

UNIVERSITÄT
BAYREUTH

Module Handbook

M6 b34 Philosophy and Computer Science
Faculty of Humanities and Social Sciences
University of Bayreuth - Germany

General Information and Reading Notes

A central component of the Bologna process is the modularisation of degree programmes which means a switch from the former course system to a modular system by grouping thematically related courses into course bundles – or modules.

This module handbook contains the description of all modules offered in the degree programme. The module handbook gives an overview and provides students, prospective students, and other interested persons with information on the content of the individual modules, their qualification goals, as well as qualitative and quantitative requirements.

Legal Disclaimer

Module descriptions provide students with detailed information regarding the content and the structure of the modules of a degree program. Only the relevant examination and study regulations are legally binding.

Examinations

The module handbook provides information on the module examinations. Slashes are to be read as "or" and denote alternative forms of examination. If a module has partial examinations, their respective weighting is indicated. The weighting is relevant for the calculation of the overall module mark.

The scope and duration of the respective examination forms are defined in the examination and study regulations of the programme.

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Fak526051: Analytical Thinking			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: winter semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
semester tasks/oral exam/term paper		1	
Term paper (~5000 words), oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: This module introduces students to analytical philosophical thinking and the characteristics of philosophical debates. Students gain basic competencies in logical reasoning, learn how to analyse philosophical arguments, and to develop philosophical hypotheses.			
Learning contents: In the course, various forms of philosophical argumentation are examined, and philosophical writing and discussion are practiced. Students learn to present philosophical problems and positions in a clear and comprehensible way. In addition, students practice disentangling different positions and dimensions within a debate.			
Type and scope of the courses: Seminar (2 SHW)			


Fak526052: Theoretical Philosophy			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or at start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Students get acquainted with basic knowledge, concepts, and problems in theoretical philosophy in a methodologically reflective way, thus training their reflective competence.			
Learning contents: Essential knowledge and methods of theoretical philosophy are taught as exemplified in a specific field of theoretical philosophy (e.g., philosophy of science or epistemology). Students get to know basic concepts, questions, and approaches of that subfield. Students practice analysing philosophical thinking and argumentation.			
Type and scope of the courses: Lecture (2 SHW)			


Fak526053: Practical Philosophy			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Thoma, Johanna; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Students get acquainted with with basic texts, concepts, and problems of practical philosophy in a methodically reflective way, thus training their reflective competence.			
Learning contents: Essential knowledge and methods of practical philosophy are taught as exemplified in a specific field of practical philosophy (e.g., ethics, political philosophy). Students get to know basic concepts, questions, and approaches of that subfield. Students practice analysing philosophical thinking and argumentation.			
Type and scope of the courses: Lecture (2 SHW)			


Fak126054: Computational Thinking			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 60	Link to HTML page 
Credit points: 5	Frequency: winter semester	Self-study hours: 90	
Person responsible for the module: Buschek, Daniel; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Acquisition of methodological competencies in programming and understanding of procedural/algorithmic thinking.			
Learning contents: Students learn a programming language, get to know the basics of computer science and algorithms, and learn how computers work.			
Type and scope of the courses: Course (2 SHW)			


Fak126055: Theoretical Computer Science			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 60	Link to HTML page 
Credit points: 5	Frequency: winter semester	Self-study hours: 90	
Person responsible for the module: Schönfeld, Mirco; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Students learn to structure and dynamically represent data as well as to analyse the complexity of algorithms.			
Learning contents: Basic methods and concepts from theoretical computer science such as lists, search and sorting methods, binary and search trees, graphs, and the related complexity theory and algorithm theory.			
Type and scope of the courses: Course (2 SHW)			


Fak126056: Applied Computer Science			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: summer semester	Self-study hours: 120	
Person responsible for the module: Buschek, Daniel; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: Fundamental programming skills and computer science concepts (e.g., from an introductory lecture including object-oriented programming as well as computer science basics).			
Learning objectives: This module provides the foundations for applying computer science concepts and knowledge in practical situations. This includes, but is not limited to, learning about methods and tools for conceptualising, developing, and implementing software systems in general, and/or in specific application domains. The module expects basic programming skills that are then further deepened and developed as part of this module, e.g., by providing opportunities for students to work in a larger (application-specific) software development context.			
Learning contents: Concepts, methods, tools and related knowledge for applying computer science in practical contexts, including software engineering, software development in general and/or in specific application domains.			
Type and scope of the courses: Course (2 SHW)			


