

01117401: Operating System

计算机原理与设计

Chapter 0: Organization

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March 9, 2016

温馨提示：



为了您和他人的工作学习，
请在课堂上**关机或静音**。

不要在课堂上接打电话。

1 Teachers & Students of this course

- Introduction of the students
- Introduction of the Teacher
- Introduction of the teaching Asistants

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- Textbook and References
- Course organization
- Introduction of the projects

3 Conclusion

Outline

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Introduction of the students

- Students: 116, 2016-2-24(compare: 104, 2015-3-1)
 - 计算机学院(89, 3 JL15:2 PB13:84 PB14)
 - 少年班学院(20, 1 PB12:4 PB13:15 PB14)
 - 化学与材料科学学院(2, 2 PB13)
 - 生命科学学院(3, 2 PB13:1 PB14)
 - 数学科学学院(1, 1 JL14)
 - 信息科学技术学院(1, 1 PB13)

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Introduction of the Teacher: Contact

Name: 陈香兰

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QQ group: [459744064](#)(提供学号、姓名作为验证信息)

Introduction of the Teacher: Personal Profile

● Education:

- Department of Computer Science and Technology, USTC
- PB9511, Undergraduate Study(本科学习)
- SA0011& BA0211, successive postgraduate and doctoral programs of study(硕博连读), Major of Computer Software and Theory
- Research area: Operating System, etc.

● Teaching(as Speaker):

● Undergraduate:

- ① Operating System Principles and Implementation(2016, 2015, 2014, 2012, 2011, 2009)
- ② Linux operating system source code reading(2009, 2011)

● Graduate:

- ① Linux operating system Analysis (2014 - 2007)
- ② Embedded operating system(2014, 2009, 2008, 2007, 2006)
- ③ Secure operating system(2008)

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Introduction of the teaching Asistants

● 3 TAs:

① 阮震元, PB13011

- Phone: 15556901487
- Email: rzy@mail.ustc.edu.cn

② 王俊彦, SA15011

- Phone: 15855133897
- Email: wjuny@mail.ustc.edu.cn

③ 王震, SA15011

- Phone: 15855133897
- Email: wzzju@mail.ustc.edu.cn

(If changes, this page will be modified.)

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Introduction of the course: overview

- This course:

- 是计算机专业学生必修的核心专业基础课之一。
 - 是一门涉及较多硬件知识的计算机系统软件课程。
 - 在计算机软硬件课程设置上，它起着承上启下的作用。
- 操作系统对计算机系统资源实施管理，是所有其他软件与计算机硬件的唯一接口，所有用户在使用计算机时都要得到操作系统提供的服务。
- 通过本课程的学习，能够理解操作系统的基本概念和主要功能。培养分析问题、解决问题的能力以及独立承担专门技术工作的能力。

Introduction of the course: overview

- Prerequisite courses:

- Programming language C(C语言)
- Assembly language(汇编语言)
- Data structures(数据结构)
- Microcomputer Principles and Systems(微机原理与系统)

- 课件：英文为主，部分中文（考虑到国内考研需求）

- Schedule:

Classroom: 3C224

Time of the classes: 3(8,9), 15:55~17:30

5(3,4), 9:45~11:20

Weeks: 1-15

Introduction of the Course: Chapters I

Part I: Introduction

- Course Overview
- Operating-System Overview
- Operating-System Structure(操作系统结构)
- Computer-System Structure(计算机系统结构)

Part II: Process Management

- Processes(进程)
- Threads(线程)
- CPU Scheduling(进程调度)
- Process Synchronization(进程同步)
- Deadlocks(死锁)

Introduction of the Course: Chapters II

Part III: Memory Management

- Main Memory
- Virtual Memory(虚存)

Part IV: Storage Mangement

- Mass-Storage(外存) Structure
- File-System Interface
- File-System Implementation
- I/O Systems

Outline

1 Teachers & Students of this course

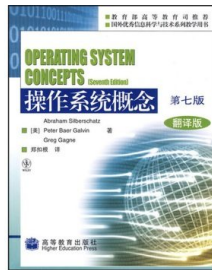
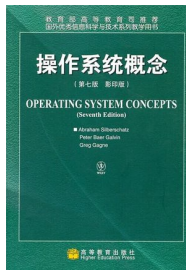
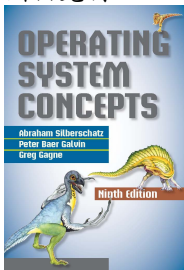
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- (恐龙书) **Operating System Concepts**, by Avi Silberschatz, Peter Baer Galvin, and Greg Gagne.
 - Webpage: <http://www.os-book.com/>
 - Who use: 弗吉尼亚大学, 北卡罗来纳州立大学, RICE, 斯坦福, 加州伯克利, CMU等



