이화여자대학교
EWHA WOMANS UNIVERSITY

Syllabus (2021-Spring)

Course Title	Mathematics for Statistics(통계수학)	Course No.	38755
Department/ Major	Department of Statistics	Credit/Hours	3
Class Time/ Classroom	Monday (14:00~15:15) / Wednesday (12:30~13:45) Classroom: https://ewha.zoom.us/j/3983475973		
Instructor	Name: Jae Youn Ahn	Department: Department of Statistics	
	E-mail: jaeyahn@ewha.ac.kr	Phone: 02-3277-2378	
Office Hours/ Office Location	Wednesday 17:00~19:00 Call to my office (02-3277-2378), then talk me on the phone or using Zoom. https://ewha.zoom.us/j/3983475973		

I. Course Overview

1. Course Description

This course introduce mathematial methods required for statistics and various machine learning techniques. Major topics of this course include

- Linear Algebra and Vector Calculus;
- Numerical Mathematics and Computing;
- Optimizations.

We also learn computing program "Python" for the numerical calculations.

Exams can be either on-site or onlie depending on the pandemic situation.

Mid-term exam: 4/26 (Monday) 13:50~15:25

Final exam: 6/9 (Wednesday) 12:20~13:55

* Please use "Student ID + Name" as your user name in Zoom. You should have always camera on to take this course. If your camera is not on, I can ban you from Zoom class.

2. Prerequisites

Calculus 1 and 2, or equivalent courses. Statistics 1 and 2, or equivalent courses. In case you do not take Calculus 2, it might be okay to take this course if you have taken all of Calculus 1, Statistics 1 and 2. However, I strongly recommend to take all of the courses described above. Python is not a prerequsite, and it should be taught during the class.

You should have camera and mic to login the Zoom class.

3. Course Format

Lecture	Discussion/Presentation	Experiment/Practicum	Field Study	Other
90%	%	10%		%

(Instructor can change to match the actual format of the class.)

Explanation of course format:

We will have online class through Zoom due to COVID-19. We will also have Python Lab during the class.

4. Course Objectives

After the course, students can understand various mathematical techniques for the data science. Students can also conduct simple scientific calculation using Python.

5. Evaluation System

☐ Relative evaluation

- Explanation of evaluation system:

We will have relative evaluation system with proportion of A to be around 45%. However, this proportion can be change subject to the overall achievement of the class. Midterm exam or final exam can be either "on-site exam" or "online exam" depending on the pandemic situation.

While attendance is not included in the evaluation system, if you miss more class than the university set you will get automatically F grade. I will regularly check attendance during the class without pre-notification.

Midterm Exam	Final Exam	Quizzes	Presentation	Projects	Assignments	Participation	Other
40 %	50 %	%	%	%	10 %	%	%

* Evaluation of group projects may include peer evaluations.

II. Course Materials and Additional Readings

1. Required Materials

[1] Kreyszig, Erwin. "Advanced Engineering Mathematics, 10th Eddition." (2009).

2. Supplementary Materials

3. Optional Additional Readings

III. Course Policies

* For laboratory courses, all students are required to complete lab safety training.

IV. Course Schedule (15 credit hours must be completed.)

Week	Date	Topics & Class Materials, Assignments
Week 1	(mm/dd)	Chapter 7: Matrices, Vectors, Determinants
	(mm/dd)	Python-Lab Ⅰ
Week 2	(mm/dd)	Chapter 7: Matrices, Vectors, Determinants
	(mm/dd)	Python-Lab Ⅱ
Week 3	(mm/dd)	Chapter 7: Matrices, Vectors, Determinants
	(mm/dd)	Python-Lab Ⅲ
Week 4	(mm/dd)	Chapter 8: Matrix Eigenvalue Problems
	(mm/dd)	Chapter 8: Matrix Eigenvalue Problems
Week 5	(mm/dd)	Chapter 8: Matrix Eigenvalue Problems
	(mm/dd)	Chapter 8: Matrix Eigenvalue Problems
Week 6	(mm/dd)	Chapter 8: Matrix Eigenvalue Problems
	(mm/dd)	Python-Lab Ⅳ
Week 7	(mm/dd)	Chapter 9: Vector Differential Calculus
	(mm/dd)	Chapter 9: Vector Differential Calculus
Week 8	(mm/dd)	Mid-Term Exam
	(mm/dd)	Mid-Term Exam

Week	Date	Topics & Class Materials, Assignments
Week 9	(mm/dd)	Chapter 19: Numerics in General
	(mm/dd)	Chapter 19: Numerics in General
Week 10	(mm/dd)	Chapter 19: Numerics in General
	(mm/dd)	Python-Lab V
Week 11	(mm/dd)	Chapter 20: Numeric Linear Algebra
	(mm/dd)	Chapter 20: Numeric Linear Algebra
Week 12	(mm/dd)	Chapter 20: Numeric Linear Algebra
	(mm/dd)	Chapter 20: Numeric Linear Algebra
Week 13	(mm/dd)	Python-Lab VI
	(mm/dd)	Chapter 22: Optimization and Linear Programming
Week 14	(mm/dd)	Chapter 22: Optimization and Linear Programming
	(mm/dd)	Python-Lab VII
Week 15	(mm/dd)	Final Exam
	(mm/dd)	Final Exam
Makeup Class	(mm/dd)	I will upload the video lectures for the makeup classes if necessary.
Makeup Class	(mm/dd)	

V. Special Accommodations

* According to the University regulation section #57-3, students with disabilities can request for special accommodations related to attendance, lectures, assignments, or tests by contacting the course professor at the beginning of semester. Based on the nature of the students' request, students can receive support for such accommodations from the course professor or from the Support Center for Students with Disabilities (SCSD). Please refer to the below examples of the types of support available in the lectures, assignments, and evaluations.

Lecture	Assignments	Evaluation
.Visual impairment : braille, enlarged reading materials .Hearing impairment : note-taking assistant Physical impairment : access to classroom, note-taking assistant	Extra days for submission, alternative assignments	.Visual impairment: braille examination paper, examination with voice support, longer examination hours, note-taking assistant .Hearing impairment : written examination instead of oral .Physical impairment : longer examination hours, note-taking assistant

- Actual support may vary depending on the course.

* The contents of this syllabus are not final—they may be updated.


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