

## Course Syllabi

### 1. TICS-00066 MULTI-AGENT SYSTEMS

#### 2. 96 credits hours.

#### 3. Bibliography

- An Introduction to MultiAgent Systems, Michael Wooldridge, 2009
- Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations, Yoav Shoham, Kevin Leyton-Brown, 2008
- Agentes software y sistemas multi-agente: conceptos, arquitecturas y aplicaciones, Ana Mas, 2004
- Sistemas multiagentes y sus aplicaciones en Automatización Industrial/[https://www.ing.ula.ve/~aguilar/publicaciones/objetos/author\\_libros/editor.pdf](https://www.ing.ula.ve/~aguilar/publicaciones/objetos/author_libros/editor.pdf), Aguilar José, Ríos Addison, Hidrobo Francisco, Cerrada Mariela, 2013

#### 4. Specific Course Information

a. Smart agents are essential for coordination in multi-agent systems, as they allow autonomy, effective communication, cooperation and distributed problem resolution. These features not only optimize the system's functioning, but also enable complex problems to be addressed more efficiently, which is essential in applications in fields such as electronic commerce, distributed surveillance and process control. A course on Multiagent Systems In this context, the subject on multiagent systems aims to develop a multiagent approach to computer science that focuses on the study of systems composed of multiple autonomous agents that interact with each other to achieve their own goals or the goals of the society to which they belong. Multiagent systems are a domain of computer research that deals with systems that are composed at the micro level by multiple autonomous agents that interact with each other and with their environment. This is the first step to introduce students to the understanding of what is a software agent to later detail a multiagent system, to demonstrate how the techniques and tools for multiagent systems allow solving different problems where Artificial Intelligence is related to the virtual world.

#### b. Prerequisites:

- TICS-00047 ARTIFICIAL INTELLIGENCE
- TICS-00036 DATABASES II: ADMINISTRATION AND OPTIMIZATION
- TICS-00067 OPERATING SYSTEMS
- TICS-00045 SOFTWARE ENGINEERING
- TICS-00034 MACHINE LEARNING

#### 5. Learning Objectives of the Course

- a. The overall objective of the course is to provide students with an introduction to multi-agent systems, their diverse architectures and ways of interacting to solve problems.
- Know the main architectures of multi-agent agents and systems
  - Study the methodologies available for the design of multi-agent systems.
  - Acquire specific knowledge of computational intelligence techniques for the design and implementation of multi-agent systems.
  - Develop skills and methodologies for designing multi-agent systems.

-agent systems.

b. Learning Outcomes

- Use methodologies for multi-agent system development
- It employs computer packages in the implementation of multi-agent systems
- It identifies the basic operating principles of multi-agent systems and their potential for problem solving.

**6. Course Topics**

- Intelligent agents
- Multi-agent systems
- Methodologies for the design of agents
- Design and implementation of multi-agent systems