

Module Implantable Hearing Devices

Module Name: Implantable Hearing Devices

Module Number		Level	Master	Short IHD Name
Responsible Lecturers	Prof. Dr. Tim Jürgens			
Department, Facility	THL, Applied Natural Sciences			
Course of Studies	Biomedical Engineering, Master			
Compulsory/elective	Elective	ECTS Credit Points	3	
Semester of Studies	2	Semester Hours per Week	2	
Length (semesters)	1	Workload (hours)	70	
Frequency	SuSe	Presence Hours	30	
Teaching Language	English	Self-Study Hours	40	
Consideration of Gender and Diversity Issues	<input checked="" type="checkbox"/> Use of gender-neutral language (THL standard) <input type="checkbox"/> Target group specific adjustment of didactic methods <input type="checkbox"/> Making subject diversity visible (female researchers, cultures etc.)			
Applicability	Biomedical Engineering			
Remarks	None			

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Course 1: Implantable Hearing Devices Lecture

Course Number		Short Name	IHD
Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	<input type="checkbox"/>	ECTS Credit Points	3
Participation Limit	20	Semester Hours per Week	2
Group Size (practical training, exercises, ...)	None	Workload (hours)	70
Teaching Language	English	Presence Hours	30
Study Achievements („Studienleistung“, SL)	None	Self-Study Hours	40
SL Length (minutes)	n. a.	SL Grading System	n. a.
Exam Type	Written Exam	Exam Language	English
Exam Length (minutes)	60	Exam Grading System	One-third Grades
Learning Outcomes	<p>The students have the necessary specialist knowledge to classify various hearing implants according to their respective technology and indication.</p> <p>The students understand the properties and restrictions of the electrode-nerve interface.</p> <p>The students know the background of the various adaptation strategies and rehabilitation measures and can evaluate them taking into account the individual requirements and psychosocial aspects of the hearing impaired.</p>		
Participation Prerequisites	<p>Knowledge about anatomy and physiology</p> <p>Knowledge about medical electronics and medical technology</p> <p>Knowledge about signals and systems</p>		
Contents	<ul style="list-style-type: none"> - Candidacy for implantation - psychosocial development of deaf and implanted children and adults - Medical and surgical aspects of implantation - Design of implantable hearing devices - Physiological aspects of implantable hearing devices - Music perception, psychoacoustics, and speech understanding with cochlear implants - Fitting and rehabilitation aspects - Telemetry, technical and safety aspects of cochlear implants 		
Literature	<ul style="list-style-type: none"> • Niparko, J.K: Cochlea Implants: Principles and Practices - 2nd edition, LWW, 2009 		

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- Waltzman, S.B., Roland, J.T.: Cochlear Implants - 3rd edition, Thieme, 2014
- Ruckenstein M.J.: Cochlear Implants and other Implantable Hearing Devices - 1st edition, Plural Publishing, 2012
- Cooper, H. R., Craddock, L. C.: Cochlear implants: a practical guide - Whurr publishers, 2009
- Zeng, F., Popper, A. N., Fay, R. R.: Cochlear implants: auditory prostheses and electric hearing - Springer, 2004
- Ernst, A., Battmer, R., Todt, I.: Cochlear Implant heute - Springer, 2009
- Wolfe, J., Schafer, E.: Programming cochlear implants - Plural Publishing, 2015

Remarks	
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