

Course Syllabus for 2190513 DS (ICE)

1. Course Number: 2190513
2. Course Credit: 3 (3-0-6)
3. Course Title: Data Science
4. Department: Information and Communication Engineering (ICE)
5. Semester: First Semester
6. Academic Year: 2025
7. Instructor: Assoc. Prof. Peerapon Vateekul, Ph.D. Office: Room 19-04, ENG4
8. Condition: 2190101: Programming (Python)
9. Status: Required
10. Curriculum: Information and Communication Engineering (ICE)
11. Degree: B.Eng.
12. Hours/Week: 3-Hour Lecture & Lab
13. Course Description

Data Science is the study of the discovery of knowledge from data. Being a data scientist requires an integrated skill set spanning mathematics, statistics, machine learning, databases, and other branches of computer science, along with a good understanding of the craft of problem solving. Data Engineering is the study of how to engineer or process data, i.e., data cleansing, data storing, etc. There are three main parts in this course:

- Data analysis: Machine Learning techniques
- Data engineering: Data exploration & preparation
- Data visualization: Storytelling via data

14. Course Outline

- 14.1. Learning Objectives
 - Describe what Data Science and Data Engineering are and the skill sets needed
 - To be able to explore and understand collected data
 - To be able to analyze data by applying traditional machine learning techniques
 - To be able to visualize data in relation to spatial and temporal points of view
- 14.2. Learning Contents
 - ENG2 Room 302
 - Prerequisites: Python programming
 - *** Please bring your laptop to the class ***
 - Students need to attend the class on-site at least 80% (at least 10 weeks) as a mandatory criterion to “pass” this course.

#	Mon (9AM-12PM)	Contents	Instructor	Module
1	4-Aug-25	Intro + Pandas	Aj.Peerapon	Data Anl (1)
	11-Aug-25	No class (Mother's Day)	Aj.Peerapon	
2	18-Aug-25	Data Analytics with Pandas	Aj.Peerapon	Data Anl (2)
3	25-Aug-25	Data Preparation	Aj.Peerapon	Data Anl (3)
4	1-Sep-25	ML1: Supervised: Decision Tree	Aj.Peerapon	AI/ML (1)
5	8-Sep-25	ML2: Supervised: Regression	Aj.Peerapon	AI/ML (2)
6	15-Sep-25	ML3: Supervised: kNN + GridSearch	Aj.Peerapon	AI/ML (3)
	24-Sep-25	Midterm Exam Week (22 - 26 Sep) 24 Sep 2025 at 1.00PM - 4.00PM		
7	29-Sep-25	ML4: Neural Networks & Unsupervised	Aj.Peerapon	AI/ML (4)
8	6-Oct-25	Deep Learning (1): CNN	Aj.Peerapon	Adv AI (1)
	13-Oct-25	No class (H.M. King Bhumibol Adulyadej's Memorial Day)		
9	20-Oct-25	Web Scraping & API (FastAPI)	Aj.Peerapon	Data Sci (1)
10	27-Oct-25	Streamlit (Web application for AI) * Project Announcement	Aj.Peerapon	Data Sci (2)
11	3-Nov-25	Gen AI: LLM, etc.	Aj.Peerapon	Adv AI (2)
12	10-Nov-25	Deep Learning (2): LSTM & TF	Aj.Peerapon	Adv AI (3)
13	17-Nov-25	DS Tools: Airflow, MLFlow, etc.	Aj.Peerapon	Data Sci (3)
	24-Nov-25	Final Exam Week (24 Nov - 8 Dec) 24 Nov 2025 at 8.30AM - 11.30AM		

- Approximately 1.5 hours of tutorial or Q&A sessions will be offered each week.
- 14.3. Method: Lecture and Lab
- 14.4. Learning Media: PowerPoint presentation, Zoom
- 14.5. Evaluation
 - Attendance 5%
 - Assignment 15%
 - Project 20%
 - Midterm Exam 30% (Lab Test)
 - Final Exam 30% (Lab Test)

15. Reading List

- 15.1. Required Text: N/A
- 15.2. Electronic Media or Websites: N/A

16. LMS

- 16.1. MyCourseVille: <https://www.mycourseville.com/?q=courseville/course/70559>
- 16.2. Discord: <https://discord.gg/gDuajEfnre>
- 16.3. Github: https://github.com/pvateekul/2190513_DS-ICE_2025s1