



Study Plan

School: Institute for Advanced Studies and Research
Degree: Doctorate
Course: Agricultural and Environmental Sciences (cód. 538)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
FIT11487D	Thesis Project in Environment Sciences	*** TRANSLATE ME: Ciências Agrárias e do Ambiente ***	6	Year	156
ERU11488D	Methods in Scientific Research	Agricultural Sciences	3	Semester	78
PAO11489D	Research Methods in Environment Sciences	Environmental Sciences	3	Semester	78
Thesis					

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO11490D	Seminar in Advance Studies in Agricultural Sciences I	Agricultural Sciences	3	Semester	78
PAO11491D	Seminar in Advance Studies in Environmental Sciences I	Environmental Sciences	3	Semester	78
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
FIT11492D	Seminar in Advance Studies in Agricultural Sciences II	Agricultural Sciences	3	Semester	78
PAO11493D	Seminar in Advance Studies in Environmental Sciences II	Environmental Sciences	3	Semester	78
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					

4th Year - 7th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
FIT11494D	Complementary Thesis Activities	Agricultural Sciences	6	Year	156



4th Year - 7th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

4th Year - 8th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Thesis					

Conditions for obtaining the Degree:

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

{ \ }newline

1º Ano - 1º e 2º Semestre { \ }newline

5 UC Obrigatórias num total de 18 ECTS

2º Ano - 3º e 4º Semestre

2 UC Obrigatórias num total de 6 Ects { \ }newline

{ \ }newline

4º Ano - 7º e 8º Semestre { \ }newline

Unidade curricular optativa num total de 6 Ects

{ \ }newline

Para obtenção do grau, é necessário também a aprovação na Tese, com um total de 210 ECTS, a decorrer no 1º, 2º, 3º e 4º Ano. ***

Program Contents

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Thesis Project in Environment Sciences (FIT11487D)

The syllabus of this curricular unit is designed to help the student understand and scientifically summarize his (her) research objectives and means needed to successfully carry it out. He should learn to revise and lay out the state of art related to his subject matter, and clearly enunciate the objectives of his (her) study, the hypothesis and the expected results. Included topics are: a) state of art of scientific knowledge; b) definition of objectives of scientific research and experimental work; c) scientific experimental design and related statistical methods, methodology applied and evaluation of the necessary means, tools and instruments to successfully carry out the experimental work (in close relationship with the curricular unit Research Methods); d) expected results; e) contingency plan according to expected constraints; f) thesis timetable; g) public presentation, defense and discussion of the thesis project.

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Methods in Scientific Research (ERU11488D)

The study object of this PhD program is the agri-environmental complex, thus the student is confronted with very different phenomena and processes as well as data of different nature. Therefore, the student must know several different methods of conducting trials and experiments, in the laboratory and in the field, which, by appropriate statistical methods, can lead to valid and objective conclusions. In order to provide a solid methodological formation in the fields of Agricultural Science, the syllabus comprises the following sequential steps:

1. Identification of problems and of the inherent methodological issues;
2. Establishment/recognition of different types of "experimental units";
3. Identification/selection of experimental goals;
4. Selection of methods and techniques appropriate to the objectives established for the study;
5. Use of methods and techniques as tools aimed at finding answers to the problems identified.



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Research Methods in Environment Sciences (PAO11489D)

The study object of this PhD program is the agri-environmental complex, thus the student is confronted with very different phenomena and processes as well as data of different nature. Therefore, the student must know several different methods of conducting trials and experiments, in the laboratory and in the field, which, by appropriate statistical methods, can lead to valid and objective conclusions. In order to provide a solid methodological formation in the field of Environmental Sciences, the syllabus comprises the following sequential steps:

1. Identification of problems and of the inherent methodological issues;
2. Establishment/recognition of different types of "experimental units";
3. Identification/selection of experimental goals;
4. Selection of methods and techniques appropriate to the objectives established for the study;
5. Use of methods and techniques as tools aimed at finding answers to the problems identified.

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Seminar in Advance Studies in Agricultural Sciences I (ZOO11490D)

The unit of Seminars in Advanced Studies in Agricultural Sciences I, is based on a broad scientific

basis of education. The comprehensiveness and multidisciplinary intended are achieved by

students attending seminars focused on advanced topics in the areas of agricultural and

environmental sciences and other scientific areas such as:

- 1 - Advanced analytical techniques applied to different matrices (soil, water, food, plants, tissues ...);
- 2 - Toxicology, food quality and food safety;
- 3 - Information technology and electronics in agricultural production;
- 4 - Bioinformatics: sequence analysis and applications;
- 5 - Behavioral, stress and well-being in animal experimentation;
- 6 - Ethics in Animal Research.
- 7- Flowering and frutification physiology
- 8 - Phytopathology and biotechnology
- 9 - Closed soilless cultivation systems



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Seminar in Advance Studies in Environmental Sciences I (PAO11491D)

The unit of Seminars in Advanced Studies in Environmental Sciences I, is based on a broad scientific basis of education. The comprehensiveness and multidisciplinary intended are achieved by students attending seminars focused on advanced topics in the areas of agricultural and environmental sciences and other scientific areas such as:

- 1 - Management of renewable natural resources;
- 2 - Climate change and water management
- 3 - Landscape planning and management
- 4 - Remediation of degraded ecosystems
- 5 - Environmental impacts of intensive farming
- 6 - Landscape dynamics and bioindicators
- 7 - Natural and semi-natural habitats: conservation and values of wildlife

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Seminar in Advance Studies in Agricultural Sciences II (FIT11492D)

The unit of Seminars in Advanced Studies in Agricultural Sciences II, is based on a broad scientific basis of education. The comprehensiveness and multidisciplinary intended are achieved by students attending seminars focused on advanced topics in the areas of agricultural and environmental sciences and other scientific areas such as:

- 1 - Innovation in food technology, materials, processes and products;
- 2 - Advances in precision agriculture;
- 3 - Energy balance in agricultural mechanization;
- 4 - Plant genomics, methods and techniques;
- 5 - Standardization of animal experiments;
- 6- Animal Models - Organization and management in animal experiments

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Seminar in Advance Studies in Environmental Sciences II (PAO11493D)

The unit of Seminars in Advanced Studies in Environmental Sciences II, is based on a broad scientific basis of education. The comprehensiveness and multidisciplinary intended are achieved by students attending seminars focused on advanced topics in the areas of agricultural and environmental sciences and other scientific areas such as:

- 1 - Environmental and ecological quality;
- 2 - Fragmentation of landscape vs biodiversity;
- 3 - Biomass, biofuels, and energy efficiency
- 4 - Rural world - multiagent and multiobjective decision
- 5 - Phylogenetic resources conservation
- 6 - Production systems that aim to increase efficiency and decrease the negative externalities.
- 7 - Spatial modeling in ecology and environment

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Complementary Thesis Activities (FIT11494D)

The syllabus of this curricular unit is strongly related to the supervision and support of the doctoral students and envisages the achievement and development of the competencies described in the learning outcomes of this curricular unit.

The Complementary Thesis Activities may consist of the following: realization of advanced or short courses on subjects related either to their thesis work or the achievement of transferable skills ('softskills' such as Ethics in Science, Research and Entrepreneurship, Scientific Writing); participation in conferences organized by national or international experts; organization of seminars for the dissemination of their research results; participation in scientific meetings with the presentation of communications (oral or poster); collaboration in teaching activities related to their field of specialization; participation in the elaboration of research project proposals, and other adequate activities.