

Module Layout COS623 / Cognitive System Design

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|---|--|-------------------------------------|-------------------|
| Faculty | ΣΘΕΕ | Faculty of Pure and Applied Science | |
| Programme of Study | COS | M.Sc. in Cognitive Systems | |
| Module | COS623 | Cognitive System Design | |
| Level of Study | Undergraduate | | Graduate |
| | | Master | Doctoral |
| | | X | |
| Language of Instruction | English | | |
| Mode of Delivery | Distance | | |
| Module Type | Required | | Electives |
| | | | X |
| Number of Group Consulting Meetings | Total | Physical Presence | Online |
| | 12 + 1 revision | - | 12 + 1 revision |
| Number of Assignments | 1 Assignment / Project and 12 Interactive Activities | | |
| Final Grade Calculation | Interactive Activities | Assignment / Project | Final Exam |
| | 24 % | 26 % | 50 % |
| Number of European Credit Transfer System (ECTS) | 10 | | |

Module Description

The goal of the course is to expose students to a comprehensive cross-section of the main elements of artificial cognitive systems. Inspired by artificial intelligence, developmental psychology, and cognitive neuroscience, our aim is to build systems that can act on their own to achieve goals: perceiving their environment, anticipating the need to act and the likely outcome of actions, learning from experience, adapting to changing circumstances, and interacting with humans. The course surveys the cognitivist, emergent, and hybrid paradigms of cognitive science and discusses cognitive architectures derived from them. Students will be guided through the main paradigms, modelling methods, and technologies involved in the design of cognitive artificial systems and will understand the theoretical and technical challenges involved in modelling and building systems that can reason, solve problems, acquire and use knowledge, make decisions. They will learn how and in which cases computational models can be used to help us in understanding human intelligence and in making progress towards more advanced AI systems. In this respect, the key issues of autonomy, embodiment, learning & development, memory, knowledge representation, decision making and evaluation are discussed. Concepts are introduced in an intuitive, natural order, with an emphasis on the relationships among ideas and building to an overview of the field, equipping students with sufficient knowledge and understanding to study specific topics in greater depth.

Pre-requisite Modules

Co-requisite Modules

Grading Scheme

| Assessment Method | Percentage on Final Grade | Workload | |
|--------------------------|---------------------------|--------------|--------------|
| | | Hours | ECTS |
| Interactive Activities | 24 % | 25-30 | 1 |
| Assignment / Project | 26 % | 50-50 | 2 |
| Final/Repeat Examination | 50 % | 3 | - |
| Total | 100% | Total | Total |

Grading Rules and Assessment methods

- Passing rate
 - 50% of the Interactive Activities
 - 50% of the Assignment / Project
 - Students are allowed to participate in the final exam of a Module if they have overall earned the minimum grade ($\geq 50\%$) in both their Assignment / Project and Interactive Activities
 - 50% of the Final Exam

If a student earns a grade with decimal points, then it is rounded to the nearest half unit.