

Module description: M.Sc. 'Sports Exercise and Human Performance'

Title of Module		Advanced Research Methods					
Title of Module		Vertiefende Wissenschaftsmethodik					
Degree Program		Sports, Exercise and Human Performance					
1	Module Number: M4	Status: <input checked="" type="checkbox"/> Mandatory Module <input type="checkbox"/> Elective Module					
2	Frequency: <input checked="" type="checkbox"/> every semester <input type="checkbox"/> every winter semester <input type="checkbox"/> every summer semester	Duration: <input type="checkbox"/> 1 semester <input checked="" type="checkbox"/> 2 semesters	Semester: 1-2	CP: 20	Workload (h): 600 h		
3	Module Structure:						
	No.	Type	Course	Status (mandatory/lective)	CP	Attendance (h + SWS¹)	Individual Study Time (h)
	1	S	Analysis of Complex Datasets – Employing Advanced Statistical Methods	<input checked="" type="checkbox"/> m <input type="checkbox"/> e	5	60 (4 hrs/week)	90
	2	S	Inverse Dynamics of Human Movement	<input checked="" type="checkbox"/> m <input type="checkbox"/> e	5	60 (4 hrs/week)	90
	3	S	Forward Dynamics of Human Movement	<input checked="" type="checkbox"/> m <input type="checkbox"/> e	5	60 (4 hrs/week)	90
4	S	Neurodynamics of Human Movement	<input checked="" type="checkbox"/> m <input type="checkbox"/> e	5	60 (4 hrs/week)	90	
4	Content of Module: This module imparts advanced statistical analyses (multi-level analysis, structure equation modelling, bid data, etc.) for experimental and analytical datasets and -sources. In addition to this, this module provides profound knowledge of methodological competences to experimentally analyze human movements as well as electromyographical and neuroscientific datasets. Here, students enjoy the extraordinary well-equipped movement laboratory of the institute to acquire and apply first-hand measurement techniques. However, since the explanation of in-depth movement analyses require complex computational models, students are further on supposed to achieve skills in the development and acquisition of suchlike technologies within this module.						
5	Learning Outcomes: The students achieve skills in modern methods in analyzing human movements. Thereby, complex datasets are developed and are individually analyzed by help of statistical methodologies. Besides, analyses of human movements are theoretically and practically performed and intensively discussed. Therefore, modern computer technologies are used and applied in order to prove theories of motion control, neuronal processing of sensomotoric, forward dynamics. For this, students use current findings in the scientific literature as well as relevant projects of the depending working departments.						
6	Options within the Module: None.						
7	Type of Examination: <input checked="" type="checkbox"/> Final Module Examination <input type="checkbox"/> Module Examination <input type="checkbox"/> Course Examinations						
8	Degree-Relevant Examination(s):					Duration or length	Weighting of grade for module grade in %
	Number and form (e.g. written examination, oral examination); assigned to course no. ² : Written Examination						
					90 min	100 %	

	Required Coursework:	
9	Number and form; assigned to course no.:	Duration or length
	Short but precise coursework assignments including preparation, execution and postprocessing of complete seminars are required. Possible coursework requirements are session protocols (1-2 pages) or written/oral assignments (approx. 10 pages/10-15 minutes). The depending type of coursework will be announced in advance to the session. Length and extent are oriented on the respective content. Max. 2 of the mentioned coursework requirements will be demanded per session, e.g., one protocol and one oral examination.	
10	Requirements for Obtaining Credits (CP): The credit points of the module are awarded when the entire module has been completed successfully, i.e. all degree-relevant examinations and all required coursework.	
11	Weighting of Module Grade in Calculation of Final Overall Grade: 15 %	
12	Admission to Module: None.	
13	Attendance: No compulsory attendance.	
14	This Module is also an Element of the Following Degree Programs: None.	
15	Module Coordinator: Prof. Dr. Heiko Wagner	Faculty: FB 07
16	Additional Information: The seminar S1 is distributed over the first and second semester with 2 hrs/week each.	