



Programme of Course "Information Systems and Network Security"

- Code: DS9003
- Type of course unit: Elective (Bachelor Degree in Computer Science curriculum General), Elective (Master Degree in Computer Science curriculum GSEEM), Elective (Master Degree in Computer Science curriculum General), Compulsory (Master Degree in Computer Science curriculum NEDAS), Compulsory (Master Degree in Computer Science curriculum UBIDIS)
- Level of course unit: Undergraduate Degrees, Postgraduate Degrees
- Semester: 1

Number of ects credits: (Bachelor Degree in Computer Science) 6 (workload 150 hours), (Master Degree in Computer Science) 6 (workload 150 hours)

Teachers: Gianpiero Monaco (gianpiero.monaco@univaq.it)

1	Course objectives	It has become nearly impossible to live in today's society and to be not dependent on information systems of one type or another. This course provides an introduction to Information Systems and Network Security. The main objective is to provide students with an overall understanding of the main concepts of information systems and network security, to highlight their increasing importance in modern organizations and societies and to emphasize the ethical, social and security implications.
2	Course content and learning outcomes (dublin descriptors)	<p>Topics of the module include:</p> <ul style="list-style-type: none"> • Basics of Cryptology. • Information Systems Security: - Information Technology Security, Crime, Compliance, Continuity. - Threats, Vulnerabilities, and Risk Exposure. - Defense: Information Technology Defense. • Game Theory for Network Security. • Introduction to Information Systems. • Algorithmic Issues arising in Information Systems: Revenue Maximization Envy-Free Pricing Problems. • Introduction to Cloud Computing. • Algorithmic Issues arising in Information Systems: Scheduling Algorithms; Envy-Free Scheduling. <p>On successful completion of this module, the student should :</p> <ul style="list-style-type: none"> • Acquire knowledge on: Information systems; Information technologies that support organizations; Networks and Data management; Information Systems Security; Cryptology; Cloud computing; Algorithmic issues arising in information systems. • Be able to solve general issue arising in information systems at the enterprise level. Being able to develop secure computer networks and information systems. • Be autonomous in solving general issue arising in information systems and network security. Being able to assess the level of security of an Information systems and computer network. • Be able to understand issues arising in information systems and network security at the enterprise level. • Be able to improve its knowledge in the field of information systems and network security in his future studies and/or works.
3	Course prerequisites	Fundamentals of algorithms and discrete mathematics. General knowledge of Computer Networks.
4	Teaching methods and language	<p>Lectures and exercises.</p> <p>Language: English</p> <p>Reference textbooks</p> <ul style="list-style-type: none"> • Lecture notes and extra didactic material provided by the lecturer., Lecture notes and extra didactic material provided by the lecturer. http://gianpieromonaco.com/ISNS2017.html
5	Assessment methods	<p>Pre-Assessment: Course pre-requisites are clearly stated on the Module website.</p> <p>Formative Assessment: The formative assessment is performed via interaction between</p>

teacher and students during lectures. Students are involved in questioning and discussion, by means of open oral questions to the entire class. Summative Assessment: Written test followed by an optional oral exam. The oral exam can be required either by the student, to improve grades, or by the teacher, in presence of significant mistakes/misunderstandings in the written exam. An optional mid-term written test is also be provided, which is meant to cover the first part of the course, in order to help the students to split the workload. The written test is aimed at: (1) verification of theoretical competence, and in particular of knowledge and comprehension of Course contents (2) verification of skills in understanding and solving significant exercises, and in explaining the proposed solutions. This in order to verify the ability of application of techniques learnt during the Course, of analysis of problems and synthesis of suitable solutions, and of evaluation of alternative solutions. Criteria of evaluation will be: the level of knowledge and practical ability; the property of use of the technical/mathematical language; the clarity and completeness of explanations. The written test (about 2 hours) consists in: (i) Short essays and open questions to cover point (1), 30-50% of total marks; (ii) Exercises, to cover point (2), 50-70% of total marks. All parts can result in negative marks if the answer is omitted or seriously flawed. The oral exam (max 1 hour) will occur within the same exam session of the written test and will typically cover the areas of the written answers that need clarification plus, possibly, additional subjects proposed by the teacher.