

Module Catalogue

»International Information Systems«

Bachelor

SPO 2021



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The following text is a commentary in English language on the module manual of Technische Hochschule Augsburg, helping you to understand the contents of the German document. The legally binding text remains the German version of the module manual. Please refer to the German text if possible or seek advice in case of uncertainties. The purpose of the module descriptions is to provide a content-related overview of your degree course.

Only the current version of the university catalogue and examination regulations shall be deemed legally binding.

Contents

1	International Information Systems Bachelor - 1. Semester	4
1.1	1st Foreign Language	4
1.2	Mathematics 1	6
1.3	Programming 1	8
1.4	Introduction to Business Administration, Financial Accounting	10
1.5	2nd Foreign Language 1 of 4	14
2	International Information Systems Bachelor - 2. Semester	16
2.1	Database Systems	16
2.2	2nd Foreign Language 2 of 4	20
2.3	Introduction to Information Systems	22
2.4	Programming 2 & Software Engineering	24
2.5	Mathematics 2	26
3	International Information Systems Bachelor - 3. Semester	28
3.1	Customizing of Information Systems	28
3.2	E-Business	30
3.3	2nd Foreign Language 3 of 4	32
3.4	Programming of Information Systems	34
3.5	Statistics	38
4	International Information Systems Bachelor - 4. Semester	42
4.1	Data Analytics	42
4.2	2nd Foreign Language 4 of 4	44
4.3	Intercultural Management & Law	46
4.4	International IT Project and Service Management	50
4.5	Team Project	54
5	International Information Systems Bachelor - 5. Semester	56
5.1	Integrated Semester in Industry	56
5.2	Practical Seminar	58
5.3	Cost Accounting, Controlling & Financial Management	60
6	International Information Systems Bachelor - 6. Semester	64
6.1	Applied Artificial Intelligence	64
6.2	Business Modelling	66
6.3	Production and Logistics	70
7	International Information Systems Bachelor - 7. Semester	74
7.1	Bachelor Thesis	74
7.2	Scientific Research Methods for Information Systems	76

8 Required Elective Modules	78
8.1 Profile Education Elective Modules	78

1 International Information Systems Bachelor - 1. Semester

1.1 1st Foreign Language

Information about the module

engl. Name	1st Foreign Language
Code	FL1
Coordinator	Prof. Dr. Svea Schauffler
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	1st Foreign Language (4 Credit hours)
Modul area	Programming
Teaching language	The module is usually taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: <ul style="list-style-type: none">• Presentation, 10-20 minutes, 20%• Oral examination, 10-20 minutes, 20%• Written examination, 90 minutes, none auxiliaries, 60%
Examination number	9770010
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The course is a combination of teacher input, independent self study, and language teaching based on a communicative methodology which includes the interaction of all participants. Groups usually comprise 20-25 participants.

Qualification aims for the module learning objectives/skills

The aim of this mandatory language course is for participants to use English confidently as part of their studies but also in the workplace.

This is achieved using an interactive and application-based methodology for language teaching. The focus is on useful skills such as text comprehension, technical vocabulary, written correspondence, oral communication, presenting, and negotiating in English.

Reading list

Will be provided in class.

1.2 Mathematics 1

Information about the module

engl. Name	Mathematics 1
Code	MAT1
Coordinator	Prof. Dr. Caroline Justen
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Mathematics 1 (4 Credit hours)
Modul area	Mathematics
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	The topics are relevant for the mathematics 2 module
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, auxiliaries: 2 DIN A4 pages handwritten formulary; a calculator that can't calculate 70! (70 Factorial)
Examination number	9770020
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Propositional logic
- Infinite sequences and series
- Real-valued functions
- Financial mathematics
- Derivatives
- Complex numbers

Qualification aims for the module learning objectives/skills

Students passing the course successfully will be able to:

- develop new mathematical knowledge from calculus and linear algebra which are not part of the mathematics 2 modul:
 - understanding problems in mathematical language
 - solving mathematical problems of low and medium complexity
 - transferring mathematical knowledge taught in the course to new simple problems
- train logical reasoning
- model simple practical problems in mathematical language
- use mathematical textbooks to extend the mathematical topics of the lectures

Reading list

J. Stewart, S. Watson, D.K. Clegg: Calculus: Early Transcendentals, *Metric Edition Cengage Learning, Inc, 9th edition*, 2020.

K. Sydsaeter, P. Hammond, A. Strom, A. Carvajal: Essential Mathematics for Economic Analysis, *Pearson Education, 6th edition*, 2021.

G. Strang: Calculus, *Wellesley-Cambridge Press, 3rd edition*, 2017.

Opitz, O.; Etschberger, S.; Burkart, W.R.; Klein R. : Mathematik, Lehrbuch für das Studium der Wirtschaftswissenschaften. *De Gruyter Oldenbourg, 12. Auflage*, 2017.

1.3 Programming 1

Information about the module

engl. Name	Programming 1
Code	PRG1
Coordinator	Prof. Dr. Jens Lauterbach
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Programming 1 (4 Credit hours) Practical work Programming 1 (2 Credit hours)
Modul area	Programming
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Admission requirement for the examination	Practical work Programming 1
Type of exam / required course achievements	Electronic examination, 60 minutes, Auxiliaries: Development environment, authorized lecture and exercise materials, Java API documentation, Moodle
Examination number	9770030
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

This lecture introduces students to the core concepts of programming based on the programming language JAVA. JAVA is one of the important languages of our time and it is widely used in business.

The focus of the lecture lies on the concepts and methods of programming. These concepts and methods will be introduced and explained with examples in JAVA.

The first part of the lecture provides the context with key terminology of business informatics and software engineering. It then introduces to the fundamentals of programming with basic JAVA language elements, simple data types, variables, expressions and operators. Then control structures, complex data types and methods will be introduced. The second part of the lecture provides an introduction to object-orientation and its application in JAVA.

The lecture will provide the concepts and methods that will then be practiced in hands-on exercises with a state-of-the art integrated development environment (IDE, e. g., Eclipse). Students will develop and implement algorithms in JAVA and will be evaluated based on their ability to apply the knowledge from the lecture in practice.

Qualification aims for the module learning objectives/skills

Students will get an introduction to the core concepts of programming using JAVA. After successful participation, students will be able to:

- Understand and describe key elements of the programming language JAVA
- Know the key concepts of OO programming languages
- Understand JAVA source code of low to medium complexity
- Independently implement algorithms in JAVA
- Independently develop own algorithms
- Quickly familiarize themselves with other programming languages

Reading list

Literature recommendations will be provided in the lecture.

