MA1508E

Linear Algebra for Engineering

Welcome!

- Lecturer self-introduction
- Lesson Plan
- Module components
- Ask questions

Lecturer Self Introduction

Mr. Clifton NG Wei Zhi

Lecturer Self Introduction

- BSc (Hons), National University of Singapore, 2016-2020
  - Major: Applied Mathematics (Operations Research & Financial Mathematics (ORFM) Specialisation)
  - Minor: Statistics
  - Have also taken a few Economics modules

Lesson Plan

Week	Video Lecture	Live Lecture	Lecture Quiz	Tutorial	Test	Practice Session	Group Project
1	Video 1.1 – 1.8	Introduction Lecture 1	Week 1				
2	Video 2.1 –2.4	Lecture 2 Introduction to MATLAB	Week 2				
3	Video 3.1 – 3.6	Lecture 3	Week 3	Tut 1		Practice 1	
4	Video 4.1 – 4.7	Lecture 4	Week 4	Tut 2			Discussion
5	Video 5.1 – 5.3	Lecture 5	Week 5	Tut 3		Practice 2	
6	Video 6.1 – 6.6	Lecture 6	Week 6	Tut 4	Test 1		
R							
7	Video 7.1 – 7.6	Lecture 7	Week 7	Tut 5			Discussion
8	Video 8.1 – 8.5	Lecture 8	Week 8	Tut 6		Practice 3	
9	Video 9.1 – 9.6	Lecture 9	Week 9	Tut 7	Test 2		
10	Video 10.1 – 10.7	Lecture 10	Week 10	Tut 8			Discussion
11	Video 11.1 – 11.3	Lecture 11	Week 11	Tut 9			Discussion
12	Video 12.1 – 12.4	Lecture 12	Week 12	Tut 10	Test 3		
13	Tutorial 11	Exam Briefing Revision				Practice 4	Presentation

Disruption in Tutorial

- Week 5, 12 Feb 2021, Friday (Chinese New Year)
  - TTE1, TTE5: Join any other group. Download Practice Worksheet 2 during lecture instead.
- Week 11, 2 Apr 2021, Friday (Good Friday)
  - TTE1, TTE5: Join any other group.

Module Components

MA1508E

Linear Algebra for Engineering

[2020] 2020/2021 Semester 2

Owner

MA1508E
Linear Algebra for Engineering
[2020] 2020/2021 Semester 2
Fac of Science (Dept of Mathematics)
28 Dec 2020 12:00 am - 31 May 2021 11:59 pm

Module Overview

Week	Video Lecture	Live Lecture	Lecture Quiz	Tutorial T: Tutorial session P: Tutorial Publish	Test	Practice Session	Group Project
1	1.1 Linear systems 1.2 Geometrical interpretation 1.3 Elementary row operations, 1.4 Row equivalent matrices 1.5 Row-echelon forms 1.6 Writing solutions from row-echelon forms 1.7 GE and GJE 1.8 Example (GE and GJE)	Introduction to MA1508E Lecture 1	Week 1				
2	2.1 Homogeneous linear systems 2.2 Matrices – definitions and special types 2.3 Matrix operations 2.4 Matrix multiplication	Lecture 2 Introduction to MATLAB	Week 2	P: Tut 1			
	3.1 Block multiplication 3.2 Inverse of a matrix						

Latest Announcements

+ Create An Announcement

No announcements.

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Linear Algebra for Engineering

[2020] 2020/2021 Semester 2

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Wee

Mon, 11 January 2021 - Sun, 17 January 2021

Lecture

[L1] Friday, 15 January 2021, 12:00-14:00, E-Learn_B

[LLE1] Wednesday, 13 January 2021, 14:00-16:00, E-Learn_B

[LLE2] Monday, 11 January 2021, 12:00-14:00, E-Learn_B

[LLE3] Wednesday, 13 January 2021, 12:00-14:00, E-Learn_B

[LLE4] Monday, 11 January 2021, 14:00-16:00, E-Learn_B

[LLE5] Tuesday, 12 January 2021, 16:00-18:00, E-Learn_B

[LLE6] Monday, 11 January 2021, 10:00-12:00, E-Learn_B

Multimedia Channel: Video Lecture Week 1

Reading: Elementary Linear Algebra: Applications Version

Avialable online for free.

