Modulhandbuch

Embedded Systems and Microrobotics - Master's Programme

im Sommersemester 2021

erstellt am 25/04/24

Frühere Module

inf191 - Special Topics in Practical Computer Science II

Module label	Special Topics in Practical Computer Science II
Modulkürzel	inf191
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Praktische Informatik
Zuständige Personen	• Peter, Andreas (module responsibility) • Vogel-Sonnenschein, Ute (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	No participant requirements
Skills to be acquired in this module	The module aims to integrate current developments in the field of Practical Informatics into the course of study in the appropriate course forms. **Subject competences** The students: • differentiate and contrast a subarea of practical computer science in more detail • recognize and assess the techniques and methods to be applied in the special field of the course and their limits • identify, structure and solve problems also in new or emerging areas of their discipline • recognize the limits of current knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in practical computer science and assess their significance • critically follow further developments in the special field discussed in the course. **Methodological competencies** The Students: • apply state-of-the-art and innovative methods in the reserarch and solution of problems, drawing on other disciplines where appropriate • investigate problems on the basis of technical and scientific literature, • write an article according to scientific criteria, and present their results in a scientific talk • reflect on problems, including those in new or emerging areas of practical computer science, and apply computer science methods to investigate and solve them • plan time schedules and other resources • develop and reflect on their own theories on independently generated hypotheses **Social Skills** The Students: • will communicate persuasively orally and in writing with users and professionals • will solve tasks goal-oriented in a team **Self-competencies** The students: • deepen their self-organization skills • reflect self-critically on their actions and skills in the special field under consideration and assess them appropriately

Module contents	In this module, content and methods on current topics in practical computer science are taught. For details on objectives and contents, please refer to the details of the assigned course or contact the lecturers directly
Literaturempfehlungen	depending on the course assigned
Links	
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Teaching/Learning method	2 events of V, Ü, S, P
Previous knowledge	none

Examination	Prüfungszeiten	Type of examination
Final exam of module	Am Ende der Vorlesungszeit nach Absprache mit dem Lehrenden	Fachpraktische Übungen oder Referat oder mündliche Prüfung

Lehrveranstaltungsform	VA-Auswahl
SWS	2
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	28 h

inf493 - Special Topics in Theoretical Computer Science II

Module label	Special Topics in Theoretical Computer Science II
Modulkürzel	inf493
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Theoretische Informatik
Zuständige Personen	• Wehrheim, Heike (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	The required prerequisites are specified in the details of the assigned course.
Skills to be acquired in this module	The aim of the module is to integrate current developments in theoretical computer science into the degree program in appropriate course formats. **Professional skills** The students: • differentiate and contrast a sub-area of computer science in which they have specialized in more detail or reflect on computer science in general • recognize and assess the techniques and methods to be used in their special field and their limitations • identify, structure and solve problems in new or emerging areas of their discipline • apply state-of-the-art and innovative methods to investigate and solve problems, drawing on other disciplines where appropriate • recognize the limits of today's knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in computer science and assess their significance **Methodological skills** The students: • evaluate tools, technologies and methods and apply them in a differentiated manner • creatively develop new and original approaches and methods • reflect on problems in new or emerging areas of their discipline and apply computer science methods to investigate and solve them **Social skills** The students: • integrate their skills into team processes **Personal skills** The students: • pursue the further developments in computer science in general and in their specialized field successfully and independently carry out innovative activities in their professional field
Module contents	Depending on the assigned course
Literaturempfehlungen	je nach zugeordneter Lehrveranstaltung

Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	semi-annual
Module capacity	unlimited
Reference text	If more than one course is assigned to the module, you should generally select courses with a total of 4 SWS, e.g. a lecture with an associated tutorial. Further information can be found in the description (details) of the assigned courses.
Teaching/Learning method	2 events from V, S, Ü, P
Previous knowledge	None

Examination	Prüfungszeiten	Type of examination
Final exam of module		Fachpraktische Übung und mündliche Prüfungen oder Klausur

