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
Recommendation: CM Information Systems I, CM Information Systems II, AM Information Systems, SuM Information Systems I, SuM Information Systems II; CM Computer Science, AM Computer Science I, AM Computer Science II; Programming Project</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Combined examination: PRES, PO</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing the module examination</td></tr>
<tr><td>8</td><td colspan="6">Other Programmes that Use the Module
Bachelor of Science Wirtschaftsinformatik:
Specialisation Section Information Systems</td></tr>
<tr><td>9</td><td colspan="6">Module Manager
Univ.-Prof. Dr. Christoph Rosenkranz</td></tr>
<tr><td>10</td><td colspan="6">Miscellaneous
Important note: this course starts in the lecture-free period during which components of the portfolio are completed. Basic knowledge of programming, databases, modeling, architectures, data structures and algorithms as well as project management is required. The students work self-organized in teams. On fixed dates the teams have to present fixed milestones (e.g. requirement specification, requirement specification, sprint meeting, backlogs, intermediate presentation, final presentation, finished product incl. program code). The work results are compared and, if necessary,</td></tr>
</table>

	corrected so that all teams are able to complete their development assignment. If necessary, the students receive training in the tools and methods to be used as part of a preliminary course.

<table>
<tr><th colspan="6">Bachelor Seminar Information Science</th></tr>
<tr><td colspan="2">Module Code
1277BSSWF1</td><td>Workload
180h</td><td>ECTS Credits
6</td><td>Module Language
German and English</td><td>Module Availability
every term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="2">Courses
a) Bachelorseminar Information Systems for Sustainable Society (Prof. Ketter)
b) Bachelorseminar Information Systems and Digital Technology (Prof. Seidel)
c) Bachelorseminar Integrated Information Systems (Prof. Rosenkranz)
d) Bachelorseminar Information Management (Prof. Schoder)
e) Bachelorseminar Machine Learning (Jun.-Prof. Zyue Li)</td><td>Contact Hours
a) 30h
b) 30h
c) 30h
d) 30h
e) 30h</td><td>Self-Studies
a) 150h
b) 150h
c) 150h
d) 150h
e) 150h</td><td>Course Language
a) German and English
b) German and English
c) German and English
d) German and English
e) German and English</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Project planning in the context of scientific work
• Structure and argumentation in scientific works: problem, objective, terminology system, outline
• Dealing with scientific literature: literature research, literature administration, literature evaluation, referencing and citation in scientific work
• Scientific Writing
• Formal requirements
• Writing, presenting and defending one's own scientific work
Seminar work topics are taken from the following areas, among others:
a) Business Intelligence, Analytics, Machine Learning and Learning Agents research in the domains of Energy Markets, Smart Sustainable Mobility, Energy Storage and Transactive Energy & Blockchain
b) Conceptual Modeling, Business Process Management, Information Systems Development, Systems Analysis and Design, Digital Innovation, Digital Entrepreneurship, Green IS, Environmental Sustainability
c) IT Outsourcing, IT Strategy, Information Systems Development & IT Project Management, Open Source Software Development, Agile Development, Business Process Management, Digital Transformation
d) Business Analytics, Artificial Intelligence in Trading, Health and Logistics, Media Mass Customization, Electronic Commerce, Social Media Analysis, Openness, Decision Support Systems
e)
Supervised, unsupervised and semi-supervised learning
Clustering, principal component analysis, high-dimensional data
Transfer learning and federated learning
Neural network, convolutional neural network, graph convolutional network
Recurrent neural networks for natural language processes and more
Self-supervised learning
Reinforcement learning</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand basic theories from the above mentioned areas.
... collect, systematize and synthesize literature and data material for a scientific work on a selected topic.
... present and/or discuss results with teaching staff and other students.
... reflect their own performance and implement feedback constructively.
... use under guidance techniques of scientific work and good scientific practice.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
</table>

4	**Teaching and Learning Methods** seminar
5	**Module Entry Requirements** none
6	**Mode of End-Of-Module Examination** Combined examination: PRES, TP
7	**Prerequisites for Awarding of Credit Points** Passing the module examination of one of the courses a) to d)
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik
10	**Miscellaneous** In the first step, the Bachelor's seminar module is taken by students via KLIPS. This allocation takes place in the 1st allocation phase through the submission of prioritised allocation requests. When enrolling via KLIPS, priority enrolment requests must be submitted for the Bachelor's seminars offered by the various examiners. As a rule, there will be no booking in the 2nd occupancy phase or in the allocation of remaining places. Subsequently, each student is allocated a place in a Bachelor's seminar, taking into account the available capacities. After the allocation to the Bachelor seminars, the students give preferences for concrete seminar work topics. This is usually done at the beginning of the semester via a survey in ILIAS. Part of the Bachelor's seminar is the participation in the block course "Scientific Work", which is offered at the beginning of the semester. Further information on the allocation procedure and the block course can be found in the course descriptions in KLIPS or on the website of the Cologne Institute for Information Systems. The seminar paper can be written in German or English. It is strongly recommended to complete the Bachelor's seminar before the Bachelor's thesis, as the Bachelor's seminar teaches basic competences for scientific work and especially for writing a scientific paper.

3.6.4 Bachelor Thesis Information Systems

<table>
<tr><th colspan="7">Bachelor's Thesis Information Systems</th></tr>
<tr><td colspan="2">Module Code
1277BMWIN1</td><td>Workload
360h</td><td>ECTS Credits
12</td><td>Module Language
German and English</td><td>Module Availability
every term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
a) Bachelor Thesis with Prof. Dr. Ketter
b) Bachelor Thesis with Prof. Dr. Seidel
c) Bachelor Thesis with Prof. Dr. Rosenkranz
d) Bachelor Thesis with Prof. Dr. Schoder
e) Bachelor Thesis with Jun.-Prof. Zyue Li</td><td>Contact Hours
a) 0h
b) 0h
c) 0h
d) 0h
e) 0h</td><td>Self-Studies
a) 360h
b) 360h
c) 360h
d) 360h
e) 360h</td><td>Course Language
a) German and English
b) German and English
c) German and English
d) German and English</td></tr>
<tr><td>2</td><td colspan="6">Module Content
Preparation of a scientific thesis. Bachelor's thesis topics are taken from the following areas, among others:
a) Business Intelligence, Analytics, Machine Learning and Learning Agents research in the domains of Energy Markets, Smart Sustainable Mobility, Energy Storage and Transactive Energy & Blockchain
b) Conceptual Modeling, Business Process Management, Information Systems Development, Systems Analysis and Design, Digital Innovation, Digital Entrepreneurship, Green IS, Environmental Sustainability
c) IT Outsourcing, IT Strategy, Information Systems Development & IT Project Management, Software Development, Open Source Software, Agile Development, Business Process Management, Digital Transformation
d) Business Analytics, Artificial Intelligence in Trading, Health and Logistics, Media Mass Customization, Electronic Commerce, Social Media Analysis, Openness, Decision Support Systems
e) Data Mining, Statistics, Machine Learning, Deep Learning, Smart Mobility</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... analyse current questions and challenges within the framework of prepared cases.
... collect, systematize and synthesize literature and data material for a scientific work on a selected topic.
... establish and evaluate independently developed positions.
... design their learning and working processes independently.
... use techniques of scientific work and good scientific practice.</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
Bachelor’s Thesis</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
100 CP successfully passed; Recommendation: Bachelor Seminar</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Written test 12 weeks</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing the module examination</td></tr>
<tr><td>8</td><td colspan="6">Other Programmes that Use the Module
Bachelor of Science Wirtschaftsinformatik:
Bachelor Thesis Information Systems</td></tr>
</table>

	Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Bachelor Thesis Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik
10	**Miscellaneous** Bachelor's theses at the Cologne Institute for Information Systems are assigned in a central assigning procedure. In the first step, the Bachelor's thesis module is assigned to students via KLIPS. This allocation takes place in the 1st allocation phase through the submission of prioritised allocation requests. In the case of KLIPS, prioritized requests for the Bachelor's thesis modules offered by the various examiners must be submitted. As a rule, there will be no enrolment in the 2nd phase or in the allocation of remaining places. Subsequently, each student is allocated a place for a Bachelor's thesis, taking into account the available capacities. After the allocation to the examiners, the students give preferences for concrete Bachelor's thesis topics. This is usually done about three weeks before the respective start date via a survey in ILIAS. Further information on the assigning procedure can be found in the course descriptions in KLIPS or on the website of the Cologne Institute for Information Systems. The Bachelor's thesis can be written in German or English. It is strongly recommended that you complete the Bachelor seminar before writing your Bachelor's thesis, as the Bachelor seminar teaches basic skills for scientific work and especially for writing a scientific paper. Please note that the Cologne Institute for Information Systems (CIIS) offers Bachelor's theses in every semester. Each semester you can start working on your bachelor's thesis at a fixed starting time (in November in winter semesters and in May in summer semesters).

4 Module tables and descriptions (Enrollment from 24/25)

4.1 Core and Advanced Section

Im Basisbereich gemäß § 28 Absatz 20 Nr. 1 der geltenden Prüfungsordnung müssen die zu Prüfenden 72 LP erwerben.

Group	Module	CP	CC/EC
CM Introduction to programming	6	CC	72
AM Algorithms and data structures	9	CC	
AM Software Engineering	9	CC	
CM Information Systems I	6	CC	
CM Information Systems II	6	CC	
AM Information Systems	6	CC	
CM Mathematics for students of Informatics I	9	CC	
CM Mathematics for students of Informatics II	9	CC	
CM Fundamentals of Business Administration	12	CC	

4.2 Supplementary Section Information Systems

Im Ergänzungsbereich gemäß § 28 Absatz 20 Nr. 2 der geltenden Prüfungsordnung müssen die zu Prüfenden 36 LP erwerben.

Group	Module	CP	CC/EC
CM Ethical Issues in Information Systems	6	CC	36
CM Accounting I	6	EC	
CM Corporate Development I	6	EC	
CM Finance I	6	EC	
CM Marketing I	6	EC	
CM Supply Chain Management I	6	EC	
CM Decision Analysis	6	EC	
SpM Media and Technology Management I	6	EC	
SpM Media and Technology Management II	6	EC	
SpM Entrepreneurship	6	EC	
Studies Abroad I (Winfo)	6	EC	
Studies Abroad II (Winfo)	6	EC	

4.3 Specialisation Section Information Systems

Im Schwerpunktbereich gemäß § 28 Absatz 20 Nr. 3 der geltenden Prüfungsordnung müssen die zu Prüfenden 48 LP erwerben.

Group	Module	CP	CC/EC	
Advanced programming concepts	9	CC	30	48
SpM Visualization	9	CC		
SpM Information Systems	12	CC		
SpM Information Systems II	6	EC	12	
SpM Information Systems III	6	EC		
Studies Abroad in Information Systems	6	EC		
Bachelor Seminar Information Science	6	CC	6	

4.4 Studium Integrale

All of the Faculty's bachelor programmes include an interdisciplinary component, known as the Studium Integrale, in which students accumulate 12 credit points. The Studium Integrale is a university-wide and interdisciplinary component of the courses of study in which academic and professional competences are imparted. The Studium Integrale has both theoretical and practical content, enabling students to focus on more academic aspects or topics related to their future careers enhancing their employability. It aims to teach and develop skills that go beyond subject-specific knowledge or that are related to basic academic and personal traits: scientific curiosity, systematic and analytical thinking, and ability to deal with complexity, a solution-minded outlook plus other abilities such as teamwork and foreign language skills.

The Studium Integrale courses are run jointly by the faculties and the University's Professional Centre. They enable students to pursue their own interests in more depth, gain an insight into other subjects and departments, attend courses dealing with issues of relevance to society, acquire skills relevant to their future careers and attend language classes. The "Universitas" segment offers formats especially designed for the Studium Integrale, such as lecture series on societal issues with related workshops. In addition, the Studium Integrale offers students assistance with their learning and studying, helping them with such questions as how to write an academic paper or how to conduct literature reviews. Periods of training abroad and work experience can also be credited in the Studium Integrale. The Studium Integrale carries 12 credit points in total and formally counts as a module. There is no restriction on the number of attempts possible for Studium Integrale examinations.

Any credit points attained in the Studium Integrale over and above the 12 credit points specified in the study structure are shown on the transcript of records.

4.5 Bachelor's Thesis

The bachelor's thesis carries 12 CPs and is written at the end of the programme. Its aim is to illustrate that the candidate is capable of working and reflecting independently on a specific problem related to the subject matter covered on the programme, using the necessary methods and within a specified period. The topic of the bachelor's thesis must reflect one of the sub-categories: Core and Advanced Section, Supplementary Section or Specialisation Section.

To be allowed to register for the bachelor's thesis component, candidates must have acquired at least 100 credit points. In line with the number of credit points it carries, the workload allotted for the thesis is 360 hours, i.e. 12 weeks. Bachelor's theses should not be more than 40 pages long. Candidates who have earned all of the necessary credit points, except for the bachelor's thesis, must register within a period of one year to write their bachelor's thesis. Further and more detailed information concerning bachelor's theses can be found in the examination regulations.

