MATE130078	计算物理	**学分：**2	**周学时：**2
	Computational Physics	**总学时：**36	
预修课程：高等数学、概率论、线性代数、大学物理、量子物理			
修读对象：大三本科生			

中文课程简介（150 字以内）

本课程将围绕现代物理问题介绍计算机数值模拟方法的应用，在向学生介绍基础的数值计算方法同时，通过对模拟结果的分析深化对物理问题的理解。通过本课程的学习，可以使学生对物理研究中的主要计算技术有一个较为全面的了解，从而具备利用计算机模拟方法解决复杂体系物理问题的能力。

英文课程简介

This course is designed to improve students' ability to solve physical problem raised in complicated circumstances by combining physics, numerical methods and computer programming. A number of modern physical topics are introduced to students with applying basic numerical techniques, which is intended to develop their analytical strategies and promote their expansion of physical knowledge. The goal of this course is to introduce the principle computational simulation methods used in physical investigation, and to equip the students with the ability to attack complicated physical problems.

Computational simulation methods introduced include: numerical solution of ODE, numerical solution of PDE, Monte-Carlo simulation, Molecular Dynamics method, Fast Fourier Transformation, etc.

Physical topics introduced include: radioactive decay, realistic projectile motion, oscillatory motion, planetary motion, vibration and the physics of musical instruments, random walk and diffusion, quantum mechanics, etc.