1.4 Introduction to Business Administration, Financial Accounting

Information about the module

engl. Name	Introduction to Business Administration, Financial Accounting
Code	IBA
Coordinator	Prof. Dr. Stephan Zimmermann
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Introduction to Business Administration, Financial Accounting (6 Credit hours)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Type of exam / required course achievements	Written examination, 90 minutes, auxiliary: calculator, 1 DIN A4 sheet (front and back) with handwritten, personal lecture summary
Examination number	9770040
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Business Administration:

- Fundamentals of economics
- Scientific approach of business administration
- Entrepreneurship and constitutive management decisions (business model, choice of legal form and location, corporate constitution)
- Value Chain (marketing and sales, production, materials management)
- Organization and human resources management
- Operational taxes

Financial accounting:

- Terms and rules of external accounting
- Technique of double-entry bookkeeping
- Balance sheet: structure, content, transactions
- Profit and loss account: structure, content, business transactions
- Basics of balance sheet analysis

Qualification aims for the module learning objectives/skills

Upon successful completion of the module, students will be able to:

- Understand elementary theories of economics
- Recognize challenges, tasks and methods of business administration
- Explain constitutive decisions of companies
- Outline basic value chain and leadership processes in a company
- Explain the tasks and rules of financial accounting
- Apply the system of double-entry bookkeeping.

Reading list

Business Administration:

Thommen, Jean-Paul; Grösser, Stefan (2014): Economy, Company, Management. Introduction to Business Administration. Zürich

Eichhorn, Peter; Towers, Ian (2018): Principles of Management. Efficiency and Effectiveness in the Private and Public Sector. Cham: Springer International Publishing

Kolmar, Martin (2017): Principles of Microeconomics. An Integrative Approach. Cham: Springer International Publishing

Pride, William M.; Hughes, Robert J.; Kapoor, Jack R. (2019): Foundations of business. 6E. Boston: Cengage.

Mazzarol, Tim (2020): Entrepreneurship and Innovation. Fourth edition. Singapore: Springer (Springer Texts in Business and Economics).

Financial Accounting:

Nothhelfer, Robert: Financial Accounting. Introduction to German GAAP with exercises (2017). München, Wien: De Gruyter Oldenbourg (De Gruyter Textbook).

Epstein, Lita; Tracy, John A. (2015): Bookkeeping all-in-one for dummies. Hoboken, NJ: John Wiley & Sons (For dummies). 2nd Edition

1.5 2nd Foreign Language 1 of 4

Information about the module

engl. Name	2nd Foreign Language 1 of 4
Code	II2.FS
Coordinator	Lecturers at the Faculty of Liberal Arts and Sciences
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	2nd Foreign Language 1 of 4 (4 Credit hours)
Modul area	Foreign Language
Teaching language	The module is taught in German for non-native students. Depending on the selection, the module will be taught in Spanish, French, Italian or Chinese language
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: Oral and written parts according to the module specifications of the chosen language of the faculty of Liberal Arts and Sciences
Examination number	9771098- 9771504
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The course is a combination of linguistic input by the teacher, independent self-study and communicative and application-oriented language teaching in which all participants are involved. The course takes place in groups of 20-25 participants.

Qualification aims for the module learning objectives/skills

The goal of this compulsory curriculum is to achieve confidence with the terminology of this subject and its professional environment. This is achieved through task-based and interactive teaching in the foreign language. The course puts emphasis on crucial and practical skills such as reading comprehension, technical vocabulary, written correspondence, confident verbal communication, presentation and negotiation.

Reading list

Literature recommendations will be provided in the lecture.

2 International Information Systems Bachelor - 2. Semester

2.1 Database Systems

Information about the module

engl. Name	Database Systems
Code	DBS
Coordinator	Prof. Matthias Kolonko, Ph.D. (ONPU)
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Database Systems (4 Credit hours) Practical work Database Systems (2 Credit hours)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Admission requirement for the examination	Practical work Database Systems
Type of exam / required course achievements	Written examination, 90 minutes, none auxiliaries As an alternative to the written exam, 3 interim tests can be handed in that will be summarized as one final grade. After having chosen to hand in the 3 interim tests, it is not possible to switch back to the written exam at the end of the particular semester.
Examination number	9770050

Content of the module

The course focuses on three central points in the area of database systems. The first key point is the semantic data modeling and the system-independent database design. It is followed by the implementation using relational database systems with SQL. Subsequently, the normal form theory is addressed into more depth. During the course, both practical and theoretical aspects are examined. The architecture of a database management system (RDBMS) and suitable physical data structures are illustrated using a common RDBMS.

An instance of a relational database system will be provided for SQL exercises. During the practical training, the design and realization of an appropriate database structure is requested from the students by means of a self-imposed topic.

Qualification aims for the module learning objectives/skills

After having successfully accomplished the course, participants shall be able to

- describe the fundamental architecture and operational principles of a database system.
- perform analysis and data modeling (both conceptual and logical database design).
- name and utilize the fundamental SQL operations.
- implement data structures and queries using SQL (DDL & DML).
- perform an analysis and normalization of a logical data model with regard to the theory of normal forms.

Weighting of individual performance in the final grade

Written exam (100%) or 3 interim tests (each with the same weighting)

Reading list

- R. Elmasri, S. B. Navathe: *Fundamentals of Database Systems* (Pearson 2020, ISBN: 1-292-09761-2)
- S. Müllenbach, L. Kern-Bausch, M. Kolonko: Conceptual Modeling Language AGILA MOD
in Herald of Advanced Information Technology, vol. 2, no. 4, pp. 246-258, Dez. 2019
(ISSN: 2663-0176 – DOI: 10.15276/hait.04.2019.1)
- M. Kolonko, S. Müllenbach, E. Arsirii, B. Trofymov: *Extensions to the Conceptual Modeling Language AGILA MOD*
in Proceedings of the VI. Ukrainian-German conference „Informatics. Culture. Technology“, Odessa, Sept. 2018, pp. 38-39
- L. Kern-Bausch, M. Jeckle: Informationsmodellierung und logischer Datenbankentwurf, Kapitel 14.2
in Taschenbuch der Informatik (U. Schneider und D. Werner), 4. Auflage, Fachbuchverlag Leipzig im Carl Hanser Verlag, 2001,
ISBN: 3-446-21753-3
- P. Sauer: Informationsmodellierung, Kapitel 2
in Taschenbuch Datenbanken (T. Kudraß), 2. Auflage, Fachbuchverlag Leipzig im Carl Hanser Verlag, 2015,
ISBN: 978-3-446-43508-7
- Vorlesungsunterlagen von Prof. Dr. Sabine Müllenbach unter <https://ohs.informatik.hs-augsburg.de:4443/web/bine>
(Anmeldung mit RZ-Login)

