

## 课程大纲 COURSE SYLLABUS

1.	<b>课程代码/名称</b> <b>Course Code/Title</b>	Multi Agent Systems
2.	<b>课程性质</b> <b>Compulsory/Elective</b>	Elective
3.	<b>开课单位</b> <b>Offering Dept.</b>	Computer Science and Engineering
4.	<b>课程学分/学时</b> <b>Course Credit/Hours</b>	3/64
5.	<b>授课语言</b> <b>Teaching Language</b>	English
6.	<b>授课教师</b> <b>Instructor(s)</b>	Georgios Theodoropoulos
7.	<b>开课学期</b> <b>Semester</b>	Fall
8.	<b>是否面向本科生开放</b> <b>Open to undergraduates or not</b>	Yes
9.	<b>先修要求</b> <b>Pre-requisites</b>	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)  计算机程序设计基础、数据结构与算法分析、概率论与数理统计
10.	<b>教学目标</b> <b>Course Objectives</b>	
	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)  To introduce the concept of agents and multi-agent systems To introduce the main issues surrounding the design of intelligent agents To introduce the main issues surrounding the design of a multi-agent systems To introduce the tools for the modelling and simulation of MAS	
11.	<b>教学方法</b> <b>Teaching Methods</b>	
	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)  Lecture, Lab	
12.	<b>教学内容</b> <b>Course Contents</b>	
	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)	
	<b>Section 1</b>	<ul style="list-style-type: none"> <li>● <b>Weeks 1-3: Introductory concepts</b> <ul style="list-style-type: none"> <li>○ Agent definitions and classification</li> <li>○ Multi agent organisations</li> <li>○ MAS Applications</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Trends and Challenges</li> </ul>
Section 2	<ul style="list-style-type: none"> <li>● Weeks 4-7: <b>Agent Architectures</b> <ul style="list-style-type: none"> <li>○ Cognitive agent architectures</li> <li>○ Reactive vs Deliberative agent architectures</li> <li>○ Layered architectures</li> <li>○ Knowledge Representation</li> <li>○ Development Tools</li> </ul> </li> </ul>
Section 3	<ul style="list-style-type: none"> <li>● Weeks 8-11: <b>Agent Communication and cooperation</b> <ul style="list-style-type: none"> <li>○ Communication languages and content</li> <li>○ Interaction Protocols</li> <li>○ Distributed problem solving and planning</li> </ul> </li> </ul>
Section 4	<ul style="list-style-type: none"> <li>● Weeks 12-15: <b>Distributed problem solving and planning</b> <ul style="list-style-type: none"> <li>○ Task sharing</li> <li>○ Distributed planning (centralised vs distributed plans)</li> </ul> </li> </ul>
Section 5	<ul style="list-style-type: none"> <li>● Week 16: <b>Summary and Revision</b></li> </ul>
<b>13. 课程考核</b>	
<b>Course Assessment</b>	
<p>(① 考核形式 Form of examination; ②. 分数构成 grading policy; ③ 如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p><b>Attendance 10%</b> <b>Assignments 35%</b> <b>Final Exam 55%</b></p>	
<b>14. 教材及其它参考资料</b>	
<b>Textbook and Supplementary Readings</b>	
An Introduction to MultiAgent Systems, 2nd Edition, Michael Wooldridge	

