

Course Syllabus

Domaine : science économique et gestion et science financière	Filière :
Spécialité : M1 Comptabilité et Audit	
Semestre : S3	Année scolaire : 2025/2026

Identification de la matière d'enseignement	
Intitulé : Deep Learning Applications	
Unité d'enseignement : transversale	
Nombre de crédits : 02	Coefficient : 02
Volume horaire hebdomadaire total : 1h30	
Cours (nombre d'heures par semaine) : 1h30	
Travaux dirigés (nombre d'heures par semaine) : 0	
Travaux pratiques (nombre d'heures par semaine) : 0	

Responsable de la matière d'enseignement	
Nom, Prénom, Grade :	Chaima ahlem karima djellab MCB
Localisation du bureau :	-
Email :	chaima-ahlem-karima.djellab@univ-annaba.dz
Horaire du cours et lieu :	Mercredi à 15.30 en ligne

Description de la matière d'enseignement

Pré-requis :

To successfully follow this course, students should have:

1. **Mathematics & Statistics:** Basic knowledge of linear algebra (matrices, vectors), probability, and statistics.
2. **Programming Skills:** Familiarity with Python programming (variables, loops, functions, libraries).
3. **Machine Learning Basics:** Understanding of supervised and unsupervised learning, regression, and classification.
4. **Data Handling:** Ability to use libraries such as NumPy, Pandas, and Matplotlib for data preprocessing and visualization.
5. **English Reading Skills:** Ability to read and understand scientific material in English (documentation, research papers).

Objectifs de la matière d'enseignement :

By the end of this course, students will be able to:

1. **Remember:** Identify and define key deep learning concepts, functions, and architectures.
2. **Understand:** Explain differences between ML and DL, and interpret how neural networks operate.
3. **Apply:** Implement deep learning models using Keras and TensorFlow for real datasets.
4. **Analyze:** Compare and evaluate different models, and diagnose issues such as overfitting.
5. **Evaluate:** Justify model choices and optimization techniques with evidence.
6. **Create:** Design and develop innovative deep learning applications and research projects.

Contenu de la matière d'enseignement

1. Fundamentals of Machine Learning
2. Feedforward Neural Networks
3. Optimization Algorithms
4. Convolutional Neural Networks (CNNs)
5. Recurrent Neural Networks (RNNs)
6. LSTM Networks (Long Short-Term Memory)
7. GRU Networks (Gated Recurrent Units)

Course Description

This course introduces the fundamentals and applications of deep learning with a focus on economics and management. Students will learn to build and evaluate neural network models using TensorFlow and Keras, and apply them to real-world tasks such as prediction, classification, and time series analysis.

Modalités d'évaluation

Nature du contrôle	Pondération en %
Examen	60%
Micro – interrogation	20%
Travaux dirigés	Non concerné
Travaux pratiques	Non concerné
Projet personnel	Non concerné
Travaux en groupe	20%
Sorties sur terrains	Non concerné
Assiduité (Présence /Absence)	Non concerné
Total	100%

Références & Bibliographie

1. *Practical Deep Learning, 2nd Edition*
2. *Deep Learning with Python.*
3. *Dive Into Deep Learning.*
4. *Deep Learning* par Ian Goodfellow.

Planning du déroulement du cours (prévisionnel)		
Sem.	Titre du cours	Date
1	Introduction to Deep Learning – ML vs DL, key concepts, applications in economics & management.	
2	Machine Learning basics – models, classification, regression, evaluation.	
3	Introduction to Keras & TensorFlow – building first neural networks.	
4	Feed-Forward Neural Networks (MLP).	
5	Optimization algorithms – Gradient Descent, Adam, cost functions.	
6	Activation functions – Sigmoid, ReLU, Softmax, Tanh, etc.	
7	Practical application – predictive/classification model.	
8	Convolutional Neural Networks (CNN) – basics and architectures.	
9	Applications of CNN – image & graph analysis.	
10	Recurrent Neural Networks (RNN) – fundamentals and LSTM.	
11	LSTM for time series & text data – implementation & evaluation.	
12	GRU networks – time series forecasting, NLP, speech recognition.	
13	Acceleration with GPU & Google Colab.	
14	Team project presentations – AI solutions for banking or insurance challenges.	
15	Course review and exam preparation.	

محاسبہ و تدقیق

20 2/10/30

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آیتہ حسینی
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بریاہ پیری
مولویہ زینہ