2.2 2nd Foreign Language 2 of 4

Information about the module

engl. Name	2nd Foreign Language 2 of 4
Code	II2.FS
Coordinator	Lecturers at the Faculty of Liberal Arts and Sciences
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	2nd Foreign Language 2 of 4 (4 Credit hours)
Modul area	Foreign Language
Teaching language	The module is taught in German for non-native students. Depending on the selection, the module will be taught in Spanish, French, Italian or Chinese language
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	The module 2nd Foreign Language 2 of 4 builds on the 2nd Foreign Language 1 from 4 and is assumed. (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: Oral and written parts according to the module specifications of the chosen language of the faculty of Liberal Arts and Sciences
Examination number	9771098- 9771504
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The course is a combination of linguistic input by the teacher, independent self-study and communicative and application-oriented language teaching in which all participants are involved. The course takes place in groups of 20-25 participants.

Qualification aims for the module learning objectives/skills

The goal of this compulsory curriculum is to achieve confidence with the terminology of this subject and its professional environment. This is achieved through task-based and interactive teaching in the foreign language. The course puts emphasis on crucial and practical skills such as reading comprehension, technical vocabulary, written correspondence, confident verbal communication, presentation and negotiation.

Reading list

Literature recommendations will be provided in the lecture.

2.3 Introduction to Information Systems

Information about the module

engl. Name	Introduction to Information Systems
Code	ISY
Coordinator	Prof. Dr. Arne Mayer
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Introduction to Information Systems (3 Credit hours) Practical work Introduction to Information Systems (1 Credit hour)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Admission requirement for the examination	Practical work Introduction to Information Systems
Type of exam / required course achievements	Written examination, 60 minutes, auxiliary: non-programmable calculator
Examination number	9770060
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Fundamentals and Definitions of Information Systems
- Business Process Management and Modeling
- Information systems, esp. Key System Applications
- IT strategies, Enterprise Architecture Management, Information management
- Case studies on complex integrated business processes and information systems

Qualification aims for the module learning objectives/skills

After successful completion of the module, students will be able to:

- To describe the subject areas assigned to information systems discipline. You will be able to explain the four layer principle and how it differs from business administration and computer science.
- Understand the challenges and tools used to describe IT systems and are able to independently document business processes using common methods
- Master basic terms, methods, concepts and applications of operational information processing and integrated systems.
- Students understand IT strategies and their necessity; They are familiar with IT organizational structures and relevant working methods/methods for the design of IT systems and are able to analyze IT landscapes with the help common methods such as Enterprise Architecture Management methods

Reading list

Laudon, K. C., Laudon J. P.: Management Information Systems: Managing the Digital Firm, current edition, Pearson

Annual update in the lecture due to the innovative nature

2.4 Programming 2 & Software Engineering

Information about the module

engl. Name	Programming 2 & Software Engineering
Code	PRG2
Coordinator	Prof. Dr. Jens Lauterbach
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Programming 2 & Software Engineering (4 Credit hours) Practical work Programming 2 & Software Engineering (2 Credit hours)
Modul area	Programming
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	Module Programming 1 (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Admission requirement for the examination	Practical work Programming 2 & Software Engineering
Type of exam / required course achievements	Electronic examination, 60 minutes, Auxiliaries: Development environment, authorized lecture and exercise materials, Java API documentation, Moodle
Examination number	9770070
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Larger software applications are developed in practice in teams using a methodical approach. As a basis for this, the concepts, methods and tasks of software engineering (SE), which go beyond pure programming, are presented in this course:

- Agile and classic SE process models (e.g. Scrum)
- Requirements engineering (e.g. with user stories)
- Design and architecture (e.g. with UML)
- Validation (e.g. unit tests and test management)
- Versioning and deployment (e.g. with Git)
- Operation (e.g. DevOps)

Based on foundations of the lecture Programming 1, further concepts and constructs of modern programming languages are taught using JAVA. The module deals with the following content:

- Repetition and deepening of the foundations and understanding of object-oriented programming
- Introduction of other important concepts, such as e. g. helper classes and frameworks for working with JAVA
- Introduction and deepening of input/output concepts such as streams and parallel programming with threads
- Introduction to distributed applications
- Introduction to functional programming

Qualification aims for the module learning objectives/skills

After successful participation in the module, students are able to:

- describe basic knowledge of programming including the concepts of object-oriented programming
- grasp requirements and tasks, to abstract them and to solve them using programming language tools
- familiarize themselves with further concepts or other programming languages
- understand and apply the tasks and methods of (agile) software engineering.

Reading list

Literature recommendations will be provided in the lecture.

2.5 Mathematics 2

Information about the module

engl. Name	Mathematics 2
Code	MAT2
Coordinator	Prof. Dr. Caroline Justen
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Mathematics 2 (4 Credit hours)
Modul area	Mathematics
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	Module Mathematics 1 (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, auxiliaries: 2 DIN A4 pages handwritten formulary; a calculator that can't calculate 70! (70 Factorial)
Examination number	9770080
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Integration
- Systems of linear equations
- Linear Algebra
- Multivariable functions
- Linear Optimization

Qualification aims for the module learning objectives/skills

Students passing the course successfully will be able to:

- develop new mathematical knowledge from calculus and linear algebra which are not part of the mathematics 1 modul:
 - understanding problems in mathematical language
 - solving mathematical problems of low and medium complexity
 - transferring mathematical knowledge taught in the course to new simple problems
- train logical reasoning
- model simple practical problems in mathematical language
- use mathematical textbooks to extend the mathematical topics of the lectures

Reading list

J. Stewart, S. Watson, D.K. Clegg: Calculus: Early Transcendentals, *Metric Edition Cengage Learning, Inc, 9th edition*, 2020.

K. Sydsaeter, P. Hammond, A. Strom, A. Carvajal: Essential Mathematics for Economic Analysis, *Pearson Education, 6th edition*, 2021.

G. Strang: Calculus, *Wellesley-Cambridge Press, 3rd edition*, 2017.

Opitz, O.; Etschberger, S.; Burkart, W.R.; Klein R. : Mathematik, Lehrbuch für das Studium der Wirtschaftswissenschaften. *De Gruyter Oldenbourg, 12. Auflage*, 2017.

