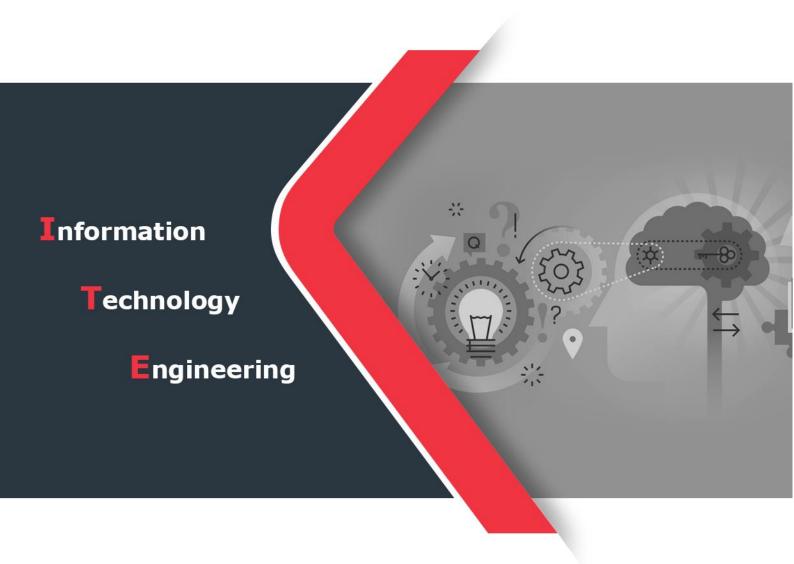


Machine Learning

Course Definition





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1. Basic Information:

Course Name	Machine Learning
Course Code	AML601
Number of Presentational Sessions*	20
Number of Synchronous Sessions**	10
Number of Shorter Tests***	4
Number of Exams***	1
Theoretical Sessions Work Load (hrs.)	60
Practical Sessions Work Load (hrs.)	30
Credit Hours	6

^{*}Each presentational session comprises both recorded lecture (1.5 hrs.) and interactive learning content (1.5 hrs.).

N.B.

Generally, each chapter requires two presentational sessions: one for the recorded content and one for the interactive content (unless the chapter is too long, in which case it may require more sessions (. This note applies to synchronous sessions as well, where each chapter requires one synchronous session generally.

^{**}Each synchronous session comprises the interactive lecture carried out in real time in a virtual class (1.5 hrs.).

^{***}Each shorter test is 0.5 hr. long. The final exam is 2 hrs. long.

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2. Prerequisites courses:

Course	Code
Statistics	BPS601
Artificial Intelligence	BAI501
Natural Languages Processing	ANL601

3. Course Objectives:

The main aims of this course "Machine Learning" are:

- Study machine learning problems
- Study supervised learning
- Study unsupervised learning
- Study Reinforcement learning
- Study Time Series

4. Learning Outcomes (LO):

By the end of this course, the learner is expected to acquire and learn the following subjects:

- Data Processing and wrangling for Machine Learning models
- Comparing and choosing best learning model
- Learning models evaluation
- Results interpretation

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5. Assessment Results:

				Assessment Type				
Chapter Number	Chapter Title	General Objectives	Interactive Content & Recorded Sessions	Applied Activities (Synch. Sessions)	Final Exam*/ Shorter Tests*	Presentations and Interviews***	Reports ***	
CH1	Machine Learning Basics Comprehension -Analytical Thinking -Tools and Application Hands- On		J	J	J	J	J	
CH2	Supervised learning	Comprehension -Analytical Thinking -Tools and Application Hands- On	J	J	J	J	√	
СНЗ	Unsupervised learning	Comprehension -Analytical Thinking -Tools And Application Hands- On	J	J	J	J	J	
CH4 t Learning Processing		Comprehension -Analytical Thinking -Tools	J	J	J	J	J	

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		And Application					
	Hands- C						
		Comprehension					
		-Analytical					
CH5	Time Series	Thinking -Tools	J	J	J	J	J
		And Application					
		Hands- On					

^{*}The final exam is two hours long and is given at the end of the course.

^{**}Shorter tests are about 30 minutes long and are given after three or four lectures throughout the semester during synchronous sessions.

^{***}Presentations, interviews, and reports are submitted once after each three or four lectures throughout the semester during synchronous sessions.

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6. Course Syllabus:

Chapter	Subject	Content	Number of Learning Objects	Number of synchronous Learning Objects
CH1	Machine Learning Basics	 Artificial Intelligence and Machine Learning Machine learning Hierarchy Machine Learning Tools Scikit-learn 	4	2
CH2	Supervised learning	 Linear Regression Non-Linear Regression Logistic Regression Decision Trees Bayes Classifier K-Neighbors Support Vector Machine Evaluation Methods 	8	4
СН3	Unsupervised learning	 Clustering by division Agglomerative Clustering Association rules discovery 	3	1
CH4	Reinforcement Learning Processing	 Reinforcement learning Q-learning Taxi driver problem 	3	1

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CH5	Time Series	1. Time Series	2	1
СПЭ	Time Series	2. Rolling averages	2	1

7. Practical Activity:

• Tools and Labs:

Tool Name	Description
Python	Programming language

• Practical Activities per Chapters:

Chapter	Activities Type	Remarks
	☑ Exercises	
	☑ Homework	
CH1	☐ Webinars	
СПІ	☐ Project	
	☐ Experiment	
	☐ Other	
	☑ Exercises	
	☑ Homework	
CH2	☐ Webinars	
CHZ	☐ Project	
	☐ Experiment	
	☐ Other	

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СН3	☑ Exercises	
	✓ Homework	
	☐ Webinars	
	☐ Project	
	☐ Experiment	
	☐ Other	
CH4	☑ Exercises	
	☑ Homework	
	☐ Webinars	
	☐ Project	
	☐ Experiment	
	☐ Other	
CH5	☑ Exercises	
	☑ Homework	
	☐ Webinars	
	☐ Project	
	☐ Experiment	
	☐ Other	

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