

Course Syllabus
Mathematics for Artificial Intelligence
Super AI Engineer Course by AI Association of Thailand

Course	:	Mathematics for Artificial Intelligence
Credit	:	3 credits
Semester	:	January 2022 – April 2022
Course Outline	:	Introduction to mathematics for machine learning, Linear Algebra: Vector and Matrix, Linear Algebra: Transformation & Determinant, Linear Algebra: Eigenvectors, Linear Algebra: Singular Value Decomposition (SVD), Probability: Basics of Probability and Weighted and Unweighted, Statistics, Calculus: Differential and Integral, Loss Function, Binary Cross-Entropy Loss, Maximum Likelihood, Linear Classifier, Multinomial Model, High Dimensional Data
Instructor	:	Dr. Prachya Boonkwan (prachya.boonkwan@nectec.or.th) (NECTEC) Dr. Sanparith Marukatat (sanparith.marukatat@nectec.or.th) (NECTEC)
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.ariat.or.th/ https://www.unibo.it/en/teaching/course-unit-catalogue/course-unit/2020/446598

Schedule:

No.	Topics	Hours
1	Introduction to mathematics for machine learning	3
2	Linear Algebra: Vector and Matrix	3
3	Linear Algebra: Transformation & Determinant	3
4	Linear Algebra: Eigenvectors	3
5	Linear Algebra: Singular Value Decomposition (SVD)	3
6	Probability: Basics of Probability and Weighted and Unweighted, Statistics	3
7	Calculus: Differential and Integral	3
8	Loss Function, Binary Cross-Entropy Loss	3
9	Maximum Likelihood	3
10	Linear Classifier	3
11	Multinomial Model	3
12	High Dimensional Data	3
13	Project Workshop 1	10
14	Project Workshop 2	10
15	Project Workshop 3	10
16	Examination	
	Lecture	36
	Workshop	30