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Artificial Intelligence in Health and Sport

ERASMUS+ Blended Intensive Programme call for applications

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Introduction

The Università of Parma (Italy), jointly with the University of Extremadura (Spain), the University of Évora (Portugal), the Atlantic Technological University (Ireland), the Otto-von-Guericke Universität Magdeburg (Germany)

offer the EU GREEN students the opportunity to participate in an ERASMUS+ Blended Intensive Program (BIP). The Blended Intensive Program is officially approved by the EU in the framework of the ERASMUS+ 2021/2027 and is developed in the framework of the EU GREEN Network.

BIPs are one of the new and innovative formats of student mobility introduced by the new Erasmus+ 2021-2027 Program. These programs, jointly developed by multiple higher education institutions, feature advanced and innovative pedagogical approaches that combine short-term face-to-face (physical) mobilities with portions of virtual learning.

BIPs are inherently transnational and transdisciplinary, as curricula are developed and taught together by partner institutions in different countries. The combination of in-person and virtual learning spaces allows students and professors to experience and exchange highly collaborative, challenge-based, and research- steeped methods of teaching and learning.

Through the required virtual part of the program, students and professors alike have the opportunity to develop and hone their digital knowledge and skills, reflecting the European Commission's priority to harness the potential of digital technologies for teaching and learning and to develop digital skills for all.

Total number of participants per institution:

The Blended Intensive Program is open to a limited number of participants from each EU GREEN partner institution, and to an overall number of students. The number of participants agreed is 35.

BIP calendar (both virtual and physical periods)

The BIP calendar consists of 2 phases:

- A physical programme, starting on June 17th and ending on June 21st 2024.
- A virtual programme, starting on June 24th and ending on July 12th 2024.

ECTS credits (with credit equivalents for non-ECTS partners)

The successful completion of the program, both in its physical and virtual parts, awards 6 ECTS.

Teaching methodologies

Face-to-face lectures, on-field class, case-studies presentations, self-learning, and group meetings for data analysis and discussion.

Venue for the physical period of attendance

The physical part of the BIP will take place at University of Parma in Italy (Università degli Studi di Parma - I PARMA01). The address is as follows:

University of Parma (Università degli Studi di Parma)
[Department of Medicine and Surgery \(Dipartimento di Medicina e Chirurgia\)](#)
Via Gramsci 14
Postal code: 43126
Parma, Italy

The call for applications

Description of the program

Artificial Intelligence (AI) has become a transformative force in our society entering industries like robotic, financial service, agriculture, medicine, transportation, defense. In the context of human well-being, AI also entered the field of healthcare, lifestyle, and elite sport with the target of prevention, diagnosis, monitoring, and prescription. With this BIP, we aim at disseminating current knowledge and future directions regarding the application of AI for the maintenance of a healthy lifestyle in general population, and for performance optimization and injury prevention in athletes. The competences acquired in the BIP will be divided in 4 modules. The module **Introduction to Artificial Intelligence** consists of a historical trajectory of AI, basic knowledge of data analysis and AI models, and generative AI. The module **Artificial Intelligence: Opportunities and Challenges** addresses key issues related to ethics, regulation, education, digital transformation, and future directions of AI. The module **Artificial Intelligence in Health: Research and Applications** explores various applications of AI in health, including wearable technologies, exercise prescription, monitoring of patients at risk of clinical conditions. The module **Artificial Intelligence in Sport: Research and Applications** is focused on the application of AI in sport setting, considering different models for motion analysis, training monitoring, performance prediction, and injury prevention.

The program consists of lectures, demonstration, and workshops, round tables in both virtual and in-presence modalities, with the participation of experts from educational institutions and industry to explore theoretical bases of AI and practical applications in sport and health sectors. The program is built to guarantee a proficient exchange among students and scholars from different cultural contexts and expertise.

Program content, detailing physical and virtual components

The contents for each module for both physical and virtual components are the following:

Introduction to Artificial Intelligence (8 hours)

The module provides lectures on basic competences of AI. The development of AI is reported, which began during the first half of the 20th century with the initial concept of artificially intelligent robots up to the diverse models and applications of the current society. The module concentrates to the basic knowledge of data analysis, from simpler to more complicated approaches, and how they can be applied to health and sport sector. Main features of AI, machine learning, neural networks, and deep learning are explained. Finally, generative AI is explored for its potential use to generate various types of contents, including text, imagery, audio, and synthetic data. The module consists of 3 lectures (6 hours) during the physical component and 1 lecture (2 hours) during the virtual component.

Artificial Intelligence: Opportunities and Challenges (10 hours)

The module is intended to stimulate students on critical issues related to AI. Although AI became a transformative and generative force of the current society and invaded several sectors, it is important to recognize its opportunities, challenges, and limits. Firstly, the European legal framework on AI is debated to understand the requirements and obligations for developers and deployers. Therefore, it is important to clarify ethical and legal requirements for a proper application of AI also in health and sport sector. Moreover, it is necessary to recognize at which extent AI can partially or completely overcome human intelligence in various sectors and industries. The module continues to provide new applications of AI in sport and education. The inclusion of AI in sport created a digital transformation which should be discovered for its challenges and benefits concerning the involvement on several areas. Similarly, the sport industry can benefit from the use of AI for fostering new job opportunities. The module consists of 3 lectures (6 hours) during the physical component and 2 lecture (4 hours) during the virtual component.

