# COURSE DETAIL

| INTRODUCTION TO SCIENTIFIC COMPUTING |
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| **Country**<br>China |
| **Host Institution**<br>Tsinghua University |
| **Program(s)**<br>Tsinghua University |
| **UCEAP Course Level**<br>Upper Division |
| **UCEAP Subject Area(s)**<br>Mechanical Engineering |
| **UCEAP Course Number**<br>182 |
| **UCEAP Course Suffix** |
| **UCEAP Official Title**<br>INTRODUCTION TO SCIENTIFIC COMPUTING |
| **UCEAP Transcript Title**<br>INTRO SCIEN COMPUT |
| **UCEAP Quarter Units**<br>3.00 |
| **UCEAP Semester Units**<br>2.00 |

**Course Description**

This course focuses on the basic concepts of numerical analysis, including the solution of ordinary differential equations (ODEs) and partial differential equations (PDEs), interpolation, optimization, parallel computing, and an overview of applied computing in science and engineering. The course includes lectures and homework (programming), and practical exercises in programming are the focus of this course. The course content includes three main parts: The first part mainly introduces the overview of scientific computing, including its methods, existing problems, and its application in the field of energy engineering. The second part (the largest part) provides the theoretical foundation of numerical analysis, interpolation, solution of differential equations (ODEs and PDES), and optimization. Examples include simple solvers for corresponding problems. The last part focuses on the components of parallel computing technology (Message Passing Interface, MPI).

**Language(s) of Instruction**
English

**Host Institution Course Number**
30140482

**Host Institution Course Title**
INTRODUCTION TO SCIENTIFIC COMPUTING

**Host Institution Course Details**

**Host Institution Campus**

**Host Institution Faculty**

**Host Institution Degree**

**Host Institution Department**

**Course Last Reviewed**
2024-2025

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