TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The objective of this course is to learn the basics of deep learning and the associated algorithms.

Prof. Dr. Ban N. Dhannoon

1. Teaching Institution	Al-Nahrain University / College of Science
2. University Department/Centre	Computer Department
3. Course title/code	Deep Laerning
4. Modes of Attendance offered	Full time
5. Semester/Year	First Semester / 2022-2023
6. Number of hours tuition (total)	45 hours
7. Date of production/revision of this specification	7/10/2022
8. Aims of the Course	

This course gives a quick and fast introduction to the basic concepts and important algorithms in machine learning. It gives the concepts, the intuitions, and the tools you need to actually implement programs capable of *learning from data*.

We will cover a large number of techniques, from the simplest and most commonly used (such as linear regression.

9. Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Cognitive goals .   A1. Introduction to basic concepts of machine learning (supervised and unsupervised)   A2. Basics of Gradient Descent   A3. Classification and Regression Trees   A4. Regularization and Model Selection   A5. Artificial Neural Network architecture
B. The skills goals special to the course.   B1. Ability to design machine learning programs.   B2.
Teaching and Learning Methods
Books   Lecture notes   Powerpoint
Assessment methods
Monthly exams   Classroom participation and discussions
C. Affective and value goals C1. Question: Looking for new information and raising questions   C2. Conclusion and Deduction: Thinking about what is beyond the available information to fill the gap   C3.   C4.
Teaching and Learning Methods
Describe, discuss
Assessment methods
Exams, Quizzes

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1.
D2.
D3.
D4.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2		• General Introduction	عرض، شرح ومناقشة	الفعالية داخل الصف
2	2		• Basic concepts of machine learning ○ Supervised Learning • Unsupervised Learning	=	=
3	2		• Empirical risk minimization ○ Gradient Descent • Stochastic Gradient Descent .	=	=
4	2		• Classification and Regression Trees (CART)	=	=
5	2		• Regularization and Model Selection	=	=
6	2		○ Cross Validation ○ Feature Model Selection ○ SSIM		
7	2		• Mid1	=	=
8	2		• Artificial Neural Network architecture	=	=
9	2		• Know your data	=	=
10	2		• Data visualization	=	=
11	2		• K-Means Clustering	=	=
12	2		• Clustering	=	=
13	2		• PCA -The Curse of dimensionality and	=	=

			Dimension Reduction		
14	2		• Feature Engineering for Machine Learning	=	=
15	2		• Mid 2	=	=

11. Infrastructure	
1. Books Required reading:	Advances in Deep Learning, 2020
2. Main references (sources)	1. Stanford University Machine Learning CS229 Lecture notes by Andrew Ng. 2. Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, Aurelien Geron, Orielly, 2017.
A- Recommended books and references (scientific journals, reports…).	Feature Engineering for Machine Learning Principles and Techniques for Data Scientists, Alice Zheng and Amanda Casari, Orielly, 2018
B-Electronic references, Internet sites…	Youtube –Andrew Ng
12. The development of the curriculum plan	