Lehrveranstaltungsform	VA-Auswahl
SWS	2
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	28 h

inf592 - Special Topics in 'Applied Artificial Intelligence' II

Module label	Special Topics in 'Applied Artificial Intelligence' II
Modulkürzel	inf592
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	• Sonntag, Daniel (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	No participant requirement
Skills to be acquired in this module	The module aims to integrate current developments in the specialization area 'Learning and Cognitive Systems II' into the appropriate course formats within the study program. **Professioal competences** The students: • differentiate and contrast a specific area of computer science in which they have specialized, in more detail, or reflect on computer science in general • recognize and assess the techniques and methods applicable in their specialized field and their limitations • identify, structure and solve problems also in new or emerging areas of their discipline • apply state-of-the-art and innovative methods in investigating and solving problems, possibly drawing from other disciplines • recognize the limits of current knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in computer science and assess their significance **Methodological competencies** The students: • valuate tools, technologies, and methods and apply them in a differentiated manner, creatively developing new and original approaches and methods • reflect on problems, even in emerging areas of their discipline, and apply computer science methods to investigate and solve them **Social Competencies** The students: • integrate their skills into team processes **Self-competences** The students: • critically follow the further developments in computer science in general and in their specialized area • successfully and independently carry out innovative activities in their professional field
Module contents	This module offers various classes in the field of Learning and Cognitive Systems. For details regarding objectives and content, please refer to the specific class or contact the instructor directly.
Literaturempfehlungen	depending on the area of specialization and the assigned course

Links		
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	irregular	
Module capacity	unlimited	
Teaching/Learning method	2 events from V, S, Ü, P	
Previous knowledge	none	
Examination	Prüfungszeiten	Type of examination
Final exam of module		
	At the end of the lecture period by arrangement with the lecturer	Semester-long practical exercises or presentation or oral examination

Lehrveranstaltungsform	VA-Auswahl
SWS	2
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	56 h

inf492 - Special Topics in Theoretical Computer Science I

Module label	Special Topics in Theoretical Computer Science I
Modulkürzel	inf492
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Theoretische Informatik
Zuständige Personen	• Wehrheim, Heike (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	The required prerequisites are specified in the details of the assigned course.
Skills to be acquired in this module	The module aims to integrate current developments in the specialization area "Modeling and Analysis of Complex Systems" I into the course of study in the appropriate course forms. **Professional competencies** The students • differentiate and contrast a subarea of computer science in which they have specialized in more detail or reflect on computer science in general • recognize and evaluate the techniques and methods to be applied in their special field and their limitations • identify, structure and solve problems also in new or emerging areas of their discipline • apply state-of-the-art and innovative methods in investigating and solving problems, drawing on other disciplines as appropriate • recognize the limits of current knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in computer science and assess their significance **Methodological competencies** The students • evaluate tools, technologies and methods and apply them in a differentiated manner • creatively develop new and original approaches and methods • reflect on problems also in new or emerging areas of their discipline and apply computer science methods for investigation and solution **Social Competencies** The students • integrate their skills into team processes **Self-competencies** The students • critically follow further developments in computer science in general and in their field of specialization • carry out innovative activities in their professional field successfully and independentl
Module contents	depending on the assigned course
Literaturempfehlungen	depending on the assigned course

Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Reference text	If more than one course is assigned to the module, you should generally select courses with a total of 4 SWS, e.g. a lecture with an associated tutorial. Further information can be found in the description (details) of the assigned courses.
Teaching/Learning method	2 events from V, S, Ü, P
Previous knowledge	none

Examination	Prüfungszeiten	Type of examination
Final exam of module	at the end of the lecture term	Practical exercise and oral exams or written exam

Lehrveranstaltungsform	VA-Auswahl
SWS	2
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	28 h

inf189 - Special Topics in Practical Computer Science I

Module label	Special Topics in Practical Computer Science I
Modulkürzel	inf189
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Praktische Informatik
Zuständige Personen	• Peter, Andreas (module responsibility) • Vogel-Sonnenschein, Ute (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	The required prerequisites are further specified in the details of the assigned course.
Skills to be acquired in this module	The module aims to integrate current developments in the field of Practical Informatics into the course of study in the appropriate course forms. **Professional competences** The students: • differentiate and contrast a subarea of practical computer science in more detail • recognize and assess the techniques and methods to be applied in the special field of the course and their limits • identify, structure and solve problems also in new or emerging areas of their discipline • recognize the limits of current knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in practical computer science and assess their significance • critically follow further developments in the special field discussed in the course. **Methodological competences** Students will: • apply state-of-the-art and innovative methods in the reserarch and solution of problems, drawing on other disciplines where appropriate • investigate problems on the basis of technical and scientific literature, • write an article according to scientific criteria, and present their results in a scientific talk • reflect on problems, including those in new or emerging areas of practical computer science, and apply computer science methods to investigate and solve them • plan time schedules and other resources • develop and reflect on their own theories on independently generated hypotheses **Social competences** Students will: • communicate persuasively orally and in writing with users and professionals • solve tasks goal-oriented in a team **Self competences** The students • deepen their self-organization skills • reflect self-critically on their actions and skills in the special field under consideration and assess them appropriately
Module contents	In this module, content and methods on current topics in practical computer science are taught. For details on objectives and contents, please refer to the details of the assigned course or contact the lecturers directly
Literaturempfehlungen	depending on the course assigned
Links	

Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Reference text	see course description for more details
Teaching/Learning method	2 events from V, S. Ü, P
Previous knowledge	The required prerequisites are further specified in the details of the assigned course.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Portfolio and presentation (Referat) : during the course Written or oral exam: At the end of the lecture period. More detailed information on the forms of examination will be given in the course.	Written exam or portfolio or presentation (Referat) or oral exam

Lehrveranstaltungsform	VA-Auswahl
SWS	4
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	28 h

inf593 - Special Topics in 'Applied Artificial Intelligence' I

Module label	Special Topics in 'Applied Artificial Intelligence' I
Modulkürzel	inf593
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	• Sonntag, Daniel (module responsibility) • Lehrenden, Die im Modul (Module counselling)
Prerequisites	No participant requirement
Skills to be acquired in this module	This module aims to integrate current developments in the specialization area "Learning and Cognitive Systems" I into the course of study in the appropriate course forms. **Professioal competences** The students: • differentiate and contrast a specific area of computer science in which they have specialized, in more detail, or reflect on computer science in general • recognize and assess the techniques and methods applicable in their specialized field and their limitations • identify, structure and solve problems also in new or emerging areas of their discipline • apply state-of-the-art and innovative methods in investigating and solving problems, possibly drawing from other disciplines • recognize the limits of current knowledge and technology and contribute to the further scientific and technological development of computer science • discuss current developments in computer science and assess their significance **Methodological competencies** The students: • valuate tools, technologies, and methods and apply them in a differentiated manner, creatively developing new and original approaches and methods • reflect on problems, even in emerging areas of their discipline, and apply computer science methods to investigate and solve them **Social Competencies** The students: • integrate their skills into team processes **Self-competences** The students: • critically follow the further developments in computer science in general and in their specialized area • successfully and independently carry out innovative activities in their professional field
Module contents	depending on the area of specialization and the assigned course
Literaturempfehlungen	depending on the area of specialization and the assigned course

Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Teaching/Learning method	2 VA aus V, S, Ü, P
Previous knowledge	none

Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period by arrangement with the lecturer.	Practical exercises and presentation or oral examination

Lehrveranstaltungsform	VA-Auswahl
SWS	2
Frequency	siehe Angebotsrhythmus Modul
Workload Präsenzzeit	28 h

inf581 - Special Topics in 'Digitalised Energy Systems' II

Module label	Special Topics in 'Digitalised Energy Systems' II
Modulkürzel	inf581
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Computing Science (Master) > Angewandte Informatik • Master's programme Digitalised Energy Systems (Master) > Digitalised Energy System Automation, Control and Optimisation
Zuständige Personen	• Nieße, Astrid (module responsibility) • Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	No participant requirements
Skills to be acquired in this module	This module integrates current developments in the field of Digitalised Energy Systems in adequate study courses. **Professional competences** The students: • define and contrast a computer science part, in which they are specialised, in detail or • evaluate computer science in general • recognise and evaluate applied techniques and methods of their subject and are aware of their limits • identify, structure and solve problems/tasks, also in new or developing subject areas • apply state of the art and innovative methods to solve problems, if necessary from other disciplines • are aware of the current limits and contribute to the development of computer science research and technology • discuss and evaluate recent computer science developments **Methodological competences** The Students: • evaluate tools, technologies and methods • sophisticatedly combine new and original approaches and methods • creatively evaluate problems/tasks, including new or developing subject areas of their discipline • apply computer science methods for solutions and research **Social competences** The Students: • support team process by their abilities **Self-competences** The Students: • pursue the overall and special computer science development • critically implement innovative professional activities effectively and independently
Module contents	See assigned course description
Literaturempfehlungen	Will be announced in the course
Links	

Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	irregular	
Module capacity	unlimited	
Teaching/Learning method	V + Ü	
Previous knowledge	none	

Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period	Portfolio or presentation or oral examination

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	siehe Angebotsrhythmus Modul	28
Exercises		2	siehe Angebotsrhythmus Modul	28
Präsenzzeit Modul insgesamt				56 h