Introduction To Computer Science (計算機概論)

Chia-Chun Tsai
Professor
Dept. of Computer Science and Information Engineering
Nanhua University
E-mail: chun@mail.nhu.edu.tw
http://www.nhu.edu.tw/~chun

Fall 2018

Textbook (教科書)

Foundations of Computer Science
Fourth Edition, 2018
By Behrouz A. Forouzan

©Cengage Learning

© 2018 Cengage 版權所有，為課本著作之延伸教材，亦受著作權法之規範保護，僅作為授課教學使用，禁止列印、影印、未經授權重製和公開散佈
Course Time and Office Hours
(課程時間與辦公室時間)

- **Course Time & Place:**
  - B: 08:10 ~ 11:00, Monday, S301
  - A: 08:10 ~ 11:00, Wednesday, S301

- **Office Hours & Place:**
  - 13:10 ~ 16:00, Tuesday, C309
  - 13:10 ~ 16:00, Wednesday, C309

- **TA Hours & Place:**
  - 15:10 ~ 17:00, Wednesday, S326
  - CSIE 2B 方啟德

Prepare your materials
(準備素材)

- Concentration and Passion 專心與熱衷
- Textbook in English or Chinese 英文或中文教科書
- Make class notes 作筆記
- Install **Quiz_SendAnswerByGmail.apk**
  - Android手機-下載與裝置 小考專用app
- Propose questions 提問
  - TA CSIE 2B 方啟德 / Office Hours
Grading (評量)

- Attendance (出席占分) : -5 % ~ 5 %
- Homework (平時占分) : 35 %
- Midterm Test (期中考占分) : 30 %
- Final Test (期末考占分) : 35 %

Attendance -5~5 %

- Roll-call (點名) each class
  - 0.5 each since 2nd time arrival late
- Signature (簽名) each class
  - -1 for 1st absence, -2 each since 2nd time absence

Exception (例外):

- Final test will be rejected if the number of absences is up to six because your learning has not been recognized to complete this course.
Homework 35 %

- **Quizzes**: Grading for sum of righted answers in total problems
- **Paper-based assignments**: Grading for sum of righted answers in total problems
- **Video-based assignments**
- **Deliver your paper/video assignments on time**: The score will be reduced due to overdue
- **Don’t cheat** for your any homeworks
  The score would be **zero** once one is verified

Mid-term Test 30 %

Final Test 35 %

- **4-page Problems in English/Chinese**
  - Closed book and 100 points are maximally graded from 110~125-point problems
- **Don’t cheat in any tests**
  The score would be **zero** once one is verified.
- **Open for all the gradings**
  (You can check your scores about homework and tests anytime)
- **No 58~59.9 points in term score**
Teaching Web 教學網頁
http://www.nhu.edu.tw/~chun

Video-based Web: 歷年影片作業
http://qnew.nhu.edu.tw
Quiz_SendAnswerByGmail.apk
小考專用於互動的APP

Contents (目錄/課程內容) for
Introduction To Computer Science

Ch1. Introduction 簡介
  • Turing model, Von Neumann model, Computer components, History.

Ch1. Introduction-Extension 簡介-補充資料
  • Moore’s Law, nano-meter process.

Ch2. Number Systems 數字系統
  • Binary, Octal, Decimal, and Hexadecimal systems.

Ch3. Data Storage 資料儲存
  • Data types, Storing numbers, Storing text, Storing audio, Storing images, and Storing video.

Ch4. Operations on Data 資料運算
  • Logic operations, Shift operations, and Arithmetic operations.
Contents for Introduction to Computer Science

Ch5. Computer Organization 電腦組織
- Central processing unit, Main memory, I/O subsystem, Subsystem interconnection, Program execution, Different architectures, and A simple computer.

Ch6. Computer Networks and Internet 電腦網路
- Introduction, TCP/IP protocol suite, Layers, and Internet applications.

Ch7. Operating Systems 作業系統
- Introduction, Evolution, Computers, and survey of operating systems.

Midterm Test 期中考

Contents for Introduction To Computer Science

Ch8. Algorithms 演算法
- Concept, Algorithm representation, A formal definition, Basic algorithms, Sub-algorithms, and Recursion.

Ch9. Programming Languages 程式語言
- Evolution, Translation, Programming paradigms, and Common concepts.

Ch11. Data Structure 資料結構
- Arrays, Records, and Linked lists.

Ch12. Abstract Data Types 抽象資料型態
- Stacks, Queues, General linear lists, Trees, Binary trees, Binary search trees, and Graphs.
Contents for
Introduction To Computer Science

Ch13. File Structure 檔案結構
- Access methods, Sequential files, Indexed files, Hashed files, Directories, and Text versus binary.

Ch14. Databases 資料庫
- Database management systems, Database architecture, Database models, Relational database model, Operations on relations, and Database design.

Ch15. Data Compression 資料壓縮
- Lossless compression and Lossy compression methods.

Ch18. Artificial Intelligence 人工智慧
- Searching.

Final Test 期末考

The Structure of Each Chapter

Objectives 目標

End–Chapter Materials 章末教材
- Recommended Reading
- Key Terms
- Summary

Practice Set 練習集
- Quizzes
- Review questions
- Problems
### Scheduling for CSIE-1A

9/12(\textit{Wed}), 9/19, 9/26, 10/3

\textbf{10/10} (國慶日, 上午補課\textbf{10/17}),

\textbf{10/17} & \textbf{22} (no class, 公出到武夷協同教學), 10/31

11/7, \textbf{11/9} (Fri, 6:00PM\nobreakdash\sim C322, Mid-Test),

11/14, 11/21, \textbf{11/28} (no class, 公出工科技藝競賽)

12/5, 12/12, 12/19, 12/26, 1/2, 1/9,

1/11 (Fri, 6:00PM\nobreakdash\sim at C322, Final Test)

---

### Scheduling for CSIE-1B

9/17 (Mon), 9/24 (中秋節), 10/1, 10/8

\textbf{10/10} (國慶日, 下午補課\textbf{10/15}),

\textbf{10/15} & \textbf{22} (no class, 公出武夷協同教學), 10/29,

11/5, \textbf{11/9} (Fri, 6:00PM\nobreakdash\sim at C322, Mid-Test)

11/12, 11/19, 11/26, 12/3, 12/10, 12/17,

\textbf{12/22} (Sat, 補\textbf{12/31}), 12/24, \textbf{12/31} (no class)

1/7, \textbf{1/11} (Fri, 6:00PM\nobreakdash\sim at C322, Final Test)