Artificial Intelligence in Health: Research and Applications (14 hours)

The module covers the area of health, providing theoretical knowledge and evidence-based implications. AI is having a huge impact on health, and it is revolutionizing the area of diseases prevention, monitoring of risk factors for clinical conditions, exercise prescription, monitoring of vital parameters. Focusing on the area of

healthcare, this module provides competences on the development and application of AI models for precision medicine and imaging, monitoring of patients for cardiovascular prevention, cardiorespiratory assessment, pre- and post-operative strategies. AI is also applied to the prescription of exercise and the monitoring of physical activity level, sleep patterns, diet via a variety of wearable sensors. However, it is essential to debate at which extent these tools can create a sustainable and reliable system for the evaluation of human activities and the enhancement of the motivation and engagement of individuals towards a healthy lifestyle. The module consists of 5 lectures (10 hours) during the physical component and 2 lecture (4 hours) during the virtual component.

Artificial Intelligence in Sport: Research and Applications (16 hours)

The module addresses the area of sport, providing theoretical knowledge and evidence-based implications. Sport has been completely transformed because of the inclusion of AI in several procedures, strategical approaches, and data analytics. AI created novel approaches for the human motion analysis, allowing new in-field and real-time assessments and accelerating laboratory-based data analysis. AI is contributing to the understanding of sport performance with the use of technologies and the application of innovative approaches for the prediction of athletes' performances, the prevention of injuries, the monitoring of training load. The module consists of 3 lectures (6 hours) during the physical component and 5 lecture (10 hours) during the virtual component.

Motivation at the basis of the BIP

The BIP is born with the idea of sharing competences and skills present in the five Universities that participate in this initiative and share them with students coming from different regions in Europe so that they will take home and possibly adapt to their reality what they will learn in Parma.

Program learning objectives

Attending this BIP program the students, as well as the teaching staff, will have the chance to exchange experiences and knowledge. In all four modules students will be driven by teachers through a *knowledge to action* path, where they will learn how to deal with the complexity of the above issues and with the conflicts that they often produce, improving education, awareness-raising and human, professional and institutional efforts. In addition, they will actively participate in work groups in a field sample collection, in the data analysis, and, after the week in Parma, they will also have to collaborate through on-line meetings.

Final evaluation

At the end of the program students are requested to create a content using the artificial intelligence related to one of the specific topics of the program.

Language of teaching

All the modules and courses are taught in ENGLISH language (B1 minimum level required).

Eligibility and participation criteria

To apply for this program, students must be regularly enrolled at one of the participating universities ([EU GREEN partner universities](#)). Applicants must be enrolled in a Bachelor's, Master's or PhD level degree.

At the time of the application submission, applicants must demonstrate proof of English language competence at the B1 level (CEFR). This can be certified by the University of origin (see application procedures below).

Participation to the program is open to students of the following disciplines and/or degree programmes:

- **University of Parma**
Any discipline related with public health and sport and exercise science.
- **University of Extremadura applicants**
Any discipline related with public health and sport and exercise science.
- **University of Évora applicants**
Any discipline related with public health and sport and exercise science.
- **Atlantic Technological University applicants**
Any discipline related with public health and sport and exercise science.
- **Otto-von Guericke Universität Magdeburg applicants**
Any discipline related with public health and sport and exercise science.
- **Wroclaw University of Environmental and Life Sciences applicants**
Any discipline related with public health and sport and exercise science.
- **Universitatea din Oradea applicants**
Any discipline related with public health and sport and exercise science.
- **Högskolan i Gävle applicants**
Any discipline related with public health and sport and exercise science.
- **University of Angers applicants**
Any discipline related with public health and sport and exercise science.

Applicants should expect to hear back about the result of their application by May 10th 2024.

Selected students must communicate their acceptance or withdrawal within 10 days from the publication of the selection results by contacting their university program coordinator (see below).

Selected students will be contacted with further instructions upon completion of the selection procedures.

How to apply

Students interested in participating should fill out the [application form](#) by **20th April 2024**.

The application form must contain the following attachments:

- Copy of valid ID or passport;
- Curriculum Vitae;
- Transcript of Records (A certificate of enrolment at the home University with a list of passed exams and grades);
- Language certificate (If not already present as an exam in the Transcript of Records);
- Motivation letter (containing, if applicable, previous experiences abroad);
- Other documents and certificates (optional).

Selection criteria and procedures

An appointed Committee formed by Prof. Giancarlo Condello, Prof. Valentina Presta, Prof. Santos Villafiana, Prof. Hugo Folgado, Prof. Elke Knisel, Prof. Lisa Ryan will carry out the selection procedures. Selection is based on the following criteria:

- Academic performance
- Motivation
- English language competence
- Evaluation of further qualifications and skills

Students should expect to hear back about the result of their application by May 10th, 2024. Selected students must communicate their acceptance or withdrawal within 10 days from the publication of the selection results by contacting their university program coordinator (see below). Selected students will be contacted with further instructions upon completion of the selection procedures.

Financial support

As a part of the ERASMUS+ Program, financial support may be guaranteed by the selected student's home University. Each partner university is responsible for the management of the financial aspects of the mobilities in accordance with the provisions of the competent ERASMUS+ National Agency.

No financial support is available for University of Parma students as they will not be travelling for purposes of participation in this program (non-mobility participants).

Available services at University of Parma (in-presence period)

Services available to students during the in-person part of the program (examples might include):

- Administrative Support
- Accommodation Support
- Social events
- University services (Wi-Fi, library access, lab access, etc.)
- Visa Support, if needed

Contacts

University of Parma (Coordinator)
[Prof. Giancarlo Condello](#)

University of Extremadura
[Prof. Santos Villafiana Domínguez](#)

University of Évora
[Prof. Hugo Folgado](#)

Atlantic Technological University
[Prof. Lisa Ryan](#)

Otto-von-Guericke Universität Magdeburg
[Prof. Elke Knisel](#)