

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。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	医学免疫学 Medical Immunology
2.	授课院系 Originating Department	医学院 School of Medicine
3.	课程编号 Course Code	MED405
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 春季/ Spring
7.	授课语言 Teaching Language	中英双语 English & Chinese English with detailed explanation in Chinese on key terms 英文为主，难点增加中文解释
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)	任欢，医学院；生物楼 B514; renh@sustech.edu.cn REN Huan, School of Medicine; Rm B514, Biology Bldg.
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA
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	48				48
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	BIO102A 普通生物学; BIO104 普通生物学实验; BIO320 分子生物学; BIO206-15 细胞生物学				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 N/A				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 N/A				

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

《医学免疫学》是医学及相关专业主干基础课程，是专业核心课。该课程系统性阐述免疫系统的物质基础、诱发机体免疫应答的抗原与危险信号、免疫应答的类型与作用、免疫病理以及免疫学相关应用在疾病诊断和防治中的作用。为学习其它基础医学以及临床医学学科奠定重要基础。

Medical Immunology is a major core course for undergraduate students who major in Medicine and related subjects. The course aims to help the students to understand components of the immune system, antigenic and danger signals that stimulate the immune response, types of immune response, immunopathology and immune techniques and related application in the clinics, etc. The course study will lay the foundation for the students to study other medical-related courses.

16. 预达学习成果 Learning Outcomes

本课程完成后，学生将能够：

- (1) 培养对机体的免疫系统组成及其功能的了解和认识；
- (2) 培养对人体免疫系统在疾病发生发展中作用的认知视角；
- (3) 掌握一定的免疫学分析方法和实践应用技能；了解免疫学规律在疾病预防及诊疗中的应用；
- (4) 培养对免疫学与其它医学基础学科以及临床学科交叉知识的认识；
- (5) 培养独立思考的能力和严谨求实的科学作风。

- (1) Understand essential information on human immunology;
- (2) Understand the role of a functional immune system in human lives and evolution;
- (3) Grasp basic immune techniques and applications in disease treatment and prevention;
- (4) Understand relationship and interdisciplinary knowledge between immunology and other medical sciences;
- (5) Be trained on independent thinking, preciseness and factualism.

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)

一、绪论

1. 医学免疫学发展史

2. 免疫系统功能、免疫器官与组织、免疫细胞与分子、免疫应答与病理性免疫

Part 1: General Introduction

1. Brief history, the development of Medical Immunology
2. General introduction to immunity, function of immune system, immune organs and tissue, immune cells and molecules, immune response, immunopathogenesis

二、抗原

1. 概念与性质

2. 影响抗原免疫原性的因素

3. 分类及其在医学上的意义

4. 非特异性免疫刺激剂

Part 2: Antigen (Ag)

1. Definitions and properties
2. Factors that influence the immunogenicity of an Ag
3. Classification and application in medicine
4. Non-specific immune stimulator

三、免疫球蛋白

1. 概念和结构

2. 抗体的生物学特性与功能

3. 人工制备抗体

Part 3: Immunoglobulin (Ig)

1. Concept and structure Ig
2. Biological properties and functions of antibodies (Ab)
3. Human-made Ab

四、补体

1. 定义和组成成分

2. 补体的激活途径及其调节

3. 补体的生物学活性

4. 补体水平异常与疾病

Part 4: Complement system

1. Definition and components
2. Complement activation pathways and their regulation
3. Biological features
4. Complement abnormality and clinical diseases

五、细胞因子

1. 细胞因子分类和共同特性

2. 细胞因子受体

3. 细胞因子的免疫学作用与临床应用

Part 5: Cytokines

1. General introduction, common features and classification
2. Cytokine receptors
3. Immune function and clinical application

六、人类白细胞分化抗原和黏附分子

1. HLDA 概念与功能

2. 细胞黏附分子的分类与功能

3. 临床应用

Part 6: Human leukocyte differentiation Ag and cell adhesion molecules

1. Concept and function: HLDA
2. Cell adhesion molecules, classification and functions
3. Clinical application

七、主要组织相容性复合体

1. MHC 遗传特征

2. 人类白细胞抗原 (HLA)：分布、结构和功能

3. HLA 与临床疾病

Part 7: Major Histocompatibility Complex (MHC)

1. Human MHC genetic characteristics
2. Human leukocyte antigen (HLA): distribution, structures and function
3. HLA and clinical diseases

八、固有免疫系统与固有免疫应答

1. 固有免疫系统
2. 固有免疫细胞
3. 固有免疫识别
4. 固有免疫应答

Part 8: Innate immune system and innate immune response

1. Innate immune system
2. Innate immune cells
3. Innate immune recognition
4. Innate immune response

九、适应性免疫细胞

1. T 细胞发育
2. B 细胞发育
3. T/B 细胞表面分子与标记
4. T/B 细胞亚群、分类及其功能

Part 9: Adaptive immune cells

1. T cell development
2. B cell development
3. T cell surface molecules/ B cell surface molecules
4. T/B cell classifications and functions

