Hochschule Bremen
Studiengang "BIONIK – Mobile Systeme"

Modulbezeichnung "Terrestrische Lokomotion" ("Terrestrial Locomotion")

Module code	1.2

Semester	1. Semester MSc
Module coordinator	Prof. Dr. Eize J. Stamhuis
Qualification objectives	Scills in setting up and piloting of an appropriate complex and delicate measurement system. Derivation of relevant parameters in time and space from self-performed measure-ments. Ability to reconstruct and abstract of measurement sequences in a model. Knowledge in analysis of measure-ments and derived parameters and comparison with literature for similarities and differences. Scills to link specific sub-results to characteristic events. Draw conclusions from self-derived results. Write a scientific report about own research.
Module Content	The assignment is to analyse different human locomotion styles (strolling, walking, jogging, running) by studying the kinematics using joint-markers and high-speed video recording equipment. By walking over a platform with a force plate, forces and moments in 3D can be derived for each style, which can be linked to the kinematics recordings through e.g. an inverse dynamics approach. By comparing results from kinematic recordings and force-moment measurements, conclusions can be drawn about the accuracy, temporal and spatial resolution and ultimately about the applicability of each method for practical Bionic application, e.g. in walking robotics or other bio-inspired or technical motion systems.
Type of module	Compulsory Module
Teaching and learning methods	Lab (incl. seminar instruction, supervised independent experimentation and result processing)
Assessment	Written report (English)
Pre-requisites	Recommended: Basic knowledge of Biology and Mechanics
Usability	Advanced level Choice-module for e.g. Biology, Science or Engineering , Adv. BSc or MSc (depending ob background)
Student workload	60 + 120 h
Contact hours	60 h
Independent study	120 h
ECTS points	6
Duration and frequency	One time per academic year in the Winter-semester 15 scheduled practica
Language	English (formal) and German (informal)
Reading list	Will be announced at the semester start.

Lecturer	Subject	SWS
Prof. Dr. Stamhuis	Terrestrial Locomotion	4