

## Course syllabus

Course title	Motor control
Instructor(s)	Dr. Artur Pilacinski
Contact details	<a href="mailto:art.pilacinski@gmail.com">art.pilacinski@gmail.com</a> , <a href="mailto:ap@uc.pt">ap@uc.pt</a>
Affiliation	University of Coimbra, Portugal
Course format	On line seminar / lecture
Number of hours	15
Number of ECTS credits	2 ECTS
Brief course description	This course aims at showing students how does the mind move the body and vice versa. We will traverse through the elegant organization of the human motor system and see how it influences other, supposedly higher, cognitive processes.
Full course description	This course presents students with the opportunity to learn about neural systems responsible for movements of the body. Parts of the course loosely follow the outline of David Rosenbaum's book „Human Motor Control”, whereas topics not covered by that book will be discussed on the basis of original research and review papers. The course will be split into three basic parts: 1) Principles and basic organization of motor control neural systems 2) Movement control 3) Motor control – beyond body movements. 1) Deals with anatomical and neurobiological principles of motor systems organization. 2) Describes basic types of movement that humans can perform, such as reaching and looking. 3) Provides perspective on how does movement control expand to other domains of cognition and how the natural human body can be surpassed by wiring brain and machine. Each topic will be discussed on the basis of research in both humans and non-human species, and will combine knowledge of both normal and abnormal brain function (such as the example of optic ataxia helps understanding spatio-motor function of parietal lobes). The focus of the course will be to provide groundwork understanding of motor systems for future researchers and practitioners in the domains of neuropsychology and (human) motor neuroscience.
Learning outcomes	At the end of the course, students will obtain understanding of neural systems engaged in human motor control, will have knowledge about diseases and disorders of movement control and will be able to critically evaluate research related to motor control and embodiment. This will

---

match at least the following learning outcomes of the study program:  
K\_W01, K\_W02, KW\_06.

---

Learning activities  
and teaching methods

Classes will be held as on line presentations with students free to ask questions or discuss topics as necessary/requested. Each session will start with a brief journal club style student presentation of a research article. Homework related to research articles will be required to complete the course. Practical exercises may be included.

---

List of topics/classes  
and bibliography

=== Principles and basic organization of motor control neural systems ===  
 1) Introduction to motor control. Basic terms and concepts.  
 2) Basic methods in brain research  
 3) Basic anatomy, neuroanatomy and physiology of movement control  
 === Movement control ===  
 4) Full body movements and walking  
 5) Gaze control  
 6) Reaching and grasping  
 7) Drawing ,writing, and tool use  
 === Motor control – beyond body movements ===  
 8) Language, thinking and movement  
 9) Neuroprosthetics and brain-machine interfaces.

Literature

Rosenbaum D. A. , Human Motor Control

Schadmehr R. and Wise S. Computational Neurobiology of Reaching and Grasping

Journal articles: tba.

---

Assessment methods  
and criteria

The course will be graded on the basis of the final test or practical assignment. Completing class assignments will be mandatory.

---

Attendance rules

80% attendance required.

---

Prerequisites

Students must have completed at least a basic course introducing to psychology/cognitive science. Recommended would be completing a basic course in neuropsychology, neurophysiology or brain anatomy prior to attending the course. Individual cases may be accepted.

---

Academic honesty

Students must respect the principles of academic integrity. Cheating and plagiarism (including copying work from other students, internet or other sources) are serious violations and will be reported to the administration.

---



UNIVERSITY  
OF WARSAW



**Cognitive  
Science**

FACULTY OF PSYCHOLOGY UW  
INSTITUTE OF PHILOSOPHY UW

---

Remarks

-

---