

## Module: AI Applications – Project

<b>Level</b>	Bachelor	<b>Short Name</b>	AIA
<b>Responsible Lecturers</b>	Prof. Dr. André Drews, Prof. Dr. Henrik Botterweck		
<b>Department, Facility</b>	(Unspecified)		
<b>Course of Studies</b>	International Track		
<b>Compulsory/elective</b>	Elective	<b>ECTS Credit Points</b>	2,5
<b>Semester of Studies</b>	(Unspecified)	<b>Semester Hours per Week</b>	2
<b>Length (semesters)</b>	1	<b>Workload (hours)</b>	75
<b>Frequency</b>	SuSe and WiSe	<b>Presence Hours</b>	20
<b>Teaching Language</b>	German/English	<b>Self-Study Hours</b>	55

The following section is filled only if there is **exactly one** module-concluding exam.

<b>Exam Type</b>	Portfolio Exam	<b>Exam Language</b>	German/English
<b>Exam Length (minutes)</b>		<b>Exam Grading System</b>	One-third Grades
<b>Learning Outcomes</b>	<p>The students get practical insights into recent topics in Artificial Intelligence in research and economics on a basic scientific level.</p> <p>The participants acquire competences and abilities in realizing projects based on the basic ideas and principles of AI.</p> <p>The students become able to work on relevant basic topics in research and application of AI efficiently and team-oriented.</p> <p>The students know how to structure a scientific and/or practical problem in AI within a team on a basic level, work on it systematically and present the results.</p>		
<b>Participation Prerequisites</b>	Basic programming abilities are advantageous.		

The previous section is filled only if there is **exactly one** module-concluding exam.

<b>Consideration of Gender and Diversity Issues</b>	<ul style="list-style-type: none"> <li>✓ Use of gender-neutral language (THL standard)</li> <li>✓ Target group specific adjustment of didactic methods</li> <li>✓ Making subject diversity visible (female researchers, cultures etc.)</li> </ul>
<b>Applicability</b>	The module can be combined with the more theoretically oriented module "AI Applications – seminar". The project module is intended to give a more practical and project-related background in AI applications across disciplines and hence shall broaden the view for participants of possibly all study programs.
<b>Remarks</b>	The project is intended to provide abilities to realize simple applications of modern topics of Artificial Intelligence. The background and supervision is provided by members of the universities' expert group for AI in applications and external speakers from science and economics.

In the related seminar module the topics are presented from a more general perspective. The project shall result in a scientific treatise, in advanced cases (not necessarily on Bachelor level) in a publication, for example for the annual students conference, including a poster session discussion. The module is structured in a flexible manner according to the competences and interests of the participants. According to their individual background and interests, participants in bachelor programs may work together with Master students, but they work on a more basic level on specified adequate sub-topics.

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## Module Course: AI Applications – Project

(of Module: AI Applications – Project)

<b>Course Type</b>	Project Work	<b>Form of Learning</b>	Online supported with presence hours
<b>Mandatory Attendance</b>	no	<b>ECTS Credit Points</b>	2,5
<b>Participation Limit</b>		<b>Semester Hours per Week</b>	2
<b>Group Size</b>		<b>Workload (hours)</b>	75
<b>Teaching Language</b>	German/English	<b>Presence Hours</b>	20
<b>Study Achievements ("Studienleistung", SL)</b>		<b>Self-Study Hours</b>	55
<b>SL Length (minutes)</b>		<b>SL Grading System</b>	One-third Grades

The following section is filled only if there is a course-specific exam.

<b>Exam Type</b>		<b>Exam Language</b>	
<b>Exam Length (minutes)</b>		<b>Exam Grading System</b>	
<b>Learning Outcomes</b>			
<b>Participation Prerequisites</b>			

The previous section is filled only if there is a course-specific exam.

<b>Contents</b>	<p>The detailed content is adapted each semester according to the participants' needs and speakers fields of expertise. The Bachelor level requires a more basic and general approach. Topics are related to, but independent of the AI Applications seminar. Examples are:</p> <ul style="list-style-type: none"> <li>Edge AI (Applications, Neuromorphic Computing, ...)</li> <li>Image segmentation in different applications</li> <li>Image processing/Object detection in various applications</li> <li>Typical applications of Large Language Models</li> <li>Reinforcement Learning and its usage</li> <li>AI in the Cloud</li> <li>AI for optimizing economic work-flow and processes.</li> </ul>
<b>Literature</b>	<p>Given by lecturers / speakers. General background is found in: Deep Learning, Goodfellow, Bengio, Courville, MIT Press 2016(online: <a href="http://www.deeplearningbook.org">www.deeplearningbook.org</a>)</p>
<b>Remarks</b>	<p>Participation in the „AI Applications – Seminar“ module prior to the project work is recommended, but not mandatory. There is a parallel module on Master level strongly connected to this module.</p>