3 International Information Systems Bachelor - 3. Semester

3.1 Customizing of Information Systems

Information about the module

engl. Name	Customizing of Information Systems
Code	CUST
Coordinator	Prof. Dr. Jens Lauterbach
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Customizing of Information Systems (4 Credit hours)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: <ul style="list-style-type: none">• Written examination, 60 minutes, with authorized lecture material, 50%• Project work, 10-30 pages and 10-30 minutes presentation, 50%
Examination number	9772030
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

This lecture introduces to Enterprise Systems (ES), that represent a specific category of information systems. They build on pre-packaged industry best practices embedded in standardized product software and target large-scale integration of data and business processes across all company's functional areas and beyond company borderlines.

In the first part of the lecture, after an introduction to the key terms and definitions for ES, process-centric ES and in particular Enterprise Resource Planning (ERP) Systems will be discussed in detail. ERP Systems such as SAP S/4 HANA are the core business applications for many organizations. The lecture will examine

- Fundamentals of ERP Systems (structures, master data, transaction data)
- Basic Functionalities of ERP Systems with the example SAP S/4 HANA
- Core processes such as "Order to Cash" and "Procure to Cash"

The second part of the lecture presents the core concepts of ES implementations and ES management. Here among other topics, the necessary steps to configure/customize an ERP system such as SAP S/4 HANA and concepts such as master data management and lifecycle management are elaborated.

Qualification aims for the module learning objectives/skills

Students will get an introduction to the core concepts of Enterprise Systems as specific category of Information Systems. After successful participation, students will be able to:

- Understand and describe the different types and concepts of Enterprise Systems
- Understand and describe the functions and processes covered by ERP Systems
- Use the SAP S/4 HANA System for important core processes
- Understand and describe the core concepts of ES Implementations and of ES Management
- Configure/customize core features of the SAP S/4 HANA System

Reading list

Literature recommendations will be provided in the first lecture.

3.2 E-Business

Information about the module

engl. Name	E-Business
Code	EBUS
Coordinator	Prof. Dr. Arne Mayer
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	E-Business (4 Credit hours)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None; recommended: Introduction to business administration
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, none auxiliaries
Examination number	9772040
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Areas of e-business
- Technical and technological foundations of the internet economy as driver for e-business
- Functional view on e-Business information systems
- Economics of e-Business, especially electronic commerce
- E-Companies
- E-Communities
- E-Entertainment

Qualification aims for the module learning objectives/skills

- An understanding of e-business and its areas and their impact on business as well as economy
- Abilities for analyzing relevant information systems and their underlying processes and workflows
- Practical relevant functional skills for upcoming employments in the industry
- Increased their soft skills due to case studies, discussions, and ability to present self-elaborated content

Reading list

Kollmann, Tobias.: E-Business, Springer Gabler, 7. Auflage, 2019 (in German)

Laudon, Kenneth C.; **E-commerce:** business, technology, society, Pearson (Boston, MA), 2012.

Peitz, Martin; Waldfogel, Joel: The Oxford handbook of the digital economy, Oxford Univ. Press, 2012

Reynolds, Jonathan: **E-Business:** a management perspective, Oxford Univ. Press, 2010

3.3 2nd Foreign Language 3 of 4

Information about the module

engl. Name	2nd Foreign Language 3 of 4
Code	II2.FS
Coordinator	Lecturers at the Faculty of Liberal Arts and Sciences
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	2nd Foreign Language 3 of 4 (4 Credit hours)
Modul area	Foreign Language
Teaching language	The module is taught in German for non-native students. Depending on the selection, the module will be taught in Spanish, French, Italian or Chinese language
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	The module 2nd Foreign Language 3 of 4 builds on the 2nd Foreign Language 2 and 1 from 4 and is assumed. (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: Oral and written parts according to the module specifications of the chosen language of the faculty of Liberal Arts and Sciences
Examination number	9771098- 9771504
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The course is a combination of linguistic input by the teacher, independent self-study and communicative and application-oriented language teaching in which all participants are involved. The course takes place in groups of 20-25 participants.

Qualification aims for the module learning objectives/skills

The goal of this compulsory curriculum is to achieve confidence with the terminology of this subject and its professional environment. This is achieved through task-based and interactive teaching in the foreign language. The course puts emphasis on crucial and practical skills such as reading comprehension, technical vocabulary, written correspondence, confident verbal communication, presentation and negotiation.

Reading list

Literature recommendations will be provided in the lecture.

3.4 Programming of Information Systems

Information about the module

engl. Name	Programming of Information Systems
Code	PRG3
Coordinator	Prof. Dr. Jens Lauterbach
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Programming 3 (4 Credit hours) Practical work Programming 3 (2 Credit hours)
Modul area	Programming
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	Programming 1 (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Admission requirement for the examination	Practical work Programming of Information Systems
Type of exam / required course achievements	Electronic examination, 60 minutes, Auxiliaries: SAP, authorized lecture and exercise materials, Moodle
Examination number	9772020
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

This lecture introduces concepts of programming that are required when organizations want to change or extend their Enterprise Systems (ES). This can for example be required in ES implementations, when the organization introduces a new system and the system needs to be adapted to meet business requirements. As technology platform SAP S/4 HANA will be used and the programming language ABAP.

The first part of lecture presents the fundamentals of programming for Enterprise Systems such as:

- Technical fundamentals and architecture
- Basic ABAP language elements
- ABAP reporting
- Simple data types, variables
- Expressions and operators
- Control structures
- Functions
- Complex data types

The second part of the lecture introduces advanced programming concepts

- Object Oriented Reporting with Abap Objects
- Events
- Interfaces
- Inheritance
- Exceptions
- Advanced programming techniques

Qualification aims for the module learning objectives/skills

Students will get an introduction to the programming of Enterprise Systems using SAP S/4 HANA and ABAP.

After successful participation, students will be able to:

- Understand and describe key elements of the programming language ABAP
- Understand ABAP source code
- Independently implement algorithms in ABAP
- Independently develop simple algorithms

Reading list

Literature recommendations will be provided in the first lecture.