Please note that the Cologne Institute for Information Systems (CIIS) offers Bachelor's theses in every semester. Each semester you can start working on your bachelor's thesis at **one fixed starting time** (in November in winter semesters and in May in summer semesters).

4.6 Module Descriptions

4.6.1 Core and Advanced Section

CM Introduction to programming					
Module Code 5751BEinPr	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Programming Course		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German
2	**Module Content** • Basic programming terms, e.g. variables, operators, modifiers, data structures, methods, comments • Algorithmic concepts, e.g. loops, control structures (conditional branching), recursion • Technical tools such as IDEs, SDKs, compilers, version control systems • Systematic approaches to efficiently solving simple problems, e.g. analyzing the problem, designing the solution (e.g. with pseudocode), using existing solutions (e.g. libraries), checking the developed solution (simple tests), troubleshooting methods • Paradigm and structure-specific concepts (e.g. classes, objects)				
3	**Learning Objectives** Students learn the basic concepts of programming. They are able to recognize these concepts and apply them to solve simple problems. This enables students to analyze simple programming problems and to design and implement their algorithmic solution. Students are also able to comment, test and debug the code they have created themselves.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				

10	**Miscellaneous**

AM Algorithms and data structures

Module Code	Workload	ECTS Credits	Module Language	Module Availability	Duration
5751AlgDat	270h	9	German	every 2nd term - summer term	1 Term

1	**Courses** Algorithms and data structures	**Contact Hours** 60h	**Self-Studies** 210h	**Course Language** German

2 **Module Content**

After an introduction to the terminology and definition of computer science and the structure and functionality of computers, the lecture deals with basic contents of algorithms and data structures. The general design and analysis of algorithms are performed using examples from the fields of sorting and search methods as well as elementary graph algorithms. Furthermore, elementary graph algorithms can be treated. The presented elementary data structures include trees, graphs and Union-Find data structures.

3 **Learning Objectives**

Students...
... design and implement basic algorithms and analyse algorithms with regard to correctness and their runtime behaviour depending on the data structures used. know and understand the relevant methods and theories for the points mentioned above under "Module content".

4 **Teaching and Learning Methods**

lecture
practice

5 **Module Entry Requirements**

Recommendation:

6 **Mode of End-Of-Module Examination**

Written test: WT (120 – 180)

7 **Prerequisites for Awarding of Credit Points**

Passing the module examination.
Admission requirements for the examination:
Coursework completed as part of the practice.
Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.

8 **Other Programmes that Use the Module**

Bachelor of Science Wirtschaftsinformatik (ab WS24/25):
Core and Advanced Section Information Systems
Bachelor of Science Wirtschaftsinformatik:
Core Section Information Systems

9 **Module Manager**

Geschäftsführende*r Direktor*in Institut für Informatik

10 **Miscellaneous**

AM Software Engineering					
Module Code 5751BSoftw	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Software Engineering		**Contact Hours** 90h	**Self-Studies** 180h	**Course Language** German
2	**Module Content** After an introduction to the terminology and definition of computer science and the structure and functionality of computers, the lecture deals with basic contents of algorithms and data structures. The general design and analysis of algorithms are performed using examples from the fields of sorting and search methods as well as elementary graph algorithms. Furthermore, elementary graph algorithms can be treated. The presented elementary data structures include trees, graphs and Union-Find data structures.				
3	**Learning Objectives** Students... ... design and implement basic algorithms and analyse algorithms with regard to correctness and their runtime behaviour depending on the data structures used. know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				
10	**Miscellaneous**				

CM Information Systems I					
Module Code 1277BBWIF1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Information Systems Management		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** • Information systems as a science • Strategic role of information systems • Internal and inter-company business process integration • Electronic commerce and electronic business • Computer supported collaborative work • IT security • Ethical, social and political aspects • Information assets • Business process reengineering • Internet of things				
3	**Learning Objectives** Students... ... know and understand basic theories in the field of information management. ... apply theories in the field of analysis and structuring concepts in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... use methods in pre-structured contexts in a solution-oriented way in the field of analysis and structuring concepts. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... communicate continuously and purposefully within teaching and learning groups. ... establish and evaluate independently developed positions. ... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. ... question and critically reflect on current social developments. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems Bachelor of Arts Medienwissenschaft: Media and Technology Management				

	Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems
9	**Module Manager** Univ.-Prof. Dr. Detlef Schoder
10	**Miscellaneous** Mandatory accompanying reading: Laudon, K.; Laudon, J.; Schoder, D.: Wirtschaftsinformatik – eine Einführung, Pearson Verlag, 2015, 3rd Edition

<table>
<tr><th colspan="7">CM Information Systems II</th></tr>
<tr><td colspan="2">Module Code
1277BBWIF2</td><td>Workload
180h</td><td>ECTS Credits
6</td><td>Module Language
German</td><td>Module Availability
every 2nd term - winter term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="3">Courses
Database Systems</td><td>Contact Hours
90h</td><td>Self-Studies
90h</td><td>Course Language
German</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Relational model and relational algebra
• Relational query languages (SQL)
• Conceptual data modelling (e.g., Entity Relationship Model)
• Relational database design
• Normalization (1.-3. normal form, BCNF)
• Development process of database systems
• Data organization, data management, data protection and privacy
• Transactions, Concurrency Control, Indices</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand basic theories in the field of relational databases and data management.
... apply theories in the field of relational databases and data management in pre-structured contexts (e.g. case studies) in a solution-oriented way.
... use methods in the field of relational databases and data management in pre-structured contexts in a solution-oriented way.
... develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
<tr><td>4</td><td colspan="6">Teaching and Learning Methods
lecture
tutorial</td></tr>
<tr><td>5</td><td colspan="6">Module Entry Requirements
none</td></tr>
<tr><td>6</td><td colspan="6">Mode of End-Of-Module Examination
Written test: WT (90)</td></tr>
<tr><td>7</td><td colspan="6">Prerequisites for Awarding of Credit Points
Passing the module examination</td></tr>
<tr><td>8</td><td colspan="6">Other Programmes that Use the Module
Master of Science Gesundheitsökonomie:
Specialisation Section Health Economics
Bachelor of Science Betriebswirtschaftslehre:
Supplementary Section Business Administration
Bachelor of Science Wirtschaftsinformatik:
Core Section Information Systems
Bachelor of Arts Medienwissenschaft:
Media and Technology Management
Bachelor of Science Wirtschaftsinformatik (ab WS24/25):
Core and Advanced Section Information Systems
Bachelor of Science Informatik:
Advanced Section WiSo Anteil</td></tr>
</table>

9	**Module Manager** Univ.-Prof. Dr. Christoph Rosenkranz
10	**Miscellaneous** Mandatory reading is announced every semester. The written test may be in the form of an e-examination. Tutorials will be offered instead of exercise classes. The lecture will be conducted using a flipped classroom concept (videos and documents will be provided for self-study; repetition, discussion and consolidation will take place face-to-face in class).