Reading: Linear Algebra with Applications

Avialable online for free.

Folder (Non-Submission): Introduction

Folder (Non-Submission): Lecture 1 Notes

Lecture Notes

Latest Announcements

+ Create An Announcement

No announcements.

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Linear Algebra for Engineering

[2020] 2020/2021 Semester 2

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Information like Description, Pre-requisites, Co-requisites, Preclusions, Workload and Modular Credits are retrieved from NUS Bulletin. If there's a need to update this information, please update it at the source (NUS Bulletin), and then refresh it in LumiNUS.

Teaching Modes

This will be an e-learning module.

Video lectures: A few short videos introducing to key concepts that students have to watch weekly.

Live lectures: Through Zoom Conferencing

Type	Group	Day of the week	Start Time	End Time	Duration
Lecture	L1	Friday	12:00	14:00	2 hours
Lecture	LLE1	Wednesday	14:00	16:00	2 hours
Lecture	LLE2	Monday	12:00	14:00	2 hours
Lecture	LLE3	Wednesday	12:00	14:00	2 hours
Lecture	LLE4	Monday	14:00	16:00	2 hours
Lecture	LLE5	Tuesday	16:00	18:00	2 hours
Lecture	LLE6	Monday	10:00	12:00	2 hours

Tutorial Sessions: Through Zoom Conferencing

Type	Group	Day of the week	Start Time	End Time	Duration
Tutorial	T01	Thursday	14:00	16:00	2 hours
Tutorial	T02	Tuesday	16:00	18:00	2 hours
Tutorial	TTE1	Friday	16:00	18:00	2 hours
Tutorial	TTE2	Friday	14:00	16:00	2 hours
Tutorial	TTE3	Friday	16:00	18:00	2 hours
Tutorial	TTE4	Wednesday	14:00	16:00	2 hours
Tutorial	TTE5	Friday	14:00	16:00	2 hours
Tutorial	TTE6	Wednesday	12:00	14:00	2 hours

Description

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Linear Algebra for Engineering

[2020] 2020/2021 Semester 2

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GENERAL

Module Overview

Module Details

Class & Groups

Task Report

TOOLS

Announcements

Conferencing

Consultation

Files

Forum

Gradebook

Multimedia

Description | Facilitators | Readings | Weblinks | Timetable | Library Resources

List the compulsory and/or supp[illegible]ntary textbooks and reference reading materials for your module. Provide as much details of the book as possible and contact library E-Reserves team ([illegible]sv@nus.edu.sg) if you would like to create readings from journal articles.

Title & Author	Edition/Year/ISBN	Publisher	Type
Linear Algebra with Applications Author: W. Keith Nicholson Website: https://lyryx.com/wp-content/uploads/2018/01/Nich...OpenLAWA-2018A.pdf	2018 B edition 2018	CreateSpace Independent Publishing Platform	References Avialable online for free.
Elementary Linear Algebra: Applications Version Author: Howard Anton, Chris Rorres Website: http://bank.engzenon.com/tmp...c7f0-4955-9e79-437cc0feb99b/5d9787da-516c-444a-be77-49acc0feb99b/Howard_Anton_...	11th Edition 2013	Wiley	References Avialable online for free.
Linear algebra : concepts and techniques on euclidean spaces / Ma Siu Lun, Ng Kah Loon, Victor Tan. Author: Ma, Siu Lun,	Second edition. 2016 9789813152885	Singapore : McGraw-Hill Education (Asia), 2016. ©2016.	Supplementary Location: Science Library RBR Location: NUS High School Books Call #: QA184 Ma 2016 Call #: QA184 Ma 2016

