COMPATIBILITY GUIDELINES TO DESIGN YOUR STUDY PLAN

In a study plan for the Master Degree Program in Artificial Intelligence for Science and Technology (AI4ST), students can choose:

- some guided-choice courses within a predefined set for each educational track and
- some courses more freely (free-choice courses) within the educational offer of UNIMI, UNIMIB, and UNIPV.

However, there are some incompatibilities among the courses due to excessive overlap of content or to excessive missing background knowledge.

These document provides guidelines to avoid incompatible courses which will not allow for approval of the proposed study plan. It is worth noting that the list of incompatibilities is not exhaustive: only the incompatibilities detected in the previously proposed study plans are listed, due to the huge offer of the three universities and their variability in each academic year.

To facilitate the choices for each educational track, this document presents also a list of choices which have been already approved in the past. Selecting compatible courses as shown in this document will result in approval of the selected courses in the study plan. It is worth noting that the list of compatibilities is not exhaustive: only the compatibilities identified in the previously proposed study plans are listed.

Courses which appear neither in the compatible list or in the incompatible list will be analyzed by the Study Plan Committee for possible compatibility.

This document provides:

- the table of incompatibilities
- the table of compatibilities for each educational track.

To build the study plan, the first step consists in choosing the preferred educational track. The second step consists in choosing the guided-choice course in the cluster offered by the selected educational track. The third step consists in choosing the free-choice courses.

When an educational track is selected, automatically the compatibility with the courses which are mandatory for all students is ensured. Also when the guided-choice course is selected among the ones offered for the selected educational track, the compatibility with the courses which are mandatory for all students and the ones of the selected educational track is ensured.

To avoid delays in the approval process of the study plan, when third step mentioned above is performed look carefully to the table of incompatibilities: choosing a course which has been declared incompatible with the selected educational track and with the selected guided-choice within such a track will not allow for approval of the proposed study plan. The table of incompatibilities lists the courses which are incompatible either with a course that is mandatory for all students or that is offered by an educational track.
For instance, ADVANCED MACHINE LEARNING from the Computer Science Master Degree Program offered by UNIMIB is incompatible with all tracks of AI4ST due to the significant overlap with ADVANCED FOUNDATIONS OF ARTIFICIAL INTELLIGENCE.

The table of compatible courses can be used while selecting the free-choice courses in the third step mentioned above. For each educational track and for each guided-choice course selected within the cluster offered for such an educational track, the table shows the list of courses which are compatible with the educational track and the selected guided-choice course within such a track.
After the educational track has been selected, the column “Guided-choice option” shows each of the guided-choice courses offered by such an educational track. Then, the column “Free-choice option” shows the courses which can be chosen as free-choice courses since they are compatible with the selected educational track and the selected guided-choice course within such an educational track.
If both the free-choice courses are selected among the ones listed in the column “Free-choice option” for the selected educational track and the selected guided-choice course within the cluster offered by such an educational track, the study plan is automatically approved.
Other choices for the free-choice courses are possible, but the study plan will need to be carefully evaluated and clarifications or changes may be required by the study plan committee before the approval will be possible.
Some courses have notes which must be carefully read. For example, the course "Quantum information and algorithms” requires self-study of the theoretical part given in “Quantum Simulation” if this course is not already included in the study plan.

Finally, many courses not offered by AI4ST are in Italian: these courses should be considered only if students are fluent enough in the Italian language (native-speaking or fluency equivalent to the B2-level Italian language certification). Students are advised to carefully check the teaching language for courses not offered by AI4ST: even if the syllabus and other information are presented in English in the web sites of the universities, it is essential to look for the actual teaching language declared in the web site.

INCOMPATIBILITY

COURSE	UNIVERSITY OFFERING THE COURSE	INCOMPATIBLE WITH	AI4ST EDUCATIONAL TRACK
ARTIFICIAL INTELLIGENCE (Informatica)	UNIMIB	ADVANCED FOUNDATIONS OF AI	All Tracks
ADVANCED MACHINE LEARNING (Informatica)	UNIMIB	ADVANCED FOUNDATIONS OF AI	All Tracks
SIGNAL AND IMAGING ACQUISITION AND MODELLING IN ENVIRONMENT	UNIMIB	SENSING AND VISION FOR INDUSTRY AND ENVIRONMENT - module 1	1
SENSING AND VISION FOR INDUSTRY AND ENVIRONMENT - module 1	UNIMIB	SIGNAL AND IMAGING ACQUISITION AND MODELLING IN ENVIRONMENT	3
ELEMENTI DI INFORMATICA (Teoria e Tecnologia della Comunicazione)	UNIMIB	Pre-requirement to be admtted to the Master Degree in AI4ST	All Tracks
FOUNDATIONS OF COMPUTER SCIENCE	UNIMIB	Pre-requirement to be admtted to the Master Degree in AI4ST	All Tracks
INNOVATION AND TECHNOLOGY LAW	UNIPV	Advanced Foundations of Law and regulations in privacy and data protection	All Tracks

COMPATIBILITY	Guided-choice option	Free-choice option	Notes
educational track 1: AI for Industry and Environment			
guided-choice course in educational track 1	Intelligent monitoring and control systems		
free-choice course - in educational track		Environmental monitoring and management	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Ambient Intelligence	from Track 2
		Embedded systems architectures and design	from Track 2
		Statistical Mechanics of Neural Networks	from Track 4
		Advanced computational techniques for big imaging and signal data	from Track 3
		Physical sensors and systems for environmental imaging/signals	from Track 3
educational track 1: AI for Industry and Environment			
guided-choice course in educational track 1	Environmental monitoring and management		
free-choice course - in educational track		Intelligent monitoring and control systems	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Ambient Intelligence	from Track 2
		Embedded systems architectures and design	from Track 2
		Statistical Mechanics of Neural Networks	from Track 4
		Advanced computational techniques for big imaging and signal data	from Track 3
		Physical sensors and systems for environmental imaging/signals	from Track 3

