
DESIGN AND ANALYSIS OF ALGORITHMS

COURSE INTRODUCTION

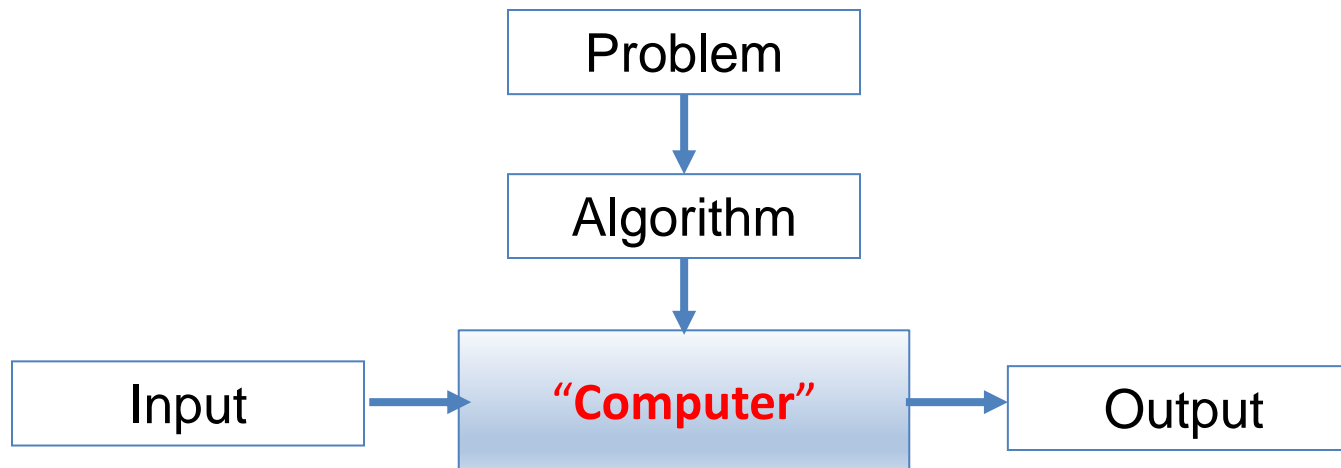
Course overview



From: internet

Course overview

- Why we need the algorithms?
 - Problems in life.
 - Problems in science.
 - Specialize in Computer and Information Science.



Course overview

- ❑ Emphasizes on **Design** and **Analysis** of Algorithms:
 - Design Algorithm:
 - How to make algorithm for solving a given problem?
 - Analysis off Algorithm
 - The designed algorithm is good or not?
 - Benchmark: time and resource.
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Course overview

□ Topics covered

- Basic principles of algorithm design and analysis
 - Some techniques for designing algorithm:
 - Recursive; Devide and Conquer; Trial and Error; Greedy; Dynamic Programming.
 - How to analyze algorithms using both mathematical tools and basic experiments.
 - How to transform new problems into well-known algorithmic problems with efficient solutions.
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Objective

Main goals of this course:

- ❑ Knowledge: Know how to make problem specification; grasp the basic techniques for algorithm design and assessment their complexities.
 - ❑ Skills: Ability to build algorithm for specific problems, give the complexity of the algorithm.
 - ❑ Attitude: Having a serious learning attitude, ability to self-study and thinking in developing application for real problems.
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Lecture schedules

- ❑ Semester 2, AY 2022-2023
 - ❑ Credits: 3 (2 class + 2 lab + 5 self-study)
 - ❑ Class: Monday, 7:00-8:50, room 208-T5
Thursday, 7:00-8:50, room 202-T4
Friday, 7:00-8:50, room 202-T4
 - ❑ Lab: Computer room T5
 - ❑ Course language: Vietnamese, English
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Assessments

- Weekly (homework, attendances): 20%
 - Midterm (homework, essay): 20%
 - Final (exam, project): 60%
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Lecturer and tutor

❑ Lecturer

- Assoc.Prof. Nguyễn Thị Hồng Minh
- 0904101065 (phone, zalo, viber)
- minhnth@hus.edu.vn (mail)
- nth_minh@yahoo.com (mail, facebook)

❑ Tutors

- BSc., MSc. student Đặng Trung Du (098.464.0898)
 - BSc., MSc. student Trần Bá Tuấn (032.745.7300)
 - BSc., MSc. student Trịnh Cẩm Nhung (038.462.4498)
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Course resources

