

Course Syllabus
Data Science and Analytics
Super AI Engineer Course by AI Association of Thailand

Course	:	Data Science and Analytics
Credit	:	3 credits
Semester	:	January 2022 – April 2022
Course Outline	:	Introduction to Data Science & Analytics. Data capture and interpretation. Data storage, data manipulation and data interpretation using mathematical sciences and computational methods.
Instructor	:	Asst. Prof. Dr. Natsuda Kaothanthong (natsuda@siit.tu.ac.th) (SIIT) Asst. Prof. Dr. Warut Pannakkong (natsuda@siit.tu.ac.th) (SIIT) Dr. Nuttapong Sanglerdsinlapachai (nuttapong.sanglerdsinlapachai@nectec.or.th) (NECTEC) Dr. Eakasit Pacharawongsakda (eakasit.pac@dpu.ac.th) (DPU)
Grading	:	Attendance / Quiz 20% Examination 40% On-hand Project 40% Top 20% → 'A'. Bottom 20% and/or students whose score < 30% → 'F'
Quiz	:	Quizzes are randomly conducted in the classes
Projects	:	The project aims to give you experience of deep learning. The project will be classified into individual hackathon projects, small group projects, and big bang group projects.
Course Material	:	http://mooc.aiat.or.th/ https://www.unibo.it/en/teaching/course-unit-catalogue/course-unit/2020/446598

Schedule:

No.	Topics	Hours
1	Introduction to Data Science and Analytics	3
2	Data pre-processing: data cleansing, data transformation, data aggregation, feature extraction, correlation	3
3	Database concepts and library	3
4	Data visualization: Concepts	3
5	Data visualization library: Matplotlib, Seaborn	3
6	Evaluation: confusion matrix, precision, recall, f-measure, accuracy, ROC curve, area under curve (AUC), mean absolute error (MAE), root mean square error (RMSE)	3
7	Descriptive analytics, diagnostic analytics, predictive analytics, prescriptive analytics	3
8	Supervised methods: classification decision tree, Naïve bayes, linear regression, logistic regression, random forest	3
9	Supervised methods: numeric prediction, linear regression, non-linear regression	3
10	Unsupervised methods: K-mean, DBSCAN, Hierarchical clustering	3
11	Unsupervised methods: Association	3
12	Trend analysis and outlier analysis	3
13	Project Workshop 1	10
14	Project Workshop 2	10
15	Project Workshop 3	10
16	Examination	
	Lecture	36
	Workshop	30