

Introduction to System Identification							Modulnummer:		
<i>Introduction to System Identification</i>									
Bachelor Pflicht/Wahl <input checked="" type="checkbox"/> Wahlpflicht <input type="checkbox"/> Wahl <input type="checkbox"/> Sonderfall <input type="checkbox"/>				Modulbereich: Pflicht					
Anzahl der SWS	V	UE	K	S	Prak.	Proj.	Σ	Kreditpunkte: 4	Turnus in der Regel in jedem SoSe
	2	1	0	0	0	0	3		
Formale Voraussetzungen: Keine									
Inhaltliche Voraussetzungen: -									
Vorgesehenes Semester: ab 1. Semester									
Sprache: Englisch									
Ziele: <ul style="list-style-type: none"> • To understand the basic system identification process, which involves a combination of model selection, data analysis, and noise assumptions. • To acquire a knowledge of several system identification techniques, and to understand when each method is applicable. • To understand the effect of the model, noise, and system identification on the estimated model, that is, to understand the effects of the assumptions used to obtain a model estimate. 									
Inhalte: <ul style="list-style-type: none"> • Typical model structures used in system identification: state-space, polynomial matrix, impulse response, and frequency domain models. • Model properties: controllability, observability, reachability, and linearity. • Requirements for the identifiability of a model, specifically, persistency. • Regression and least-squares analysis for linear-in-the-parameters models. • Consistency of estimated models and other useful statistical properties. • Parameter estimation methods such as instrumental variable methods. 									
Unterlagen (Skripte, Literatur, Programme usw.): <ul style="list-style-type: none"> • C. T. Chen, "Linear System Theory and Design", 3rd ed. New York: Oxford University Press, 1999. • M. Verhaegen and V. Verdult, "Filtering and System Identification: A Least Squares Approach", 1st ed. New York: Cambridge University Press, 2007. • L. Ljung, "System Identification: Theory for the User", 3rd ed. Upper Saddle River, NJ: Prentice-Hall, 1999. • R. Pintelon and J. Schoukens, "System Identification: A Frequency Domain Approach", 1st ed. New York: Wiley-IEEE Press, 2001. 									
Form der Prüfung: i.d.R. Bearbeitung von Übungsaufgaben und Fachgespräch oder mündliche Prüfung									
Arbeitsaufwand		Präsenz			42 h				
		Übungsbetrieb/Prüfungsvorbereitung			78 h				
		Summe			120 h				
Lehrende: Matthew Hoelzel					Verantwortlich: Matthew Hoelzel				