Università degli Studi di L'Aquila - Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica

Laurea in Matematica

Degree Profile

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Degree profile of
Laurea in Matematica

Type of degree and length	Single degree (180 ECTS credits, 3 years)
Institution(s)	Università degli Studi dell'Aquila, Italy.
Accreditation organisation(s)	Ministero dell'Istruzione dell'Università e della Ricerca (MIUR), Italy.
Period of reference	MIUR 2013, for 3 years.
Cycle /level	QF for EHEA: 1st cycle; EQF level: 6; Italian NQF: Laurea.

A	**PURPOSE**
	The degree program is designed to provide a solid basic preparation in mathematics in both theoretical and applied framework. In addition it is also provided a basic training in physics and a first approach to computer science.

B	**CHARACTERISTICS**	
1	Discipline(s) / subject area(s)	Mathematics; Physics; Informatics; Others (70: 10: 5: 15)
2	General / specialist focus	General education in pure and applied Mathematics
3	Orientation	The degree program is oriented to form a graduate student able to access to any master degree course in mathematics (pure and applied), but also to other master degree courses (engineering) or professionalizing master in computer science and finance
4	Distinctive features	Some courses of the third year of the degree are taught in English.

C	**EMPLOYABILITY AND FURTHER EDUCATION**	
1	Employability	The completion of the program provides employment opportunities in the following professional fields: education, insurance, banking and financial institutions
2	Further studies	Master programs in Mathematics (theoretical and applied mathematics), interdisciplinary programs related to Mathematics (Mathematical Engineering, Mathematical Physics), Master programs in Engineering / Informatics

D	**EDUCATION STYLE**	
1	Learning and teaching approaches	Lectures and exercises, laboratory classes, small work groups, individual study based on text books and lecture notes. Tutorials with academic staff. Individual tutorial for preparing the Diploma dissertation
2	Assessment methods	Written exams, oral exams, laboratory reports, continuing assessments, final comprehensive exam, assessment of Diploma dissertation

E	**PROGRAMME COMPETENCES**

1	Generic
	• Analysis skills: capacity for analysis and synthesis using logical arguments and proven facts. • Flexible mind: acquisition of a flexible mind, open to apply basic mathematical knowledge and competences in a wide range of job opportunities and in everyday life. • Team- work: capability to perform guided teamwork in a lab setting and related special skills demonstrating capacity for handling the rigor of the discipline and for time management (including meeting deadlines). • Communication skills: ability to communicate effectively and to present complex information in a concise manner orally and in writing and using appropriate technical language. • Popularization skills: ability to communicate with non- experts, including some teaching skills. • Synthesis skills: ability for abstract and analytical thinking, and synthesis of ideas. • Problem solving: ability to identify, pose and resolve problems
2	Subject specific
	• Deep knowledge and understanding: Ability to analyze mathematical problems (both abstract and applied) in terms of fundamental principles and knowledge and by means of appropriate mathematical methods. • Approximation skills: ability to find approximate solutions with explicit statements of assumptions and the use of limiting cases. • Mathematical skills: Ability to understand and master the use of the mathematical and numerical methods. • Problem solving: Ability to solve a wide range of problems by identifying their fundamental aspects and using both pure and applied methods as derived from mathematics curriculum. • Computational skills: Ability to use appropriate software such as programming languages and packages mathematical investigations. • Modeling ability: Ability to model biological phenomena, physical and financial. • Learning ability: ability, through independent study, to enter new fields by using mathematics knowledge

F	**COMPLETE LIST OF PROGRAMME LEARNING OUTCOMES**
	• Ability to demonstrate knowledge and understanding of Mathematics fundamentals in: language of elementary set theory, basic differential equations; basic complex functions; some probability; some statistics; some numerical methods and computer simulation; basic geometry of curves and surfaces; some algebraic structures; some discrete mathematics; and some modeling from a related discipline. • Ability to demonstrate knowledge and understanding of mathematics relevant for physics, ICT and engineering at a basic level, i.e. differential and integral calculus, algebra, analytic functions of real and complex variables, vectors and matrices, vector calculus, ordinary and partial differential equations, statistics, numerical analysis, Fourier methods and furthermore capability of using such tools in other fields applications. • Ability to apply knowledge and understanding in other areas as physics, astronomy, chemistry, biology, engineering, computer science, information and communication technology, economics, accountancy, actuarial science, finance and many others. • Basic knowledge and understanding of special fields chosen by the student: physics, informatics, statistics, in order to prepare for future specialization and/or interdisciplinary approaches. • Ability to perform computer calculations related to applied math problems by using appropriate software and at least one programming language, learning how to analyze and display results. • Acquisition of good working habits concerning both working alone (e.g. diploma thesis) and in teams (e.g. lab reports, including team- leading), achieving results within a specified time- frame, with an emphasis on awareness about professional integrity and on how to avoid plagiarism. • Demonstrated proficiency in using English language, including subject area terminology, for literature search.