

MAT2041 Tutorial 1: Homework

- homework policy
- homework submission

Plan today

Plan for Tutorial 1 (50 min):

- Introduction to homework policy (10min)
 - drop policy
 - regrading policy
- How to prepare e-version of homework (10 min)
 - 3 formats;
 - tips such as circling answers
- How to submit homework via BB (5 min)
- Exercise: (25 mins)

BASIC LOGISTICS

Basic information

- Course website:

<https://tongxin.me/MAT2041/>

or check Prof. Tongxin Li's homepage
<https://tongxin.me/> to find the website.

Wechat Group

- Join Session L01, L02 or L03 wechat group if you have not; ask TA or classmates.
- **Check wechat group!**
- **Check wechat group!**
- **Check wechat group!**
- **Check once every day**
--even if emergency, check once every 2 days

Questions on the Course

Any **homework**-related problem

--please send to homework-related TAs

- **Other problems:**

--Ask in Piazza

--Come to TA office hours

If these channels cannot resolve your questions:

--Come to Prof. Office hours

--Send private post in Piazza;

--Send email to Prof.

Homework Submission

- Only via **BB (will show a demo later)**
 - Ask your friends if you still don't know how to use it after this tutorial
- **Electronic versions should be clear; otherwise you may lose all points. (will show tips later)**

Homework Policy: Regrading Policy I

Go to the office hours of the TAs who graded this assignment

- if you have questions about the comment on your solution
- if only clerical or math mistake during grading
- if you think your solution is correct but graded by mistake
- For any other issues, please contact the instructor

Homework Policy: Regrading Policy II

Regrade requests

- must be made within **one week** of the score being posted in blackboard.
- only regrades related to **administrative mistakes** made after the one-week period are likely to be considered.

Homework Policy: Discussion Policy

Collaboration is allowed

But

please list all the people with whom you discussed at each question

p.S. The details of the collaboration policy for this course are available in the Resources tab on Piazza.

Homework Policy:

The Assignment 1 will be graded by

Zishan Qian

Email: 222042009@link.cuhk.edu.cn

Tel: 18057227100

Office Location: the smaller room of SDS Research Lab (4th Floor, Zhi Xin Building) #11

Office hour: Fri 14:00–16:00

Chenhao Si

Email: 222042011@link.cuhk.edu.cn

Tel: 18813956305

Office Location: the bigger room of SDS Research Lab (4th Floor, Zhi Xin Building) #71

Office hour: Fri 16:00–18:00

Academic Integrity

- **Academic Integrity:** your assignments will contain only the work of you (though you may discuss with others)
 - Plagiarism causes loss of points for the homework
 - other penalties may also be pursued, as allowed by University policy
 - similar policy for exams
- NOTE: The policies contained in this syllabus **are subject to change**. You will be notified in the event of any changes.

HOW TO PREPARE E- VERSION OF HOMEWORK

Three accepted types for homework solution

- **Scan handwritten** homework
- Write the solution on a **tablet** such as iPad, then export it as pdf
- Type up the solution via **LaTeX**

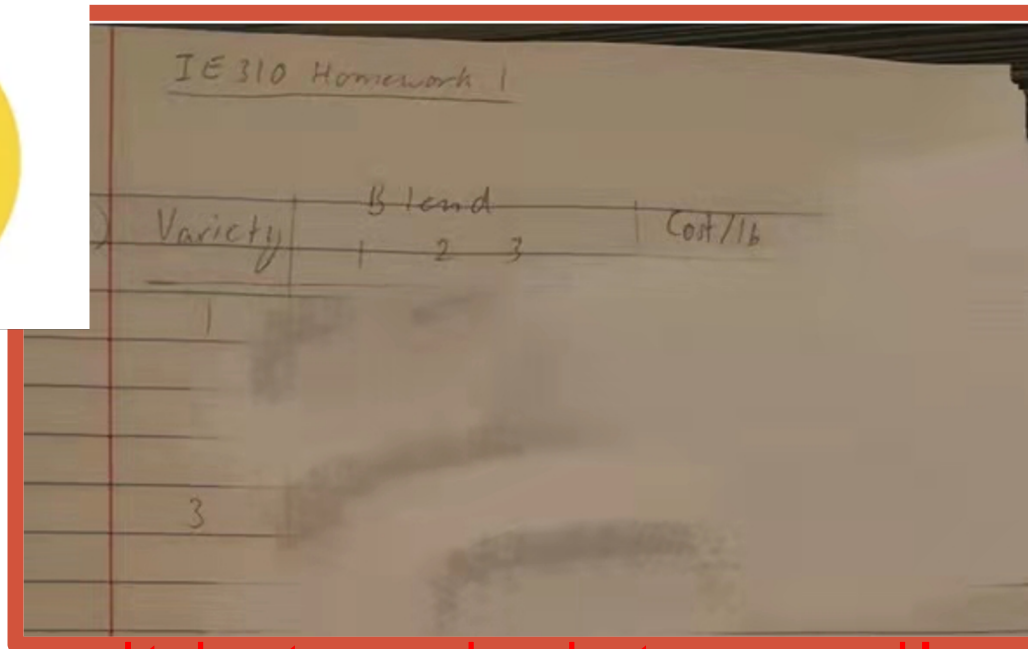
Scan handwritten homework

- A guide of scanning solution:
<https://help.gradescope.com/article/0chl25eed3-student-scan-mobile-device>
- Please make sure:
lighting is good;
angle of each page is correct.

Demo: How to Scan PDF

A quick 2-min Demo.