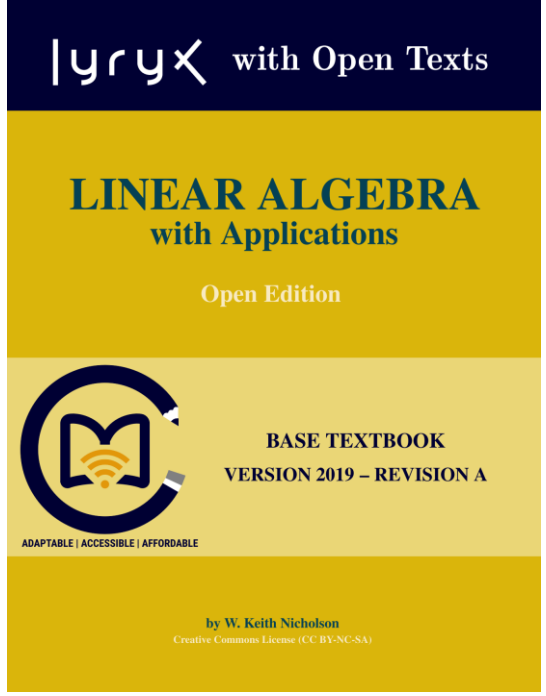
Readings

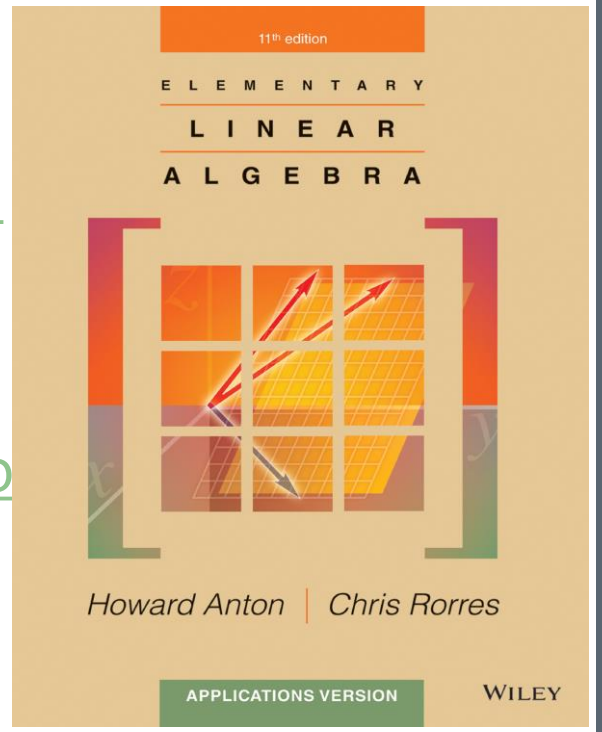
- **Linear Algebra with Applications**

  Website: https://lyryx.com/wp-content/uploads/2018/01/Nicholson-OpenLAWA-2018A.pdf

- **Elementary Linear Algebra: Applications Version**

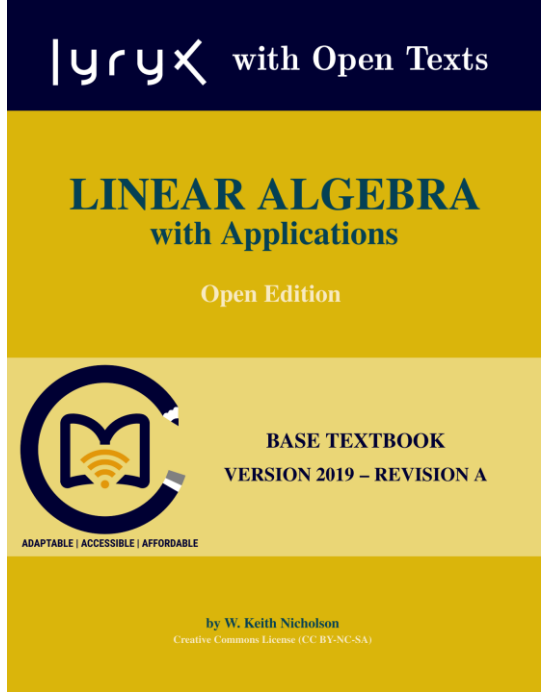
  Website: http://bank.engzenon.com/tmp/5d977c3a-c7f0-4955-9e79-437cc0feb99b/5d9787da-516c-444a-be77-49acc0feb99b/Howard_Anton_Chris_Rorres_Elementary_Linear_Algebra_Applications_Version_11th_Edition.pdf

