

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	SDIMXXX / Introduction to Nonlinear Control Systems
2.	课程性质 Compulsory/Elective	Elective
3.	开课单位 Offering Dept.	School of System Design and Intelligent Manufacturing
4.	课程学分/学时 Course Credit/Hours	3/48
5.	授课语言 Teaching Language	English
6.	授课教师 Instructor(s)	刘涛
7.	开课学期 Semester	Spring
8.	是否面向本科生开放 Open to undergraduates or not	No
9.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) None.
10.	教学目标 Course Objectives	
	<p>(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p>By the end of this course, the student should</p> <ol style="list-style-type: none"> 1. be familiar with the basic concepts in nonlinear control systems; 2. be able to analyze some fundamental properties of the given system; 3. be able to carry out the design of some classic nonlinear control laws. 	
11.	教学方法 Teaching Methods	
	<p>(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <ol style="list-style-type: none"> 1. The course consists mostly of classroom lecturing. 2. Student participation is encouraged through discussions, seminars, and course projects. 	
12.	教学内容 Course Contents	
	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)	
	Section 1	Introduction to Nonlinear Systems

	Section 2	Second-order Systems
	Section 3	Existence and Uniqueness
	Section 4	Comparison Lemma
	Section 5	Lyapunov Stability of Autonomous Systems
	Section 6	Lyapunov Stability of Nonautonomous Systems
	Section 7	Converse Theorems
	Section 8	Feedback Linearization
	Section 9	Sliding Mode Control
	Section 10	Backstepping
	
13.	课程考核 Course Assessment	
	<p>(① 考核形式 Form of examination; ②. 分数构成 grading policy; ③ 如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <ol style="list-style-type: none"> 1. Form of examination: Midterm exam and final exam. 2. Grading policy: Class performance(10%), Homework(15%), Midterm exam(25%), Final exam (50%). 	
14.	教材及其它参考资料 Textbook and Supplementary Readings	
	Nonlinear Systems, Third Edition, Hassan K. Khalil, 2002.	