

## 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.	<b>课程名称 Course Title</b>	生物安全概论 Introduction to Biosafety
2.	<b>授课院系 Originating Department</b>	医学院 School of Medicine
3.	<b>课程编号 Course Code</b>	MED109
4.	<b>课程学分 Credit Value</b>	2
5.	<b>课程类别 Course Type</b>	任选课 Free Elective
6.	<b>授课学期 Semester</b>	秋/春 Autumn/Spring
7.	<b>授课语言 Teaching Language</b>	中英双语 English & Chinese
8.	<b>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 &amp; Contact (For team teaching, please list all instructors)</b>	王海东、公共卫生及应急管理学院、wanghd@sustech.edu.cn, 15187109673 Wang Haidong, School of Public Health and Emergency Management, wanghd@sustech.edu.cn, 15187109673
9.	<b>实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact</b>	无 NA (请保留相应选项 Please only keep the relevant information)
10.	<b>选课人数限额(可不填) Maximum Enrolment (Optional)</b>	25

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
	24	8			32
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

本课程拟围绕社会经济生活中的生物安全问题，向学生介绍生物安全的基本概念，现代生物技术的应用，入侵生物和病原生物的认识和分类以及科研活动中的生物安全保障措施等，使学生了解生物安全的基本理论，正确认识生物技术，提升生物安全意识。

This course focuses on the biosafety issues in social and economic life. The students will be introduced to the basic concepts of biosafety, the application of modern biotechnology, the classification of invasive and pathogenic organisms as well as the biosecurity measures in scientific research activities. Through the course the student will get a basic theory of biosafety, understand biotechnology properly, and culture the biosafety awareness.

#### 16. 预达学习成果 Learning Outcomes

1. 学生能够了解生物安全的基本概念

Students are able to understand the basic concepts of biosafety

2. 正确看待生物技术在社会各领域中的应用

Understand the utilization of emerging biotechnology in all areas of the society

3. 培养学生的基本生物安全意识

To cultivate the basic biosafety awareness of the student

#### 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.)

课程内容分为讲授和专题研讨模块；

讲授内容主要包括：1. 生物安全的基本概念，2. 生物因子的风险评估，3. 传染病的安全防控，4. 高等级生物安全实验室，5. 转基因生物技术与食品安全，6. 生物安全产业与战略

专题研讨：1. 生物技术与生物安全，2 转基因食品生物安全，3. 科研活动生物安全

The course will be delivered in in both lecturing and seminar,

The lecturing part will cover topics from: 1. The basic concepts of the biosafety, 2 The biological factors involved in the risk assessment, 3. The prevention of the infectious diseases, 4. The high biosafety level labs, 5. The transgenic technology, 6. The biosafety industry and stratagem

The seminars will cover topics from 1, Biotechnology and biosafety, 2. Transgenic foods and biosafety, 3 Biosafety in Research activity

Section	Topic	Hours
1	序章-Introduction 1.1 生物安全的基本概念 The basic concepts of biosafety 1.2 生物安全发展历程 The history of biosafety development 1.3 国内外生物安全现状 The current status of the biosafety at home and abroad	2
2	生物因子的风险评估 Biological factor and risk assessment 3.1 风险评估的概念及政策 The risk assessment and its strategy 3.2 病原微生物风险评估 The risk assessment of pathogenic microorganism 3.3 实验室生物安全评估 The biosafety assessment of labs	2
3	传染病的安全防控 The prevention of infectious diseases 3.1 传染病的定义和有害因子 The infectious diseases and its harmful factor 3.2 常见传染病的流行特点 The common infectious diseases and its epidemiology 3.3 常见传染病的防控重点 The prevention of common infectious diseases	2
4	高致病病原微生物 High pathogenic microorganisms 4.1 高致病病原微生物种类 The types of high pathogenic microorganisms 4.2 高致病病原微生物的防护 The prevention of high pathogenic microorganisms 4.3 高致病病原微生物的研究 The research of high pathogenic microorganisms	2
5	高等级生物安全实验室	2

