模态逻辑及其应用

30690562,模态逻辑及其应用,Modal Logic and its Applications

总学分：2,总学时：32

开课单位： 人文学院
课程类别： 本科专业基础课
课程特色： 全外文授课
课程面向： 本科生
考核方式： 考试
教学方式： 课堂讲授为主

课程团队：Jeremy Seligman

课程内容简介:在现代逻辑学研究的众多领域中，模态逻辑因其对表达力和复杂性的较好平衡，而在从 人文学科到软件设计的众多领域中都得到了深入的应用。在本课程中，模态逻辑的理念 和方法将随着其在对时间、知识、必然性、以及社会行为建模的应用被介绍。这样，学 生将被带入类似实际研究的环境中，体会到理论和实践中不同理念和需求的互动。本课 程将引导学生熟悉经典教材、手册、以及重要文章，并让学生具备在有进一步兴趣时自 行探索学习更深内容的能力。尽管本课程预设学生已多少有些逻辑学基础知识，但也会 为不具备该条件的学生留出余地。

Course Description:Among branches of modern logic, modal logic provides a nice balance of expressivity and complexity, allowing it to be applied widely and extensively in many fields ranging from humanities to software design. In this course, ideas and methods of modal logic will be introduced along with its famous applications in modeling time, knowledge, necessity, and social behaviors. In this thread, student will be led into environments similar to research, in which ideas and needs from theoretical side and practical side frequently interact. Pointers will be given to standard textbooks/handbooks as well as notable papers, and with knowledge and skills introduced in this course, students with further interests should in principle be able to explore by their own. This course aims to student who more or less have learnt some logic, but this is not strictly required.

先修要求:无硬性先修课要求。预设学生对命题和谓词逻辑的语言和语义有一定了解，能正确使用集合、图、关系、函数等数学概念，对哲学问题有一定兴趣并愿意参加讨论。

适用院系专业:哲学、社会科学、计算机科学、数学

教学目标:使学生了解模态逻辑基本原理和特征，体会到其得以广泛应用的深层原因，增强多角度多 层次探索不同领域问题间相互联系的意识。

预期学习成效:通过学习本课程，学生将具备模态逻辑的基本知识和技能，熟悉形式语言的表达力和计算 复杂性等概念，从而在各自的学习和研究中，拥有更清晰的思维和更立体的思路。

参考书：van Benthem, J. Modal Logic for Open Minds (2010). CSLI Press. Blackburn, Patrick; de Rijke, Maarten; and Venema, Yde (2001) Modal Logic. Cambridge University Press. Hughes, G. E., and Cresswell, M. J. (1996) A New Introduction to Modal Logic. Routledge.