3.5 Statistics

Information about the module

engl. Name	Statistics
Code	STAT
Coordinator	Prof. Dr. Phil. Alessandra Zarcone
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Statistics (4 Credit hours)
Teaching language	The module is taught in English.
Teaching and learning methods	Seminar format with practical exercises
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 90 minutes, 2 DIN A4 page handwritten list of R functions, statistics software (R) on own laptop
Examination number	9772010
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Introduction to statistics and to R
- Descriptive statistics: measures of central tendency, measures of dispersion, distributions
- Visualization with R
- Basic Probability Theory
- Looking at relationships: Correlation
- Prediction: Regression, Multiple Regression and Logistic regression
- Elements of Inferential statistics: hypothesis testing, comparing means, confidence intervals, significance testing, model evaluation
- Reporting of statistical models and results

Qualification aims for the module learning objectives/skills

After successfully completing this module, the students are able to:

- know and understand the most important statistical properties such as mean, median, percentile, quantile, variance, co-variance, correlation, auto correlation, variation coefficient and confidence intervals
- understand descriptive statistics methods and employ them for exploratory data analysis
- perform exploratory data analysis with R
- understand data visualization and create simple plots using R
- understand basic probability theory methods and solve simple problems using them
- formulate the assumptions behind different models and understand how to choose an appropriate model
- apply inferential statistics methods to evaluate statistical models
- apply the methods learned using the statistical software R and interpret the output coming from the software

Reading list

Field, Andy; Miles, Jeremy; Field, Zoe: Discovering Statistics Using R, SAGE Publications, 1. Aufl. 2012

Bruce, Peter; Bruce, Andrew; Gedeck, Peter: Practical Statistics for Data Scientists, O'Reilly, 2. Aufl. 2020

Winter, Bodo: Statistics for Linguists: An Introduction Using R, Routledge. 1. Aufl. 2019

Software:

- R: <https://www.r-project.org/>

4 International Information Systems Bachelor - 4. Semester

4.1 Data Analytics

Information about the module

engl. Name	Data Analytics
Code	DAT
Coordinator	Prof. Dr. Wolfgang Kratsch
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Data Analytics (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, none auxiliaries
Examination number	9772050
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Due to the advancing digitalization, data plays an increasingly important role in decision-making in companies. Today, companies no longer rely solely on traditional business intelligence tools to analyze their data. Under the term advanced analytics, they also use methods of statistics and machine learning to make forecasts about future events today and derive recommendations for action.

The resulting analytical information systems support decision-makers in companies by providing them with decision-relevant information, models and simulation results for different scenarios. Technologies such as online analytical processing (OLAP), data warehousing and data mining are used for this purpose. In companies, the focus is particularly on business analytics. This describes the process of so-called data refinement and visualization. It is a strategic tool for company managers. The focus is not only on the question "What was?", but also: "What will be?".

Qualification aims for the module learning objectives/skills

After successful participation in the module, students will be able to:

- Explain data and how to use it in a business context to develop new or improve existing business models and processes.
- Execute the data analysis process from data preparation to algorithms for analysis to visualization of analysis results.
- Examine issues and scenarios based on company data.
- Classify the quality as well as the linkage of data analysis results.

Reading list

Chamoni, P.; Gluchowski, P Analytische Informationssysteme: Business Intelligence-Technologien und –Anwendungen. 3. Auflage. Springer-Verlag: Berlin, Heidelberg 2006.

Laudon, K. C.; Laudon, J. P.; Schoder, Detlef Wirtschaftsinformatik – Eine Einführung. 2. Auflage. Pearson Studium: München et al. 2009.

Laursen, G. H. N.; Thorlund, J. Business Analytics for Managers: Taking Business Intelligence Beyond Reporting. 2. Auflage. Wiley: Hoboken 2016.

Ware, C. Information Visualization. 3. Auflage. Morgan Kaufmann: Waltham 2012.

4.2 2nd Foreign Language 4 of 4

Information about the module

engl. Name	2nd Foreign Language 4 of 4
Code	II2.FS
Coordinator	Lecturers at the Faculty of Liberal Arts and Sciences
Faculty	Faculty of Liberal Arts and Sciences
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	2nd Foreign Language 4 of 4 (4 Credit hours)
Modul area	Foreign Language
Teaching language	The module is taught in German for non-native students. Depending on the selection, the module will be taught in Spanish, French, Italian or Chinese language
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	The module 2nd Foreign Language 4 of 4 builds on the 2nd Foreign Language 3, 2 and 1 from 4 and is assumed. (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: Oral and written parts according to the module specifications of the chosen language of the faculty of Liberal Arts and Sciences
Examination number	9771098- 9771504
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The course is a combination of linguistic input by the teacher, independent self-study and communicative and application-oriented language teaching in which all participants are involved. The course takes place in groups of 20-25 participants.

Qualification aims for the module learning objectives/skills

The goal of this compulsory curriculum is to achieve confidence with the terminology of this subject and its professional environment. This is achieved through task-based and interactive teaching in the foreign language. The course puts emphasis on crucial and practical skills such as reading comprehension, technical vocabulary, written correspondence, confident verbal communication, presentation and negotiation.

Reading list

Literature recommendations will be provided in the lecture.

4.3 Intercultural Management & Law

Information about the module

engl. Name	Intercultural Management & Law
Code	IML
Coordinator	Prof. Dr. Svea Schauffler Frank Falker, LL.M.
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Intercultural Management & Law (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 120 minutes, Intercultural Management: none auxiliaries; Law: auxiliary Collection of laws
Examination number	9772090
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Intercultural barriers and the resulting misunderstandings can strongly influence any business decision and the possible results. Due to this, the development of intercultural competence is of utmost importance for both executives and managers to be successful in an international and dynamic business environment. International project management through global information systems is therefore of great importance. This course examines the relationship between culture and management and highlights the complexities of managing in international business. Basic psychological and sociological constructs underlying the creation and maintenance of international cooperation are analyzed. Special attention is given to the impact of globalization and the various forms of international alliances, as well as diversity and change management in this context. In this context, legal issues are also relevant, especially for the management, development and operation of information systems. The module creates a basic understanding of the relevant legal concepts based on the topics:

Private Law

- legal transactions
- General and special law of obligations
- Property law

Internet law

- Protection of domains
- Electronic Commerce
- Liability for damages and limitation of liability Copyright law

Competition Law

- Basic concepts
- Protection and liability
- Claims for damages

Data protection

- Characteristics and basic terms
- Applicable legal provisions
- Telecommunications data protection

Qualification aims for the module learning objectives/skills

After successful participation in the module, students will be able to:

- reproduce a basic psychological and sociological understanding of culture formation
- classify the basics of the most important culture researchers and measurement models
- specify risks and precautions in international business
- identify the impact of globalization on culture and management
- identify the basic features of private law and basic features of data processing law, including the importance of data protection, as well as their practical significance.
- interpret basic knowledge of legal casework in contract law.
- apply acquired knowledge in professional and everyday life.

