

Study Plan

School:	School of Sciences and Technology
Degree:	Master
Course:	Informatics Engineering (E-Learning) (cód. 578)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Applied Artificial Intelligence	Informatics	6	Semester	157
INF07192M					
	Computer-Based Decision Support Systems	Informatics	6	Semester	157
INF07193M					
	Advanced Topics in Compilation	Informatics	6	Semester	157
INF07194M					
	Advanced Topics in Distributed Systems	Informatics	6	Semester	157
INF07195M					



1st Year - 1st Semester						
Component code	Name	ield EC	d ECTS Duration Hours			
Group of Options	News	Coloutific Avec Field	ГСТС	Duration		
Component code	Name	Scientific Area Field	ECIS	Duration	Hours	
INF07033M	Text Based Information Retrieval	Informatics	0	Semester	157	
INF07191M	Multimodal Systems	Informatics	6	Semester	157	
GES07014M	Information Systems Management	Management	6	Semester	161	
MAT07177M	Cryptography	Informatics	6	Semester	157	
INF07173M	advanced Topics in Digital Processing	Informatics	6	Semester	157	
INF07176M	Location Based Services	Informatics	6	Semester	157	
INF07190M	Embedded Systems	Informatics	6	Semester	157	
INF07171M	Declarative Languages Implementation	Informatics	formatics 6		157	
INF07179M	Distributed Informatiom Systems / System Intero- perability and Integration	Informatics 6		Semester	157	
INF07017M	Data Warehouse	Informatics 6		Semester	157	
INF07187M	Natural Language Processing Systems	Informatics	6	Semester	157	
INF07170M	Machine Learning	Informatics	6	Semester	157	
INF07174M	Ubiquitous Computing	Informatics	6	Semester	157	
INF07175M	Game Design	Informatics	6	Semester	157	
INF07178M	Declarative Information Systems	Informatics	6	Semester	157	
INF07185M	Data Mining	Informatics	6	Semester	157	
INF07186M	Computer-Based Decision and Control Systems	Informatics	6 Semest		157	
INF07172M	Reasoning and Knowledge Representation	Informatics	6	Semester	157	
INF07181M	Multimedia Information System	Informatics	6 Semes		157	
INF07180M	Software Engineering	Informatics	6	Semester	157	
INF07188M	Digital Signals Processing	Informatics	6	Semester	157	

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Human-Machine interfaces	Informatics	6	Semester	157
INF07183M					
	Project Management	Management	6	Semester	157
GES07182M					
	Advanced topics in Databases	Informatics	6	Semester	157
INF07184M					



1st Year - 2nd Semester						
Component code	Name	eld ECTS Duration He				
Group of Options			FOTO			
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INF07033M	Text Based Information Retrieval	Informatics	6	Semester	157	
INF07176M	Location Based Services	Informatics	6	Semester	157	
INF07190M	Embedded Systems	Informatics	6	Semester	157	
INF07171M	Declarative Languages Implementation	Informatics	6	Semester	157	
INF07179M	Distributed Informatiom Systems / System Intero- perability and Integration	Informatics	6	Semester	157	
INF07017M	Data Warehouse	Informatics	6	Semester	157	
INF07187M	Natural Language Processing Systems	Informatics	6	Semester	157	
INF07170M	Machine Learning	Informatics	6	Semester	157	
INF07174M	Ubiquitous Computing	Informatics	6	Semester	157	
INF07175M	Game Design	Informatics 6		Semester	157	
INF07178M	Declarative Information Systems	Informatics	6	Semester	157	
INF07185M	Data Mining	Informatics	6	Semester	157	
INF07186M	Computer-Based Decision and Control Systems	Informatics	6	Semester	157	
MAT07177M	Cryptography	Informatics	6	Semester	157	
INF07173M	advanced Topics in Digital Processing	Informatics	6	Semester	157	
GES07014M	Information Systems Management	Management	6	Semester	161	
INF07191M	Multimodal Systems	Informatics	6	Semester	157	
INF07172M	Reasoning and Knowledge Representation	Informatics	6	Semester	157	
INF07181M	Multimedia Information System	Informatics	6	Semester	157	
INF07180M	Software Engineering	Informatics	6	Semester	157	
INF07188M	Digital Signals Processing	Informatics	6	Semester	157	