- ❑ Course materials

 - Google Classroom

 - Google Drive

- ❑ Discussions

 - Group zalo

 - Email: minhnth@hus.edu.vn

 - Subject begin with: [MAT35xx].<subject>*

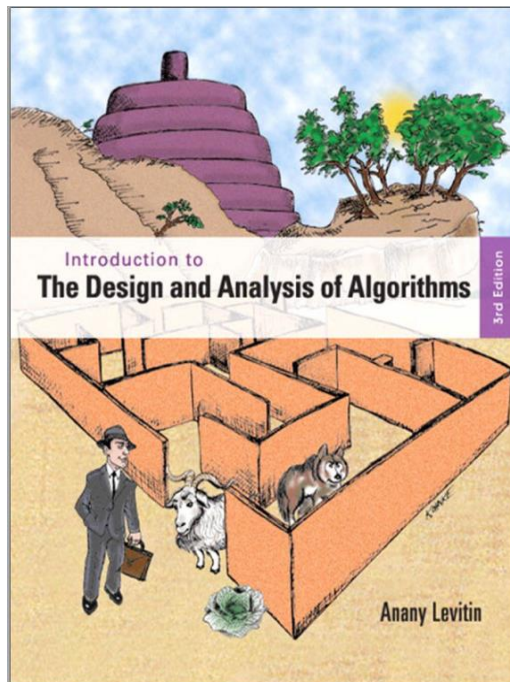
- ❑ Software

 - Programming language: **Java, C++, Python**

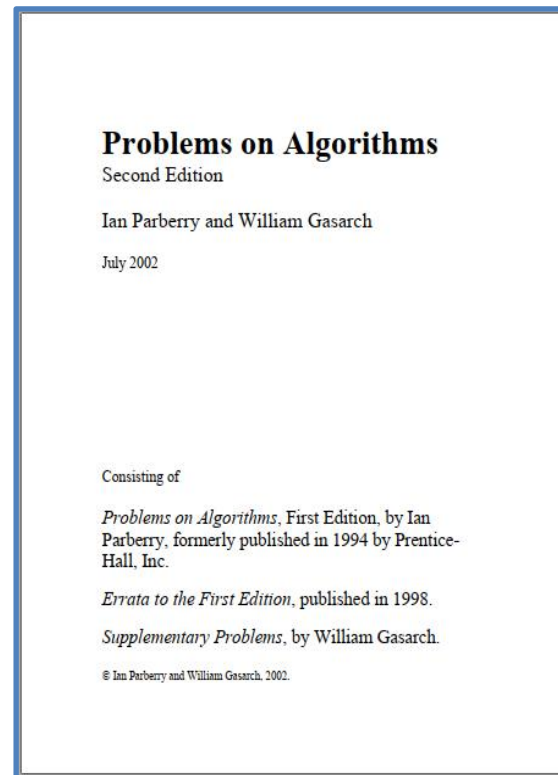
 - Interactive app: Google Form, Kahoot! (smart phone, laptop)

Course resources

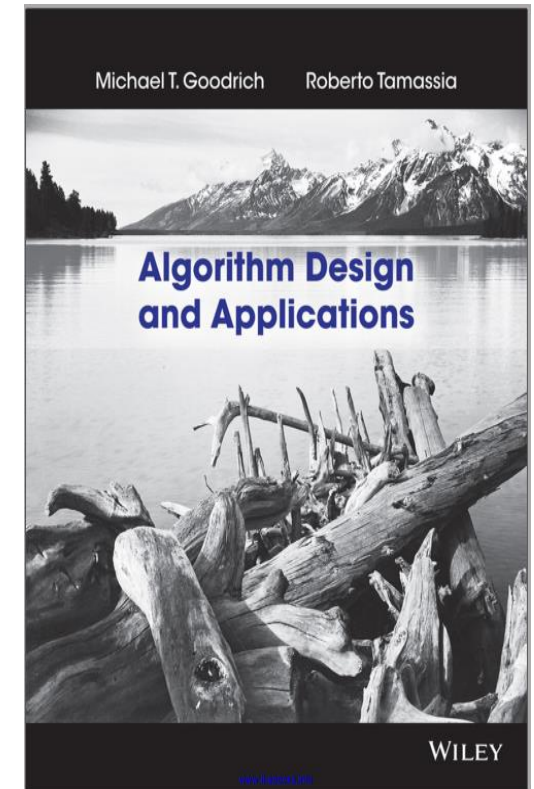
□ Reference books:



