**《高等数学A1》课程教学大纲**

**一、课程基本信息**

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| **课程代码** |  | **课程名称** | **高等数学A1** | |
| **开课院系** | **数学与统计学院** | **授课对象** | **本科工科专业** | |
| **课程学分** | **6** | **课程学时** | **理论课程学时** | **96** |
| **实践课程学时** |  |
| **授课教师**  **(负责人)** | **湛少锋** | **邮箱** | **Shfzhan.math@whu.edu.cn** | |
| **电话** | **027-68752958** | |
| **授课教师** |  | **邮箱** |  | |
| **电话** |  | |
| **授课类别** | **专业必修课** | | | |
| **前导课程** | **中学里的初等数学课程** | | | |

**二、课程简介**

高等数学A1课程是为本校理工类学生开设的一门必修的公共基础理论课。它一方面为后续的数学课程和专业课程提供必要的数学基础知识，另一方面进一步提高学生的数学素质。通过本课程的学习，使学生获得：函数与极限、一元函数的导数与微分，中值定理与导数应用、不定积分、定积分、定积分的应用、微分方程及其应用等方面的基本概念、基本理论和基本运算技能，培养学生的抽象思维能力、概括问题能力、逻辑推理能力、空间想象能力和自学能力，还特别注意培养学生的运算能力、运用所学知识分析和解决实际问题的能力。

**三、课程内容与学时分配**

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| --- | --- |
| **内容** | **学时** |
| **函数与极限** | **18** |
| **导数与微分** | **16** |
| **微分中值定理与导数应用** | **20** |
| **不定积分** | **12** |
| **定积分及其应用** | **16** |
| **微分方程** | **14** |
| **合计** | **96** |

**四、课程成绩评定**

**平时成绩40%，期末考试成绩占总成绩60%。**

**五、教材及参考书**

**教材:《高等数学》（上册）齐民友主编，高等教育出版社, 2009 年 1月。**

**辅导教材：1、《高等数学学习指南》（上册）湛少锋、桂晓风、王孝礼、黄正华编著，武汉大学出版社, 2012年10月。**

**2、《高等数学全程同步导引》（上册）湛少锋 科学出版社 2012年12月**

**Syllabus for Advanced Mathematics A1**

**1. Basic Course Information**

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| --- | --- | --- | --- | --- |
| **Course code** |  | **Course name** | **Advanced Mathematics A1** | |
| **Offered By** | **School of Mathematics and Statistics** | **Suitable For** | **Engineering science undergraduate** | |
| **Credits** | **6** | **Credit hours** | **Lecture** | **96** |
| **Experiment** |  |
| **Course director** | **Zhan Shaofeng** | **Email** | **Shfzhan.math@whu.edu.cn** | |
| **Tel.** | **027-68752958** | |
| **Course teacher** |  | **Email** |  | |
| **Tel.** |  | |
| **Course type** | **Compulsory courses** | | | |
| **Prerequisites** | **Elementary Mathematics in middle school** | | | |

**2. Course Description**

The advanced mathematics A1 course is a compulsory public basic theory course for science and engineering students. On the one hand, it provides the necessary mathematics basic knowledge for the subsequent mathematics courses and professional courses. On the other hand, it further enhances the students' mathematical quality. Through learning this course, students will acquire the basic concepts, basic theory and basic computing skills of functions and limits, derivatives and differentials of unary functions, application of mean values and derivatives, indefinite integrals, definite integrals, application of definite integrals, differential equations and their applications. Moreover, students' abstract thinking ability, general problem ability, logical reasoning ability, spatial imagination ability and self-learning ability are cultivated. Special attention is also paid to cultivating students' computing ability, using the knowledge and ability to solve practical problems.

**3. Course contents and lectures**

|  |  |
| --- | --- |
| **Contents** | **Lectures** |
| **Function and Limits** | **18** |
| **Derivatives and Differentials** | **16** |
| **The Mean Value Theorem and Applications of Differentiation** | **20** |
| **Indefinite Integrals** | **12** |
| **Definite Integral and its Applications** | **16** |
| **Differential Equations** | **14** |
| **Sum** | **96** |

**4. Grading policy**

Attendance and homework 20%, mid-term exam 10% and final 70%.

**5. Textbooks and references**

**TextBook：**

1、“Advanced Mathematics (Volume one)” , edited by Qi minyou, published by Higher Education Press, January, 2009.

**Reference books:** “Advanced mathematics learning guide (Volume one)” edited by Zhan Shaofeng, Gui Xiaofeng, Wang Xiaoli, Huang Zhenghua published by Wuhan University Press, October, 2002.

2、“Full course synchronous guidance of Advanced Mathematics (Volume one)” edited by Zhan Shaofeng published by Science Press, December, 2012.