2nd Year - 3rd Semester							
Component code	Name	Scientific Area F	ield EC	TS Durat	ion Hou		
Group of Options							
Component code	Name	Scientific Area Field	ECTS	Duration	Hours		
INF07033M	Text Based Information Retrieval	Informatics	6	Semester	157		
INF07172M	Reasoning and Knowledge Representation Informatics 6 Semester				157		
MAT07177M	Cryptography	Informatics	6	Semester	157		
INF07191M	Multimodal Systems	Informatics	6	Semester	157		
INF07173M	advanced Topics in Digital Processing	Informatics	6	Semester	157		
INF07176M	Location Based Services	Informatics	6	Semester	157		
INF07190M	Embedded Systems	Informatics	6	Semester	157		
INF07171M	Declarative Languages Implementation	Informatics	6	Semester	157		
INF07179M	Distributed Informatiom Systems / System Interoperability and Integration	Informatics	6	Semester	157		
INF07017M	Data Warehouse	Data Warehouse Informatics 6 5		Semester	157		
INF07187M	Natural Language Processing Systems	Informatics	6	Semester	157		
GES07014M	Information Systems Management	Management	6	Semester	161		
INF07170M	Machine Learning	Informatics	6	Semester	157		
INF07174M	Ubiquitous Computing	Informatics	6	Semester	157		
INF07175M	Game Design	Informatics	6	Semester	157		
INF07178M	Declarative Information Systems	Informatics	6	Semester	157		
INF07185M	Data Mining	Informatics	6	Semester	157		
INF07186M	Computer-Based Decision and Control Systems	Informatics	6	Semester	157		
INF07181M	Multimedia Information System	Informatics	6	Semester	157		
INF07180M	Software Engineering	Informatics	6	Semester	157		
INF07188M	Digital Signals Processing	Informatics	6	Semester	157		
F07189M	Seminars	Informatics	6	Semes	iter 157		
andatory alternativ							
Component code Dissertation Internship	Name Scientific Area Field ECTS Duration		Hours				
Internship							



2nd Year - 4th Semester							
Component code	Name	Scientific Area Field	ECTS	Duration	Hours		
Mandatory alternatives							
Component code	e Name	e Scientific Area Field	I ECTS	Duration	Hours		
Dissertation							
Internship							

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

- 1° Semestre: { \setminus } newline
- 4 UC obrigatórias num total de 24 $\mathsf{Ects}\{\,\backslash\,\}\,\mathsf{newline}$
- 1 UC Optativa num total de 6 Ects $\{ \setminus \}$ newline
- $2^{\mathsf{O}} \,\, \mathsf{Semestre:} \{\, \backslash\,\} \, \mathsf{newline}$
- 3 UC Obrigatórias num total de 18 $\mathsf{Ects}\{\,\backslash\,\}\,\mathsf{newline}$
- 2 UC Optativas num total de 12 $\mathsf{Ects}\{\,\backslash\,\}\mathsf{newline}$
- 3^{O} Semestre: { \ } newline
- 1 UC obrigatória num total de 6 $\mathsf{Ects}\{\, \backslash\,\}$ newline
- 1 UC optativa num ttal de 6 $\mathsf{Ects}\{\,\backslash\,\}\,\mathsf{newline}$

Para obtenção do grau é necessário também a aprovação em Dissertação, Relatório de Estágio ou Trabalho de Projecto, no total de 48 ECTS, no 3.º e 4.º Semestre. ***

Program Contents

Back Applied Artificial Intelligence (INF07192M)

Back

Computer-Based Decision Support Systems (INF07193M)



Back Advanced Topics in Compilation (INF07194M) Intermediate representation (IR)

Linear IRs Tree IRs Three-address code

Control flow analysis

Basic blocks Control flow graph

Data flow analysis

Liveness analysis Live ranges Interference graph

Primer on the MIPS architecture Code generation

Basic instruction selection Measures for code cost Tiles and tilings Instruction selection by maximal munch Instruction selection by dynamic programming Tree grammars Bottom-up rewrite systems Instruction selection by peephole optimisation