(影印版/翻译版：网上大约50~60元能买到)

(大多数同学使用中文教材，建议尝试英文教材)

Reference

- Andrew S. Tanenbaum, Moderns Operating Systems (影印版, 翻译版)
- William Stallings, Operating Systems: Internals and Design Principles (影印版, 翻译版)
 - Webpage : <http://williamstallings.com/>
- (国内考研用书) 汤子瀛等, 计算机操作系统, 西安电子科技大学出版社
- Network

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Course organization

- ① 理论课部分：总60学时=2学时*2次*15周
- ② 课后阅读
- ③ Homework:
 - 随章布置，可能有课堂作业
 - 每2周交一次（周一），不接受迟交的作业（不迟于周三晚上9点）
- ④ Projects：总40学时（上机实验/源代码分析/多媒体作业）
 - 随课程进展布置，具体要求在布置的时候宣布
 - 上机作业检查：根据实验时间安排，由助教进行
 - 上机报告根据要求时间提交，不接受迟交的报告
- ⑤ 习题课，复习和答疑
 - 学习委员根据班上学生的需要，随时与主讲老师或助教提出
 - 根据需要协商安排，一般期末会安排一次
- ⑥ Final Exam（可以协商，一般安排在考试周）

Submission of homework and project

① Homeworks: 书面 (必须手写)

② Projects:

- 上机/源码阅读:

- 演示+口头说明+书面报告 (电子), 个别可以考虑视频

- 多媒体作业:

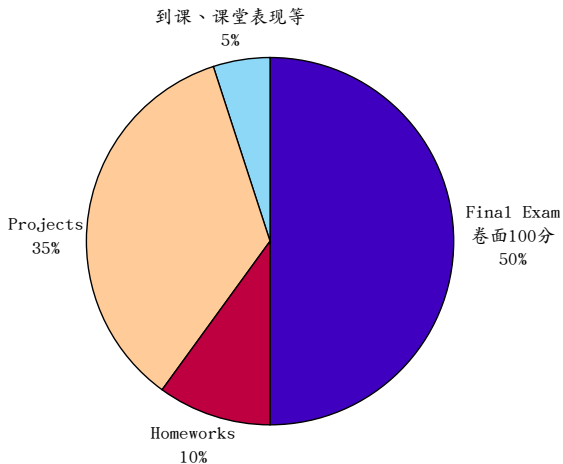
- 人数不限, 每组选择一个题目或一个专题的子内容 (建议建立大组, 选择一个专题, 做透)

- 时长: $\geq$ 人数 $\times$ 5 分钟

- 根据提交情况, 在课堂播放, 或...

- 请在本周进行分组和题目选择

Final score composition



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Introduction of the projects

- Software Env: **Windows** 和 **Linux**以及各种工具
- 在虚拟机上安装Ubuntu/KUbuntu操作系统
 - ① 熟悉使用Linux操作系统
 - ② 熟悉Linux下的软件安装方法
 - ③ 随着实验进行，安装各种开发工具和合用的软件。典型的开发环境，例如：
 - 集成开发环境eclipse C等
 - 编辑器+编译工具链
 - ④ 熟悉Linux下的文档工具、网络相关软件等
 - ⑤ 学习编写简单的shell脚本
 - ⑥ 学会将自己的数据与系统分离（随时可以重新安装系统）

Introduction of the projects

- 随着课程章节的进行，完成算法验证类实验，包括
 - ① 进程调度算法
 - ② 内存管理算法
- 助教将提供标准输入
- 操作系统启动体验
 - 提供一个操作系统
 - 提供一个启动加载程序
 - 提供一个模拟器bochs
 - 能够在bochs上利用启动记载程序加载操作系统运行
- 源代码阅读体验
 - 选择开源操作系统的某个模块，进行分析并验证

- 本课程的重要性
 - 在课程设置上：必修，4个学分
 - 在年级安排上：大二下
 - 在计算机系统中：承上启下
 - 在课程内容上：理论与实践并重；培养自学能力。

“教学相长” —— 《礼记·学记》

“路漫漫其修远兮，吾将上下而求索。” —— 屈原 《离骚》

“千里之行，始于足下” —— 《老子》第六十四章

谢谢！