Reading list

Literature will be announced in the seminar.

4.4 International IT Project and Service Management

Information about the module

engl. Name	International IT Project and Service Management
Code	IPSM
Coordinator	Prof. Dr. Clemens Espe, MBA
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	(4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, none auxiliaries
Examination number	9772070
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

IT Project Management:

- Methods for initiating projects/international projects and for stakeholder management
- Classical organizational forms of projects and international projects
- Teaching the necessary tools for planning time, costs and content of a project/international project
- Computer-aided tools for project management
- Methods for monitoring and controlling project progress
- Closing of projects/international projects

IT Service Management:

- Processes according to the industry standard ITIL of the phases
 - Service Strategy,
 - Service Design,
 - Service Transition,
 - Service Operation and
 - Continual Service Improvement

Qualification aims for the module learning objectives/skills

After successful participation in the module, students will be able to:

- independently carry out the definition and structuring of projects.
- plan, execute and successfully complete projects independently and on their own responsibility with regard to time, costs and content
- use the instruments and statistical methods of project management in a manner appropriate to the situation
- plan projects using current computer-aided project management tools by independently recording and optimizing time, cost, budget and resource plans
- explain the ITIL framework with its five lifecycle phases and its 26 processes
- evaluate current service processes in the work environment and transfer the ideas, structures and best practices of the ITIL framework to improve these processes

Reading list

PMI (2013): „A Guide to the Project Management Body of Knowledge“, Project Management Institute, 5th edition, 2013

Tiemeyer (2018): „Handbuch IT-Projektmanagement: Vorgehensmodelle, Managementinstrumente, Good Practices“, Hanser, 2018

Burghardt (2012): „Projektmanagement: Leitfaden zur Planung, Überwachung und Steuerung von Projekten“, Publicis Publishing, Erlangen 2012

E. M. Goldratt (2002): „Die Kritische Kette – Das neue Konzept im Projektmanagement“, Campus Verlag, Frankfurt, New York, 2002

Hofstede (2010): „Cultures and Organizations - SW of the Mind“, Mc Graw-Hill, 2010

Axelos (2014): „ITIL Lifecycle Suite“ (5 Bände), The Stationary Office, 2014

Beims, Ziegenbein (2015): „IT-Service Management in der Praxis mit ITIL“, Hanser, 2015

4.5 Team Project

Information about the module

engl. Name	Team Project
Code	PROJ
Coordinator	Prof. Dr. Stephan Zimmermann (Director of Studies)
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Team Project (4 Credit hours)
Teaching language	The module is taught in English and in German.
Teaching and learning methods	Project work, Seminar
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 8, Contact hours: 60h, Independent study: 180h, Total workload: 240h

Exam

Type of exam / required course achievements	Portfolio exam: <ul style="list-style-type: none">• Project work, 10-30 Seiten, 80%• Presentation, 20-40 minutes, 20%
Examination number	9774020
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The students carry out IT projects in small teams. The tasks of the students include project management, as well as project implementation depending on the task as well as documentation and presentation of the results.

Qualification aims for the module learning objectives/skills

After successful participation in the module, students will be able to:

- understand team processes and resolve typical team conflicts.
- plan and execute IT projects in a team with regard to time, effort and resources.
- apply agile or classic project management methods in practice.
- select suitable methods and learn new techniques independently.
- document project results in a comprehensible and appealing manner.

Reading list

Project specific Literature recommendations will be provided in the lecture.

5 International Information Systems Bachelor - 5. Semester

5.1 Integrated Semester in Industry

Information about the module

engl. Name	Integrated Semester in Industry
Code	PRAC
Coordinator	Advisor for Internship
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Integrated Semester in Industry (20 weeks)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Practical work
Prerequisites	The start of the internship and participation in the practical seminar is permitted if at least 80 ECTS have been proven.
Usage possibilities	International Information Systems
Total workload and its constituent parts	ECTS: 20, Total workload: 20 weeks

Exam

Type of exam / required course achievements	Practical report, 20-50 pages
Examination number	9773010
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Special feature:

As a special feature of studies at Bavarian universities, we offer you a legally required practical study semester integrated into your studies, in which the focus of knowledge transfer is shifted out into practice. During the practical semester, you retain your status as a student; the practical training is supplemented and deepened by accompanying teaching events at the university.

The Internship Office is responsible for the formal handling of the internship. Therefore, please also read the guidelines for the practical study semesters of the Internship Office.

In addition to the Internship Office, you will also have a professional supervisor. Please contact him or her as early as possible, especially if you have any problems with your internship.

Qualification aims for the module learning objectives/skills

- Instruction to work independently and on one's own responsibility
- Introduction to the professional field by working as independently as possible and on your own responsibility
- Extension and deepening of knowledge about organizational problem solving in the company
- Knowledge of issues relating to the exercise of the profession, such as job opportunities, forms of employment law and workplaces
- Insight into relevant tax regulations and social security.

Weighting of individual performance in the final grade

passed with success / passed without success

Reading list

Literature recommendations will be provided during the practical work, if needed.

5.2 Practical Seminar

Information about the module

engl. Name	Practical Seminar
Code	PSEM
Coordinator	Professors of the Faculty of Computer Science
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter semester
Courses	Practical Seminar (2 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar
Prerequisites	The start of the internship and participation in the practical seminar is permitted if at least 80 ECTS have been proven.
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 2, CP credits: 2, Contact hours: 30h, Independent study: 30h, Total workload: 60h

Exam

Type of exam / required course achievements	Presentation, 15-30 minutes
Examination number	9773020
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Students can

- present their own work correctly and comprehensibly according to scientific standards and answer questions.
- understand presentations on other work and participate in professional discussions.

Qualification aims for the module learning objectives/skills

The students expand their competence for presentations.

Weighting of individual performance in the final grade

passed with success / passed without success

Reading list

Literature recommendations will be provided in the lecture.