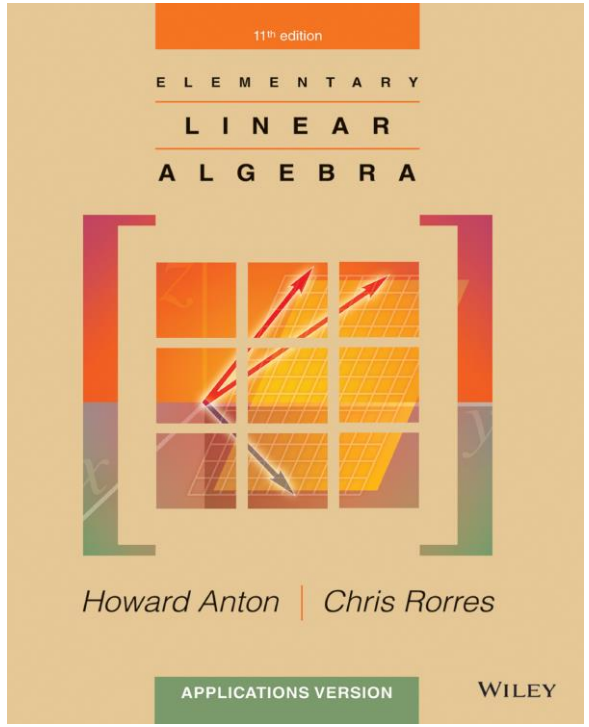




Readings

- Highly recommended to download: It's free!
- More diagrams, detailed explanation, more examples
- Extra exercises
- Applications: Reference for group project





Video Lecture

- Most of the weeks ≤ 6 videos, each video ≤ 10 mins
- Introduction and summary for content for the week
- View before attempting video quiz and live lecture

Live Lecture via Zoom conferencing

- LLE1: Wednesday 1400-1600hrs
- LLE5: Tuesday 1600-1800hrs
- LLE6: Monday 1000-1200hrs
- It will be recorded, recordings will be uploaded
- Lecture slides follow lecture notes closely, to be provided after live lecture

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[2010] 2020/2021 Semester 1

Owner

TOOLS

Announcements
Chat Room
Conferencing
Consultation
Files
Forum
Gradebook

Conferencing

Maximum participants size is 300 per meeting.

Note:

1. iPad and iPhone users are unable to share and view shared files, please advise them to use desktops.
2. As the creator of the meeting, you will be asked to sign in before starting the meeting. This would make you the host of the meeting.

Upcoming | Expired

Please click on the sync icon of the meeting to sync with changes made through the Zoom portal. Changes regarding recurring meeting cannot be synced back.

1 2

Meeting Name	Date & Time	Duration (HH:MM)	Meeting Password	Created By	Status	
MA1508E Online Lecture Week 1 Meeting ID: **91366224159**	12 Aug 2020 12:00 pm	02:00		Jonathon Teo Yi Han	Upcoming	...
MA1508E Online Lecture Week 2 Meeting ID:	17 Aug 2020 4:00 pm	02:00		Jonathon Teo Yi Han	Upcoming	...