AM Information Systems					
Module Code 1277BAWI11	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Integrated Information Systems		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** • Integrated information processing • Business Process Management • Business Process Modelling • Intra-organizational application systems (Enterprise Resource Planning (ERP) and Enterprise Systems) • Inter-organisational application systems (Supply Chain Management (SCM) and Customer Relationship Management (CRM)) • Service-oriented architectures (SOA), Cloud Computing and Micro-Services • Enterprise Application Integration (EAI)				
3	**Learning Objectives** Students... ... know and understand basic theories in the field of integrated information systems and business process management. apply theories in the field of integrated information systems and business process management in pre-structured contexts (e.g. case studies) in a solution-oriented way. know and understand common methods in the field of integrated information systems and business process management. use methods in the field of integrated information systems and business process management in pre-structured contexts in a solution-oriented way. develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** Recommendation: CM Information Systems I, CM Information Systems II				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems				
9	**Module Manager** Univ.-Prof. Dr. Christoph Rosenkranz				
10	**Miscellaneous** Mandatory texts can be indicated, which must be read before the lecture. The degree of preparation is checked in the lectures and exercises. Case studies and exercises can be prepared in group work, which must be presented in the plenum by students. The solutions presented will be analysed and discussed. Mandatory reading will be announced each semester. The exam may take the form of an e-examination. Tutorials will be offered instead of practices.				

CM Mathematics for students of Informatics I					
Module Code 5751BMath1	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Mathematics for students of Informatics I		**Contact Hours** 84h	**Self-Studies** 186h	**Course Language** German
2	**Module Content** The topics include: Basics: Proofs, proof principles and reasoning (incl. full induction) Basic concepts of sets, relations and functions Elementary number theory Geometry basics Linear algebra: Algebraic structures (groups, rings, solids, Boolean algebras) Complex numbers Vector and matrix calculus Linear systems of equations Vector spaces Linear combinations and bases Dimension Linear mappings and representation matrices Determinants Eigenvalues, eigendecomposition Singular value decomposition Analysis: Numbers, sequences, series Continuity Important function classes (polynomials, rational functions, exponential function and logarithm, trigonometric functions)				
3	**Learning Objectives** Students... ... The students... ... know and understand the relevant methods and theories for the points mentioned above under "Contents of the module". ... learn basic proof techniques as well as elementary mathematical terms and methods ... are able to formulate problems analytically ... are able to solve mathematical problems independently ... can present and communicate their solutions in an understandable way ... gain an understanding of linear and algebraic relationships ... train their mathematical intuition				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				

6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Prof. Dr. Andreas Vogelsang
10	**Miscellaneous**

CM Mathematics for students of Informatics II					
Module Code 5751BMath2	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Mathematics for students of Informatics II		**Contact Hours** 84h	**Self-Studies** 186h	**Course Language**
2	**Module Content** The topics include Analysis Differential calculus: Differentiation, extreme values, mean value theorem and consequences, higher derivatives, Taylor polynomial and series, applications of differentiation Integral calculus: definite and indefinite integral, integration of rational and complex functions, improper integrals, Fourier series Ordinary differential equations Probability theory Probability space, distribution Conditional probabilities Expected value, variance, random variables, Markov, Chebyshev, Chernoff inequality Hypothesis tests Markov chains Bayesian statistics				
3	**Learning Objectives** Students... ... The students... ... know and understand the relevant methods and theories for the points mentioned above under "Contents of the module". ... are able to formulate problems analytically ... are able to solve mathematical problems independently ... can present and communicate their solutions in an understandable way ... learn how to deal with real and complex numbers, sequences and series ... acquire knowledge and learn methods of differential and integral calculus ... can deal with elementary functions and carry out mathematical reasoning ... familiarise themselves with basic concepts of probability theory and can apply these independently				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommended: Mathematics for Computer Scientists I				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				

8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems
9	**Module Manager** Prof. Dr. Andreas Vogelsang
10	**Miscellaneous**

CM Fundamentals of Business Administration					
Module Code 1230BBGDB1	**Workload** 360h	**ECTS Credits** 12	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Fundamentals of Business Administration		**Contact Hours** 120h	**Self-Studies** 240h	**Course Language** German
2	**Module Content** • Management structures and models • Strategy and target systems of companies • Corporate functions and processes and their interrelationships • Analysis and design of service provision, in particular the deployment of personnel • Main features of the operational cost and performance accounting • Main features of the annual accounts • Main features of operational investment and financing decisions				
3	**Learning Objectives** Students... ... analyse market and environment conditions for entrepreneurial action and their influence on corporate decisions. ... reflect and justify basic positions and basic standards (competition, freedom, social justice) of companies in a social market economy. ... structure corporate actions according to different process categories and differentiate between management, business and support processes. ... design individual management processes with the help of procedures and instruments (values, strategy and corporate goals, coordination and motivation, information and control system). ... make decisions for the design and optimization of business processes (customer attraction, customer loyalty, brand management, service delivery, service innovation) and use them to shape relationships with sales and procurement markets. ... select adequate financial management procedures for various business decisions and apply them in extracts (external accounting, internal controlling, investment and financial accounting). ... assess the success of corporate decisions with the help of key performance indicator systems and draw conclusions from them. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (90)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Mathematik: Nebenfach WiWi Bachelor of Science Wirtschaftsmathematik: Nebenfach WiWi Bachelor of Science Wirtschaftsinformatik: Core Section Information Systems Bachelor of Science Gesundheitsökonomie:				

	Core and Advanced Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Geographie: Nebenfach BWL Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Core and Advanced Section Information Systems Bachelor of Science Informatik: Nebenfach Wirtschaftswissenschaften
9	**Module Manager** Geschäftsführende*r Direktor*in des Instituts für Berufs-, Wirtschafts- und Sozialpädagogik
10	**Miscellaneous**

4.6.2 Supplementary Section Information Systems

CM Ethical Issues in Information Systems					
Module Code 1277BEETH1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Ethics and Responsibility in a Digital World		**Contact Hours** 45h	**Self-Studies** 135h	**Course Language** German
2	**Module Content** This module highlights the critical interface between ethics and the field of Information Systems (IS) and provides students with the opportunity to acquire relevant knowledge and skills to better navigate the complex ethical landscape of modern information technologies. In particular, it aims to foster three key competencies - ethical awareness, ethical analysis and value-based action - that are essential for professional and responsible action throughout one's academic and professional career.				
3	**Learning Objectives** Students... ... know and understand the relevant methods and theories for the points mentioned above under "Module content". ... know and understand basic ethical concepts and theories. ... analyze and evaluate (current) ethical issues and challenges in practical contexts (e.g. case studies, simulation games). ... justify and evaluate independently developed positions and present and/or discuss them with teaching staff and other students. ... develop an understanding of the impact of decisions taking into account ecological, economic, social and/or ethical criteria. ... question and critically reflect on current social developments.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems				
9	**Module Manager** AD B.Sc. Wirtschaftsinformatik				
10	**Miscellaneous** This module will be a mandatory module starting in winter semester 2025/2026. This does not apply				

	if the supplementary section has been successfully completed up to and including summer semester 2025.

