Artificial Intelligence in Medicine – Transforming Healthcare Through Technology
AIMTech

AIMTech is a **multidisciplinary Blended Intensive Program (BIP)** designed to equip students with the knowledge and skills necessary to leverage **Artificial Intelligence (AI) in healthcare,** a topic not covered in any of the HEIs curricula. AI is transforming diagnostics, clinical decision support, patient monitoring, and precision medicine, making it essential for healthcare professionals to understand and apply AI-driven solutions responsibly.

This program integrates **cutting-edge AI methodologies** with real-world applications, offering an immersive **hybrid learning experience** that combines virtual instruction with hands-on training. Participants will explore symbolic **AI, machine learning, deep learning, natural language processing (NLP), computer vision, evolutionary computing, and neuro-symbolic AI,** while addressing **ethical, legal, and regulatory** challenges in AI-driven healthcare.

Through **interdisciplinary collaboration** AIMTech fosters **innovation in AI-driven solutions**, aligning with the **EU Digital Education Action Plan** and **Erasmus+ priorities** in inclusion, sustainability, and international cooperation.

Objectives

Knowledge Acquisition

- Understand fundamental AI concepts (machine learning, deep learning) and their role in medicine.

- Identify AI applications in **medical imaging, genomics, and robotic automation.**
- Analyze **ethical, legal, and regulatory** challenges of AI -driven healthcare.
- Evaluate the **data requirements, computational resources and deployment challenges** for AI-based clinical tools.

Skill Development

- Gain proficiency in analyzing **medical, imaging and genomic datasets using AI tools**.
- Critically evaluate **AI-driven technologies and and their real-world impact**.
- Develop **AI-based decision-making competencies** for clinical workflows

Innovation and Collaboration

- Foster **cross-disciplinary cooperation** among **medical, biological, computational, and engineering** disciplines.
- Encourage innovative AI-driven solutions for **healthcare challenges**.
- Engage **AI developers, regulatory bodies, and healthcare practitioners** in responsible AI deployment.

Target Audience

- Undergraduate students (minimum of 10) in **medicine, biology, biotechnology, computer science, IT, and engineering** interested in AI applications in healthcare.

Course Structure & Methodology

1. Online Module (3 Weeks)

This phase introduces **AI fundamentals** through interactive exercises, discussions, and Q&A sessions:

- **Introduction to AI in Healthcare**

- **AI in Diagnostics & Decision Support**
- **AI in Medical Imaging & Robotics**
- **AI in Patient Monitoring & Automation**
- **AI in Genomics & Precision Medicine**
- **Ethical, Legal & Policy Considerations**

2. On-Site Workshop (5 Days – Practical Training & Innovation Sprint)

Participants will engage in **hands-on learning** using **open-source AI platforms, medical AI toolkits, and real-world datasets.**

Learning Outcomes

By the end of the course, participants will:

- Demonstrate **competence in AI applications for clinical practice, research, and policy.**
- Apply AI tools for **medical, genomic, and imaging data analysis.**
- Evaluate **ethical and legal implications of AI in medicine.**
- Design and propose **sustainable AI-driven healthcare solutions**

Dissemination & Sustainability

- **Open-access course materials** and digital networking platform.
- **Academic publications** on AI in healthcare.
- **Webinars, training programs, and interdisciplinary AI panels**.
- Integration into **university curricula as a recurring Erasmus+ program**.

Evaluation Metrics

- **Pre- and post-course assessments** to measure knowledge gains.
- **Participant feedback surveys** to assess content relevance and effectiveness.
- **Capstone project evaluations** to gauge applied learning outcomes**.**

The AIMTech course bridges the gap between **AI advancements and clinical practice,** preparing future healthcare professionals and AI developers for the **next generation of AI-integrated medicine t**hrough an **interdisciplinary, research-driven, and hands-on approach ensuring ethical AI deployment in healthcare.**

Coordinating Receiving University: University of Ioannina

- Eleftheria Hatzimichael, Associate Professor of Haematology, Faculty of Medicine, School of Health Sciences
- Evangeli Lampri, Assistant Professor of Pathology, Faculty of Medicine, School of Health Sciences, University of Ioannina
- Alexandros T. Tzallas, Associate Professor in Biomedical Engineering, Department of Informatics and Telecommunications, University of Ioannina
- Nikolaos Giannakeas, Associate Professor in Signal Processing, Department of Informatics and Telecommunications, University of Ioannina
- Konstantinos Kalafatakis, Visiting Professor in Neurosciences, Department of Informatics and Telecommunications, University of Ioannina

Cohosting Institutions

1. ***Neapolis University Pafos***
   - Savvas Chatzichristofis, Professor of Artificial, Intelligence, Department of Computer Science and Vice-Rector of Research and Innovation
   - Zach Anthis, Lecturer Artificial Intelligence and Data, Analytics (AIDA), Department of Computer Science
   - Lefteris Zacharioudakis, Assistant Professor of Cybersecurity, Department of Computer Science

- Natia Anastasi, Lecturer in Engineering Material, Department of Computer Science
- Avgousta Kyriakidou, Assistant Professor in Software Project Management, Department of Computer Science
- Georgios Pavlidis, Associate Professor of Private International Law & European Law School of Law of Neapolis University in Cyprus, Director Jean Monnet Center of Excellence AI-2-TRACE-CRIME (2024), UNESCO Chair (2023) & Jean Monnet Chair (2020)

2. ***Clermont Auvergne University (UCA)***
   - Professor Marie-Elisabeth Baudoin, Law School, Vice President for International and European Affairs, Clermont Auvergne University, Coordinator of ARTEMIS European University
   - Christine Bertrand, Directrice de l'institut Droit, Économie Management - Université Clermont, Auvergne

3. ***OTH Regensburg University of Applied Sciences***
   - Prof. Dr. med. Georgios Raptis, International, Coordinator, Faculty of Computer Science and Mathematics

4. ***Tallin University of Technology***
   - Professor Vasilis Kostakis, Ragnar Nurkse, Department of Innovation and Governance

Other Partners

i. ***International Hellenic University***
   - Christos Tjortjis Professor, School of Science and Technology

ii. ***University of Western Macedonia***
   - Dimitris Panaretos, Adjunct Lecturer in Statistics, Department of Statistics and Insurance Science, Statistical and Artificial Intelligence Consultant, Founder of Μέντωρ Academy

iii. ***Teamviewer***
   - Contact Evangelia Stavrou, Senior Administration & HR Assistant – Greece

iv. ***Engage Media***
   - Giannis Aggelakis, AI and DT Trainer & Consultant | EngageMedia Greece

v. ***Διεπιστημονική Εταιρεία Έρευνας στην Αιματολογία***