

E – Charakteristika studijního předmětu/Subject Specification					
Název studijního předmětu / Subject title	Fuzzy Control				
Typ předmětu / Subject type	Obligatory		dopor. ročník / semester/ recommended year / semester	2/3	
Rozsah studijního předmětu / Study load in hours and credits		hod. za týden / weekly load	2 + 2 h	Kreditů / Credits	5
Jiný způsob vyjádření rozsahu / Other expression of study load	15 weeks (2 hours of lectures and 2 ours of seminar)				
Způsob zakončení / Assessment	Exam		Forma výuky / Form of teaching	Lectures Seminars	
Další požadavky na studenta / Other demands on students					
Basic knowledge in natural science					
Vyučující / Lecturer					
Wolfgang Kästner					
Stručná anotace předmětu / Subject annotation					
<p>The aim is to impart basic as well as consolidated knowledge about fuzzy set theory, fuzzy systems and their application in control theory.</p> <p>Main topics are:</p> <ul style="list-style-type: none">- Foundations of fuzzy set theory- Fuzzy systems and their components- Fuzzy system of Mamdani type (structure, example of demonstration, practical realisation, software tool DynStar)- Fuzzy system of Takagi-Sugeno-Kang type (structure, example of demonstration, practical realisation, analogy to Artificial Neural Networks)- requirements for application in control theory (consideration of dynamic components)- development of fuzzy controller- application of fuzzy controller and comparison to classical controller <p>The students get basic informations about the foundations of fuzzy set theory from the mathematical point of view. Knowledge about the structure, operation and application of relational and functional fuzzy systems will be imparted. Seminar and practical training on PC consolidate the ability to develop and apply fuzzy algorithms.</p>					
Informace ke kombinované nebo distanční formě / Information for students in external form of study					
Rozsah konzultací (soustředění) / Consultations, study meetings		hodin za týden / hours per week			
Rozsah a obsahové zaměření individuálních prací studentů a způsob kontroly / Individual student work – type, load, content and way of checking					
Assignment of tasks and check of solution in seminar.					
Studijní literatura a studijní pomůcky / Reading list and study utilities					
<p>Lutz, H.; Wendt, W.: Taschenbuch der Regelungstechnik, Verlag Harri Deutsch, 2002</p> <p>Unbehauen, H.: Regelungstechnik I, Vieweg Verlag, 2002</p> <p>Schulz, G.: Regelungstechnik, Oldenbourg Verlag, 2002</p> <p>Wong, C-C; Chen, C-C: A clustering-based method for Fuzzy Modeling, IEICE Trans. Inf. & Syst., Vol. E82-D, No. 6, 1999</p> <p>Computational Intelligence Fuzzy-Logik und Fuzzy Control, Begriffe und Definitionen, VDI/VDE 3550, Blatt 2, Oktober 2002</p> <p>Access to standards at library and internet.</p>					