CM Accounting I					
Module Code 1016BBMAT1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Accounting I		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** • Introduction to Accounting • Fundamentals in Financial Accounting • Fundamentals in Managerial Accounting • Book Keeping • Case Studies				
3	**Learning Objectives** Students... ... know and understand basic theories. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods. ... use methods in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Economics Specialisation Section Track Business Administration Specialisation Section Track Social Sciences Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

	Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems
9	**Module Manager** Area Accounting and Taxation
10	**Miscellaneous** Courses take place in first part of the semester (1. midterm).

CM Corporate Development I					
Module Code 1253BBMCD1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Corporate Development I (2. Midterm)		**Contact Hours** 90h	**Self-Studies** 90h	**Course Language** German
2	**Module Content** This course first introduces foundations of Corporate Governance and Corporate Strategy. Building on this, concepts of Organizational Design and Instruments of Human Resource Management are presented and analysed.				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of corporate governance, business strategy, organizational design and HR-management. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... establish and evaluate independently developed positions. ... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr.‘ Anne Burmeister Univ.-Prof. Dr. Matthias Heinz Univ.-Prof. Dr. Bernd Irlenbusch Univ.-Prof. Dr. Dirk Sliwka
10	**Miscellaneous**

CM Finance I					
Module Code 1259BBMFI1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Finance		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** Fundamentals of capital budgeting • Fundamental questions related to terminology and decision theory • Capital budgeting under certainty • Prospects of capital budgeting under uncertainty Fundamentals of financing • Internal financing • External financing				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of finance. ... apply theories in the area of finance in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... know and understand common methods in the area of finance. ... use methods in the area of finance in pre-structured contexts in a solution-oriented way. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft:				

	Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems
9	**Module Manager** Univ.-Prof. Dr. Alexander Kempf Dr. Alexander Pütz Univ.-Prof. Dr. Heinrich R. Schradin
10	**Miscellaneous**

CM Marketing I					
Module Code 1266BBMMA1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Introduction to Marketing (1. midterm)		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** The module covers theories and methods to analyse key marketing decision problems and to develop sound recommendations how to solve these decision problems. To this end, it looks at (i) consumers' responses to marketing activities and the underlying psychological mechanisms (consumer behaviour), (ii) the collection and analysis of data about markets and key stakeholders (e.g., consumers) which serves as the empirical basis for decision-making (market research), (iii) the marketing planning process (strategic marketing decisions), and (iv) marketing mix decisions (e.g., brand/product, price, etc.).				
3	**Learning Objectives** Students... ... know and understand basic theories of a market-oriented management of businesses. ... know and understand common marketing planning methods, including strategic marketing decisions and marketing mix decisions. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt: Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr. Werner Reinartz Univ.-Prof. Dr.‘ Franziska Völckner
10	**Miscellaneous**

CM Supply Chain Management I					
Module Code 1271BBMSC1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Operations Management		**Contact Hours** 75h	**Self-Studies** 105h	**Course Language** German
2	**Module Content** • Fundamentals of Operations Management • Demand Forecasting • Inventory Management • Production Planning • Supply Chain Management • Location Planning • Process Design				
3	**Learning Objectives** Students... ... know and understand basic theories in the area of supply chain management. ... know and understand common methods in the area of supply chain management. ... use methods in the area of supply chain management in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... present and/or discuss results with teaching staff and other students. ... develop an understanding of the impact of decisions that take into account environmental, economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice tutorial				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Core and Advanced Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Arts Lehramt:				

	Bachelor Education WiSo Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems
9	**Module Manager** Area Supply Chain Management Univ.-Prof. Dr. Ulrich W. Thonemann
10	**Miscellaneous**

CM Decision Analysis					
Module Code 1282BBEDT1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Decision theory		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** German
2	**Module Content** • Fundamentals of rational decision-making • Structuring and differentiation of complex decision situations with regard to different characteristics • Description of theoretical prerequisites for the application of decision theoretical methods • Application of methods to practical examples • Determination and justification of optimal alternatives using formal procedures				
3	**Learning Objectives** Students... ... know and understand basic theories. ... know and understand common methods. ... use methods in pre-structured contexts in a solution-oriented way. ... communicate continuously and purposefully within teaching and learning groups. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Gesundheitsökonomie: Core and Advanced Section Health Economics Bachelor of Arts Regionalstudien China - Betriebswirtschaftslehre: Ergänzungsbereich BWL Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Univ.-Prof. Dr. Ludwig Kuntz				
10	**Miscellaneous** The event is offered in the second term. An exam is offered both after the second term and during the semester break.				

SpM Media and Technology Management I					
Module Code 1284BSMTM1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Media and Technology Management I		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German and English
2	**Module Content** • Introduction to the management of digital and hybrid media and technology goods and services • Corporate strategies of various media genres in the fields of journalism and entertainment and their significance in a social context				
3	**Learning Objectives** Students... ... know and understand basic theories. ... use methods in pre-structured contexts in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... establish and evaluate independently developed positions. ... design their learning and working processes independently. ... kennen und verstehen die relevanten Methoden und Theorien zu den zuvor unter "Inhalte des Moduls" genannten Punkten.				
4	**Teaching and Learning Methods** seminar				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Management, Economics and Social Sciences: Specialisation Section Management, Economics and Social Sciences Bachelor of Science Betriebswirtschaftslehre: Specialisation Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems Bachelor of Arts Medienwissenschaft: Media and Technology Management				
9	**Module Manager** Univ.-Prof. Dr.‘ Claudia Loebbecke, M.B.A.				
10	**Miscellaneous**				

