**本科全英语课程采用如下英文版教学大纲**

**Syllabus Sample of Fudan University**

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| **Department: Fanhai International School of Finance Date: 2024/8/26** | | | | | | | | | | | | | | |
| **Course Code** | | FISF130020 | | | | | | | | | | | | |
| **Course Title** | | Introduction to Computer Science | | | | | | | | | | | | |
| **Credit** | | 3 | | **Experiment**  **(including Computer) Credit** | | | | 1 | | **Practice Credit** | | 0 | **Aesthetic Education**  **Credit** | 0 |
| **Credit Hours Per Week** | | 3 | | **Education on The Hard-Working Spirit Credit Hours** | | | | 0 | | [**Language of Instruction**](http://www.baidu.com/link?url=47JJa4qk0LrDpLNqaOc5vq3QapQmx50Zq2Si4vRilP0LBh4dhC7LdZ11ucoXf4IUT8hpalC4TDsTvQgZFq5vOkmJp5rQO-DihNiIVE0Ui-SRoTDGpQwonRCT8aiX7pDO) | | 54 | **Honors**  **Course** | □Yes  ☑No |
| **Course Type** | | □Core General Education Course  □Specific General Education Course □Basic Course in General Discipline  □Others | | | | | | | | | 2+X Major ：  ☑Professional Core Course  □Professional Advanced Course | | | |
| Non 2+X Major ：  □Professional Compulsory Course □Professional Elective Course | | | |
| **Course Objectives** | | （Including value, knowledge and ability objectives）  This course aims to provide students with a foundational understanding of modern computing techniques. By the end of the course, students should be able to comprehend the principles behind real-world software and how it is applied to solve practical problems. | | | | | | | | | | | | |
| **Course Description** | | This course begins with an introduction to the fundamental principles of computation, followed by an in-depth study of data structures and algorithms. Students will apply their knowledge through hands-on practice with the Rust programming language. The course then explores key concepts in operating systems, networking, databases, and software applications, with a focus on their security issues. Finally, it covers essential techniques in artificial intelligence. | | | | | | | | | | | | |
| **Course Requirements:**  N/A | | | | | | | | | | | | | | |
| **Teaching Methods:**  This course emphasizes both theoretical knowledge and engineering capabilities. Each week, students will primarily focus on learning core concepts in two classes, followed by a specially tailored in-class practice session to reinforce their understanding. | | | | | | | | | | | | | | |
| **Course Director's Academic Background:**  Dr. Hui Xu received his Ph.D. from the Chinese University of Hong Kong. His research primarily focuses on program analysis and software reliability. He has published dozens of papers in top-tier conferences and journals. | | | | | | | | | | | | | | |
| **Instructor's Academic Background:**  Dr. Hui Xu received his Ph.D. from the Chinese University of Hong Kong. His research primarily focuses on program analysis and software reliability. He has published dozens of papers in top-tier conferences and journals. | | | | | | | | | | | | | | |
| **Members of Teaching Team** | | | | | | | | | | | | | | |
| **Name** | | **Gender** | | | | **Professional Title** | | | **Department** | | | **Responsibility** | | |
| Hui Xu | | Male | | | | Associate Professor | | | School of Computer Science | | | Teaching | | |
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| **Course Schedule** (Please supply the details about each lesson)**:**  Week 1: Numbers and Computation   * Course Introduction * Binary System * Computation and Computers * In-class Exercises   Week 2: Computer Architecture   * CPU and Instruction Set Architecture * Input and Output * In-class Exercises   Week 3: Programming Languages and Compilers   * Introduction to Programming Languages * Programming Language Features: Rust * In-class Exercises   Week 4: Data Structures   * Linear Data Structures * Trees and Graphs * In-class Exercises   Week 5: National Day Holiday  Week 6: Algorithms - I   * Sorting Problems and Algorithms * String Matching Problems and Algorithms * In-class Exercises   Week 7: Algorithms - II   * Binary Search Trees * Graph Algorithms: Shortest Path, etc. * In-class Exercises   Week 8: Computer Networks - I   * Local Area Network: IP/ARP * Wide Area Network: Routing * In-class Exercises   Week 9: Computer Networks - II   * Transport Layer: TCP/IP * Application Layer: DNS, HTTP * In-class Exercises   Week 10: Cryptography   * Symmetric Encryption * Asymmetric Encryption * Hash Algorithms * In-class Exercises   Week 11: PKI and Applications   * Digital Certificates and PKI * PKI Applications: Digital Signatures * PKI Applications: Transport Layer Security Protocol * In-class Exercises   Week 12: Blockchain and Applications   * Distributed Ledger * Bitcoin * Smart Contracts * In-class Exercises   Week 13: Application Software   * Application Frontend: Web/App * Application Backend: Sessions, Databases * In-class Exercises   Week 14: Application Security   * Network Attacks * Privacy Leaks * Injection Attacks * In-class Exercises   Week 15: Artificial Intelligence - I   * Supervised Learning * Unsupervised Learning * In-class Exercises   Week 16: Artificial Intelligence - II   * Neural Networks * Large Language Models * In-class Exercises | | | | | | | | | | | | | | |
| **The design of class discussion or exercise, practice, experience and so on:**  Each week includes exercises related to the classroom content to deepen students' understanding and mastery of the material. | | | | | | | | | | | | | | |
| **If you need a TA, please indicate the assignment of assistant:**  Q&A, grading | | | | | | | | | | | | | | |
| **Grading & Evaluation** (Provide a final grade that reflects the formative evaluation process)**:**  Regular Exercises: 50%   * Scores are based on the quality of weekly exercises. * The final score is calculated by taking the highest scores from all but the lowest two exercises (n-2).   Final Exam: 50%   * Closed-book exam. | | | | | | | | | | | | | | |
| **Usage of Textbook：**□Yes(complete textbook information form below) ■No  **Textbook Information** (No more than two textbooks) **:** | | | | | | | | | | | | | | |
| **Title** | **Author** | | **ISBN** | | **Publishing Time** | | **Publisher** | | | **Type Ⅰ** | | | **Type Ⅱ** | |
|  |  | |  | |  | |  | | | □Self-compiled Textbook (Published)  □Non-mainland Textbook  □Other Textbook (Published) | | | □National Planning Textbook  □Provincial and Ministerial Planning Textbook  □School Level Planning Textbook  □Others | |
|  |  | |  | |  | |  | | | □Self-compiled Textbook (Published)  □Non-mainland Textbook  □Other Textbook (Published) | | | □National Planning Textbook  □Provincial and Ministerial Planning Textbook  □School Level Planning Textbook  □Others | |
| **Teaching References** (Including author, title, publisher, publishing time,ISBN)**:**  No textbooks are required for this course; we will primarily use self-designed slides as the main teaching material. | | | | | | | | | | | | | | |

Table column size can be adjusted according to the content.