十、抗原加工与提呈、抗原提呈细胞

1. 抗原提呈细胞
2. 经典抗原提呈途径
3. 非经典抗原提呈途径

Part 10: Antigen processing and presentation

1. Antigen presentation cells
2. Classical antigen presentation pathways
3. Non-classical antigen presentation pathways

十一、适应性免疫应答：细胞免疫应答

1. T 细胞识别特异性抗原
2. T 细胞活化、增殖分化和记忆细胞形成
3. 效应 T 细胞功能与适应性免疫应答转归

Part 11: Adaptive immune response: cellular immunity

1. T cell recognition of specific Ag
2. T cell activation, differentiation and memory
3. T cell effector function and outcomes

十二、适应性免疫应答：体液免疫应答

1. B 细胞识别特异性胸腺依赖性抗原（TD 抗原）
2. B 细胞对 TD 抗原的免疫应答
3. B 细胞对胸腺非依赖抗原（TI 抗原）的免疫应答
4. 体液免疫应答的一般规律

Part 12: Adaptive immune response: humoral immunity

1. B cell recognition of specific TD-Ag (Thymus-dependent Ag)
2. B cell mediated immune response against TD-Ag
3. B cell-mediated immune response against TI-Ag
4. General rules of humoral immune response

十三、免疫耐受

1. 免疫耐受概念
2. 中枢免疫耐受和外周免疫耐受

3. 免疫耐受的诱导

4. 免疫耐受的维护与意义

Part 13: Immune tolerance

1. Concept
2. Central tolerance and peripheral tolerance
3. Induction of immune tolerance
4. Maintain and significance of immune tolerance

十四、免疫调节

1. 概念与免疫调节的意义

2. 细胞水平的免疫调节

3. 分子水平的免疫调节

4. 器官与系统水平的免疫调节

Part 14: Immune regulation

1. Concept and significance of immune regulation
2. Immune regulation at the molecular level
3. Immune regulation at the molecular level
4. Immune regulation at the systemic level and others

十五、免疫紊乱：超敏反应(案例讨论+演讲)

1. 四型超敏反应特征、过敏反应机制与案例

2. II型超敏反应机制与案例

3. III型超敏反应机制与案例

4. IV型超敏反应机制与案例

Part 15: Immune related disorder: hypersensitivity (case discussion + oral presentation)

1. General introduction, allergy and cases
2. Type II hypersensitivity and cases
3. Type III hypersensitivity and cases
4. Type IV hypersensitivity, summary

十六、免疫病理：相关疾病

1. 免疫缺陷病

2. 自身免疫病

3. 移植免疫

4. 肿瘤免疫

Part 16: Immune related disease

1. Immunodeficiency diseases
2. Autoimmune diseases
3. Transplantation immunology
4. Immunity to Tumor

十七、免疫学诊断与免疫调控

1. 免疫学技术

2. 免疫预防

3. 免疫治疗

Part 17: Immunodiagnosis and Immune manipulation

1. Immunological technology
2. Immunoprophylaxis
3. Immunotherapy

Quiz, Review & discussions, Presentations interspersed throughout the semester

Section	Hour	Teaching Contents
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1	3	绪论 & 免疫器官与组织
		Introduction & Immune organs and tissues
2	3	抗原
		antigens
3	3	免疫球蛋白-I
		Immunoglobulins-I, structure and functions; classification and properties
		免疫球蛋白-II (1 h)
4	3	human-made Abs; 补体系统 (2 h)
		Complement systems
		细胞因子
		Cytokines
5	3	人类白细胞分化抗原和黏附分子
		Human leukocyte differentiation Ag and cell adhesion molecules
6	3	主要组织相容性复合体
		Major Histocompatibility Complex (MHC)
7	3	固有免疫系统与固有免疫应答
		Innate immune system and innate immune response
8	3	适应性免疫细胞
		Adaptive immune cells
9	3	抗原加工与提呈, 抗原提呈细胞
		Ag processing and presentation, antigen presentation cells
10	3	适应性细胞免疫应答
		Adaptive immunity: cell-mediated immune response
11	3	适应性体液免疫应答
		Adaptive immunity: humoral immune response
12	3	免疫耐受与免疫调节
		Immune tolerance and regulation
13	3	免疫紊乱-I 型超敏反应 (分组讨论与演讲 1)
		Immune disorder-I (type I hypersensitivity) project and presentation 1
14	3	免疫紊乱-II II、III、IV 型超敏反应 (分组讨论与演讲 2)
		Immune disorder-II (type II, III, IV hypersensitivity) project and presentation 2
15	3	免疫病理
		Immune-related diseases
16	3	免疫学诊断与治疗+期末复习
		Immune diagnosis and therapy + final review

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

Textbooks:

Cellular and Molecular Immunology (9th edition). Abul K. Abbas, Andrew H. Lichtman and Shiv Pillai. ELSEVIER.

曹雪涛主编《医学免疫学》第7版 2018年, 人民卫生出版社

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		



课堂表现 Class Performance				
小测验 Quiz	10			
课程项目 Projects	10			
平时作业 Assignments	10			
期中考试 Mid-Term Test	20			
期末考试 Final Exam	40			
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。