SpM Media and Technology Management II					
Module Code 1284BSMTM2	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Media and Technology Management II		**Contact Hours** 30h	**Self-Studies** 150h	**Course Language** German and English
2	**Module Content** • In-depth development of topics related to the management of digital and hybrid media and technology goods and services based on changing, industry-specific project content and case studies				
3	**Learning Objectives** Students... ... know and understand basic theories. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... communicate continuously and purposefully within teaching and learning groups. ... establish and evaluate independently developed positions. ... present and/or discuss results with teaching staff and other students. ... design their learning and working processes independently. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** seminar				
5	**Module Entry Requirements**				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Management, Economics and Social Sciences: Specialisation Section Management, Economics and Social Sciences Bachelor of Science Betriebswirtschaftslehre: Specialisation Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Business Administration Bachelor of Arts Medienwissenschaft: Media and Technology Management Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				

9	**Module Manager** Univ.-Prof. Dr.‘ Claudia Loebbecke, M.B.A.
10	**Miscellaneous**

SpM Entrepreneurship					
Module Code 1253BEEnt1	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Entrepreneurship		**Contact Hours** 60h	**Self-Studies** 120h	**Course Language** English
2	**Module Content** • Strategies on Market Entry, Products, Markets and Value Creation • Entrepreneurial Behaviour				
3	**Learning Objectives** Students... ... know and understand basic theories. ... apply theories in pre-structured contexts (e.g. case studies) in a solution-oriented way. ... analyse (current) questions and challenges within the framework of pre-structured contexts. ... present and/or discuss results with teaching staff and other students. ... develop an understanding of the impact of decisions that take into account environmental, ... economic, social and/or ethical criteria. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommended: CM Corporate Development I				
6	**Mode of End-Of-Module Examination** Written test: WT (60)				
7	**Prerequisites for Awarding of Credit Points** Passing of the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Betriebswirtschaftslehre: Supplementary Section Business Administration Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Sozialwissenschaften: Supplementary Section Social Sciences Bachelor of Science Volkswirtschaftslehre: Specialisation Section Track Economics Specialisation Section Track Business Administration Specialisation Section Track Social Sciences Bachelor of Science Gesundheitsökonomie: Supplementary Section Health Economics Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Univ.-Prof. Dr. Christian Schwens				
10	**Miscellaneous**				

Studies Abroad I (Winfo)					
Module Code 1277BESAb1	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subjects: Business Administration, Economics, Social Sciences or Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme's curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** None				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depends on course selection				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

Studies Abroad II (Winfo)					
Module Code 1277BESAb2	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subjects: Business Administration, Economics, Social Sciences or Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme′s curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** None				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depends on course selection				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Supplementary Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

3.6.3 Specialisation Section Information Systems

CM Advanced programming concepts					
Module Code 5751BWeiPr	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** Advanced programming concepts		**Contact Hours** 56h	**Self-Studies** 214h	**Course Language** German
2	**Module Content** • Object-oriented programming concepts, such as classes, objects, inheritance, as well as comparison with other paradigms and other languages (e.g. Python, JavaScript) • Advanced programming topics such as multithreading, external libraries and their use where applicable • Deepening the knowledge already acquired in programming, e.g. testing, debugging • Structured writing, commenting and organizing of code (including annotations, interfaces, packages,...) • Possibilities of collaborative work with a version control system • Systematic approach to more complex problems ("from problem to program")				
3	**Learning Objectives** Students... ... In this module, students essentially deepen and expand the knowledge and programming skills they have already acquired. Students are thus enabled to solve more complex tasks with programs they have written themselves. In particular, they learn or deepen their skills in object-oriented programming and also become familiar with other programming paradigms and languages. This enables students to read, understand and implement simple programs in other programming languages and thus find their way around other programming languages.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommendation: CM Introduction to programming				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Institut für Informatik				

10	**Miscellaneous**

SpM Visualization					
Module Code 5751BVisua	**Workload** 270h	**ECTS Credits** 9	**Module Language** German	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** Visualization		**Contact Hours** 90h	**Self-Studies** 180h	**Course Language** German
2	**Module Content** The lecture focuses on the visual representation of data. Interactive visualisation is the communication of data in visual form. In the lecture, the fundamentals of visualisation are introduced. This includes selected topics from the areas of: the visualisation process, interaction, human perception, colour space, data types, data structure, transformation and processing, visual depiction of data such as 2D, 3D or multivariate data, time-specific data, space-orientated data, graphs. The foundation methods and their practical usages and purposes in current research areas will be introduced. Visual analysis can be used for exploration, analysis and communication in reports, presentations or online. Usage of visual analysis can be found in the areas of finance, economics, geo-sciences, meteorology, medicine, biology, transport or sport. In the exercise classes, the material from the lectures will be further discussed. Exercises will be discussed under the guidance of a tutor. The exercises serve to both expand technical knowledge and to develop communication and presentation skills.				
3	**Learning Objectives** Students... ... understand continuing, specialised theories and methods in the field of visualisation. ... analyse (current) questions and challenges in the area of visualisation. ...defend their independently developed position or solutions to problems. ... know and understand the relevant methods and theories for the points mentioned above under "Module content".				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** Recommendation: CM Computer Science, AM Computer Science I, AM Computer Science II, AM Programming Project, CM Mathematics				
6	**Mode of End-Of-Module Examination** Written test: WT (120 – 180)				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination. Admission requirements for the examination: Coursework completed as part of the practice. Practices are held in parallel to the lecture, in which exercises are set which must be successfully completed on average. Achieving 50% of the maximum number of exercise points is sufficient for successful completion.				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems				
9	**Module Manager**				

10	**Miscellaneous**

SpM Information Systems					
Module Code 1277BSWI11	**Workload** 360h	**ECTS Credits** 12	**Module Language** German and English	**Module Availability** every term	**Duration** 1 Term
1	**Courses** Capstone Project Information Systems (PO 24)		**Contact Hours** 90h	**Self-Studies** 270h	**Course Language** German
2	**Module Content** • Independent and autonomous development of an information system in a team in a project • Project and team management • Requirements analysis • Draft • Implementation • Testing • Customer communication and management				
3	**Learning Objectives** Students... ... communicate continuously and purposefully within teaching and learning groups. establish and evaluate independently developed positions. present and/or discuss results with teaching staff and other students. develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. design their learning and working processes independently. reflect their own performance and implement feedback constructively.				
4	**Teaching and Learning Methods** Research project				
5	**Module Entry Requirements** Recommendation: CM Information Systems I, CM Information Systems II, AM Information Systems, SuM Information Systems I, SuM Information Systems II; CM Computer Science, AM Computer Science I, AM Computer Science II; Programming Project				
6	**Mode of End-Of-Module Examination** Combined examination: PRES, PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems				
9	**Module Manager** Univ.-Prof. Dr. Christoph Rosenkranz				
10	**Miscellaneous**				

