Syllabus (2021-2)

Course Title	Programming for Statistics	Course No.	35300
Department/ Major	Statistics	Credit/Hours	3
Class Time/ Classroom	Wednesday 15:30~18:15		
Instructor	Name: Jae Youn Ahn	Department: Statistics	
	E-mail: jaeyahn@ewha.ac.kr	Phone: 02-3277-2378	
Office Hours/ Office Location	Wednesday 18:15 ~ 19:00 / Zoom or by phone		

Ⅰ. Course Overview

1. Course Description

In this class, we learn Python package used in machine learning and AI. **We will assume that you are comfortable with the basic python programming language such as loop, function, and class.** This is highly technical course, if you are not comfortable with basic Python language, please do not take this course. If you are not sure about your python ability, please make sure you are **highly** comfortable with all the material in the following link:

https://wikidocs.net/book/1

At the beginning of the course, we will learn how to implement some computational algorithm in Python language which helps us to be comfortable with Python language in general. You are also required to be comfortable with linear regression and logistic regression. At then end of class, we will learn how to implement linear regression and logistic regression using pytorch and tensorflow so that you are ready to implement the neural network in other future courses.

We will have online class using the Zoom application. Use the following address to access to the class
https://ewha.zoom.us/j/3983475973
For you to improve the programming skill, it is important to spend lots of time in coding practice. For that goal, we will have good amount of coding homework almost every week. **Current course capacity is already 100, there will be no additional admission for any reason.**

Depending on the pandemic situation, we may have either on-line exam or off-line exam. I will let you know two weeks earlier before the exam about the type of exam.

2. Prerequisites

Courses learning basic python language,
Regression Analysis

3. Course Format

Lecture	Discussion/Presentation	Experiment/Practicum	Field Study	Other
100 %	%	%		%

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

4. Course Objectives

After the class, students can use python for statistical learning including the neural network.

5. Evaluation System

Evaluation is based on the 100% homework. Homework will be given in a weekly basis. Each homework will be challenging, and you should spend good amount of time to be comfortable with the material that you have learned in the class. For each homework, you are also required to video-record your 10 min presentation explaining your homework. You need to upload your recording and provide the link to your video along with homework. If you cannot successfully explain your code, you will get 0 points for that homework.

V Relative evaluation

- Explanation of evaluation system:

We will have relative evaluation system. While general rule for this class was the distribution of A/B/C & below as 45/45/10, I want to have more generous distribution considering the COVID 19 environment.

Midterm Exam	Final Exam	Quizzes	Presentation	Projects	Assignments	Participation	Other
%	%	%	30 %	%	70 %	%	%

* Evaluation of group projects may include peer evaluations.

Ⅱ. Course Materials and Additional Readings

1. Required Materials

2. Supplementary Materials

3. Optional Additional Readings

- 이시카와 아키히코. 파이썬으로 배우는 딥러닝 교과서, 한빛미디어, 2020.
- McKinney, Wes. Python for data analysis: Data wrangling with Pandas, NumPy, and IPython. " O'Reilly Media, Inc.", 2017.

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)	Use of Jupyter notebook (google colab) to write report, and basic algorithm using Python
	(mm/dd)	
Week 2	(mm/dd)	Basic algorithm II using Python
	(mm/dd)	
Week 3	(mm/dd)	Numpy I
	(mm/dd)	
Week 4	(mm/dd)	Numpy II
	(mm/dd)	
Week 5	(mm/dd)	Pandas I
	(mm/dd)	
Week 6	(mm/dd)	Pandas II
	(mm/dd)	

Week	Date	Topics & Class Materials, Assignments
Week 7	(mm/dd)	Data Visualization I
	(mm/dd)	
Week 8	(mm/dd)	Data Visualization II
	(mm/dd)	
Week 9	(mm/dd)	Data manipulation and preprocessing I
	(mm/dd)	
Week 10	(mm/dd)	Data manipulation and preprocessing II
	(mm/dd)	
Week 11	(mm/dd)	Introduction to Pytorch I
	(mm/dd)	
Week 12	(mm/dd)	Introduction to Pytorch II
	(mm/dd)	
Week 13	(mm/dd)	Linear regression and logistic regression with Pytorch
	(mm/dd)	
Week 14	(mm/dd)	Introduction to Tensorflow
	(mm/dd)	
Week 15	(mm/dd)	Linear regression and logistic regression with Tensorflow
	(mm/dd)	
Makeup Class	(mm/dd)	There might be several online makeup classes if needed. All makeup class should be recorded and I will provide the link to the video.

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.