



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Matematica e Informatica		
<b>ACADEMIC YEAR</b>	2018/2019		
<b>MASTER'S DEGREE (MSC)</b>	MATHEMATICS		
<b>INTEGRATED COURSE</b>	MATHEMATICS DIDACTICS AND TEACHING METHODOLOGY		
<b>CODE</b>	19862		
<b>MODULES</b>	Yes		
<b>NUMBER OF MODULES</b>	2		
<b>SCIENTIFIC SECTOR(S)</b>	MAT/04		
<b>HEAD PROFESSOR(S)</b>	CERRONI CINZIA	Professore Ordinario	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	CERRONI CINZIA DI PAOLA BENEDETTO	Professore Ordinario Professore Associato	Univ. di PALERMO Univ. di PALERMO
<b>CREDITS</b>	6		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	1		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<p><b>CERRONI CINZIA</b>  Monday 15:00 17:00 Dipartimento di Matematica e Informatica Stanza 105  Wednesday 12:30 14:00 Dipartimento di Matematica e Informatica Stanza 105  Thursday 12:30 14:00 Dipartimento di Matematica e Informatica Stanza 105</p> <p><b>DI PAOLA BENEDETTO</b>  Friday 14:00 15:00 Per confermare data, orario e sede del ricevimento e' necessario contattare il Docente per e-mail.</p>		

DOCENTE: Prof.ssa CINZIA CERRONI

<b>PREREQUISITES</b>	No prerequisite
<b>LEARNING OUTCOMES</b>	<p>The student has to know and has to be able to analyze the main teaching methodologies developed in research in mathematics education and in the history of mathematics, also with reference to the specific role of the teacher, to the conceptual, epistemological, linguistic and teaching nodes of teaching and learning of mathematics .</p> <p>The student has to be able to design teaching methodologies for the construction of activities and more generally of a mathematics curriculum consistent with the objectives set by national guidelines for high schools and for the first cycle and by the guidelines for technical and professional institutes</p>
<b>ASSESSMENT METHODS</b>	<p>Oral examination. Marks (or grades) are expressed in thirties. There is an intermediate nonobligatory examination in the form of a seminar. The interview will begin with a subject of one's choice and will continue with two or three questions on the whole examination program. The intermediate seminar will compete for the final evaluation. We use the following Assessment Scheme: Insufficient: the student does not have an acceptable knowledge of the topics. 18-20: The student has a general knowledge and understanding of the topics; he has just adequate communication skills. 21-23: The student has an adequate knowledge and understanding of the topics; he has satisfactory communication skills. 24-26: The student has a fair knowledge and understanding of the topics; he has a decent communication skills. 27-29: The student has a good knowledge and understanding of the topics; he has a good communication skills. 30-30 cum laude: The student has an excellent knowledge and understanding of the topics; he has an excellent communication skills.</p>
<b>TEACHING METHODS</b>	Lessons

**MODULE**  
**TEACHING METHODOLOGIES IN MATHEMATICS DIDACTICS**

*Prof. BENEDETTO DI PAOLA*

**SUGGESTED BIBLIOGRAPHY**

Castelnuovo, E., Arzarello, F., & Bartolini, M. G. (1963). Didattica della matematica. Firenze: La Nuova Italia.  
D'Amore, B. (2001). Didattica della matematica. Pitagora.  
Di Martino, P., Roberto, N., & Giuseppe, R. (2018). Didattica della matematica. Mondadori Editore.

Per approfondire: Materiale didattico in rete sul sito del G.R.I.M. (Gruppo di Ricerca insegnamento/Apprendimento delle Matematiche): <http://dipmat.math.unipa.it/~grim/matdit.htm>.

<b>AMBIT</b>	20947-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	24

**EDUCATIONAL OBJECTIVES OF THE MODULE**

Knowledge and understanding  
 - Acquisition of knowledge and teaching skills related to the discipline;  
 - Awareness of the role of problem solving as a fundamental element for the mathematics thought.  
 Applying knowledge and understanding  
 - Ability to carry out practical activities and critical educational reflections.  
 - Ability to develop, implement and "criticize" educational paths realized on mathematics misconceptions and obstacles.

**SYLLABUS**

Hrs	Frontal teaching
3	Specific Education (disciplinary) and General Education: Learning Mathematics.
6	Framework for Math Education: theoretical aspect and examples in Research Education.
6	Knowledge and Skills in Mathematics. - Argumentation and Proof in Mathematics - Errors and Knowledge in Mathematics - BES and Learning process - Artefacts and problem solving.
5	Examples of experimental research in Math Education. Critical analysis.
4	Misconception, Obstacles and teaching/learning didactic situation: example at Secondary School

**MODULE**  
**TEACHING METHODOLOGIES IN MATHEMATICS HISTORY**

*Prof.ssa CINZIA CERRONI*

**SUGGESTED BIBLIOGRAPHY**

G. Loria, La storia della matematica come anello di congiunzione fra l'insegnamento secondario e l'insegnamento universitario, Atti I Congresso, Periodico di matematica, 1899, pp. 19-33

Furinghetti F., Radford L. (2002). Historical conceptual developments and the teaching of mathematics: from philogenesis and ontogenesis theory to classroom practice. English L. (Ed.). Handbook of International Research in Mathematics Education. 631-654. Hillsdale: Erlbaum.

V. Katz (ed) 2000, Using history to teach mathematics: An international perspective, The Mathematical Association of America.

V. Katz (ed) 2004, Historical Modules for the Teaching and Learning of Mathematics, The Mathematical Association of America, CD-ROM, 2004

<b>AMBIT</b>	20947-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	24

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The student has to know the main teaching methodologies developed in the research in the history of mathematics, also with reference to the specific role of the teacher, in relation to the teaching / learning of mathematics.

The student has to be able to critically analyze the main teaching methodologies developed in research in the history of mathematics, related to the teaching / learning of mathematics.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
6	The history of mathematics in teaching in the authors of the past. J.L. Lagrange, F. Klein, F. Enriques, F. Severi, etc.
5	The history of mathematics in teaching: the "geneticist" method
5	The history of mathematics in teaching as a narration
4	The history of mathematics in teaching to give the discipline its cultural and intercultural dimension
4	Educational paths of the history of mathematics in teaching