Fak526065: Specialisation			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks/term paper		1	
Term paper (~5000 words), written exam or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or at the start of the event, e.g. on slides or syllabus).			
Prerequisites: In general, programming skills and knowledge of computer science and/or philosophical methods and concepts are required. The specific requirements depend on the course.			
Learning objectives: Students will gain specialised skills in topics related to philosophy, computer science, their intersection, or related fields.			
Learning contents: On a topic of their choosing, the students learn to improve their competence in dealing with questions from philosophy, computer science, the intersection of philosophy and computer science, or related fields (such as robotics, law, healthcare, social science, business informatics, neuroscience, etc.).			
Type and scope of the courses: Course (2 SWS)			


Fak526066: Independent Study			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 10	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 140	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
scientific paper/seminar presentation/scientific talk/scientific poster/semester tasks		1	
Depending on the specific project and to be discussed with supervisor. Usually a scientific paper (~10000 words), poster and presentation, or some practical project output (e.g., program, GUI, database, movie, ...) as set by the examiner through semester tasks. This module may be unmarked.			
Prerequisites:			
In general, programming skills and knowledge of computer science and/or philosophical methods and concepts are required. The specific requirements depend on the project.			
Learning objectives:			
Students will gain specialised skills in topics related to philosophy, computer science, their intersection, or related fields through independent study.			
Learning contents:			
On a topic of their choosing, the students learn to improve their competence in dealing with questions from philosophy, computer science, the intersection of philosophy and computer science, or related fields (such as robotics, law, healthcare, social science, business informatics, neuroscience, etc.).			
Type and scope of the courses:			
N/A			

Fak526067: Internship (min. 12 weeks + report)							
Valid from: 01.10.2024							
Teaching language: English	Duration: one semester	Contact hours: 0	Link to HTML page 				
Credit points: 25	Frequency: every semester	Self-study hours: 750					
Person responsible for the module: Kästner, Lena; Prof. Dr.							
Description of coursework and examinations:							
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report	1						
Completion of the internship, submission of weekly internship descriptions (~1p), and submission of an internship report (~4-6pp).							
Prerequisites: The prerequisites may differ between internships. Students should enquire well in advance to make sure they meet the requirement for their desired internship. For internships at a research group, prior experience specific to the research group's field must usually be demonstrated.							
Learning objectives: Through an internal or external internship, students gain insights and practical experience that contribute to their orientation in the professional field. Students are given the opportunity to apply the theoretical or practical knowledge acquired during their studies in practice. An internship provides an opportunity to reflect on one's own goals for a future career and to identify one's own strengths. In this respect, the internship serves as an important step towards entering a profession.							
Learning contents: Detection and structuring of practical problems in research groups at the university (internal internship) or in (internationally oriented) organizations (external internship). Goals: learning effective teamwork, goal-oriented problem analysis within a tight time frame, weighing different solutions, acquisition of social and communication skills.							
Type and scope of the courses: N/A							


Fak526068: Internship (min. 8 weeks + report)							
Valid from: 01.10.2024							
Teaching language: English	Duration: one semester	Contact hours: 0	Link to HTML page 				
Credit points: 15	Frequency: every semester	Self-study hours: 450					
Person responsible for the module: Kästner, Lena; Prof. Dr.							
Description of coursework and examinations:							
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Title:	Weight:						
report	1						
Completion of the internship, submission of weekly internship descriptions (~1p), and submission of an internship report (~4-6pp)							
Prerequisites: The prerequisites may differ between internships. Students should enquire well in advance to make sure they meet the requirement for their desired internship. For internships at a research group, prior experience specific to the research group's field must usually be demonstrated.							
Learning objectives: Through an internal or external internship, students gain insights and practical experience that contribute to their orientation in the professional field. Students are given the opportunity to apply the theoretical or practical knowledge acquired during their studies in practice. An internship provides an opportunity to reflect on one's own goals for a future career and to identify one's own strengths. In this respect, the internship serves as an important step towards entering a profession.							
Learning contents: Detection and structuring of practical problems in research groups at the university (internal internship) or in (internationally oriented) organizations (external internship). Goals: learning effective teamwork, goal-oriented problem analysis within a tight time frame, weighing different solutions, acquisition of social and communication skills.							
Type and scope of the courses: N/A							


