

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	CHE5030/催化基础与理论
2.	课程性质 Compulsory/Elective	专业课
3.	课程学分/学时 Course Credit/Hours	2.00/32
4.	授课语言 Teaching Language	中文
5.	授课教师 Instructor(s)	王阳刚
6.	先修要求 Pre-requisites	化学专业学生均可选修。 其他专业学生需要修过《物理化学》课程。
7.	教学目标 Course Objectives	
		<p>本门课程是针对化学、材料专业研究生开设的专业学位选修课程，旨在介绍催化的基础理论与概念。使学生了解有关催化剂与催化作用的基础知识，掌握酸碱催化剂、金属及过渡金属氧化物催化剂等重要工业催化剂的催化反应原理，了解催化反应机理、反应动力学的基本知识与概念，掌握本学科发展的前沿与动态，培养学生分析和解决催化科学问题的能力。This course is designed to give a general but fundamental understanding of catalysis to graduate students majoring in chemistry and material science. It is aimed to enable students to understand the fundamental knowledge of catalysts and catalysis and to master the catalytic reaction principles of important industrial catalysts such as acid-base catalysts, metals and transition metal oxide catalysts. After completing this course, the students are expected to know the basic concepts of catalytic reaction mechanisms and kinetics, and the frontiers of modern catalysis, and are well trained for the scientific research in the fields related to catalysis.</p>
8.	教学方法 Teaching Methods	
		课堂讲授。
9.	教学内容 Course Contents	
	Section 1	催化作用导论
	Section 2	化学吸附
	Section 3	多相催化化学动力学
	Section 4	固体酸催化剂
	Section 5	过渡金属催化剂
	Section 6	理论与计算催化介绍
	Section 7	密度泛函理论在催化中的应用
	Section 8	分子动力学模拟在催化中的应用
	Section 9	微观反应动力学
	Section 10	
	

10.	课程考核 Course Assessment
	①考试;
11.	教材及其它参考资料 Textbook and Supplementary Readings
	1. Concepts of Modern Catalysis and Kinetics. Edited by I. Chorkendorff, J. W. Niemantsverdriet. Published by Wiley-VCH; ISBN: 3527305742. 2. Chemical Bonding at Surfaces and Interfaces. Edited by Anders Nilsson, Lars G.M. Pettersson, Jens K. Norskov. Elsevier. ISBN: 978-0-444-5283707 3. Fundamental concepts in heterogeneous catalysis. Edited by Jens K. Noskov, Felix Studt, Frank Abild-Pedersen, Thomas Bligaard. Published by John Wiley & Sons, Inc.