《复分析》课程教学大纲

Course Outline

课程基本信息（Course Information）					
课程代码 （Course Code）	MA214	*学时 （Credit Hours）	64	*学分 （Credits）	4
*课程名称 （Course Title）	（中文） 复分析				
	（英文） Complex Analysis				
*课程性质 （Course Type）	专业基础课				
授课对象 （Target Audience）					
*授课语言 (Language of Instruction)	中英双语				
*开课院系 （School）	致远学院/数学科学学院				
先修课程 （Prerequisite）	数学分析				
授课教师 （Instructor）	戎锋		课程网址 (Course Webpage)		
*课程简介 （Description）	本课程主要学习单复变函数相关理论。课程强调最基本的思想和严格的证明。希望学生能从分析、代数、几何等多个角度来理解经典的复分析。先修的数学分析课程对本课程至关重要，如学生能有代数和几何方面的一些知识储备则更佳。课程学习的主要内容包括：复数、复解析函数、最大模原理、Cauchy 定理、Liouville 定理、级数、孤立奇点、留数、Rouche 定理、Schwarz 引理、Poisson 积分、Riemann 映照定理等。				
*课程简介 （Description）	This course is an introduction to the theory of complex valued functions of a complex variable. Fundamental ideas and rigorous proofs will be emphasized. Students are expected to understand the classical theory of complex analysis from the *analytic*, *algebraic* and *geometric* point of view. The prerequisite of a course in mathematical analysis is essential. Some background in algebra and geometry is preferred. Topics to be covered include (but not limited to): complex numbers, analytic functions, maximum principle, Cauchy's theorem, Liouville's theorem, power series, isolated singularities, residues, Rouche's theorem, Schwarz lemma, Poisson integral and the Riemann mapping theorem.				

课程教学大纲（course syllabus）		
*学习目标(Learning Outcomes)	1. The definition of complex numbers; plus some topology, algebra and geometry 2. Some basic complex analytic functions; power series 3. The Cauchy-Riemann equation and its consequences 4. Complex line integrals; Cauchy integral formula 5. Entire functions; Liouville theorem 6. Mean-value property; Maximum principle; Morera theorem; Goursat theorem, etc. 7. Multi-valued analytic functions and the associated Riemann surfaces 8. Isolated singularities; The Laurent decomposition 9. Residue theorem and using it to compute various integrals 10. The argument principle; Rouche theorem; Hurwitz theorem, winding numbers, etc. 11. Examples of conformal mappings; The Schwarz lemma 12. Riemann mapping theorem 13. Properties of harmonic functions; Poisson integral 14. Infinite products; analytic continuation; Gamma function; Zeta function, etc. 15. Some selected more advanced topics	
*教学内容、进度安排及要求 (Class Schedule &Requirements)	教学内容	学时
	Complex numbers	4
	Examples of analytic functions; Power series	4
	Cauchy-Riemann equation and other properties of analytic functions	4
	Complex line integral	4
	Entire functions; Liouville theorem	4
	Further properties of analytic functions	4
	Multi-valued analytic functions; Riemann surfaces	4
	Isolated singularities	4
	Midterm; Residue theorem	4
	Residue calculus	4
	Logarithmic integral; Argument principle	4
	Conformal mappings; Schwarz lemma	4
	Riemann mapping theorem	4
	Harmonic functions	4

	Gamma function; Zeta function	4
	Some further topics; Review	4
*考核方式 (Grading)	（成绩构成）[暂定] 20% - 平时成绩 Homework;　35% - 期中成绩 Midterm;　45% - 期末成绩 Final	
*教材或参考资料 (Textbooks & Other Materials)	Textbook:　"**Complex Analysis**", by J. Bak and D.J. Newman References:　"**Complex Analysis**", by L. Ahlfors 　　　　　　"**Complex Analysis**", by T.W. Gamelin 　　　　　　"**Complex Analysis**", by E.M. Stein and R. Shakarchi	
其它 （More）		
备注 （Notes）		

备注说明：

1．带*内容为必填项。

2．课程简介字数为 300-500 字；课程大纲以表述清楚教学安排为宜，字数不限。