Fak526069: Internship (min. 5 weeks + report)							
Valid from: 01.10.2024							
Teaching language: English	Duration: one semester	Contact hours: 0	Link to HTML page 				
Credit points: 10	Frequency: every semester	Self-study hours: 300					
Person responsible for the module: Kästner, Lena; Prof. Dr.							
Description of coursework and examinations:							
<table border="1"> <thead> <tr> <th>Title:</th> <th>Weight:</th> </tr> </thead> <tbody> <tr> <td>report</td> <td>1</td> </tr> </tbody> </table>		Title:	Weight:	report	1		
Title:	Weight:						
report	1						
Completion of the internship, submission of weekly internship descriptions (~1p), and submission of an internship report (~4-6pp)							
Prerequisites: The prerequisites may differ between internships. Students should enquire well in advance to make sure they meet the requirement for their desired internship. For internships at a research group, prior experience specific to the research group's field must usually be demonstrated.							
Learning objectives: Through an internal or external internship, students gain insights and practical experience that contribute to their orientation in the professional field. Students are given the opportunity to apply the theoretical or practical knowledge acquired during their studies in practice. An internship provides an opportunity to reflect on one's own goals for a future career and to identify one's own strengths. In this respect, the internship serves as an important step towards entering a profession.							
Learning contents: Detection and structuring of practical problems in research groups at the university (internal internship) or in (internationally oriented) organizations (external internship). Goals: learning effective teamwork, goal-oriented problem analysis within a tight time frame, weighing different solutions, acquisition of social and communication skills.							
Type and scope of the courses: N/A							


Fak526070: Internship (min. 2 weeks + report)							
Valid from: 01.10.2024							
Teaching language: English	Duration: one semester	Contact hours: 0	Link to HTML page 				
Credit points: 5	Frequency: every semester	Self-study hours: 150					
Person responsible for the module: Kästner, Lena; Prof. Dr.							
Description of coursework and examinations:							
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Title:	Weight:						
report	1						
Completion of the internship, submission of weekly internship descriptions (~1p), and submission of an internship report (~4-6pp)							
Prerequisites: The prerequisites may differ between internships. Students should enquire well in advance to make sure they meet the requirement for their desired internship. For internships at a research group, prior experience specific to the research group's field must usually be demonstrated.							
Learning objectives: Through an internal or external internship, students gain insights and practical experience that contribute to their orientation in the professional field. Students are given the opportunity to apply the theoretical or practical knowledge acquired during their studies in practice. An internship provides an opportunity to reflect on one's own goals for a future career and to identify one's own strengths. In this respect, the internship serves as an important step towards entering a profession.							
Learning contents: Detection and structuring of practical problems in research groups at the university (internal internship) or in (internationally oriented) organizations (external internship). Goals: learning effective teamwork, goal-oriented problem analysis within a tight time frame, weighing different solutions, acquisition of social and communication skills.							
Type and scope of the courses: N/A							


Fak526057: Minds and Machines			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: summer semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: Completion of the modules "Analytical Thinking" and "Theoretical Philosophy" or demonstration of comparable competencies.			
Learning objectives: Students acquire basic knowledge about the relationship between minds, brains, and machines. They learn about core concepts in and the history of intelligence research at the intersection of philosophy, cognitive science, computer science, neuroscience, and robotics.			
Learning contents: Classical topics and debates about the relation between minds and machines, e.g., from the philosophy of mind, philosophy of science, epistemology, artificial intelligence, and cognitive science.			
Type and scope of the courses: Lecture (2 SHW)			


Fak526058: Mathematical Thinking			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 120	Link to HTML page 
Credit points: 10	Frequency: every semester	Self-study hours: 180	
Person responsible for the module: Roy, Olivier; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam or semester tasks, according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event).			
Prerequisites: There are no general requirements for participation. Individual courses may be consecutive or have specific requirements.			
Learning objectives: The students acquire basic knowledge of the mathematical and/or logical tools commonly used at the intersection of philosophy and computer science. They become familiar with the theoretical foundations of mathematical models and learn to apply them to concrete questions in philosophy and in computer science.			
Learning contents: Topics are not constrained to, but can include: Elementary set theory Natural numbers and integers, mathematical induction, rational numbers Maps, functions, relations Elementary logic and introduction to mathematical proving Advanced logic The fields of real and complex numbers Equivalence transformations of equations and inequations Meta-theory of propositional and first-order logic Modal logic, including epistemic, deontic, temporal logic, and the logic of agency non-monotonic reasoning and defeasible logic proof theory and substructural logic			
Type and scope of the courses: Lecture (2 SHW)			


