Linear Algebra: Theory and Applications (MAT2041)

Course Syllabus and Brief Introduction

Instructor:
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L02&03 Ruoyu Sun

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Introduction

- Basic Information and Course Syllabus
- Basic Introduction
- Q&A

Course Information (L02&03)

Instructor: Ruoyu Sun
(by university convention, you may call me Prof. Sun, or Professor Sun)

Course schedule:
L02 Tue, **Thu** 10:30AM-12PM

Venue: Zhixin 110

Course schedule:
L03 Tue, **Thu** 1:30PM-3PM

Venue: Zhixin 111

Office Hour: Tue 3PM-4PM (Zhixin 111 or Daoyuan Building 412)

Email: sunruoyu@cuhk.edu.cn

Important notice & QA: Wechat group
(add during the break)

Website: to share in wechat group
Homework: Blackboard
Discussion: Piazza

Online Platform

Wechat group: for important notice (e.g. homework)

& important logistics question (e.g. where is the course website)

Piazza: for discussion of tech questions

Sign up for Piazza of this class (and regular link)

- https://piazza.com/the_chinese_university_of_hong_kong_shenzhen/fall2023/mat2041

Course website: Logistics & rules; Lecture PPT collection

Blackboard: submitting homework, grading homework

These links will be shared in wechat group, and pinned on the top
(会在微信群里分享并置顶)

Myself

- Peking University, math, BS
- Univ of Minnesota, ECE, PhD
- Stanford University, Postdoc
- Facebook AI Research (led by Yann LeCun), full-time visiting scientist
- UIUC, ISE & ECE, Assistant Professor

- CUHK(SZ), Associate professor. Starting Fall 2022.
- Research Areas: machine learning, optimization and communication networks, including:

  large language models, deep learning theory, adaptive algorithms, learning to optimize, graph neural networks, resource allocation in networks, …

- I taught an early version of linear algebra in 2017 in CUHK-SZ summer, with Prof. Tom Luo.
- I taught MAT2041 in Fall 2022.

TA and Tutorials

Teaching Assistants:

周怡杰	（L）	ZHOU, Yijie	222043016@link.cuhk.edu.cn
张梦		ZHANG, Meng	223010108@link.cuhk.edu.cn
匡博文		KUANG, Bowen	119020237@link.cuhk.edu.cn
廖嘉滢		LIAO, Jiaying	223040093@link.cuhk.edu.cn
曾航		ZENG, Hang	223040119@link.cuhk.edu.cn
吴逸飞			

Their contact information will be available in blackboard and course website

No Tutorial for the first week

Textbooks

Teaching Method: slides + writing

Textbook: Gilbert Strang, *Introduction to Linear Algebra*, 6th edition, Wellesley-Cambridge Press

Remark: Using 5th edition is also fine; the 5th edition contains more contents than the 6th edition.

Recommended books: Steven Boyd, Lieven Vandenberghe*, Introduction to Applied Linear Algebra*

Steven J. Leon, *Linear Algebra with Applications*, 9th Edition

David C. Lay, et al., *Linear Algebra and its Applications*, 5th edition

Grading Scheme (tentative)

Attendance:	10 %	**Attendance** will be checked by certain method (likely scanning code for a quiz), -Starting at 3rd week (after the add/drop period)
Assignments:	25%	(In total 7~8 assignments) (Submit your assignments on Blackboard)
Mid-term Exam:	30%	
Final-term Exam:	35%	

Logistics

- Will be online in the course website later this week.
- Homework 1: will be due at least next week (probably Friday or so).
- **Dropping one homework policy**: worst score can be dropped
- **Submit via BB**

Course Syllabus (tentative)

Motivation and Vectors	Lecture 1-3	
Matrices Algebra	Lecture 4	
Linear Systems and Gaussian Elimination	Lecture 5-6	
Vector Spaces	Lecture 7-11	
Orthogonality	Lecture 12-14	**Mid-term (Lecture 1-11)**
Determinants	Lecture 15-16	
Linear Transformations	Lecture 17-18	
Eigen-Theory	Lecture 19-20	
Singular Value Decomposition	Lecture 21-22	
Quadratic Form	Lecture 25	**Final Exam**

Tip: English Vocabulary and Piazza

- Students can check this vocabulary, and edit yourself

【腾讯文档】MAT2041 Vocabulary

https://docs.qq.com/doc/DWHFWbnlWZUhEdUF5

微信群 L02

群聊: MAT2041-L02-Fall2023

Please Scan and join

该二维码 7 天内 (9月12日前) 有效，重新进入将更新

微信群 L03

群聊: MAT2041-L03-Fall2023

Please Scan and join

该二维码 7 天内 (9月12日前) 有效，重新进入将更新