**PKU Summer 2019**

**Mathematical Foundations for the Information Age**

**Announcements**

* HWs should be typed (LaTeX, Word etc.) and submitted in PDF format. Please submit your homework to mathininformatics@163.com

**Overview**

The course will cover mathematical foundation of modeling and searching of the WWW and other complex networks, discovering trends, data mining, and making recommendations based on user behavior. Topics will include large graphs, random structures, phase transitions, spectral methods, data in high dimensions, Chernoff bounds, generating functions, second order methods.

**Textbook**

**Mathematics for the Information Age by Ravi Kannan and John Hopcroft. The online version of the book can be accessed**[**here**](http://www.cs.cornell.edu/jeh/book%20no%20so;utions%20March%202019.pdf)**.** There are many different versions of the book online which may have different numbers for the chapter questions. Please refer to this version for correct HW questions.

**Course Staff**:

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| **Instructor:** | [**John Hopcroft**](http://www.cs.cornell.edu/jeh) | [jeh@cs.cornell.edu] |
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\*add '.edu.cn' after these addresses when sending an email.

**Discussion Session:**

In addition to the main lectures (8:00 to 10:00), we also have a discussion session (10:00 to 12:00). The discussion session will repeat some course materials that students may have trouble, go through previous homework, and may cover some extension materials.

**Homework Due:**

Each homework will probably have four exercises and is due before the beginning of next class. For example, the homework assigned on Monday will due on 8:00 am Wednesday morning.

**Late Policy:**

We do not accept late homework except for special reasons.

**Regrade Policy:**

Regrade requests will be considered if:  
- they are handed to Prof. Hopcroft or TAs within one week of the time that the given homework or exam is returned to the class.  
- the answer was falsely graded as incorrect. So, in particular, we will not accept requests for higher partial credit.  
- they come with a written explanation, stapled onto the assignment, of why the given answer was right.

**Exams:**

The exams will be in-class (at the class time and location, closed book).

* Midterm: 10:00 to 12:00, Wednesday, 7/10
* Final: To be announced, Friday, 7/19

**Grades**:

25% midterm, 25% final, 50% homework (the final ratio may be tuned in the end)

**Homework**:

Questions for the HWs are from Kannan/Hopcroft textbook (see above). Students are encouraged to work together but each must submit his own HW (written in his own words). The only requirement is that you understand everything you turn in. You must show all your work to receive substantial credit. **These include all the relevant part of your code for the coding questions and the assumptions you made/parameters you used that were not specified in the question text.**  **You are expected to type your solutions (i.e. no handwriting) and electronically to the email** [**mathininformatics@163.com**](mailto:mathininformatics@163.com) **.**

**Academic Integrity:**

Any work submitted by a student in this course for academic credit will be the student's own work. Violations of the rules (e.g. cheating, copying) will not be tolerated.