	<p>High biosafety level laboratory</p> <p>5.1 生物安全实验室的发展历程 The development of the biosafety laboratory</p> <p>5.2 国外高等生物实验室的体系和现状 The current status of the biosafety system abroad</p> <p>5.3 我国高等生物安全实验室的发展 The status of the domestic biosafety laboratory</p>	
6	<p>高等级生物安全实验室的操作规范 The practice specification of the high level biosafety laboratory</p> <p>6.1 高等级生物安全实验室的操作规则制定 The formulation of the practice specification of high level biosafety laboratory</p> <p>6.2 高等级生物安全实验室的人员培训 The personal training of high level biosafety laboratory</p> <p>6.3 高等级生物安全实验室的材料处理</p>	2
7	<p>人类遗传资源与生物质资源安全 Security of human genetic resources and biomass resources</p> <p>7.1 遗传物质与生物质资源概念 Concepts of genetic material and biomass resources</p> <p>7.2 潜在的威胁因素 Potential threat factors</p> <p>7.3 如何建立有效的保护体制 How to establish an effective protection regime</p>	2
8	<p>动植物检疫与生物入侵 Animal and plant quarantine and biological invasion</p> <p>8.1 动植物检疫法律法规 The national legal regulation of animal and plant quarantine</p> <p>8.2 入侵生物定义和监测 The definition and surveillance of invasive bio-organisms</p> <p>8.3 国内外动植物检疫现状 The current status of animals and plants quarantine at home and abroad</p>	2
9	<p>食品安全 Food safety</p> <p>9.1 食品安全定义和相关法规 Definitions of food safety and legal regulations</p> <p>9.2 食物源病原生物的种类和危害 The types and harms of foodborne pathogens</p> <p>9.3 国内外食品安全现状及监督体系 The current situation and surveillance system of food safety at home and abroad</p>	2
10	<p>微生物耐药性 Microbial resistance</p> <p>10.1 微生物耐药性的概念和危害 The concepts and risks of microbial resistance</p> <p>10.2 微生物耐药性的应对 The response strategy to microbial resistance</p> <p>10.3 微生物耐药性的研究方向 The future respective of microbial resistance</p>	2
11	<p>生物恐怖与生物武器 Bio-terrorism and biological weapons</p> <p>11.1 生物恐怖与生物武器的定义 Definition of bio-terrorism and biological weapons</p>	2

	11.2 生物武器的类型和危害 The types and harms of biological weapons 11.3 国内外对生物武器研发的态度 The attitudes towards the development of biological weapons at home and abroad	
12	新兴生物技术与生物安全 Emerging biotechnology and biosafety 12.1 生物技术的发展 The development of emerging biotechnology 12.2 新兴生物技术的生物安全隐患 The potential biological safety concern of emerging biotechnology 12.3 国内外对新兴生物技术的态度 The attitudes towards emerging biotechnology at home and abroad	2
13	生物安全产业与战略 Biosafety Industry and future stratagem 13.1 国外生物安全产业介绍 Introduction of foreign biosafety industry 13.2 我国面临的生物安全安全威胁 The potential biosafety threats in China 13.3 生物安全问题的对策 The strategy for biosafety issues	2
14	生物安全专题研讨-1 生物技术的发展与生物安全 Biosafety Seminar-1 Biotechnology development and biosafety threats	2
15	生物安全专题研讨-2 食品安全与公共卫生 Biosafety Seminar -2 Food safety and public health	2
16	生物安全专题研讨-3 实验室生物安全 Biosafety seminar-3 Laboratory biosafety	2

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

1. 汤宏斌主编. 生物安全概论【M】. 武汉: 湖北科学技术出版社, 2017
2. 郑涛主编. 生物安全学【M】. 北京: 科学出版社有限责任公司, 2017
3. 秦川主编. 现代生活与生物安全【M】. 北京: 科学普及出版社, 2008
4. Biosafety in Microbiological and Biomedical laboratories, 5<sup>th</sup> edition, 2020, Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH).
5. William H. Yong et al., Biobanking methods and Protocols, 2019 Humana press, Spring Nature, New York.
6. Fleming, Diane O., Hunt, Debra L., 4<sup>th</sup> edition 2006, Biological Safety, Principles and Practices. ASM press, Washington DC.

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		30		
课堂表现 Class Performance		30		
小测验				

Quiz				
课程项目 Projects				
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation		40		
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

