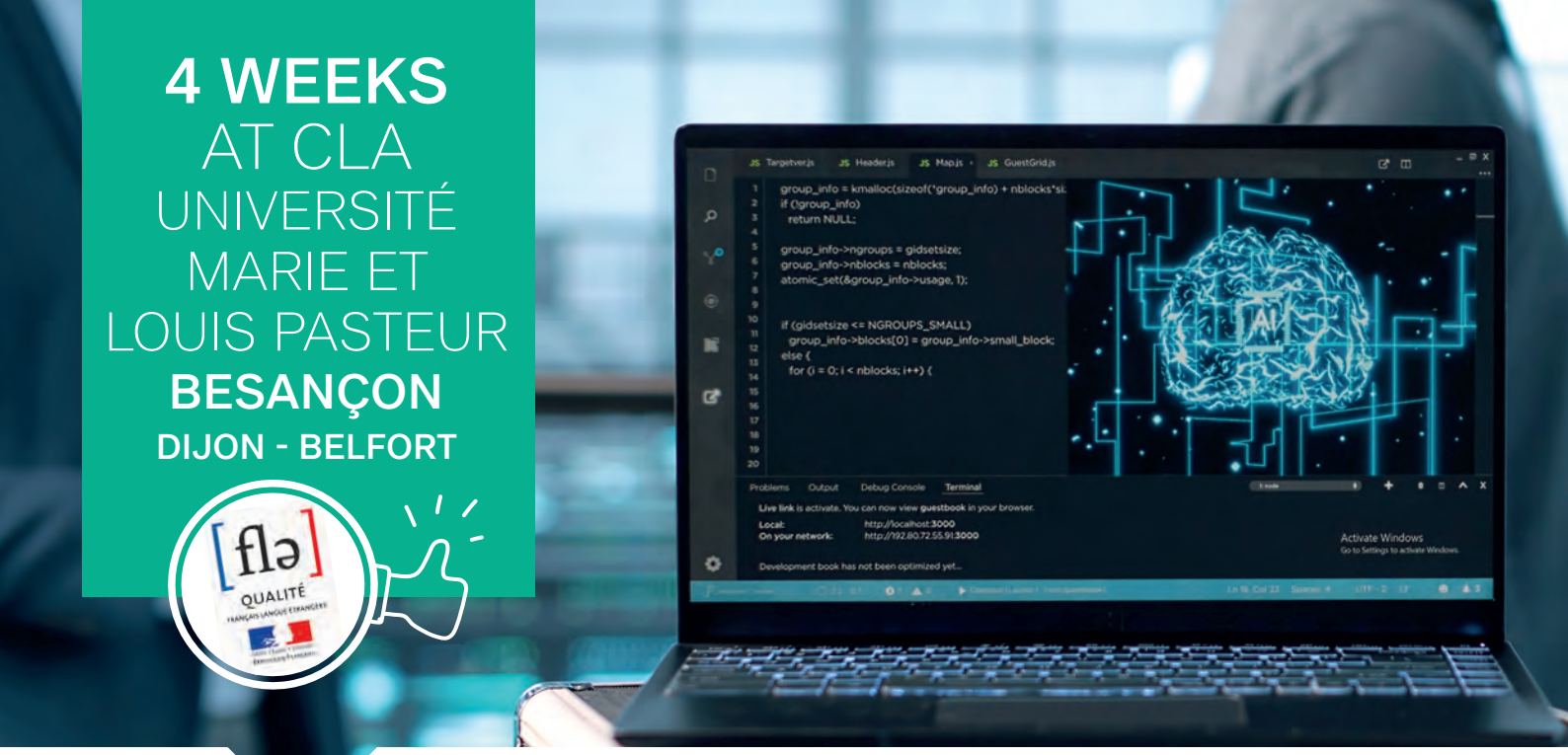
4 WEEKS
AT CLA
UNIVERSITÉ
MARIE ET
LOUIS PASTEUR
BESANÇON
DIJON - BELFORT



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AI IN SCIENCES: Shaping innovation, exploring social impact

The Center for Applied Linguistics (CLA) of Marie and Louis Pasteur University will launch in 2026 a new French + Sciences program focused on Artificial Intelligence and its ethical use in sciences, in partnership with three Graduate Schools: EIPHI for engineering sciences, INTHERAPI for health sciences, and TRANSBIO for environmental sciences.

The program is designed for future engineers and scientists who will face the complexity of AI applications in science, both in research and in more applied contexts. It addresses AI from a technological perspective, explores its innovative potential, and offers an ethical reflection on its uses, which will serve as a unifying theme throughout the program.

During the four-week stay, students will attend French as a Foreign Language classes in the mornings (open to both complete beginners and advanced speakers). In the afternoons, they will explore research topics that connect science and artificial intelligence, showcasing its wide range of applications and the excellence of the research conducted in the region. Students will also benefit from a rich program of cultural activities and events.

