

ARTIFICIAL INTELLIGENCE FOR SCIENCE /BIP AI 26.30 AUGUST 2024 – UNIVERSITY OF CAEN NORMANDIE

CAMPUS 2 - Côte de Nacre - Bd Maréchal Juin - Building « SCIENCE 3»
From Caen city centre: take **TRAM T2**, get off at “Campus 2”

Morning Classes: **Amphi S3 – 043** | Afternoon Activities: **S3 - 138**

MONDAY AUGUST 26

8.15 am > **Registration and Welcome**, by Christophe ROCHAIS, Vice-President for International Affairs
8:45 am > **Intro to Machine Learning (supervised, unsupervised, linear regression, logistic regression)**, by Romain HERAULT
10 am > *Coffee break*
10:15 am > **Fundamentals of Neural Networks (perceptron, layers, activation functions)**, by Romain HERAULT
11:45 am > *Lunch break at campus 2 University Restaurant (participant expenses)*
1:15 pm > **Hands-on Lab Session 1: Deep Learning for Particle Physics (neutrino classification)**, by Antonin VACHERET
4:30 - 7 pm > *Visit and Official Reception at Caen City Hall (Abbaye aux Hommes)*

TUESDAY AUGUST 27

8:30 am > **Deep Learning Architectures (autoencoders, ResNet, convolutional networks)**, by Julien RABIN
10 am > *Coffee break*
10:15 am > **Advanced Deep Learning Techniques (RNNs, transformers, graph networks)**, by Julien RABIN
11:45 am > *Lunch break at campus 2 University Restaurant (participant expenses)*
1:15 pm > **Hands-on Lab Session 2: Deep Learning for Physics Data Analysis**, by Antonin VACHERET
4:30 pm > **Brainstorming Session for Student Group Projects**, by Mehdi BENNANI
7 pm > *Welcome dinner, complimentary of UNICAEN*

WEDNESDAY AUGUST 28

8:30 am > **Generative Models Part 1 (VAEs, GANs, diffusion models)**, by Bruno GALERNE
10 am > *Coffee break*
10:15 am > **Generative Models Part 2 (inverse problems, scientific applications)**, by Bruno GALERNE
11:45 am > *Lunch break at campus 2 University Restaurant (participant expenses)*
1:15 - 4:15 pm > **Hands-on Lab Session 3: Generative Models for Scientific Problems**, by Bruno GALERNE
Evening off

THURSDAY AUGUST 29

8:30 - 9:15 am > **Invited Talk: Large Language Models and their Applications**, by Gaël DIAS
9:30 - 10:15 am > **Invited Talk: Physics-Informed Neural Networks (PINNs)**, by Christophe DOLABDJAN
10:30 - 11:45 am > **Invited Talk: Machine Learning in Healthcare and Medicine**, by John LEE
11:45 am > *Lunch break at campus 2 University Restaurant (participant expenses)*
1:15 pm > **Hands-on Lab Session 4: PINNs for Solving Differential Equations**, by Sidney BESNARD
4:30 - 5:30 pm > **Brainstorming Session for Student Group Projects**, by Mehdi BENNANI
Evening off

FRIDAY AUGUST 30

8:30 - 9:15: **Invited Talk: AI in Nuclear and Particle Physics**, by Antonin VACHERET
9:30 - 10:15: **Invited Talk: Foundation Models and their Scientific Applications**, by Frederic JURIE
10:30 - 11:45: **Invited Talk: Machine Learning for Materials Science**, by Sylvain LE TONQUESSÉ
11:45 am > *Lunch break at campus 2 University Restaurant (participant expenses)*
1:15 pm > **Hackathon and Presentation of Student Group Projects**, by Mehdi BENNANI
4:15pm > **Closing Remarks and Farewell**