SpM Information Systems II					
Module Code 1277BSWI12	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - winter term	**Duration** 1 Term
1	**Courses** a) Systems Analysis and Design b) Information Security and IT Forensics		**Contact Hours** a) 60h b) 40h	**Self-Studies** a) 120h b) 140h	**Course Language** a) German b) German
2	**Module Content** a) Systems Analysis and Design • Requirements analysis and survey • System modelling • Project planning • Prototyping • Unified Modeling Language (UML) • Human-computer interaction b) Information Security and IT Forensics • Terms, protection goals, threat classifications • Historical Case Studies and Conclusions for Future Situations • Presentation of concrete attack techniques and threats • Design of secure systems (consideration in the development process, frameworks, ISO/IEC 27001, risk analysis) • Recognized frameworks (BSI Basic Protection, ISO 27001, Business Continuity Management, ...) • Security models • Fundamentals of cryptographic procedures • Authentication procedures and identity management • Mobile Security • Incident Response and IT-Forensics • Legal framework				
3	**Learning Objectives** Students... ... know and understand common methods in the field of a) analysis and design of information systems; b) cryptographic procedures and protection requirements of information systems. communicate continuously and purposefully within teaching and learning groups. develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. design their learning and working processes independently.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination of course a) or b)				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems				
9	**Module Manager** Sprecher des Fachbereichs Wirtschaftsinformatik				
10	**Miscellaneous** a) Systems Analysis and Design: In some sessions case studies and exercises are prepared in group work and presented and discussed in the plenum by the students. Mandatory reading will be announced during the respective semester. b) Information security and IT forensics: The course is usually offered by a lecturer and is offered as a block course in the first or second half of the semester. Please note the course dates given in KLIPS. Within the scope of the exercise, practical work with IT security gaps within a laboratory environment (hacking and subsequent security) will take place. Previous knowledge of Linux is useful, but not necessary.				

SpM Information Systems III					
Module Code 1277BSWI13	**Workload** 180h	**ECTS Credits** 6	**Module Language** German and English	**Module Availability** every 2nd term - summer term	**Duration** 1 Term
1	**Courses** a) Information Systems Development b) Introduction to Data Science and Machine Learning		**Contact Hours** a) 60h b) 60h	**Self-Studies** a) 120h b) 120h	**Course Language** a) German b) English
2	**Module Content** a) Information Systems Development • Processes and important challenges in the development of IS • Alternatives for the realization of IS ("Make or Buy", Outsourcing, Software as a Service, etc.) • Procedures for the development of IS (waterfall model, evolutionary development, agile software development) • Concept and forms of project management for IS development • Project control and evaluation methods • Communication and leadership • Time, team and project management • Ethics in the development of IS b) Introduction to Data Science and Machine Learning • The value of data from a business perspective • Data quality and data cleansing • Design of a data analysis process • Explanation vs. forecast • Data visualization • Use of data to support entrepreneurial activity • Introduction to machine learning • Programming language: Python				
3	**Learning Objectives** Students... ... know and understand common methods in the areas of (a Information Systems Development and (b Data Science and Machine Learning. use methods in the areas of (a Information Systems Development and (b Data Science and Machine Learning in pre-structured contexts in a solution-oriented way. communicate continuously and purposefully within teaching and learning groups. present and/or discuss results with teaching staff and other students. develop an understanding of the impact of decisions that take into account environmental, economic, social or ethical criteria. design their learning and working processes independently.				
4	**Teaching and Learning Methods** lecture practice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** Written test: PO				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination of course a) or b)				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems				
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik				
10	**Miscellaneous** Mandatory reading will be announced in the respective semester of the course. b) Python is used in the course.				

Studies Abroad in Information Systems					
Module Code 1014BESAI1	**Workload** 180h	**ECTS Credits** 6	**Module Language** selected language	**Module Availability** every term	**Duration** 1 Term
1	**Courses**		**Contact Hours**	**Self-Studies**	**Course Language**
2	**Module Content** Topics from the subject Information Systems.				
3	**Learning Objectives** Students... ... The students… … acquire the knowledge and skills from the areas named in the module content which extend beyond the curriculum of the relevant bachelor programme and impart additional foundation knowledge (from subjects outside the relevant programme's curriculum); deepen attained knowledge and skills which contribute towards the specialisation or content-specific individualisation of studies. ... ... Through completing examinations at a university abroad, students widen their knowledge and skills within the subject areas named above that go beyond the module structure of the curriculum of their study programme. Content studied within a module abroad can only be credited once within one of the Studies Abroad modules.				
4	**Teaching and Learning Methods** depending on course choice				
5	**Module Entry Requirements** none				
6	**Mode of End-Of-Module Examination** depending on course selection				
7	**Prerequisites for Awarding of Credit Points** depending on course choice				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Supplementary Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems				
9	**Module Manager** Programmdirektor:in				
10	**Miscellaneous** If required, students can apply for credit transfer using the standardised procedure. Information about recognition of courses (deadlines and procedure) is provided by the WiSo Credit Transfer Centre (WiSo Anrechnungszentrum: https://www.anrechnungwiso.uni-koeln.de/). This module can also be used for crediting Academic Short Programmes organised by the WiSo-faculty. In this case, registration for the exams should be carried out in advance according to the regulations of the WiSo-faculty.				

<table>
<tr><th colspan="6">Bachelor Seminar Information Science</th></tr>
<tr><td colspan="2">Module Code
1277BSSWF1</td><td>Workload
180h</td><td>ECTS Credits
6</td><td>Module Language
German and English</td><td>Module Availability
every term</td><td>Duration
1 Term</td></tr>
<tr><td>1</td><td colspan="2">Courses
a) Bachelorseminar Information Systems for Sustainable Society (Prof. Ketter)
b) Bachelorseminar Information Systems and Digital Technology (Prof. Seidel)
c) Bachelorseminar Integrated Information Systems (Prof. Rosenkranz)
d) Bachelorseminar Information Management (Prof. Schoder)
e) Bachelorseminar Machine Learning (Jun.-Prof. Zyue Li)</td><td>Contact Hours
a) 30h
b) 30h
c) 30h
d) 30h
e) 30h</td><td>Self-Studies
a) 150h
b) 150h
c) 150h
d) 150h
e) 150h</td><td>Course Language
a) German and English
b) German and English
c) German and English
d) German and English
e) German and English</td></tr>
<tr><td>2</td><td colspan="6">Module Content
• Project planning in the context of scientific work
• Structure and argumentation in scientific works: problem, objective, terminology system, outline
• Dealing with scientific literature: literature research, literature administration, literature evaluation, referencing and citation in scientific work
• Scientific Writing
• Formal requirements
• Writing, presenting and defending one's own scientific work
Seminar work topics are taken from the following areas, among others:
a) Business Intelligence, Analytics, Machine Learning and Learning Agents research in the domains of Energy Markets, Smart Sustainable Mobility, Energy Storage and Transactive Energy & Blockchain
b) Conceptual Modeling, Business Process Management, Information Systems Development, Systems Analysis and Design, Digital Innovation, Digital Entrepreneurship, Green IS, Environmental Sustainability
c) IT Outsourcing, IT Strategy, Information Systems Development & IT Project Management, Open Source Software Development, Agile Development, Business Process Management, Digital Transformation
d) Business Analytics, Artificial Intelligence in Trading, Health and Logistics, Media Mass Customization, Electronic Commerce, Social Media Analysis, Openness, Decision Support Systems
e)
Supervised, unsupervised and semi-supervised learning
Clustering, principal component analysis, high-dimensional data
Transfer learning and federated learning
Neural network, convolutional neural network, graph convolutional network
Recurrent neural networks for natural language processes and more
Self-supervised learning
Reinforcement learning</td></tr>
<tr><td>3</td><td colspan="6">Learning Objectives
Students...
... know and understand basic theories from the above mentioned areas.
... collect, systematize and synthesize literature and data material for a scientific work on a selected topic.
... present and/or discuss results with teaching staff and other students.
... reflect their own performance and implement feedback constructively.
... use under guidance techniques of scientific work and good scientific practice.
... know and understand the relevant methods and theories for the points mentioned above under "Module content".</td></tr>
</table>