Fak526059: Machine Ethics			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: summer semester	Self-study hours: 90	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Students acquire basic knowledge to analyse the ethical implications of computer systems. They will develop an understanding of different approaches to designing ethical machines, such as value alignment, machine learning for value specification, and ethical decision-making frameworks.			
Learning contents: Topics and debates in machine ethics, e.g., ethics of computer systems and artificial intelligence, machine learning and bias, value alignment, autonomous machines and responsibility, and ethics of human-robot interaction.			
Type and scope of the courses: Lecture (2 SHW)			

Fak526060: Data Modelling and Analysis			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 60	Link to HTML page 
Credit points: 5	Frequency: winter semester	Self-study hours: 90	
Person responsible for the module: Schönfeld, Mirco; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam or semester tasks n according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: There are no requirements for participation.			
Learning objectives: Conceptual understanding of techniques and algorithms for statistics, data modelling, and data analysis.			
Learning contents: Basics of techniques and algorithms for data analysis.			
Type and scope of the courses: Course (4 SHW)			

Fak526061: Advanced Philosophy			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
semester tasks/oral exam/term paper		1	
Term paper (~5000 words) or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites: In general, basic philosophical knowledge is required. The specific requirements depend on the course.			
Learning objectives: Students deepen their philosophical knowledge on a topic of their choice. They improve their ability to deal with philosophical concepts, questions, and approaches.			
Learning contents: On a topic of their choosing, the students learn to improve their skills in dealing with philosophical questions. They practice presenting and defending their own positions in light of contemporary and/or historical debates, explain their positions and arguments verbally or in writing, and engage in philosophical debates.			
Type and scope of the courses: Seminar (2 SHW)			

Fak126062: Advanced Computer Science			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Buschek, Daniel; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
written exam/oral exam/semester tasks		1	
Written or oral exam, or semester tasks according to PSO §11 with written announcement in advance (on eLearning or CampusOnline or cmlife or start of event, e.g. on slides or syllabus).			
Prerequisites:			
In general, fundamental programming skills and knowledge of computer science concepts is required. The specific requirements depend on the course.			
Learning objectives:			
In this module, students deepen their knowledge of computer science by studying an advanced area in detail. This includes, e.g., learning about advanced concepts, algorithms and methods in a specific subfield of computer science. Methodologically, this may include practical engagement (e.g., implementing an advanced algorithm), as well as direct engagement with research work in this topic (e.g., reading papers to inform one's own course project).			
Learning contents:			
Gaining deeper knowledge about concepts, methods, algorithms, etc. in an advanced computer science topic, building on foundational computer science knowledge and skills from previous courses.			
Type and scope of the courses:			
Lecture (2 SHW)			

Fak526063: Thesis Seminar			
Valid from: 01.10.2024			
Teaching language: English	Duration: one semester	Contact hours: 30	Link to HTML page 
Credit points: 5	Frequency: every semester	Self-study hours: 120	
Person responsible for the module: Kästner, Lena; Prof. Dr.			
Description of coursework and examinations:			
Title:		Weight:	
seminar presentation/scientific talk/scientific poster		1	
Presentation (unmarked)			
Prerequisites: Successful completion of all track foundations, shared foundation, and advanced topics modules.			
Learning objectives: Students acquire the ability to communicate research projects and results in accordance with current international academic standards. They practice giving and responding to constructive and critical feedback and learn how to enhance and refine their MA or MSc thesis research (peer support).			
Learning contents: Students present their MA or MSc thesis research project. They give and receive feedback on interdisciplinary works.			
Type and scope of the courses: Seminar (2 SHW)			

Fak526064: Master's Thesis – Philosophy and Computer Science							
Valid from: 01.10.2024							
Teaching language: English	Duration: one semester	Contact hours: 0	Link to HTML page 				
Credit points: 30	Frequency: every semester	Self-study hours: 900					
Person responsible for the module: Kästner, Lena; Prof. Dr.							
Description of coursework and examinations:							
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Title:	Weight:						
Master's Thesis – Philosophy and Computer Science	1						
A thesis that reflects the effort of about 900 hours. The exact formalities are to be arranged with the examiner.							
Prerequisites: Successful completion of all track foundations, shared foundations, and advanced topics modules.							
Learning objectives: The aim of the master thesis is for students to develop and exercise their ability to undertake independent and specialised research in a concentrated manner over a sustained period of time. The thesis topic can be in any subject in philosophy or computer science or their intersection that can be supervised by any Philosophy and Computer Science teaching staff.							
Learning contents: The ability to identify, describe, and structure concrete problems. Presentation, justification, and application of a methodology to approach the chosen problem. The ability to formulate original solutions for a concrete problem. The ability to communicate research results in accordance with current international academic standards.							
Type and scope of the courses: N/A							

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