5.3 Cost Accounting, Controlling & Financial Management

Information about the module

engl. Name	Cost Accounting, Controlling & Financial Management
Code	COF
Coordinator	Prof. Dr. Jana Görmer-Redding
Faculty	Faculty of Computer Science
Type	Compulsory Module
Duration / Frequency	1 semester, winter semester
Courses	Cost Accounting, Controlling & Financial Management (6 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 6, CP credits: 8, Contact hours: 90h, Independent study: 150h, Total workload: 240h

Exam

Type of exam / required course achievements	Written examination, 90 minutes, auxiliary: non-programmable calculator, 1 DIN A4 sheet (front and back) with handwritten, personal lecture summary
Examination number	9773030
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The module deals with questions of internal accounting and corporate management. For this purpose, methods of cost and performance accounting, controlling and financial management are deepened.

The contents of the sub-topics are:

Cost and performance accounting:

- Cost accounting methods
- Contribution margin accounting
- Planned costing

Controlling:

- Basics of controlling
- Strategic controlling
- Operational controlling

Financial management:

- Views of investment and financing problems
- Investment appraisal: Static & dynamic methods
- Financing decisions: Capital structure, equity financing, debt financing

Qualification aims for the module learning objectives/skills

After successful participation in the module, students are able to:

- structure decisions on the basis of methods of cost and activity accounting in the company.
- transfer the procedures of cost and performance accounting to different questions in the company.
- explain the role and significance of controlling for companies.
- describe the tasks and instruments of operative and strategic controlling and apply them to operational decision-making situations.
- characterise operational decision-making situations and to select and apply suitable investment and financing methods for this purpose.
- critically assess the strengths and weaknesses of different investment calculation methods.
- economically analyse different types and concepts of equity and debt financing.

Reading list

Becker, Wolfgang; Holzmann, Robert (2016): Kosten-, Erlös- und Ergebnisrechnung. Wiesbaden: Springer Fachmedien Wiesbaden.

Becker, Wolfgang; Holzmann, Robert; Hilmer, Christian (2016): Übungen zur Kosten-, Erlös- und Ergebnisrechnung. Wiesbaden: Springer Fachmedien Wiesbaden.

Wöltje, Jörg (2016): Kosten- und Leistungsrechnung. Alle Verfahren und Systeme auf einen Blick. 2. Auflage. Freiburg: Haufe-Lexware GmbH & Co. KG.

Weber, Jürgen; Schäffer, Utz: Einführung in das Controlling, 14. Aufl. (oder älter), Stuttgart, Schäffer-Poeschel, 2014.

Peemöller, Volker: Controlling: Grundlagen und Einsatzgebiete, 5. Auflage (oder älter), Herne, nwb, 2005.

Brealey R., Myers S.; Allen F. (2008): Principles of Corporate Finance, Ninth Edition, New York.

Breuer W. (2007): Investition I, 3. Auflage, Wiesbaden.

Copeland T., Weston J., Shastri K. (2008): Finanzierungstheorie und Unternehmenspolitik, 4. Auflage, München.

6 International Information Systems Bachelor - 6. Semester

6.1 Applied Artificial Intelligence

Information about the module

engl. Name	Applied Artificial Intelligence
Code	AAI
Coordinator	Prof. Dr. Wolfgang Kratsch Prof. Dr. Björn Häckel
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Applied Artificial Intelligence (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, none auxiliaries
Examination number	9774010
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

In the module, selected current research work and fields of application in information systems of companies from the field of artificial intelligence are dealt with. Artificial intelligence is gaining importance in companies. Admittedly, we are still at the very beginning in the use of AI systems despite all the progress. Thanks to developments in the area of big data and algorithmic advances such as deep learning, the field of machine learning has developed rapidly in recent years and thus also provided the basis for ever greater support through artificial intelligence methods. The aim of this module is to understand these methods in an application-oriented corporate environment and in the context of information systems and to carry out use cases on this basis.

Qualification aims for the module learning objectives/skills

After successful participation in the module, students will be able to:

- reproduce basic theoretical and practical knowledge about the application areas of artificial intelligence and robotics in the context of information systems
- assess potentials and limits in the field of artificial intelligence
- describe current developments in the field of artificial intelligence
- carry out selected, company-specific use cases with the help of artificial intelligence

Reading list

Kersting, K., Lambert, C., & Rothkopf, C. (2020): Wie Maschinen lernen - Künstliche Intelligenz verständlich erklärt. Springer, Wiesbaden

Kreutzer, R.T.; Sirrenberg, M. (2019): Künstliche Intelligenz verstehen, Springer Gabler, Wiesbaden

6.2 Business Modelling

Information about the module

engl. Name	Business Modelling
Code	BMO
Coordinator	Prof. Dr. Claudia Reuter
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Business Modelling (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	Introduction to Information Systems and Programming 1 of Semester 1 and 2 (recommended)
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Electronic examination, 60 minutes, auxiliary: lecture notes, angegebene Literatur
Examination number	9772060
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The module provides participants with basic knowledge in the areas of business and software modelling.

Introduction to business and software modelling

- Properties of models
- Expectations of models
- Types of models and forms of documentation

Target modelling

- Hierarchical decomposition
- Impact mapping

Process modelling with BPMN

- BPMN process diagrams
- BPMN Collaborations
- BPMN event handling

Requirements engineering and system design

- Basics of Requirements Engineering
- System delimitation
- Eliciting requirements
- Documenting requirements textually
- Model-based documentation with UML (use case diagrams, activity diagrams, class diagrams, state diagrams, sequence diagrams)

Qualification aims for the module learning objectives/skills

After successful participation in the module, students are able to:

- select and apply established modelling concepts
- develop business process models according to BPMN
- apply requirements engineering techniques
- design simple SW systems with UML
- assess the quality of models
- know a tool for creating models

Reading list

- Bisset, M., Adzic, G.:** Impact Mapping: Making a Big Impact with Software Products and Projects, Provoking Thoughts, 2012
- Silver, B.:** BPMN Method and Style, 2. Auflage, Cody-Cassidy Press, 2011
- Pohl, K., Rupp, C.:** Basiswissen Requirements Engineering, 3. Auflage, dpunkt.verlag GmbH, 2011
- Cohn, M.:** User Stories Applied: For Agile Software Development, Addison-Wesley Professional, 2004
- Patton, J.:** User Story Mapping: Discover the Whole Story, Build the Right Product, O'Reilly and Associates, 2014
- Kecher, C., Salvanos, A.:** UML 2.5: Das umfassende Handbuch, 6. Auflage, Rheinwerk Computing, 2017
- Grässle, P., Baumann, H., Baumann, P.:** UML projektorientiert. Geschäftsprozessmodellierung, IT-System-Spezifikation und Systemintegration mit UML, Galileo Press, 2003