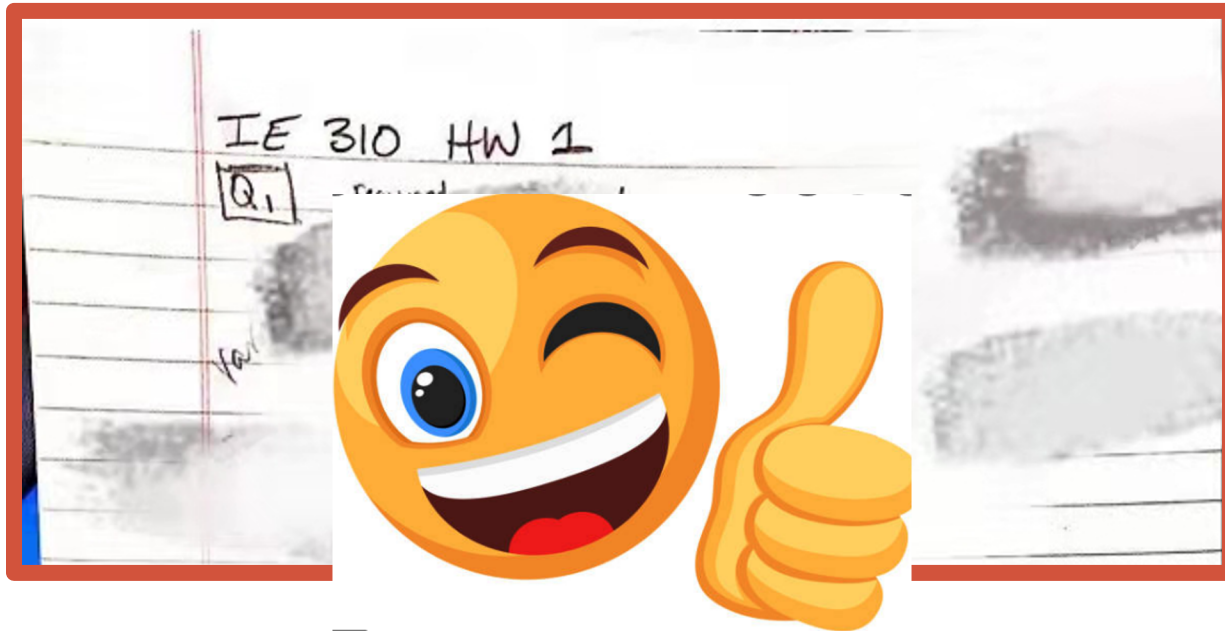
Invalid scanning -- lighting is bad



It is too dark to read!

You may receive zero score
if the TAs cannot read your solution.

Valid scanning solution -- good lighting and right angle



Circle answers and state problem numbers

- **Circle your final answers** for all questions
- **State each problem number** before writing down the solution
- The problems should **appear in order** in your submitted pdf to BB

SPACE IS IMPORTANT

- **Do NOT squeeze your solution** of all questions into one page
- It would be better if **each page** only contain the solution of **one question**
- **Leave enough space** between the solution of each part of the question

Summary

- **Scan** the solution if it is **handwritten**
- Make sure the **lighting is good** and the angle of each page is correct in the submitted pdf
- **Circle** final answers and **state** problem numbers
- **Please follow those requirements to reduce to workload of the TA.**
This will help us to speed up the grading speed.

Thank you!

HOW TO SUBMIT VIA BB

--Demo

Demo

How to submit via BB?

A quick 2-min Demo.

EXCERCISES

Exercise 1: Proof

1. Prove the following properties of scalar product:

(i.) If a is a vector and β and γ are scalars, we have

$$(\beta\gamma)a = \beta(\gamma a)$$

(ii.) If a is a vector and β, γ are scalars, then

$$(\beta + \gamma)a = \beta a + \gamma a$$

(iii.) When scalar multiplication is written with the scalar on the right, we have the right-distributive property:

$$a(\beta + \gamma) = a\beta + a\gamma$$

(iv.) Scalar-vector multiplication also satisfies another version of the right-distributive property:

$$\beta(a + b) = \beta a + \beta b$$

for any scalar β and any n -vectors a and b . In this equation, both of the $+$ symbols refer to the addition of n -vectors.

Exercise 2

2. *Total score from course record.* The record for each student in a class is given as a 10 vector r , where r_1, \dots, r_8 are the grades for the 8 homework assignments, each on a 0–10 scale, r_9 is the midterm exam grade on a 0–120 scale, and r_{10} is final exam score on a 0–160 scale. The student's total course score s , on a 0–100 scale, is based 25% on the homework, 35% on the midterm exam, and 40% on the final exam. Express s in the form $s = w^\top r$. (That is, determine the 10-vector w .)

Exercise 3 (Optional)

3. **(Optional)** *Word count and word count histogram vectors. A vector of length n can represent the number of times each word in a dictionary of n words appears in a document. For example, $(25, 2, 0)$ means that the first dictionary word appears 25 times, the second one twice, and the third one not at all. (Typical dictionaries used for document word counts have many more than 3 elements.)*

Suppose the n -vector w is the word count vector associated with a document and a dictionary of n words. For simplicity we will assume that all words in the document appear in the dictionary.

- (i.) What is $\mathbf{1}^\top w$?
- (ii.) What does $w_{282} = 0$ mean?
- (iii.) Let h be the n -vector that gives the histogram of the word counts, i.e., h_i is the fraction of the words in the document that are word i . Use vector notation to express h in terms of w . (You can assume that the document contains at least one word.)