Register allocation

For expressions By graph colouring

Static single assignment form(SSA)

Dominator and dominance frontier Conversion to and from SSA form

Basic code optimisation techniques

Dead- and useless-code elimination Constant propagation Copy propagation



Back Advanced Topics in Distributed Systems (INF07195M)

Back Text Based Information Retrieval (INF07033M)

Back

Multimodal Systems (INF07191M)

Back

Information Systems Management (GES07014M)

- 0 Problematic, Main Goals and content of the course; {\}newline
- 1 Organization, Management, system and Information, Information and Communication Technologies; {\}newline
- 2 Strategy and Information Systems and Technologies (IS/IT); {\}newline
- 3 Information Systems Management; $\{ \}$ newline
- 4 Investments Management on IS/IT; Knowledge Management{\}newline

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Cryptography (MAT07177M)

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advanced Topics in Digital Processing (INF07173M)

Discrete-time and continuous-time systems. Block diagram algebra. Feedback and stability of dynamical systems. Feedback control and regulation systems.

Systems described by continuous and discrete variables. Deterministic and stochastic systems (state machines and Markov models). Time response.

System identification (offline and online). Performance criteria and evaluation.

Design and simulation tools: Octave, Matlab/Simulink.

Projects: development of an applied project within the student interests including

- Modelling of a dynamical system

- Simulation

- Processing (visualization, control, prediction, or optimization of the modelled system)

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Location Based Services (INF07176M)

Introduction of concepts (ubiquitous computing, mobile computing, representation of spatial information) Positioning technologies (RFID, Wi-Fi, GPS ,...) Sensor networks Background information Geographical Information System Design of location-based services

Applications

Prospects for future development.



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Declarative Languages Implementation (INF07171M)

- 1. Declarative vs. Imperative Programming Languages
- 2. Implementation of Logic Languages
- 3. Implementation of Functional Languages
- 4. Implementation of Object-Oriented Languages

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Distributed Informatiom Systems / System Interoperability and Integration (INF07179M)

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Data Warehouse (INF07017M)

Back

Natural Language Processing Systems (INF07187M)

(1) lexical analysis;

- (2) Parsing: logic grammars (DCGs, XGS), tags, and HPSGs CFG.
- (3) Semantic Analysis: DRT, and other semantic for natural language, compositionality.
- (4) Pragmatic Analysis: Theory of speech acts , anaphora resolution, dialogue.
- (5) Applications of natural language processing systems

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Machine Learning (INF07170M)

Back Ubiquitous Computing (INF07174M)

Back Game Design (INF07175M)

Back

Declarative Information Systems (INF07178M)

Heterogeneous information systems. Middleware: mediator languages, logic-based models, constraint systems, persistence, modularity. Logic and object-oriented programming. Object-relational databases. Semantic web: XML, RDF, ontologies, OWL, query languages, SPARQL.



Back Data Mining (INF07185M)

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Computer-Based Decision and Control Systems (INF07186M)

- 1. Closed Loop Feedback systems.
- 1.1. Linear discrete systems
- 1.2. Transforms and transfer functions
- 1.3. poles and zeros
- 1.4. closed loop systems
- 2. System supervision and fault detection.
- 2.1. Models Based
- 2.2. Signal Based
- 3. Project and simulation tools: Octave, Matlab/Simulink.
- 4. Implementation of and applied project.

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Reasoning and Knowledge Representation (INF07172M)

- (1) Conceptual maps and semantic networks.
- (2) propositional descriptive logics
- (3) Formalization of Knowledge Bases
- (4) Ontologies
- (5) Descriptive Logic and Databases.
- (6) Time and causality
- (7) Semantic Web

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Software Engineering (INF07180M)

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Digital Signals Processing (INF07188M)

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Human-Machine interfaces (INF07183M)

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Project Management (GES07182M)

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Advanced topics in Databases (INF07184M)



Back Seminars (INF07189M)