

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

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1. 课程名称 Course Title	医学神经生物学 Medical Neurobiology
2. 授课院系 Originating Department	医学院 School of Medicine
3. 课程编号 Course Code	MED309
4. 课程学分 Credit Value	3
5. 课程类别 Course Type	专业核心课 Major Core Courses
6. 授课学期 Semester	秋季 Fall
7. 授课语言 Teaching Language	中英双语 English & Chinese
8. 授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	宋学军教授 医学院 邮箱(Email): songxuejun@sustech.edu.cn Xue-Jun Song, MD, PhD, Professor, SUSTech School of Medicine
9. 实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10. 选课人数限额(可不填) Maximum Enrolment (Optional)	

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	46	0	0	2 (学生讲演)	48
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无/None				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无/None				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无/None				

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

医学神经生物学主要面向高年级本科生。主要教学目标是帮助学生学习神经系统的基本结构、功能和疾病的原理和临床意义及其在人工智能发展领域的价值和应用。

Medical Neurobiology is an advanced biology course designed for senior undergraduate students. The overall goal of this course is to provide students a starting point to understand the fundamental principles governing the structure, organization, development, function and diseases, and its possible applications in the fields of medicine and development of artificial intelligence.

16. 预达学习成果 Learning Outcomes

1. 理解和掌握现代神经生物学的基本知识、研究方法、思维方法、研究进展及其在神经科学研究和临床医学领域的价值和应用。To learn the basic principles, research methods and progress of modern neuroscience, as well as its application and significance in medicine and other fields such as AI.
2. 提高学生在神经科学领域的学术报告和交流、讨论技能。To improve students' skills in scientific presentation and communication particularly in the field of neuroscience.

17. 课程内容及教学日历 (如授课语言以英文为主, 则课程内容介绍可以用英文; 如团队教学或模块教学, 教学日历须注明主讲人)

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

授课语言：双语教学（英语为主，中文为辅）。总共 48 学时 24 讲基本内容如下：

第 1 讲：人类共情心的社会价值和神经科学基础 (The social significance and neuroscience basis of empathy)

第 2 讲：世纪挑战 — 脑科学 (Brain science: 21th century's challenge)

第 3 讲：神经生物学研究方法 (Neuroscience research methods)

第 4 讲：神经生物学总论 (Introduction of neurobiology)

第 5 讲：神经元 1 (Neuron-1)

第 6 讲：神经元 2 (Neuron-2)

第 7 讲：受体和离子通道 1 (Receptors and ion channel-1)

第 8 讲：受体和离子通道 2 (Receptors and ion channel-2)

第 9 讲：神经递质和信号转导 (Neurotransmitters and signaling transduction)

第 10 讲：神经营养因子及其受体 (Neurotrophic factors and receptors)

第 11 讲：感知觉概论(Introduction of sensory perception)

第 12 讲：躯体感觉信息编码、痛觉研究里程碑(Sensory coding and milestone of pain research)

第 13 讲：躯体感觉信息的外周感受和传递机制 (Sensory information : peripheral mechanisms)

第 14 讲：躯体感觉信息的脊髓中枢传递和整合机制 (Sensory information: spinal cord mechanisms)

第 15 讲：躯体感觉信息的高级中枢传递和整合机制 (Sensory information: supra-spinal mechanisms)

第 16 讲：痛觉：高级中枢的下行调控作用及其机制 (Pain: descending inhibition and underlying mechanisms)

第 17 讲：麻醉与镇痛、术后镇痛和分娩镇痛 (Anesthesia and analgesia, postoperative analgesia and labor pain control)

第 18 讲：疼痛研究和临床治疗进展及其人文意义 (Progress of pain research and management and its humanistic significance)

第 19 讲：视、听、嗅、味觉概述 (Introduction of vision, audition, smell and gustation)

第 20 讲：运动概述 (Introduction of movement)

第 21 讲：日节律（睡眠和做梦）(Daily rhythm: sleep and dream)

第 22 讲：语言、思想、情感、学习和记忆 (language, thinking, emotion, learning and memory)

第 23 讲：神经系统功能障碍和疾病 (Disorders and diseases of nervous systems)

第 24 讲：思辨论题（学生演讲辩论）：脑科学的未来和人工智能 (Brain science and artificial intelligence)

18. 教材及其它参考资料 Textbook and Supplementary Readings

教材 Textbook

1. *Principles of Neural Science*, 5th edition, by Eric R. Kandel et al., Mac Grow Hill Education press

2. 《神经科学纲要》，韩济生主编，北京大学出版社

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		10		每次课堂签到，缺席最多 4 次则本课程最后考核不及格
课堂表现 Class Performance		10		遵守课堂纪律，积极参与课堂学习
小测验 Quiz				
课程项目 Projects		20		课堂演讲和项目设计研究。分组进行，课程助教组织帮助学生准备项目书和 PPT 课件
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam		60		
期末报告 Final Presentation				
其它（可根据需要 改写以上评估方 式） Others (The above may be modified as necessary)				

20. 记分方式 GRADING SYSTEM

- A. 十三级等级制 Letter Grading
 B. 二级记分制（通过/不通过） Pass/Fail Grading

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
 This Course has been approved by the following person or committee of authority

本课程已经医学院教学副主任张文勇教授审核通过。