Lecture Quizzes

- ≤ 10 basic questions weekly, 10marks/week
- Answers derived directly from lecture
- Unlimited attempts, no time limit per attempt
- Completed by Friday 2000hrs (except week 1)
- Must submit your attempts before dateline, no auto submission at dateline
- Answers, explanations, and marks obtained revealed after dateline
- Only final submission is counted final grades

Tutorials via Zoom conferencing

- Weekly starting week 3
- TTE1: Friday 1600-1800hrs
- TTE5: Friday 1400-1600hrs
- TTE6: Wednesday 1200-1400hrs

Tutorials via Zoom conferencing

- Questions will be released the week before, attempt before coming for tutorials
- Tutors go through all compulsory questions, may go through the complementary questions if time permit
- Groupmates from tutorial group
- Part 1: Solutions to tutorial questions
  Part 2: Practice worksheet, Project work discussion, Test

Practice Worksheets

- In week 3, 5, 8, 13
- Formative assessment, discuss with me and in groups (breakout room)
- Submit individually
- 20marks/practice worksheet
- Done during tutorial part 2
- Download during tutorial, answer directly on softcopy or answer on paper (scan and submit)
- Submit through LumiNUS
- Dateline: Friday 2000hrs

Test

- In week 6, 9, 12
- During tutorial part 2
- No discussion (Randomized questions)
- Zoom Proctoring
- Only 1 attempt
- Time limit: 40mins
- Open book
- Allowed to use MATLAB

Group project

- Form group before tutorial 1
  - Group members from tutorial group
  - One person from each group submit the names and student numbers of group members to Clifton: cnwz@nus.edu.sg
- 5 to 6 students per group (ideally 6)
- Submit by week 2 Friday, 22 Jan.
- Students without group will be randomly assigned to a group
- Students will be randomly assigned to groups with less than 5 members

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[2020] 2020/2021 Semester 2

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Tutorial Groups (EduRec)

Search for groups / students

Note: Tutorial Groups (EduRec) are retrieved from NUS Education Records System (Edu and for your information only.

8 groups

Group	Students	Timetable
T01 (MA1508E)		Session 1 - Thursday, Time: 14:00 - 16:00, Venue: E-Learn_B, Recurrence: 13
T02 (MA1508E)		Session 1 - Tuesday, Time: 16:00 - 18:00, Venue: E-Learn_B, Recurrence: 13
TTE1 (MA1508E)		Session 1 - Friday, Time: 16:00 - 18:00, Venue: E-Learn_B, Recurrence: 13
TTE2 (MA1508E)		Session 1 - Friday, Time: 14:00 - 16:00, Venue: E-Learn_B, Recurrence: 13
TTE3 (MA1508E)		Session 1 - Friday, Time: 16:00 - 18:00, Venue: E-Learn_B, Recurrence: 13
TTE4 (MA1508E)		Session 1 - Wednesday, Time: 14:00 - 16:00, Venue: E-Learn_B, Recurrence: 13
TTE5 (MA1508E)		Session 1 - Friday, Time: 14:00 - 16:00, Venue: E-Learn_B, Recurrence: 13
TTE6 (MA1508E)		Session 1 - Wednesday, Time: 12:00 - 14:00, Venue: E-Learn_B, Recurrence: 13

Group project

- Group discussion in week 4, 7, 10, 11
- Written report: submit in week 12
- Presentation: week 13, tutorial 11, ≤ 10 min per group
- Topic: Application of Linear algebra
- Sections:
  1. Concept/theory
  2. Small examples to demonstrate the theory
  3. Implement algorithm with preferably real like data
  4. Discussions on effectiveness of algorithm
- More details, LumiNUS files: Group Project

Final exam

- 27-Apr-2021, Tuesday
- 1700-1900hrs (2 hour)
- Open book
- Allowed to use MATLAB
- Zoom Proctoring

Assessment

- Weekly Lecture quiz: 15%
- Test: 15%
- Practice Worksheets: 20%
- Group project: 10%
- Finals: 40%

MATLAB

- Instructions available in week 2
- Use in tutorials, practice worksheet, test, group project, finals

Questions?

- Email:
  - Jonathon: jonathonteo@nus.edu.sg
  - Christian: christian.go@nus.edu.sg
  - Clifton: cnwz@nus.edu.sg
- Forum
  - Email questions may be directed to post on forum
  - Often several students have the same question as you
  - Discussion thread dedicated for trivia on Lecturers, feedback on course, content matters
- Book consultation (email)