



Study Plan

School: School of Social Sciences
Degree: Master
Course: Informatics Teaching (cód. 535)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
INF7191M	Multimodal Systems	Informatics	6	Semester	157
INF7192M	Applied Artificial Intelligence	Informatics	6	Semester	157
PED11439M	Didactic of Informatics I	Education Sciences	6	Semester	156
PED11169M	Research Methodologies in Education	Education Sciences	6	Semester	156
PSI11440M	Educational Psychology	Psychology	6	Semester	156

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
INF7174M	Ubiquitous Computing	Informatics	6	Semester	157
PED11441M	Didactic of Informatics II	Education Sciences	12	Semester	312
PED11178M	Educational Administration and Management	Education Sciences	6	Semester	156

Group of Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED11184M	School Environment Communication	Education Sciences	6	Semester	156
PED11186M	Education for Health	Education Sciences	6	Semester	156
PED11188M	Multiple Literacy	Education Sciences	6	Semester	156
PED11185M	Education for Citizenship	Education Sciences	6	Semester	156
PED11189M	History of Education in Portugal	Education Sciences	6	Semester	156
PED11190M	School Libraries	Education Sciences	6	Semester	156

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
PED11442M	Didactic of Informatics III	Education Sciences	6	Semester	156
PED11443M	Learning Assessment in Informatics	Education Sciences	6	Semester	156
PED11444M	Supervised Teaching Practice	Education Sciences	48	Year	1248



Conditions for obtaining the Degree:

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

{ \ } newline

1º Semestre: { \ } newline

5 UC obrigatórias num total de 30 Ects

2º Semestre: { \ } newline

3 UC obrigatórias num total de 24 Ects { \ } newline

1 UC optativa do quadro de optativas num total de 6 Ects { \ } newline

{ \ } newline

{ \ } newline

3º Semestre e 4º Semestre

2 UC obrigatórias em um total de 12 Ects { \ } newline

UC de Prática de Ensino Supervisionada num total de 48 Ects

É necessário também a aprovação no acto público de defesa do relatório da unidade curricular relativa à prática de ensino supervisionada. ***

Program Contents

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Multimodal Systems (INF7191M)

Concept of Multimodal Systems

Interaction Modalities

Natural Language: Speech and Text as Person to Machine interface

VoiceXML, Ink Markup Language

Tangible interfaces

Computer Vision, Recognition of Gestures and Movement

Multimodal Systems Architecture

Integration of different interaction modalities

Prospects for future development

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Applied Artificial Intelligence (INF7192M)

Uncertain knowledge and reasoning

(1) Introduction to Uncertainty

(2) Theory of probability: Syntax and semantics of probability theory, Bayes' rule and Independence;

(3) Introduction to Bayesian Networks: Syntax, Semantics; distributions parameterized

(4) Inference in Bayesian networks; Exact Inference by enumeration, elimination of variables; Approximate Inference by Stochastic Simulation; by Markov Chain Monte Carlo

(5) Temporal Probability Models: Time and uncertainty Inference, hidden Markov models, Kalman filters, dynamic Bayesian networks, particle filtering

(6) Applications of Bayesian Networks and Models of Probability: Speech Recognition, Task natural language processing.

(7) Rational decisions: preferences, utility networks, decision and value of information

(8) Learning from observation, learning by induction, decision trees; Measuring the performance of learning, statistical learning.; Bayesian Learning: learning maximum likelihood parameters with complete data.

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Didactic of Informatics I (PED11439M)

1. Introduction: Society, School and Technologies

2. Teaching of computer science and issues of didactics

3. Informatics and curriculum: Collaborative learning and computers (CSCL); Social networking; Data protection, copyright, ethics and safety in children and young Internet

4. Planning the processes of teaching and learning.



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Research Methodologies in Education (PED11169M)

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

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Educational Psychology (PSI11440M)

1. Psychological Development and Learning in Educational Contexts
 - Educational contexts and psychological development
 - Learning in educational settings: Behavioral, cognitive, socio-cultural, ecological and constructivist perspectives; processes of self-regulation of learning
2. Relational and Psychological dimensions involved in Educational Processes
 - Personal, socio-cognitive and affective dimensions
 - Educational Processes and motivational dimensions
 - Interpersonal and contextual dynamics in educational processes
3. Dynamics of Educational Dynamics
 - Teaching process and personal and socio-cognitive dimensions of teacher
 - Dynamics and interaction processes in the classroom
 - Representations and expectations in the educational relationship
 - Classroom and conflicts management.

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Ubiquitous Computing (INF7174M)

Introduction to Ubiquitous Computing
Wireless communication networks
Mobile adaptive computing
Data dissemination and management
Context-aware computing
Location-based services
Systems for mobile platforms:
Symbian
Android
iOS



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Didactic of Informatics II (PED11441M)

1. Informatics, computing and learning
 - a) Computational Thinking in School
2. Teaching Informatics and Programming
 - a) Methods and techniques of teaching informatics
 - b) Strategies "Unplugged"
 - c) Programming environments for children and youth
3. Software and digital educational resources
 - a) Creation, Organization and Use: repositories, portals and other digital libraries
 - b) Evaluation of digital educational resources

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Educational Administration and Management (PED11178M)

- 1- Object of study of Educational Administration and Organization
- 2-Educational system, organization and structures-The constitutional ideology and guiding principles-The Educational System Act as structuring of the referential system of education and teaching . Educational aims and organizational and pedagogical implications
Educational administration, organic structures and levels
- 3-Administration and educational policies- Education, contextual factors and educational equity -Territorialization and municipalization of education
- 4- Educational policies, autonomy and development of school-School Organizations, structures and configurations-Educational regulation and logical adjustment of conformity-The educational project in the context of management and school autonomy
- 5 - The class as the unit of analysis
The flexible organization of groups of students and teachers-
The size and structural composition of the class as factors in school performance