6.3 Production and Logistics

Information about the module

engl. Name	Production and Logistics
Code	PROLO
Coordinator	Prof. Dr. Arne Mayer
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, summer semester
Courses	Production and Logistics (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar format, practical class and workshop, practical work
Prerequisites	None
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Written examination, 60 minutes, auxiliary: calculator
Examination number	9772080
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

- Introduction to production and logistics
- Business objects and processes
- Inventory management
- Procurement and procurement policy
- Production and production logistics
- Distribution logistics
- Disposal logistics
- Supply Chain Management (SCM)
- Overview of information and communication systems in production and logistics
- Approaches to using artificial intelligence in production and logistics
- Further methods, techniques and applications

Qualification aims for the module learning objectives/skills

After successful participation in the module, students are able to:

- Recognize and classify the importance of logistics for the successful management of manufacturing companies
- To capture, understand, analyze and optimize companies and value chains in production and logistics methodically and comprehensively
- Be familiar with essential information and communication systems in production and logistics and understand their purposes
- Understand important functions of information and communication systems in production and logistics

Reading list

Kummer, Sebastian, Werner Jammerneegg und Oskar Grün. 2013. Grundzüge der Beschaffung, Produktion und Logistik. 3., aktualisierte Auflage. München: Pearson Studium.

Schönsleben, Paul. 2016. Integrales Logistikmanagement: Operations und Supply Chain Management innerhalb des Unternehmens und unternehmensübergreifend. 7. Aufl. Berlin, Heidelberg: Springer-Verlag.

Wannenwetsch, Helmut. 2010. Integrierte Materialwirtschaft und Logistik: Beschaffung, Logistik, Materialwirtschaft und Produktion. 4. Aufl. Springer-Lehrbuch. Berlin Heidelberg: Springer-Verlag.

Available on the WWW for members of the Augsburg University of Applied Sciences
(from the university network, also via VPN)
<http://www.springer.com/de/book/9783662483336>

Interactive examples and exercises for the book at
<http://www.intlogman.lim.ethz.ch/>

7 International Information Systems Bachelor - 7. Semester

7.1 Bachelor Thesis

Information about the module

engl. Name	Bachelor Thesis
Code	BA
Coordinator	Professors of the Faculty of Computer Science
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter or/and summer semester
Courses	
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Bachelor Thesis
Prerequisites	Information on the Bachelor thesis can be found under § 12 of the study and examination regulations.
Usage possibilities	International Information Systems
Total workload and its constituent parts	ECTS: 12, Working hours: 360 h Processing time: 4 months

Exam

Type of exam / required course achievements	Written assignment, 20-80 pages
Examination number	n.n.
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Qualification aims for the module learning objectives/skills

Reading list

Technical literature on the chosen topic.

7.2 Scientific Research Methods for Information Systems

Information about the module

engl. Name	Scientific Research Methods for Information Systems
Code	SRM
Coordinator	Professors of the Faculty of Computer Science
Faculty	Faculty of Computer Science
Type	Compulsory module
Duration / Frequency	1 semester, winter or/and summer semester
Courses	Scientific Research Methods for Information Systems (4 Credit hours)
Teaching language	The module is taught in English or in German.
Teaching and learning methods	Seminar
Prerequisites	The bachelor seminar is conducted in preparation for and accompanying the bachelor thesis
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 4, CP credits: 5, Contact hours: 60h, Independent study: 90h, Total workload: 150h

Exam

Type of exam / required course achievements	Portfolio exam: <ul style="list-style-type: none">• Written assignment, 5-15 pages, 50%• Presentation A, 15-30 minutes, 20%• Presentation B, 15-30 minutes, 30%
Examination number	9774030
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

The aim is to introduce students to a suitable scientific methodology in preparation for and during the Bachelor's thesis. The focus is on the independent development of in-depth knowledge as well as active engagement in the context of individual presentations with further contributions to this. In preparation for the Bachelor's thesis, students work on a completed topic area and summarise their results in a study paper as well as in a presentation (A). Accompanying the Bachelor thesis, questions, problems and solutions are discussed with the supervising professor. The progress and the results of the Bachelor thesis are to be presented in a presentation (B).

Qualification aims for the module learning objectives/skills

The students acquire detailed knowledge in the selected subject areas as well as extended competences in the areas of scientific work, presentation and rhetoric.

Reading list

8 Required Elective Modules

8.1 Profile Education Elective Modules

Information about the module

engl. Name	Profile Education Elective Modules
Code	PEE
Coordinator	Professors of the Faculty of Computer Science
Faculty	Faculty of Computer Science
Type	Required elective module
Duration / Frequency	1 semester, winter or summer semester
Courses	The required elective modules can be chosen from the offer of the Faculty of Computer Science.
Teaching language	See details of the respective required elective module.
Teaching and learning methods	Seminar, Seminar format, practical class and workshop, practical work
Prerequisites	Information on participation in required elective modules can be found under §§ 3, 4, 5 of the study and examination regulations.
Usage possibilities	International Information Systems
Total workload and its constituent parts	Credit hours: 24, CP credits: 30, Contact hours: 360h, Independent study: 540h, Total workload: 900h

Exam

Type of exam / required course achievements	For more information on the subject-related required elective modules please visit the program's websites under Downloads and links.
Examination number	
Grading	According to § 20 of the APO in the currently valid version.

Content of the module

Specific expertise in each module.

Qualification aims for the module learning objectives/skills

Specific expertise in each module.

Reading list

Index

1st Foreign Language , 4
2nd Foreign Language 1 of 4 , 14
2nd Foreign Language 2 of 4 , 20
2nd Foreign Language 3 of 4 , 32
2nd Foreign Language 4 of 4 , 44

Applied Artificial Intelligence , 64

Bachelor Thesis , 74
Business Modelling , 66

Cost Accounting, Controlling &
Financial Management , 60
Customizing of Information Systems ,
28

Data Analytics , 42
Database Systems , 16

E-Business , 30

Integrated Semester in Industry , 56
Intercultural Management & Law , 46
International IT Project and Service
Management , 50

Introduction to Business
Administration, Financial
Accounting , 10
Introduction to Information Systems ,
22

Mathematics 1 , 6
Mathematics 2 , 26

Practical Seminar , 58
Production and Logistics , 70
Profile Education Elective Modules , 78
Programming 1 , 8
Programming 2 & Software Engineering
, 24
Programming of Information Systems ,
34

Scientific Research Methods for
Information Systems , 76
Statistics , 38

Team Project , 54