Main information on the course

Course name	Urban Security
Degree	Master of Science (MSc) in Computer Science, Curriculum Security Engineering (Bari)
Academic year	2024/25
European Credit Transfer and Accumulation System (ECTS), in Italian Crediti Formativi Universitari (CFU)	9 CFU (each CFU corresponds to 25 hours (h) of student's time); CFU are of type T1, T2 or T3 T1 = 8 h lecture + 17 h individual study T2 = 15 h practice + 10 h individual study T3 = 25 h individual study
Settore Scientifico Disciplinare	ING-INF/05
Course language	English
Course year	Second
Period	2^ Semester
Mandatory attendance	It is highly recommended to attend classes
Study course website	https://www.uniba.it/it/ricerca/dipartimenti/informatica/didattica/corsi-di-laurea/corsi/computer-science-eng/

Teacher(s)

Name and Surname	Giuseppe Pirlo
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office	Computer Science Department – 6° floor – Room 611
e-learning platform	E-learning UNIBA - https://elearning.uniba.it/
Teacher's homepage	https://islab.di.uniba.it
Office hours	On appointment

Syllabus

Course goals	The course is set in the broader context of topics related to information technologies applied to security. Structured to be a specialized course, it focuses specifically on the potential and open issues related to urban security, analyzing the state-of-the-art technologies in the field, the theoretical foundations on which they rest, and initiating the trainee into the development of applications that employ these technologies and knowledge. Course objectives: - theoretical understanding of the underlying dynamics of urban security issues - theoretical and practical understanding of state-of-the-art technologies used for applications in urban security - ability to analyze independently in the design and implementation of solutions to urban security problems - ability to analyze data and expose the work produced
Prerequisites/requirements	The course is designed to provide support for acquiring the knowledge proposed therein. There are no mandatory prerequisites; an awareness of the basic concepts inherent in computer programming remains strongly recommended.
Course program	- Basic concepts of Probability and Statistics - Basic concepts of Artificial Intelligence: CNN, RNN

	- Basic concepts of Urban Risk Indices - Introduction to the concept of risk in the urban context - Conceptualization of the urban system - Dynamic features and static features - Technologies applied to urban security Laboratory: It is planned to develop a solution to a practical urban security problem, which will be presented, with relevant results, to the lecturer in the examination. In this context, the following activities are planned: - Research in the state of the art and identification of current problems in the context of Urban Security - Development of solutions applied to Urban Security - Development of code for the implementation of the above solutions - Critical exposition of the results obtained
Books of reference	The entire knowledge input of the course is imparted to the student through ad hoc multimedia content, in English, provided by the lecturer.
Notes to the books	-

Organization of the didactic activities

Hours			
Total	Lectures	Laboratory	Individual study
62 hours	15 hours	37 hours	10 hours
CFU/ETCS			
6	4	2	

Teaching methods

The examination method is twofold:

Phase I:
Frontal but participatory lectures: the lecturer expounds the theoretical-practical content reported in the teaching objectives by encouraging active and critical participation of learners, classroom discussion, and awareness of the methods and solutions peculiar to the thematic context of the course.

II Phase:
Laboratory activity: students, individually or in groups of up to two, identify a specific application area on which to carry out the following activities:
Identification of theoretical and/or application problem
Research of the corresponding state of the art
Design of a solution to the identified problem
Implementation of the solution
Obtaining the results
Exposition of the entire working procedure for the laboratory activity performed

Notes:

The course is delivered in English
Exposition of the final work involves a systematic recall of the theoretical content delivered in the first part of the course

Expected learning outcomes	
Knowledge and understanding	- Knowledge of the foundational issues of the course of study, i.e., inherent to urban security - Technical and practical knowledge of the technologies used in the field of urban security
Applying knowledge and understanding	- Sviluppo algoritmico di soluzioni tecnologiche - Implementazione con codice sorgente dei suddetti algoritmi
Other skills	*Making judgements* - Development of analytical and critical skills in consulting available research materials, becoming aware of the state of the art in a specific research area - Identification of the problems impacting a specific area of research - Development of realistic and effective solutions addressed to the aforementioned problems - Capacity for quantitative and qualitative analysis of the results obtained. *Communication* - Organizational and exhibition skills of self-produced research material, with attached interpretive exposition of the results obtained *Learning skills* - Development ability to identify sensitive issues in a technology sector of interest - Ability to develop and implement appropriate solutions to respond to ongoing issues in a technology sector - Understanding of own competence level and subsequent compensatory action through critical research of information and knowledge from the research world

Assessment	
Assessment methods	An oral examination is prescribed. The learner will be required to submit the following explanatory material of their work to support the oral examination: - A PDF document that serves as a report of the work carried out, complete with every detail explanatory of it, from the theoretical-practical premises to the development of the practical work to the collection and analysis of the results obtained - A Power Point presentation of the contents collected in the PDF report through which the student can conduct the oral exposition of the work done to the lecturer. - The source code of implementation of the work done, to be discussed with the lecturer. The final evaluation is expressed in thirtieths.

Evaluation criteria

Knowledge and understanding skills:
- Theoretical and practical knowledge of the tools used in the work

Applied knowledge and understanding skills:
- Ability to codify implementation of the algorithm for the identified solution to the underlying problem.
- Autonomy of judgment:
- Commitment put into the identification of appealing problems, for the relevant field, as well as the development of a respective technological solution
- Analytical skills in processing and interpreting data and results
- Communication skills:
- Work organization and exposition skills

Learning skills:
- Research of the state of the art for a technology area of interest and subsequent maturation of knowledge for skill alignment with the same.

Measurements and final grade

Grade	Description
< 18 insufficient	Fragmentary and superficial knowledge of content, errors in applying concepts, poor description.
18 - 20	Sufficient but general content knowledge, simple description, uncertainties in applying theoretical concepts.
21 - 23	Content knowledge appropriate but not in-depth, ability to apply theoretical concepts, ability to present content in a simple way.
24 - 25	Appropriate and broad content knowledge, fair ability to apply knowledge, ability to present content articulately.
26 - 27	Accurate and complete content knowledge, good ability to apply knowledge, ability to analyze, clear and correct description.
28 - 29	Broad, complete and thorough content knowledge, good application of content, good analytical and summarizing skills, confident and correct description.
30 30 cum laude	Very broad, complete and thorough content knowledge, well-established ability to apply content, excellent ability to analyze, synthesize and make interdisciplinary connections, mastery of description.

Further information

It is suggested that students rely exclusively on the information/communication provided on the official websites of the Department of Computer Science, or on social groups only if they are formed and administered exclusively by the faculty members of the relevant subjects:

- https://www.uniba.it/it/ricerca/dipartimenti/informatica/didattica/corsi-di-laurea
- https://www.uniba.it/it/ricerca/dipartimenti/informatica
- https://elearning.uniba.it/

Teaching programs are available here:
- https://elearning.uniba.it/

Information that all students should know is written in the Didactic Regulations and Study Prospectus available on the website:
- https://www.uniba.it/it/ricerca/dipartimenti/informatica/didattica/corsi-di-laurea/corsi-di-laurea

Students are suggested to be wary of information and materials circulating on unofficial sites or social groups, as they are often found to be unreliable, incorrect

	or incomplete. If you have any doubts, ask for a meeting with the lecturer in accordance with the reception arrangements. _____