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School Environment Communication (PED11184M)

1. Human communication.
 - 1.1. Verbal aspect.
 - 1.1.1. Communication models.
 - 1.2. Non-verbal aspect.
 - 1.2.1. Functions of non-verbal communication.
 - 1.2.2. The body.
 - 1.2.3.Non-verbal communication in Education.
2. Barriers to communication.
 - 2.1. Among people, among people and groups and among groups.
 - 2.2. In educational situations



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Education for Health (PED11186M)

- Education and health.
- Factors that determine the level of health and disease in the world today.
- Paradigms of health promotion.
- Environment and Health.
- Health promotion and education.
- Emerging fields in health education.
- Health in the post transactional societies in the twenty-first century.
- Healthy Living and evolution of disability.
- The ABC model and the model of empowerment in health education
- Theories and models in health education.
- Perception of risk communication and prevention.
- Group work and the development of preventive behaviors.
- Habits of risk and prevention: Prevention of diseases of our time with a healthy diet; Body and health: determinants and implications of body dissatisfaction; Prevention and mental health promotion; Neuroscience as a meeting point for the prevention and treatment of addiction; Transmitted diseases; The school and some health problems in childhood; Risks, accident rates and injuries.

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Multiple Literacy (PED11188M)

- A. Literacy/critical literacy/multiliteracy
- B. Reading the world/texts (written/oral/visual/other): 1) breaking the code(s); 2) Participate in the meanings of texts; 3) Use texts functionally; 4) Critically analyze and transform texts;
- C. Literacy practices inducting strategies: verbal/information/aural and oral/visual.
- D. Multiliteracies, social media and cyberspace:
- E. Multiliteracies and Education: creativity, critical thinking and ethics.

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Education for Citizenship (PED11185M)

- A. Conceptual key Instruments: City, citizen, politics, ideology, rationality, modernity, post-modernity, globalization, individualism, liberalism, socialism, civil society, empowerment, accountability.
- B. Conceptual, political and legal framework for citizenship education in Portugal.
- C. Citizenship education as education for the values: models and methods
- D. The dimensions citizenship education: themes, issues and intervention projects (in accordance with the provisions of the General Directorate of education to be implemented in basic and secondary education)
- D1 European Dimension of education
- D2 Environmental education for sustainability.
- D3 Consumer education
- D4 Financial education
- D5 Intercultural education
- D6 Education for peace
- D7 Gender equality education
- D8 Awareness education
- D9 Education for development
- D10 Entrepreneurship education
- D11 Education for volunteer work
- D12 Human rights education
- D13 Media education
- D14 Road safety Education
- D15 Health and sexuality education



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History of Education in Portugal (PED11189M)

1. Introduction: definition of concepts - History of Education, History of Ideas, Educational, Current Contemporary Educational Thought, History of Pedagogy
2. Historical roots of contemporary educational thinking - The pedagogical debate in the Enlightenment (eighteenth century)
3. Liberalism and the defence of Public Instruction (nineteenth century)
4. The Republic and the construction of the "New Man" (1910-1926)
5. The 'Estado Novo' and nationalistic and traditional education (1933-1945)
6. The pedagogical modernity Portuguese - Proponents of the "New School Movement"

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School Libraries (PED11190M)

The School Libraries Network: history and legislation. Documents of the School Libraries Network. The support for curriculum development and the School Library. The role of School Library in the development of reading and literacy. Relationship between School Library and the educational community. Management of School Library. The Evaluation Model School Library.

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Didactic of Informatics III (PED11442M)

1. Teaching and learning methodologies in Informatics and the curricular changes in Basic and Secondary Education.
 - 1.1 Educational work strategies in basic education: gamification, educational games in digital format, learning by project / problem / task.
2. Multimedia and Learning
 - 2.1 Cognitive theory of multimedia learning
3. New social learning and e-learning platforms
4. Web 2.0 and Web 3.0: educational implications. Tools and applications for teaching and learning of ICT.

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Learning Assessment in Informatics (PED11443M)

1. Introduction: basic concept of assessment? and fundamentals of evaluation
2. Curriculum, learning and evaluation
 - a) The cycle of planning and evaluation
 - b) Functions of the evaluation Curriculum-learning-assessment
 - c) Types of evaluation
3. The process of evaluation: planning, collecting, interpreting and using results
4. Assessment for different purposes: regulate the student's progress, regulate the process of teaching, make decisions about learning, rate the student's achievement
5. Learning evaluation in informatics: traditional vs. alternative
 - a) Knowledge evaluation assessment
 - b) Performance based evaluation
 - c) Systematic observation
 - d) e-Portfolio
 - e) Artifact based evaluation
 - f) Competency based evaluation
6. Assessment Instruments in informatics



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Supervised Teaching Practice (PED11444M)

1. Dimension Of Development Of Teaching And Learning

- a) Planning: Structuring sources; Differentiation of teaching and progression of learning; Articulated conception of annual plans, step plans and lesson plans.
- b) Evaluation: Collection and analysis of data from the initial assessment; Articulation between the results of formative assessment and summative assessment; Design and operationalizing instruments to assess student learning.
- c) Teaching classes in basic and secondary education and in informal groups of students

2. Participation In School And Relationship With The Community

- a) Collaboration in group activities of PE
- b) Conception, and development of complementary curricular activities with participation of the educational community

3. Dimension Professional, Social And Ethics: Collaborative work; The professional attitude.

- 4. Professional Development: Development of an action- research project and its public presentation and discussion.