GB13604 - Maths for Computer Science

Lecture 0 – About this Course

Claus Aranha
caranha@cs.tsukuba.ac.jp

College of Information Science

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What is this course about?

In this course, you will study (or review?) topics in fundamental mathematics that are useful for computer scientists.

- Central topic: Discrete Mathematics
  - Proofs
  - Sets
  - Integers
  - Combinations
  - Probability

A secondary objective is to help you practice and improve your technical English.

Course Materials

This course is based on Mathematics for Computer Science, Spring 2015, by Albert Meyer and Adam Chlipala, Massachusetts Institute of Technology (MIT), OpenCourseWare (OCW)

In manaba you can find links to the original course, as well as the textbook. The original material is a great complement for this course!

Structure of a Lesson

Covid 2020 version

This year, our lecture will be fully online. Each week includes the following activities:

1. Watch the video about the week's topic on MS stream;
   - You can watch the video at any time.
2. Participate in the discussion meeting on MS teams;
   - During the regular lecture time, the professor will be available on MS teams to answer questions about the materials and the exercise.
3. Solve the weekly exercise;
   - Do your exercise at home. We recommend that you start your exercise during the discussion meeting.

Course Topics

- Part I: Proofs
  - Class 1: Introduction to Proofs
  - Class 2: Sets and Induction
- Part II: Structures
  - Class 1: Number Theory
  - Class 2: Directed Graphs and Partial Orders
  - Class 3: Simple and Planar Graphs
- Part III: Counting
  - Class 1: Sums and Assymptotics
  - Class 2: Cardinality Rules and Generating Functions
- Part IV: Probability
  - Class 1: Events, Probability Spaces, Conditionals
  - Class 2: Random Variables, Deviation from Mean, Random Walk
  - Class 3: Advanced Topics and Review

Course Evaluation

2020 Version

The grade of this course will be the weighted average between the Weekly Exercises and the Final Exam.

- 70% Weekly Exercises
  - One to three questions will be posed in class;
  - You must answer your exercises individually;
  - Submission must be a PDF on MANABA;
- 30% Final Exam
  - The final exam will cover topics from all lectures;

About the Course Language

One of the goals of this lecture is to raise your level of technical English. However, this is not an English Class.

I expect the students to submit their exercises and exam answers in English. It does not need to be perfect, but I expect you to make a good effort.

If you are having difficulties

Please contact me by MANABA message, MS Teams, or by e-mail at any time!

Self-introduction

- Name: Claus Aranha;
- Country: Brazil;
- Research: Evolutionary Computation and Artificial Life;
- Hobby: game programming
- Webpage: `http://conclave.cs.tsukuba.ac.jp`