# 南方科技大学新开设研究生课程申请表

## Proposal For New Graduate Courses

课程中文名称 Course Name	多智能体系统	开课单位 Offering Dept.	计算机科学与工程系
课程英文名称 English Name	Multi Agent Systems	课程类别 Course Type	专业选修课
学分 Credit	3	总学时 Total Credit Hours	64
理论学时 Lecture hours	32	实验学时 Lab hours	32
实践学时 Social practice hours	0	讲座学时 lecture hours by guest instructors	0
授课方式 Teaching method	理论+实验	授课语言 Teaching Language	英语
考核方式 Assessment method	考试	计分方式 Grading method	等级制
开课学期 Semester	秋季	面向培养层次 Degree level offered to	研究生
是否是本研同上课 Open to undergraduates or not	是	是否有先修课程 Prerequisite Course	计算机程序设计基础、 数据结构与算法分析、 概率论与数理统计
主讲教师 Instructor	姓名 Name	职称 Title	曾承担的主要课程 (课程名称及开课时所在单位) Courses previously offered (Course name and the work unit when the course was offered)
	Georgios Theodoropoulos	讲席教授	《分布与云计算》、《数字逻辑》
	请附上教师简介，并阐述教师与拟开设课程相关的教学和科研经历。 Please attach an introduction to the instructor, which describes the teaching and research experience relevant to the course proposed.		

申请理由  
Reason for Application

- 1、 本课程对学科发展的作用。如所在学科没有相似课程，请描述该课程开设对学科课程体系的作用；如所在学科已有相似课程，请重点描述与已有课程的区别。
- 2、 本课程对研究生培养的作用。请重点描述对研究生哪些能力有提升。
- 3、 本课程的相关准备情况。请重点表述通过何种途径实现上述两项作用，可包括本课程的师资准备、教学手段，教学内容及学时分配、课程考核方式，以及所用教材和主要参考资料等。

(a) The role of this course in discipline development. If there is no similar course in the discipline, please describe the role of this course in the curriculum; if there is a similar course in the discipline, please focus on describing the difference between this course and the existing one.

(b) The role of this course in graduate education. Please focus on what abilities of postgraduates can be improved.

(c) Preparations related to this course. Please focus on the ways in which the two roles mentioned above can be achieved, including instructor(s), teaching methods, teaching contents, credit hours allocation and assessment methods of this course as well as textbooks and main reference materials.

智能体（agent）是现代人工智能的核心概念。智能体是复杂的计算机程序，它能在开放和分布式的环境中自主学习与决策。然而，越来越多的应用场景需要多个可以协同工作的智能体。多智能体系统（multi-agent systems）即是松散耦合的软件智能体网络，这些智能体通过交互来解决超出单个智能体能力或知识范围的问题。多智能体系统的研究涵盖了一系列技术问题，例如如何设计机制激励智能体中的某些行为，如何设计算法使多个智能体实现指定目标，信息如何在智能体之间交流和传播，以及多智能体系统中的规范、惯例和角色设计。目前基于多智能体系统的设计与建模方法已被广泛应用于各类应用场景中，如自动驾驶、分布式交通信号控制、多机器人智慧工厂、智慧农业、供应链管理、自动交易、商业博弈、无线协作与通信等。通过学习该课程，学生将能够掌握多智能体系统的建模方法与系统设计思维，这契合了当前产业数字化、智能化与分布式化的发展趋势。

<p>开课单位 意见 Comments of the Offering Department</p>	<p>1、本课程开设的必要性：课程的特点以及对学科整体课程体系的作用和意义等。</p> <p>2、本课程开设的可行性：（1）课程本身的可行性：包括主讲教师的开课能力、教学内容科学合理性、教学文件齐备性等；（2）开课单位的可行性：是否具备开课硬件条件等。</p> <p>3、审批结果</p> <p>(a) Necessity of offering this course: Features of the course as well as its effect and importance to the overall subject curriculum system.</p> <p>(b) Feasibility of offering this course: (1) Feasibility of the course itself: including the ability of lecturer to start the course, scientific rationality of teaching contents and completeness of teaching documents; (2) Feasibility of the offering department: whether its hardware for starting the course is satisfied, etc.</p> <p>(c) Approval results</p> <p style="text-align: center;">开课单位负责人（签章）： Dean of the Offering Department (Signature): 年 月 日 Date:</p>
<p>一级学科学位 评定分委员会 意见 Comments from sub-academic degrees committees of the first-level discipline</p>	<p>审批意见(Approval opinion):</p> <p style="text-align: center;">主任（签章） Dean(stamp) 年 月 日 Date:</p>