4	**Teaching and Learning Methods** seminar
5	**Module Entry Requirements** none
6	**Mode of End-Of-Module Examination** Combined examination: PRES, TP
7	**Prerequisites for Awarding of Credit Points** Passing the module examination of one of the courses a) to d)
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Specialisation Section Information Systems Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Specialisation Section Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik
10	**Miscellaneous** In the first step, the Bachelor's seminar module is taken by students via KLIPS. This allocation takes place in the 1st allocation phase through the submission of prioritised allocation requests. When enrolling via KLIPS, priority enrolment requests must be submitted for the Bachelor's seminars offered by the various examiners. As a rule, there will be no booking in the 2nd occupancy phase or in the allocation of remaining places. Subsequently, each student is allocated a place in a Bachelor's seminar, taking into account the available capacities. After the allocation to the Bachelor seminars, the students give preferences for concrete seminar work topics. This is usually done at the beginning of the semester via a survey in ILIAS. Part of the Bachelor's seminar is the participation in the block course "Scientific Work", which is offered at the beginning of the semester. Further information on the allocation procedure and the block course can be found in the course descriptions in KLIPS or on the website of the Cologne Institute for Information Systems. The seminar paper can be written in German or English. It is strongly recommended to complete the Bachelor's seminar before the Bachelor's thesis, as the Bachelor's seminar teaches basic competences for scientific work and especially for writing a scientific paper.

4.6.4 Bachelor Thesis Information Systems

Bachelor's Thesis Information Systems					
Module Code 1277BMWIN1	**Workload** 360h	**ECTS Credits** 12	**Module Language** German and English	**Module Availability** every term	**Duration** 1 Term
1	**Courses** a) Bachelor Thesis with Prof. Dr. Ketter b) Bachelor Thesis with Prof. Dr. Seidel c) Bachelor Thesis with Prof. Dr. Rosenkranz d) Bachelor Thesis with Prof. Dr. Schoder e) Bachelor Thesis with Jun.-Prof. Zyue Li		**Contact Hours** a) 0h b) 0h c) 0h d) 0h e) 0h	**Self-Studies** a) 360h b) 360h c) 360h d) 360h e) 360h	**Course Language** a) German and English b) German and English c) German and English d) German and English
2	**Module Content** Preparation of a scientific thesis. Bachelor's thesis topics are taken from the following areas, among others: a) Business Intelligence, Analytics, Machine Learning and Learning Agents research in the domains of Energy Markets, Smart Sustainable Mobility, Energy Storage and Transactive Energy & Blockchain b) Conceptual Modeling, Business Process Management, Information Systems Development, Systems Analysis and Design, Digital Innovation, Digital Entrepreneurship, Green IS, Environmental Sustainability c) IT Outsourcing, IT Strategy, Information Systems Development & IT Project Management, Software Development, Open Source Software, Agile Development, Business Process Management, Digital Transformation d) Business Analytics, Artificial Intelligence in Trading, Health and Logistics, Media Mass Customization, Electronic Commerce, Social Media Analysis, Openness, Decision Support Systems e) Data Mining, Statistics, Machine Learning, Deep Learning, Smart Mobility				
3	**Learning Objectives** Students... ... analyse current questions and challenges within the framework of prepared cases. ... collect, systematize and synthesize literature and data material for a scientific work on a selected topic. ... establish and evaluate independently developed positions. ... design their learning and working processes independently. ... use techniques of scientific work and good scientific practice.				
4	**Teaching and Learning Methods** Bachelor’s Thesis				
5	**Module Entry Requirements** 100 CP successfully passed; Recommendation: Bachelor Seminar				
6	**Mode of End-Of-Module Examination** Written test 12 weeks				
7	**Prerequisites for Awarding of Credit Points** Passing the module examination				
8	**Other Programmes that Use the Module** Bachelor of Science Wirtschaftsinformatik: Bachelor Thesis Information Systems				

	Bachelor of Science Wirtschaftsinformatik (ab WS24/25): Bachelor Thesis Information Systems
9	**Module Manager** Geschäftsführende*r Direktor*in Kölner Institut für Wirtschaftsinformatik
10	**Miscellaneous** Bachelor's theses at the Cologne Institute for Information Systems are assigned in a central assigning procedure. In the first step, the Bachelor's thesis module is assigned to students via KLIPS. This allocation takes place in the 1st allocation phase through the submission of prioritised allocation requests. In the case of KLIPS, prioritized requests for the Bachelor's thesis modules offered by the various examiners must be submitted. As a rule, there will be no enrolment in the 2nd phase or in the allocation of remaining places. Subsequently, each student is allocated a place for a Bachelor's thesis, taking into account the available capacities. After the allocation to the examiners, the students give preferences for concrete Bachelor's thesis topics. This is usually done about three weeks before the respective start date via a survey in ILIAS. Further information on the assigning procedure can be found in the course descriptions in KLIPS or on the website of the Cologne Institute for Information Systems. The Bachelor's thesis can be written in German or English. It is strongly recommended that you complete the Bachelor seminar before writing your Bachelor's thesis, as the Bachelor seminar teaches basic skills for scientific work and especially for writing a scientific paper. Please note that the Cologne Institute for Information Systems (CIIS) offers Bachelor's theses in every semester. Each semester you can start working on your bachelor's thesis at a fixed starting time (in November in winter semesters and in May in summer semesters).