- The Design and Analysis of Algorithms (3rd), Anany Levitin, Pearson, 2012



- Problems on Algorithms, Ian Parberry and W. Gasarch, ebook, 2002



- Algorithm Design and Applications, Michael T. Goodrich, R. Tamassia, 2015

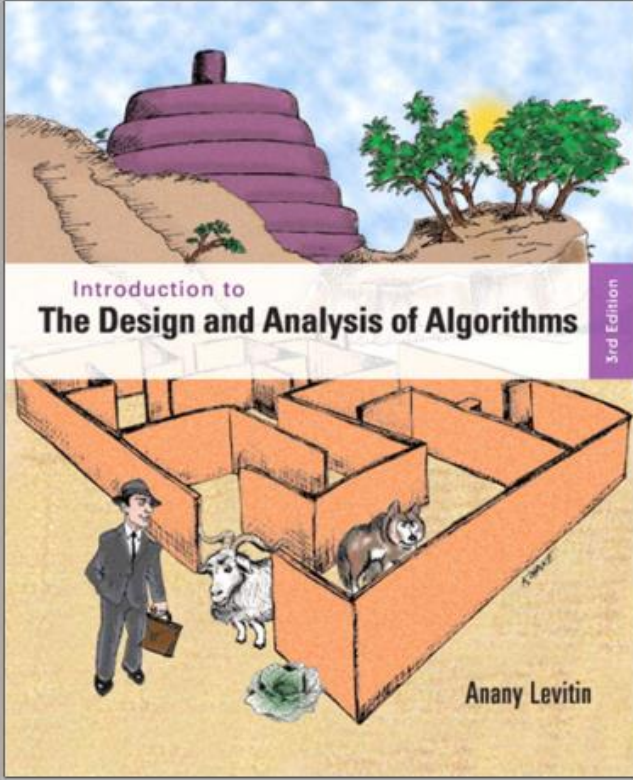
Course resources

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Bookmarks

- Cover
- Copyright Page
- Title Page
- Brief Contents
- Contents
- New to the Third Edition
- Preface
- Acknowledgments
- 1 Introduction
 - 1.1 What Is an Algorithm?
 - Exercises 1.1
 - 1.1 What Is an Algorithm? Recursive Problem Solving
 - 1.3 Important Problem Types
 - 1.4 Fundamental Data Structures
- 2 Fundamentals of the Analysis of Algorithm Efficiency
- 3 Brute Force and Exhaustive Search
- 4 Decrease-and-Conquer
- 5 Divide-and-Conquer
- 6 Transform-and-Conquer
- 7 Space and Time Trade-Offs
- 8 Dynamic Programming
- 9 Greedy Technique
- 10 Iterative Improvement
- 11 Limitations of Algorithm Power
- 12 Coping with the Limitations of Algorithm Power
- Epilogue
- APPENDIX A: Useful Formulas for the Analysis of Algorithms
- APPENDIX B: Short Tutorial on Recurrence Relations
- References
- Hints to Exercises
- Index

Introduction to
The Design and Analysis of Algorithms
3rd Edition



Anany Levitin

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Some Class Rules

- Vệ sinh bảng, phấn. Chuẩn bị máy chiếu.
 - Không nói chuyện riêng, nói chuyện điện thoại trong lớp.
 - Ra/Vào lớp không làm ảnh hưởng cô và các bạn.
 - Điểm danh bất kì.
 - **NGHIÊM CẤM GIAN LẬN** trong làm bài tập, kiểm tra.
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Expected results

- Complete the course with the best score;
- Subject material folder: lectures, documents, assignments;
- Ideas for projects, applications;
- Memorable classroom experience.
- ...

Success is the sum of small efforts
repeated day in and day out.

Robert Collier - 1885-1950 - Author



From: <https://www.insightoftheday.com/motivational-quote-by-robert-coller-10-31-2019>

Thank you for going together!

Assoc. Prof. Nguyen Thi Hong Minh

Department of Informatics

Faculty of Mathematics, Mechanics and Informatics

VNU University of Science

Bộ môn Tin học

Khoa Toán - Cơ - Tin học

Trường Đại học Khoa học Tự nhiên

Đại học Quốc gia Hà Nội