COMPATIBILITY	Guided-choice option	Free-choice option	Notes
educational track 2: Intelligent Embedded Systems			
guided-choice course in educational track 2	Embedded systems for biomedical applications		
free-choice course - in educational track		Intelligent consumer technologies	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Quantum Simulation	from Track 4
		Physical sensors and systems for environmental/biomedical imaging/signals	from Track 3
		Intelligent monitoring and control systems	from Track 1
		Advanced computational techniques for big imaging and signal data	from Track 3
		Statistical learning	from Track 4
		Quantum information and algorithms	from Track 4, WARNING: Requires self-study of the theoretical part given in Quantum Simulation
		Quantum computers and technologies	from Track 4, WARNING: Requires self-study of the theoretical part given in Quantum Simulation
		Machine Learning for Modelling	from Track 3/4
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Sensing and vision for industry and environment	from Track 1
educational track 2: Intelligent Embedded Systems			
guided-choice course in educational track 2	Intelligent consumer technologies		
free-choice course - in educational track		Embedded systems for biomedical applications	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Quantum Simulation	from Track 4
		Physical sensors and systems for environmental/biomedical imaging/signals	from Track 3
		Intelligent monitoring and control systems	from Track 1
		Advanced computational techniques for big imaging and signal data	from Track 3
		Statistical learning	from Track 4
		Quantum information and algorithms	from Track 4, WARNING: Requires self-study of the theoretical part given in Quantum Simulation
		Quantum computers and technologies	from Track 4, WARNING: Requires self-study of the theoretical part given in Quantum Simulation
		Machine Learning for Modelling	from Track 3/4
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Sensing and vision for industry and environment	from Track 1

COMPATIBILITY	Guided-choice option	Free-choice option	Notes
educational track 3: Sensing and Signal/Image Processing for Healthcare and Environment			
guided-choice course in educational track 3	Physical sensors and systems for biomedical signals		
free-choice course - in educational track		Physical sensors and systems for environmental signals	
		Physical sensors and systems for biomedical imaging	
		Physical sensors and systems for environmental imaging	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Embedded systems for biomedical applications	from Track 2
		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Advanced data management and decision support systems	from Track 1
		Advanced artificial intelligence, machine learning and deep learning	from Track 1
educational track 3: Sensing and Signal/Image Processing for Healthcare and Environment			
guided-choice course in educational track 3	Physical sensors and systems for environmental signals		
free-choice course - in educational track		Physical sensors and systems for biomedical signals	
		Physical sensors and systems for biomedical imaging	
		Physical sensors and systems for environmental imaging	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Embedded systems for biomedical applications	from Track 2
		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Advanced data management and decision support systems	from Track 1
		Advanced artificial intelligence, machine learning and deep learning	from Track 1

COMPATIBILITY	Guided-choice option	Free-choice option	Notes
educational track 3: Sensing and Signal/Image Processing for Healthcare and Environment			
guided-choice course in educational track 3	Physical sensors and systems for biomedical imaging		
free-choice course - in educational track		Physical sensors and systems for biomedical signals	
		Physical sensors and systems for environmental signals	
		Physical sensors and systems for environmental imaging	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Embedded systems for biomedical applications	from Track 2
		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Advanced data management and decision support systems	from Track 1
		Advanced artificial intelligence, machine learning and deep learning	from Track 1
educational track 3: Sensing and Signal/Image Processing for Healthcare and Environment			
guided-choice course in educational track 3	Physical sensors and systems for environmental imaging		
free-choice course - in educational track		Physical sensors and systems for biomedical signals	
		Physical sensors and systems for environmental signals	
		Physical sensors and systems for biomedical imaging	
free-choice course - in other educational tracks		Environmental monitoring and management	from Track 1
		Embedded systems for biomedical applications	from Track 2
		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Advanced data management and decision support systems	from Track 1
		Advanced artificial intelligence, machine learning and deep learning	from Track 1

COMPATIBILITY	Guided-choice option	Free-choice option	Notes
educational track 4: Complex Systems and Quantum Technologies			
guided-choice course in educational track 4	Advanced statistical mechanics and disordered systems		
free-choice course - in educational track		Quantum information and algorithms	
		Statistical Mechanics of Neural Networks	
		Quantum computers and technologies	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Embedded systems for biomedical applications	from Track 2
educational track 4: Complex Systems and Quantum Technologies			
guided-choice course in educational track 4	Quantum information and algorithms		
free-choice course - in educational track		Advanced statistical mechanics and disordered systems	
		Statistical Mechanics of Neural Networks	
		Quantum computers and technologies	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Embedded systems for biomedical applications	from Track 2
educational track 4: Complex Systems and Quantum Technologies			
guided-choice course in educational track 4	Statistical Mechanics of Neural Networks		
free-choice course - in educational track		Advanced statistical mechanics and disordered systems	
		Quantum information and algorithms	
		Quantum computers and technologies	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Embedded systems for biomedical applications	from Track 2
educational track 4: Complex Systems and Quantum Technologies			
guided-choice course in educational track 4	Quantum computers and technologies		
free-choice course - in educational track		Advanced statistical mechanics and disordered systems	
		Statistical Mechanics of Neural Networks	
		Quantum information and algorithms	
free-choice course - in other educational tracks		Intelligent consumer technologies	from Track 2
		Systems for Industry 4.0 and environment (IoT)	from Track 1
		Embedded systems for biomedical applications	from Track 2