

Sensors					AR-217
Rota	Duration	Semester	SWS	Credit Points	Workload
annually SS	1 Semester	2nd (Semester)	3 SWS	5	150 h
1	Modul structure				
	Course (Abbreviation)	Type/ SWS	Presence	Self study	Credits
	a) Sensors (SENS)	Lecture/ 2 SWS	30 h	60 h	3
	b) Sensors (SENS)	Tutorial/ 1 SWS	15 h	45 h	2
2	Language English				
3	Content <ol style="list-style-type: none"> <u>General Characteristics of Sensors:</u> Classification of sensors (internal, external etc.), sensor generalities (absolute, incremental, etc.), sensor characteristics (linearity, resolution, dynamic characteristics etc.) <u>Angular and Linear Position Sensors:</u> Methods of angular and linear position measurements (resistive, capacitive, inductive, optical), encoding schemes (incremental, absolute) <u>Velocity and Acceleration Sensors:</u> Tachogenerator, optical incremental encoder, Sagnac interferometer, micromechanical angular velocity and acceleration sensor <u>Contact Sensors:</u> Piezoresistive and capacitive tactile sensors, optical tactile sensors, force measurement by deformation of contact sensors: principle and applications of strain gage sensors <u>Proximity Sensors:</u> Hall proximity sensor, magneto-resistive proximity sensor, inductive and capacitive proximity sensors, ultrasonic proximity sensor <u>Distance and Velocity Sensors:</u> Triangular sensor, Time-Of-Flight Sensor, Laser-Range-Radar, laser interferometric distance meter, Laser-Doppler-Velocimeter Literature: <ul style="list-style-type: none"> S.R.Ruocco: Robot sensors and transducers Open University Press, Milton Keynes, England,1987 H.R. Everett: Sensors for mobile robots A.K.Peters, Natick, MA, 1995 				
4	Goals Based on the knowledge of Fundamentals of Robotics this course will introduce the physical understanding and the specific applications of sensors in robotics. Starting with the various sensor principles, the focus of the course is on electromechanical, optical, magnetical and micromechanical sensors.				
5	Examination Requirements The final exam will be a written (2 hour) exam.				
6	Formality of Examination <input checked="" type="checkbox"/> Module Finals <input type="checkbox"/> Accumulated Grade				
7	Module Requirements (Prerequisites)				
8	Allocation to Curriculum: Program: Automation & Robotics, Field of study: Robotics, Process Automation, Cognitive Systems				
9	Responsibility/ Lecturer <i>Prof. Dr .Andreas Neyer/Prof. Dr. Andreas Neyer</i>				