COURSE SYLLABUS

1. **Program information**

Faculty	Faculty of Electrical Engineering and Computer Science
Department	Computer Science
Field of study	Computers and Information Technology
Cycle of studies	Master's Degree
Study Program	Artificial Intelligence & Social Robotics Applied to Global Health

2. **Course information**

Course name		**COMPUTER SCIENCE PERSPECTIVES IN GLOBAL HEALTH**				
Year of study	1	Semester	1	Type of assessment	Exam	
Course regime		Course category by educational content: DF – Fundamental, DS – Specialization, DC – Complementary				DS
		Course category by optionality: DOB – Compulsory, DOP – Optional, DFA – Elective				DOB

3. **Total estimated time (hours allocated to teaching activities)**

I a) Number of hours per week	2	Lecture	1	Seminar	-	Laboratory / practical work	-	Project	1
I b) Total number of hours per semester according to curriculum	28	Lecture	14	Seminar	-	Laboratory / practical work	-	Project	14

Distribution of time allocation per semester (hours)	No. hours
II. Individual study	67
III. Examinations	5
IV. Other activities (specify):	-

Total individual study hours (II+III)	72
Total hours per semester (I.b+II+III+IV)	100
Number of credits	4

4. **Specific competencies acquired**

Transversal competencies	-
Professional / general competencies	CP7 – manage research data CP9 – prepare scientific reports CP10 – conduct research across disciplines CP11 – apply research ethics and scientific integrity principles in research activities

5. **Learning outcoms**

Knowledge	**Skills**	**Responsibility and autonomy**
The student/graduate analyzes the methodological framework of scientific research and critically reflects on knowledge at the intersection between computing and global health.	The student/graduate analyzes and applies advanced scientific research methodologies to develop original solutions in interdisciplinary contexts with applications addressing key challenges in global health. The student/graduate effectively communicates the results of scientific research through technical reports, presentations and/or scientific papers.	The student/graduate independently conducts research and scientific communication at the intersection of artificial intelligence and global health, taking responsibility for the application of quality and ethical standards.

6. **Course objectives** (derived from the grid of specific competencies acquired)

General objective of the course	Develops advanced competences in addressing practical problems in global health by applying numerical methods from computing and information technology.

7. **Teaching and learning content**

Lectures	**No. of hours**	**Teaching methods**	**Remarks / Notes**
1. Addressing global health challenges using AI-based approaches	2	Lecture, discussion, exemplification, demonstration	
2. Overview of AI applications for disease detection and diagnosis	2		
3. Human-centered AI for healthcare	2		
4. Biomedical and global health data: From biological reality to computational representation	2		
5. Computational biology and multi-omics: Turning biological complexity into data	2		
6. From algorithms to global health impact: Validation, bias and responsible AI	2		
7. Trends in computer science applied to global health	2		
The programme may also include invited lectures delivered by experts in the field. Opportunities for the joint organization of such lectures with the University of Tours and Örebro University may also be considered.			
Recommended minimal bibliography			
1. Beaglehole, R., & Bonita, R. (2010). What is global health? *Global Health Action*. DOI: 10.3402/gha.v3i0.5142 2. Singh, R., Gehlot, A., Rathour, N., & Akram, S. V. (Eds.). (2025). AI in disease detection: Advancements and applications. Wiley-IEEE Press. https://doi.org/10.1002/9781394278695 3. Sakly, H., Guetari, R., & Kraiem, N. (Eds.). (2025). Scalable artificial intelligence for healthcare: Advancing AI solutions for global health challenges. CRC Press. ISBN 9781032769592. 4. Grover, V., Balusamy, B., M. K., N., Anand, V., & Milanova, M. (Eds.). (2024). Approaches to human-centered AI in healthcare. IGI Global Scientific Publishing. 9798369322406.			

Applications (Project)	**No. of hours**	**Teaching methods**	**Remarks / Notes**
The practical activities involve developing a project that addresses a current global health challenge, with each meeting focused on adding new analyses or functionalities. Preparation of a technical report on the conducted work.			
Choosing the project topic in the field of global health and the development environment. Identifying challenges and proposing solutions. Defining the overall application architecture.	2	Practical work, experiment, discussion, case study Demonstration	
Analysis of data sources. Designing the architecture of the proprietary database into which data from various external data sources will be imported. Implementing the database according to the specifications.	2		
Importing data from external data sources, applying data cleaning techniques and storing the data in the proprietary database.	2		
Developing the backend application (REST API) that delivers data in various formats to the user interface.	2		
Developing the application interface for displaying stored data and filtering it by analysis-specific criteria.	2		
Implementing and integrating data analysis and statistical visualization modules into the application. Testing and documenting the project.	2		
Project presentation and evaluation.	2	Demonstration	
Attendance at compulsory activities is regulated by USV's "Framework Regulation on Student Assessment". Make-up for mandatory practical activities scheduled during the semester is carried out in accordance with the provisions of this regulation. Practical activities scheduled throughout the semester may be replaced by the completion and presentation of high-complexity projects from the course syllabus, with the approval of the course instructor.			
Recommended minimal bibliography			
1. Mooney, Stephen J., & Pejaver, Vikas (2018). *Big data in public health: terminology, machine learning, and privacy*. Annual Review of Public Health. 2. McKinney, Wes (2022). *Python for Data Analysis* (ed. a 3-a). O'Reilly Media. 3. Kleppmann, Martin (2017). *Designing Data-Intensive Applications*. O'Reilly Media. 4. Ravindra Akella, Arun Kumar Tamirisa, Suneel Kumar Kunani, Bhupesh Guptha Muthiyalu (2022), *Enterprise Application Development with C# 10 and .NET 6.* Packt Publishing			

5. Arnaud Lauret (2025), *The Design of Web APIs*, Second Edition. Manning Publications
6. Steven van Deursen and Mark Seemann (2019), *Dependency Injection Principles, Practices, and Patterns*, Manning Publications
7. Bass, Len, Clements, Paul, & Kazman, Rick (2021). *Software Architecture in Practice*, 4th Edition. Addison-Wesley

8. **Evaluation**

Type of activity	Evaluation criteria	Evaluation methods	Weight in final grade
Final evaluation	Proficiency in core computational methods and their application to global health challenges.	Continuous assessment through periodic quizzes and a final written examination.	50%
Evaluation of ongoing practical activities	Quality of technical implementation and presentation. Ability to implement, document, and present a technical solution for a health-related problem, and to communicate it effectively in a report.	Continuous assessment and a final project presentation/report.	50%

Physical accessibility: activities are conducted in classrooms and laboratories accessible to wheelchair users via ramps/lifts (USV buildings C/D); **Accessibility of teaching materials:** documents are available in digital PDF format with selectable text and slides with large fonts; **Evaluation accessibility:** ongoing evaluation through projects; possibility of extended time for the written tests and oral verification.

Date	Academic title, Name, Surname, Signature of Course Instructor	Academic title, Name, Surname, Signature of Practical Work Instructor
23.09.2026	Prof. univ. dr. Andrei LOBIUC	Șef lucrări dr. ing. Felicia GÎZĂ BELCIUG

Date of approval	Academic title, Name, Surname, Signature of Program Coordinator
24.09.2026	Prof. univ. dr. ing. Radu-Daniel VATAVU

Date of departmental approval	Academic title, Name, Surname, Signature of Head of Department
24.09.2026	Prof. univ. dr. ing. Ovidiu-Andrei SCHIPOR

Date of Faculty Council Approval	Academic title, Name, Surname, Signature of Dean
25.09.2026	Prof. univ. dr. ing. Laurentiu-Dan MILICI