

理学院（数学与应用数学专业）课程简介

课程编号：1713001150

课程名称：数值分析

学分/学时：4/64

先修课程：数学分析/高等代数/数学软件与实验

适用专业：数学类专业

课程性质：必修

教材：李庆扬、王能超、易大义编.《数值分析》（第五版）.清华大学出版社,2014年

主要参考书：吴宗敏、苏仰峰编著.《数值逼近》.科学出版社,2016

张诚坚、李东方编著.《数值代数》,科学出版社,2016。

房少梅、王霞编著.《微分方程数值解》,科学出版社,2016。

内容简介：《数值分析》数学与应用数学专业的必修课程，是统计学专业的限选课程，该课程先修为《数学分析》，《高等代数》；后续课程为专业课。该课程内容丰富，理论严谨，既有纯数学的高度抽象性，又有应用的广泛性与实际实验的高度技术性的特点，是一门与计算机使用密切结合的实用性很强的数学学科，它包括：绪论；插值法与逼近；数值积分与微分；常微分方程的数值解法；非线性方程求根；线性方程组的直接解法与线性方程的迭代解法；矩阵特征值问题。

Course Description

School of Science Faculty

Course Code: 1713001150

Course Name: Numerical Analysis

Credit/Hours: 4/64

Textbooks: Li Qingyang, Wang Nengchao, Yi Dayi, 《Numerical Analysis》 (Fifth Edition) . Press of Tsinghua University, 2014

Reference Books: Wu Zongmin, Su Yangfeng, 《Numerical Approximation》 .Press of Science, 2016

Zhang Chengjian, Li Dongfang, 《Numerical Algebra》 , Press of Science, 2016

Fang Shaomei, Wang Xia, 《 Numerical Solutions of Partial Differential Equations 》 , Press of Science, 2016

Course Description : NUMERICAL ANALYSIS is a required course for students majoring in mathematics and applied mathematics, and it is a elective course for students majoring in statistics. It is a intermediate course after fundamental courses, such as mathematical analysis and advanced algebra, and before professional courses. It has the characteristics of rich content, theoretical preciseness abstract, abroad applications and technical experiments. It is a mathematical subject which has strong relationship with the computer technology. It covers the following content: Preface, Interpolation and Polynomial Approximation, Approximation Theory, Numerical Differentiation and Integration, Initial-Value Problems for Ordinary Differential Equations , The Solution of Nonlinear Equations, Direct Methods for Solving Linear Systems, Iterative Techniques in Matrix Algebra and Approximating Eigenvalues。