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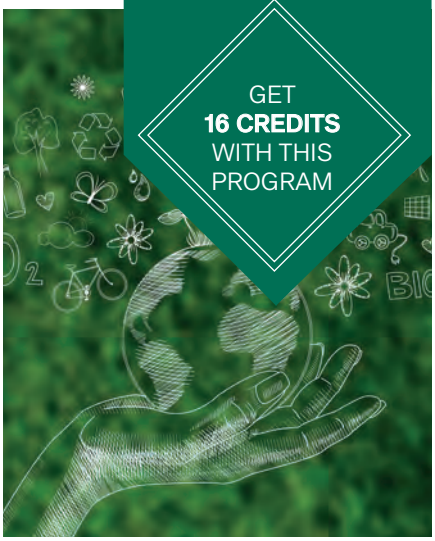

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GET **16 CREDITS** WITH THIS PROGRAM

Founded in 1958, the Center for Applied Linguistics (CLA) in Besançon is one of France's leading university language centers, welcoming over 2,000 international students each year. Internationally renowned for its expertise in French as a Foreign Language, it holds the highest level of the national Quality FLE label.

The Graduate Schools of Bourgogne–Franche-Comté — EIPHI, INTHERAPI, and TRANSBIO — offer five-year integrated thematic programs from master's to doctoral level, aimed at training the future leaders of research and innovation. Open to students from around the world, these programs are built on research teams from internationally recognized laboratories in the region and provide personalized support, state-of-the-art technological platforms, and a strong interdisciplinary approach.

COURSE CONTENT

30 HOURS PER WEEK

- **French as a foreign language: 15 hours per week**
  - > Acquisition of oral and written communication skills;
  - > Development of intercultural competence.
- **AI in sciences: 15 hours per week**
  - > Introduction to 7 topics of scientific research in the Bourgogne Franche-Comté region, in the fields of engineering, health sciences and environmental sciences;
  - > Participation in workshops and collective activities to provide perspective on the uses of AI.
- **Student performance will depend on 3 points:**
  - > Quality of the student's weekly journal and subsequent progress report;
  - > Degree of participation in program activities;
  - > Progress in French as a foreign language.

Non-contractual program, subject to change. A minimum of 10 students is required.

Duration **4 WEEKS**

Location **BESANÇON** BELFORT DIJON

PERIOD: June

French ⊕ Sciences & University housing

€1,960

4 WEEKS

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WEEK 1

MONDAY

> **Morning** French class

> **Afternoon** Introduction to AI in sciences: shaping innovation, enhancing social impact and exploring ethical use.

TUESDAY & WEDNESDAY

> **Morning** French class

> **Afternoon** Artificial Intelligence & Complex Systems (EIPHI):
This course explores the fundamentals of AI, machine learning, and deep learning, using concrete examples like image classification, while examining their societal applications, benefits, and challenges. A hands-on MNIST dataset tutorial concludes the session, providing practical insight into image classification.

THURSDAY

> **Morning** French class

> **Afternoon** How AI helps discover new medicines: from molecules to human health
This course introduces how AI, computational biology and biophysics work together in modern drug discovery. Through examples from infectious diseases, students learn how simulations reveal molecular interactions, how AI identifies therapeutic targets, and how physical forces influence drug effectiveness.

FRIDAY

> **Morning** French class

> **Afternoon** Evaluation

SATURDAY

> Excursion to the **Haut-Doubs**: guided tour of the Château de Joux, lunch at a traditional Franche-Comté inn, boat trip on the Doubs River and visit to the Saut-du-Doubs waterfall at the Swiss border.

WEEK 2

MONDAY & TUESDAY

> **Morning** French class

> **Afternoon** Using AI to treat image to map human footprint index (TRANSBIO)
This project develops innovative statistical and machine learning methods to measure and predict human and climate pressures on biodiversity. It introduces new algorithms combining constrained sampling, CNNs, fairness, and computational frugality. The expected outcomes include improved understanding of biodiversity loss and better estimation of its economic impact, potentially impulsing evidence-based environmental policies and deliver reusable tools for the scientific community.

WEDNESDAY & THURSDAY

> **Morning** French class

> **Afternoon** Artificial Intelligence for medical imaging (INTHERAPI)
Diagnostic support systems have experienced significant growth in recent decades with the development of machine learning techniques to analyze patient data and assist clinicians in their decision-making process. The recent success of deep learning-based approaches has improved the performance of these systems, but some limitations still exist for their use in clinical practice. This course will address principles of AI in medical imaging, the main applications, and the technical and practical limitations to their use.

FRIDAY

> **Morning** French class

> **Afternoon** Evaluation

SATURDAY & SUNDAY

> **FREE WEEK-END:** students are free to travel or to follow the organizers' activities in Besançon (Festival Grandes Heures Natures, visit of the Citadel, visit of the Arc-et-Senans historical site...)

