



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Ingegneria
<b>ACADEMIC YEAR</b>	2019/2020
<b>BACHELOR'S DEGREE (BSC)</b>	ELECTRONIC ENGINEERING
<b>SUBJECT</b>	MATHEMATICAL METHODS FOR ELECTRONICS
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	C
<b>AMBIT</b>	10655-Attività formative affini o integrative
<b>CODE</b>	20501
<b>SCIENTIFIC SECTOR(S)</b>	MAT/07
<b>HEAD PROFESSOR(S)</b>	BAGARELLO FABIO      Professore Ordinario      Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	6
<b>INDIVIDUAL STUDY (Hrs)</b>	96
<b>COURSE ACTIVITY (Hrs)</b>	54
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	2
<b>TERM (SEMESTER)</b>	1° semester
<b>ATTENDANCE</b>	Not mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<b>BAGARELLO FABIO</b> Tuesday    11:00    13:00    Stanza nr. 14, Edificio 8, Secondo piano, ex Dipartimento di Metodi e Modelli Matematici Thursday    11:00    13:00    Stanza nr. 14, Edificio 8, Secondo piano, ex Dipartimento di Metodi e Modelli Matematici

**DOCENTE:** Prof. FABIO BAGARELLO

<b>PREREQUISITES</b>	Formally none. But, for a better comprehension, Analysis and Vector calculus are strongly suggested.
<b>LEARNING OUTCOMES</b>	<p>Knowledge and comprehension: the student will learn how to deal with some mathematical aspects of problems relevant for them. In particular the student will learn notions of Fourier, Laplace transforms and operators on Hilbert.</p> <p>Ability of: the abstract mathematical results introduced all along the teaching will be used in the solution of concrete problems in applied mathematics, signal analysis, dynamical systems and so on.</p> <p>Autonomy of judgement: The student will be able to evaluate the degree of difficulty of the problem to be solved, and the best way to solve it. This will be achieved via an a-priori analysis of the problem itself.</p> <p>Communication skills: The student will be able to discuss all the topics taught during the course.</p>
<b>ASSESSMENT METHODS</b>	<p>The examination consists in a written part, where a certain number of exercises are proposed and must be solved, and an oral part, where the student is required to explain the written composition and to answer to some, more theoretical, questions.</p> <p>As for the grades: 30-30 and laude: Excellent. Full knowledge and understanding of concepts and methods of the discipline, excellent analytical skills even in solving original problems; excellent communication and learning skills. 27-29: Very good. Very good knowledge and understanding of concepts and methods of the discipline; very good communication skills; very good capability of concepts and methods applications. 24-26: Good. Good knowledge of main concepts and methods of the discipline; good communication skills; good autonomy for applying concepts and methods for solving original problems. 21-23: Satisfying. Sufficient knowledge of main concepts and methods of the discipline; satisfying communication skills; sufficient judgment autonomy. 18-20: Acceptable: acceptable knowledge of concepts and methods of the discipline; acceptable communication skills; acceptable judgement autonomy Non acceptable: Insufficient knowledge and understanding of concepts and methods of the discipline.</p>
<b>EDUCATIONAL OBJECTIVES</b>	A good knowledge of the theoretical and practical aspects discussed during the course, and the subsequent capacity to understand and solve problems common in Engineering.
<b>TEACHING METHODS</b>	We have around 36 hours of theory and 20 hours of practice
<b>SUGGESTED BIBLIOGRAPHY</b>	Fabio Bagarello, Metodi Matematici, Zanichelli Editore, 2019

### SYLLABUS

Hrs	Frontal teaching
10	Analytic functions
8	Hilbert spaces
3	Fourier series
4	Fourier transform
4	Laplace transform
4	Distributions
3	Operators

Hrs	Practice
6	Complex and analytic functions
3	Hilbert spaces
2	Fourier series
2	Fourier transform
2	Laplace transform
2	Distributions
3	Operators