



Study Plan

School: School of Sciences and Technology

Degree: Master

Course: Chemistry in School (cód. 114)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED07269	Didactics of Physics and Chemistry I	Education Sciences	5.5	Semester	143
FIS07270	History and Philosophy of Sciences	Physics	5.5	Semester	143
QUI07271	Industry and Environment	Chemistry	4	Semester	104
QUI07272	Chemistry of Materials	Chemistry	4	Semester	104
QUI07273	Information and Communication Technologies in Teaching	Education Sciences	5.5	Semester	143
QUI07274	Current Themes in Chemistry I	Chemistry	5.5	Semester	143

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED07275	Didactics of Physics and Chemistry II	Education Sciences	5.5	Semester	143
QUI07276	Experimentation in Chemistry	Chemistry	5.5	Semester	143
PED07277	Educational Research Methodologies	Education Sciences	4	Semester	104
QUI07278	Chemistry and Society	Chemistry	4	Semester	104
QUI07279	Laboratory Management and Safety	Chemistry	5.5	Semester	143
QUI07280	Current Themes in Chemistry II	Chemistry	5.5	Semester	143

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Dissertation				

2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Dissertation				



Conditions for obtaining the Degree:

*** TRANSLATE ME: Para aprovação na componente curricular deste Mestrado, é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares: { \ }newline

{ \ }newline

1.º Semestre { \ }newline

- 6 UC Obrigatórias num total de 30 ECTS { \ }newline

{ \ }newline

2.º Semestre { \ }newline

- 6 UC Obrigatórias num total de 30 ECTS { \ }newline

{ \ }newline

Para obtenção de grau, é necessário também a aprovação em Dissertação no total de 60 ECTS no 3.º e 4.º Semestre. ***

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Didactics of Physics and Chemistry I (PED07269)

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History and Philosophy of Sciences (FIS07270)

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Industry and Environment (QUI07271)

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Chemistry of Materials (QUI07272)

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Information and Communication Technologies in Teaching (QUI07273)

Introduction (use of computers in science - historical perspective, architecture of a modern computer). Information and Communication Technologies versus Education in Chemistry - state of the art. Production of educational materials using the "Microsoft Office". Information and Communication Technologies versus Web. Digital Educational Resources. Distance learning - e-learning.

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Current Themes in Chemistry I (QUI07274)



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Didactics of Physics and Chemistry II (PED07275)

For a situated learning and development of the physics and chemistry teacher:

- 1.1. from the physics and chemistry tacit knowledge to his explicit knowledge: pedagogical dissonances and coping strategies.
- 1.2. physics and chemistry teachers' training needs: a representative sample.
2. Interdisciplinarity and transdisciplinarity in the teaching of physics and chemistry: Problem-Based Learning as an important example.
3. The relations between Science-Technology, Society and the Environment: a pedagogical approach in the teaching of physics and chemistry; contributions of physics and chemistry to a strategy for a sustainable development.
4. Planning teaching units of physics and chemistry: some structural axes: sustainable development, problem solving, scientific literacy and citizenship education.

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Experimentation in Chemistry (QUI07276)

Experimentation in the teaching of chemistry: Background. Historical perspective. Objectives of the experimental work in the teaching of chemistry. Practical work, laboratory work and experimental work. Conceptualizations, goals and limitations. Models of investigative activities. Degree of opening an investigation. Planning of laboratory sessions. Pre-Lab sessions. Preparation of experimental activities to be developed. Definition of objectives to be achieved by carrying out the proposed activities. Design and development of educational projects of an experimental nature.

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Educational Research Methodologies (PED07277)

1. Research as an essential dimension of professionalism
 - 1.1. Relationship between scientific knowledge and professional practice
 - 1.2. The research as a mean to support the educational action
2. Epistemology and research methodology
 - 2.1. Construction of scientific knowledge
 - 2.2. Fundamentals of scientific knowledge
 - 2.3. Research paradigms: scientific / positivist and naturalist / interpretive
3. Steps in research
 - 3.1. Identifying the problem
 - 3.2. Review of literature
 - 3.3. Population and sample
 - 3.4. Research designs: experimental, case study, action research
 - 3.5. Construction of instruments for data collection: observation, interviews, questionnaires.
 - 3.6. Data Collection
 - 3.7. Data Analysis
4. The writing of scientific reports.
5. The Ethics of Research

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Chemistry and Society (QUI07278)

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Laboratory Management and Safety (QUI07279)



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Current Themes in Chemistry II (QUI07280)