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M.Sc. in Cognitive Systems

Programme of Study Layout
COS / M.Sc. in Cognitive Systems

Faculty	*ΣΘΕΕ*	*Faculty of Pure and Applied Science*				
Programme of Study	*COS*	*M.Sc. in Cognitive Systems*				
Level of Study	***Undergraduate***		***Graduate***			
			Master	***Doctoral***		
			x			
Language of Instruction	English					
Mode of Delivery	Distance					
Course Duration (Full Time)	***Years***		***Semesters***			
	2					
Fees	***Programme of Study***		***Module***	***Thesis***		
	5400 euro		*450 euro*	*1350 euro*		
Number of Modules	***Total***	***Required***	***Electives***	***Thesis***		
	14	*2*	*12*	YES		
Number of European Credit Transfer System (ECTS)	*120*					

Programme of Study Description

Since the inception of the computing paradigm, the prevalent metaphor for a computer has been that of a multi-purpose tool, as exemplified by the use of “command lines” and “desktops” at the interface between humans and computers. The unparalleled prevalence of computing-enabled devices in our everyday lives, and the widespread access to information over the Web, suggests a more apt metaphor for a modern computer, that of an assistant. Humans no longer use, but rather collaborate with their devices to solve a cognitive task, with each party learning and adapting to the capabilities of the other. Communication and decision-making happens at a level that is transparent to, and cognitively-compatible with, human abilities and limitations. One no longer speaks of human-computer interaction, but of human-computer symbiosis.

To teach the new paradigm of cognitive computing, the Joint M.Sc. Program in Cognitive Systems brings together two main scientific areas: Cognitive Psychology, and Artificial Intelligence in Computer Science. Aiming, on the one hand, for the prospective students to understand the basis for human cognition, the Program is strongly influenced by Cognitive Psychology and includes learning modules that explore the fundamentals of perception, learning, mental representation, and reasoning in humans. Aiming, on the other hand, for the prospective students to be able to design cognitive systems, the Program places its emphasis on the investigation of computational methods and tools for understanding and designing cognitive systems, and includes learning modules from Connectionist and Symbolic Artificial Intelligence, from Machine Learning, and learning modules on recent developments in Cognitive Computing. Courses are offered through both Cognitive Psychology (CP) and Computer Science (CS) scientific areas, organized in five main themes: Foundations, Perception, Learning, Reasoning, Systems.

Admission requirements	
1	A prerequisite for admission is the possession of a bachelor’s degree from a recognized higher education institution.
2	The joint M.Sc. in Cognitive Systems is geared towards students with a first degree in the STEM fields (Science, Technology, Engineering, and Mathematics), or a first degree in Cognitive Science

	or Psychology. The program assumes basic knowledge in the field of mathematics (discrete mathematics, formal logic, probability / statistics, calculus), and computing (algorithms, basic programming). This should be demonstrated in the application of a prospective student by listing relevant courses taken in earlier degrees or by offering proof of completion of relevant online courses (e.g., MOOCs). In case where this is not possible, candidates will be able to follow induction elements linked to individual courses so that they can acquire the required background.
3	Very good command of the English language is required since the material and language of instruction will be in English. Specifically, applicants should hold an English Language certificate which corresponds to IELTS with a minimum overall score of 5,5 or equivalent (B2 and above) based on the Common European Framework of Reference for Languages (CEFR).

Programme of Study Academic Specializations		
Specialization		***Awarded Degree***
1	*(no specializations)*	*MAGISTER SCIENTIAE COGNITIVE SYSTEMS*

Programme of Study Layout

Modules		***Semester***	***Required / Elective***	***Pre-requisite Modules***	***Co-requisite Modules***	***Workload***	
						Hours	***ECTS***
Common for all Specializations							
COS511	*Introduction to Cognitive Psychology*	Fall	Required			250-300	10
COS512	*Introduction to Artificial Intelligence*	Both	Required			250-300	10
COS513	*Computational Intelligent Systems*	Fall	Elective			250-300	10
COS514	*Computational Neuroscience*	Fall	Elective			250-300	10
COS521	*Cognitive Knowledge Acquisition*	Spring	Elective			250-300	10
COS522	*Learning and Memory in Humans*	Spring	Elective			250-300	10
COS523	*Human Perception and Attention*	Spring	Elective			250-300	10
COS524	*Natural Language Processing*	Spring	Elective			250-300	10
COS613	*Cognitive Agents and Reasoning*	Fall	Elective			250-300	10
COS614	*Adaptive and Interactive Systems*	Spring	Elective			250-300	10
COS621	*Experimental Psychology*	Spring	Elective			250-300	10
COS622	*Cognitive Neuroscience*	Fall	Elective			250-300	10
COS623	*Cognitive System Design*	Spring	Elective			250-300	10
COS624	*Topics in Data Science*	Fall	Elective			250-300	10
COS695	*Industry Placement (1st)*	Both	Elective	does not count towards earning the degree			5
COS696	*Industry Placement (2nd)*	Both	Elective	does not count towards earning the degree			5
COS699	*Master Thesis Induction*	Both	Elective				0
COS701A	*Master Thesis I*	Both	Elective		COS699	250-300	10
COS701B	*Master Thesis II*	Both	Elective		COS701A	500-600	20
					Total	**3000-3600**	**120**