Université Marie et Louis Pasteur • CLA Centre de Linguistique Appliquée

Graduate school EIPHI

Graduate school INTHERAPI

Graduate school TRANSBIO

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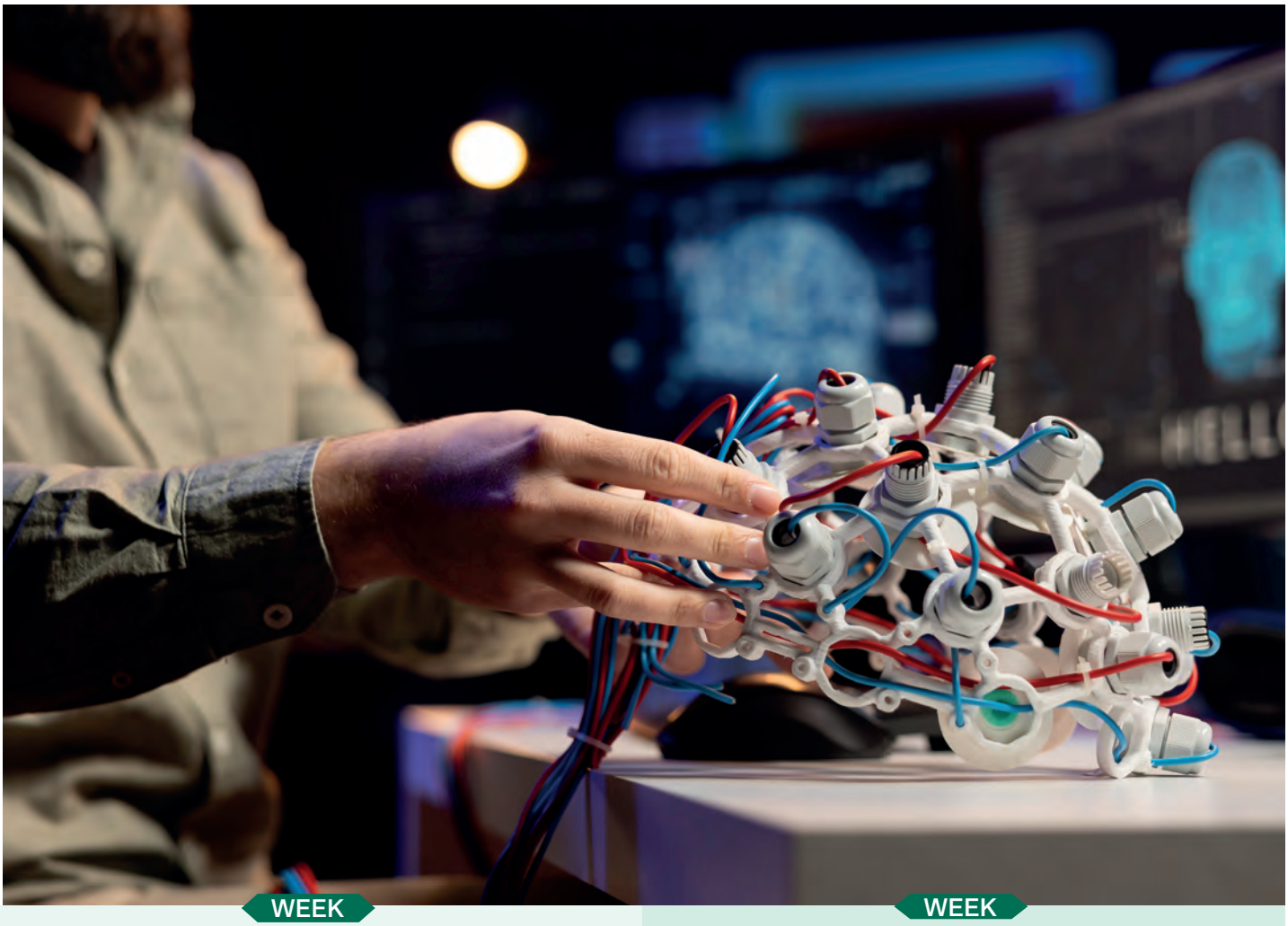

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WEEK 3

MONDAY & TUESDAY

> **Morning** French class

> **Afternoon** AI Workshops: The AI fresk workshop, lab visit, meeting with professionals.

WEDNESDAY & THURSDAY

> **Morning** French class

> **Afternoon** Using AI to treat sound records to preserve biodiversity:
This course highlights how AI enhances biodiversity assessment by analyzing the impacts of anthropogenic pressures and evaluating the effectiveness of conservation measures across diverse ecosystems.

FRIDAY

> **Morning** French class

> **Afternoon** Evaluation

SATURDAY

> Excursion to **Lausanne (Switzerland)**

WEEK 4

MONDAY

> **Morning** French class

> **Afternoon** AI approaches for optimising treatment for patients living with HIV
AI in healthcare: improving HIV treatment through data analysis and modelling hospital emergency management using multi-agent systems.

TUESDAY & WEDNESDAY

> **Morning** French class

> **Afternoon**
Neural Networks & Quantum Computing
Conventional digital computing is reaching performance limits due to physical constraints and the limits of Turing computation. These challenges are especially significant for quantum simulations and neural network emulation. This course introduces quantum information processing and neural networks, highlighting their shared principles and relevance for future hardware.

THURSDAY

> **Morning** French class

> **Afternoon** Evaluation

FRIDAY

> **Morning** French class

> **Afternoon**
Student presentations and round table with AI expert on the ethical use of AI in the scientific field.