



## Study Plan

**School:** Institute for Research and Advanced Training

**Degree:** Doctorate

**Course:** Educational Sciences (cód. 263)

### 1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED09272D	Introductory Seminar	Education Sciences	2	Semester	52
PED09274D	Education and Contemporary Society	Education Sciences	3	Semester	78
PED09276D	Research Seminar I	Education Sciences	5	Semester	130

### Group of Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
FIL09197D	Detailed Problems of Contemporary of Philosophy I	Philosophy	5	Semester	130
GES07979D	Entrepreneurship and Innovation	Management	8	Semester	208
FIS09374D	Topics in History of Science	History and Philosophy of Science	6	Semester	156
HIS09375D	History of Culture, Science and Society: Saber Agents, Knowledge and Innovation	History	6	Semester	156
FIS09429D	Topics in Philosophy of Science	History and Philosophy of Science	6	Semester	156
HIS09379D	Museums, Education and Scientific Culture	History and Philosophy of Science	6	Semester	156
MAT07516D	Statistical Inference	Mathematics	7.5	Semester	198
PSI09055D	In-deph Seminar in Psychology of Education I	Psychology	5	Semester	130
FIL10294D	Ethics and Responsibility of Organizations	Philosophy	6	Semester	168
ECN09308D	Culture, Politics and society in a Global Era	Legal-Political Theory and International Relations	6	Semester	168

Thesis

### 1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED09275D	Knowledge Production and Transfer in Education	Education Sciences	2	Semester	52
PED09273D	Education and Knowledge	Education Sciences	3	Semester	78
PED09277D	Research Seminar II	Education Sciences	5	Semester	130



### 1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
<b>Group of Options</b>					
Component code	Name	Scientific Area Field	ECTS	Duration	Hours
FIL09199D	Detailed Problems of Contemporary of Philosophy II	Philosophy	5	Semester	130
MAT07988D	Methods of Multivariate Statistics	Mathematics	6	Trimester	161
MAT07537D	Categorical Data Analysis	Mathematics	7.5	Semester	196
PSI09056D	In-deph Seminar in Psychology of Education II	Psychology	5	Semester	130
FIL10294D	Ethics and Responsibility of Organizations	Philosophy	6	Semester	168
ECN09308D	Culture, Politics and society in a Global Era	Legal-Political Theory and International Relations	6	Semester	168
Thesis					

### 2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

### 2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

### 3rd Year - 5th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

### 3rd Year - 6th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

### Conditions for obtaining the Degree:

\*\*\* TRANSLATE ME: O plano de estudos do doutoramento foi reestruturado, tendo entrado em funcionamento em 2012/13 o seguinte plano de estudos (DR n<sup>o</sup>141, de 23 de julho de 2012, Despacho n<sup>o</sup>9908/2012)

Para aprovação na componente curricular, curso de doutoramento com 30 ECTS), é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares:

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1<sup>o</sup> Semestre{\}newline

- 3 UC Obrigatórias num total de 10 ECTS {\}newline

- UC Opativas disponíveis no plano de estudos no quadro 8, num total de 5 ECTS{\}newline

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2<sup>o</sup> Semestre{\}newline

- 3 UC Obrigatória num total de 10 ECTS {\}newline

- UC Opativas disponíveis no plano de estudos no quadro 9, num total de 5 ECTS

Para obtenção do grau necessita de obter também aprovação nas provas públicas de defesa da Tese, decorrendo a investigação (Tese) desde o 1<sup>o</sup> ao 6<sup>o</sup> semestre, com um total de 150 ECTS.

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**Topics in History of Science (FIS09374D)**

Historical perspective of social, economic and cultural.

Historical perspective of the construction of big science - Scientific Theories.

History of Science in the 19th century change: Comte, Mach, Tannery and Duhem.

History of Science in the 20th century: Sarton, Congress, Bachelard, Koyré, Merton, Kuhn, Lakatos and Holton.

Scientific controversy: impacts and communication.

Study some of the controversies in the scientific focus of Physics.

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**History of Culture, Science and Society: Saber Agents, Knowledge and Innovation (HIS09375D)**

1. Topics in History of Science

2nd. Sources, Methods, Historiography - seminar work, study visits: History and Culture of Science XVIII-XXI centuries

3rd. History of Science, History of scientific culture and the 'Public Understanding of Science', History Museum of Natural History, Collecting, scientific heritage. The different subject areas of History of Science

4th. History of Science, Health, research networks

5th. History of Science (XX): institutions of science policy, Europe / USA: State and political science.

6th. Science and scientific production of memory and rituals of scientific memory.

7th. Urban areas and organization of Science in European capitals / capital of colonial empires. Case studies: in search of an array of urbanism and organization of scientific knowledge in towns. a. Hill Health b. Hill's Science: Academy of Sciences of the National Museum of Natural History and Science, c. Hill agricultural and colonial



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### **Museums, Education and Scientific Culture (HIS09379D)**

- One. Museology as cultural history
- 2nd. Investigate in Museology - method, concepts and sources
- 3rd. Museums and education - a historical perspective: relations with the disciplinary history of collecting, museums and museology. Education as museological function.
- 4th. The semantic evolution of modern museum and its setting in the Enlightenment.
- 5th. The Renaissance and Early Modern Period (XV-XVII centuries)
- 6th. The chambers of wonders
- 7th. The wonderful and magical
- Eight. The encyclopedic spirit
- 9th. University reforms and new museums and scientific equipment
10. Art and antiquity - museum, heritage and arts education
11. Challenge of Vanguard Museum (Artists, Architects, Writers)
12. Museums and social distinction. The innate (the 'predestination' a 'grace' and 'gift') and acquired.
13. Evolution and scope of the museum concept.
14. Science centers and movement "hands on".
15. Museum of Science and Technology, Science Centers, Planetariums, Museums of Natural History.

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### **Statistical Inference (MAT07516D)**

1. Fundamental concepts of probability (measure and probability, random vectors, marginal and conditional distributions, expected values, generating and characteristics functions, functions of random vectors and transformations).
2. Review of discrete and continuous distributions properties. Exponential families. Multinormal and multinomial distributions.
3. Sampling and the most used sampling distributions.
4. Point estimation. Estimation methods (moments, maximum likelihood, least squares and bayes estimators). Properties of estimators. Crámer-Rao lower bound. Asymptotic behaviour. Robustness.
5. Interval estimation. Methods for finding interval estimators. Properties. Classical and bayesian approach.
6. Hypotheses testing. Type I and Type II probability errors. Duality. Methods for finding testes. Likelihood ratio tests. Properties of tests. Neyman-Pearson theorem, most powerful tests. Asymptotic behaviour. Robustness. Classical and bayesian approach.
7. Non-parametric tests.

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### **In-deph Seminar in Psychology of Education I (PSI09055D)**

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