

# 课程大纲

## COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	MSE5014/柔性电子材料 MATERIALS FOR FLEXIBLE ELECTRONICS
2.	课程性质 Compulsory/Elective	选修课 Elective
3.	课程学分/学时 Course Credit/Hours	2/32
4.	授课语言 Teaching Language	英语 English
5.	授课教师 Instructor(s)	郭传飞, 副教授
6.	先修要求 Pre-requisites	Fundamentals of Materials Science 材料科学基础 , College Physics 大学物理

7.	<b>教学目标 Course Objectives</b>	
	<p>柔性电子学是新兴的材料科学和电子工程的交叉领域，本课程的教学目标是使学生学习和掌握如下方面的内容：柔性电子学现状；柔性电子材料的力学基础；柔性透明电极的加工制备；柔性电子器件的制备与性能；柔性电子学的未来发展方向。</p> <p>Flexible electronics is an emerging and interdisciplinary field of materials science and electronic engineering. The course covers the state of the art and the fundamental principle of mechanics for flexible electronics, the fabrication of flexible transparent electrodes, the fabrication and properties of flexible electronic devices, and the future of flexible electronics.</p>	

8.	<b>教学方法 Teaching Methods</b>	
	<p>本课程将采用前沿成果讲座为主、基础知识讲授为辅，并穿插实验设计的教学方法。教学的创新性在于不拘泥于课本和课件，结合前沿进展、基础知识、实验设计，增加个性化交流机会，使学生学习到柔性电子学最新研究思路和研究方法。</p> <p>This course will be focused on the frontiers in flexible electronics, but will also lecture fundamentals and experimental skills. Innovation: this course will not be based on teaching books; instead it will consist of lectures about recent advances, basic knowledge, and experimental skills. The lecturer will have personalized communications with students, to make sure that all the students have learned the ideas and methods of this emerging field.</p>	

9.	<b>教学内容 Course Contents</b>	
	Section 1	Overview of Flexible Electronics Technology
	Section 2	Degrees of flexible electronics
	Section 3	Bending, folding, and twisting
	Section 4	Stretching
	Section 5	Flexible substrate
	Section 6	Thin film technology
	Section 7	Flexible transparent electrodes (I)
	Section 8	Flexible transparent electrodes (II)
	Section 9	Flexible transparent electrodes (III)
	Section 10	Tutorial
	Section 11	Experiment: kirigami

	<b>Section 12</b>	Flexible devices: energy devices
	<b>Section 13</b>	Flexible devices: photoelectronics (I)
	<b>Section 14</b>	Flexible devices: implantable electronics (II)
	<b>Section 15</b>	Soft machines
	<b>Section 16</b>	Experiment: Bio-inspired design for flexible electronics
<b>10.</b>	<b>课程考核 Course Assessment</b>	
	考勤（10%）+ 作业（25%）+ 期中考试（30%）+ 期末考试（35%） Attendance: 10% + Assignments: 25% + Mid-term: 30% + Final: 35%	
<b>11.</b>	<b>教材及其它参考资料 Textbook and Supplementary Readings</b>	
	指定教材: Flexible Electronics: Materials and Applications, Wong William S., Salleo Alberto, ISBN 978-0-387-74362-2 e-ISBN 978-0-387-74363-9, 2009.	