

课程大纲 COURSE SYLLABUS

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| 1. | 课程代码/名称 Course Code/Title | 公共卫生安全 Public Health Security |
| 2. | 课程性质 Compulsory/Elective | 必修课 Compulsory |
| 3. | 开课单位 Offering Dept. | 医学院 School of Medicine |
| 4. | 课程学分/学时 Course Credit/Hours | 3/48 |
| 5. | 授课语言 Teaching Language | 中英双语 English & Chinese |
| 6. | 授课教师 Instructor(s) | 王海东, 公共卫生及应急管理学院 Haidong Wang, School of Public Health and Emergency Management |
| 7. | 开课学期 Semester | 秋季 Autumn |
| 8. | 是否面向本科生开放 Open to undergraduates or not | 否 |
| 9. | 先修要求 Pre-requisites | (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.) |
| 10. | 教学目标 Course Objectives | <p>(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>本课程拟面向生物学以及临近专业的研究生, 围绕公共卫生体系中的生物安全问题, 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分类研究, 以及科研活动中的生物安全保障措施等, 使学生在理解生物安全基本理论基础之上, 能够正确认识新兴生物技术在不同领域的应用以及可能造成的安全隐患, 养成良好的生物安全意识, 为科研工作的顺利开展奠定基础。</p> <p>预计达到教学目标如下:</p> <ol style="list-style-type: none"> 1) 了解生物安全基本理念以及我国生物安全相关法律法规; 2) 明确公共卫生体系中生物安全隐患的来源和对策; 3) 培养良好的生物安全意识为科研工作奠定基础。 <p>This course is designed for postgraduates, with a special focus on biosafety issues among the research and development in the public health system. The students will be introduced to the basic concepts of biosafety, the research of invasive and pathogenic microorganism with different level, as well as the biosecurity measures in scientific research activities. Throughout the course, the student will get into the basic theory of biosafety, recognize the potential issue during the research and development of emerging biotechnology, which lay a solid ground for future research career.</p> <p>The main objectives of the course:</p> <ol style="list-style-type: none"> 1) Get to know the basic concept of modern biosafety and related legal regulations; 2) Recognize the potential biosafety issues in the public health system development; 3) Cultivate a good biosafety consciousness in future research activities. |
| 11. | 教学方法 Teaching Methods | |

(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.)

课程内容分为讲授和专题研讨模块;

1. 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) 重大突发传染病的安全防控, 4) 病原微生物分类以及实验室生物安全, 5) 人类遗传资源与生物资源安全, 6) 生物恐怖与防范措施等;

2. 专题研讨: 国际重大生物安全事件案例分析

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

1. The lecturing part will cover topics from: 1). The basic concepts of modern biosafety, 2). The risk assessment of biological factors, 3) The prevention of the emerging infectious diseases, 4). The classification of pathogenic bio-organisms and the research in biosafety laboratories, 5). The safety and conservations of human genetic resources, 6). The bioterrorism and precautionary measures.

2. The seminar will focus on the analysis of major biosafety issues and events around the globe.

12. 教学内容

Course Contents

(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.)

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| Section 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 development of the biosafety 1.3 国内外生物安全现状 The current status of the biosafety both domestic and abroad |
| Section 2 生物因子及风险评估 Biological factors and risk assessment | 2.1 风险评估的概念及策略 The risk assessment and its strategy 2.2 病原微生物风险评估 The risk assessment of pathogenic microorganism 2.3 实验室生物安全评估 The biosafety assessment of labs |
| Section 3 重大传染疾病的防控 The prevention of emerging 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 |
| Section 4 病原微生物的分类分级 The classification and of different level of pathogenic microbes | 4.1 病原微生物的分类和危害 The classification of pathogenic microbes 4.2 病原微生物的传播模式 The transmission of pathogenic microbes 4.3 病原微生物的分级研究 The levels of pathogenic microbes |
| Section 5 病毒专题-1 呼吸道病毒研究 Virus issue-1 Respiratory viruses | 5.1 呼吸道病毒种类 The types of respiratory viruses 5.2 呼吸道病毒引起的相关疾病 The viral induced respiratory related diseases 5.3 呼吸道病毒相关研究 The research of respiratory viral diseases |
| Section 6 病毒专题-2 人畜共患疾病 Virus issue-2 Zoonotic diseases | 6.1 人畜共患疾病种类 The types of zoonotic diseases 6.2 人畜共患疾病的研究进展 The research of zoonotic diseases 6.3 人畜共患疾病的检测和预防 The surveillance and prevention of zoonotic diseases |
| Section 7 病原细菌专题-1 Pathogenic bacterial issue - 1 | 7.1 细菌性高致病原微生物的分类 The types of high pathogenic bacterial microbes 7.2 细菌性高致病原微生物的防护 The prevention of high pathogenic bacterial microbes 7.3 细菌性高致病原微生物的研究 The research of high pathogenic bacterial microbe |

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| Section 8 病原细菌专题-2 呼吸道以及肠道病原菌 Pathogenic bacteria issue – 2 Respiratory and intestinal bacteria | 8.1 呼吸道病原菌种类及疾病 The types of respiratory pathogenic bacterial microbes and related diseases 8.2 肠道病原菌种类及疾病 The types of intestinal pathogenic bacterial microbes and related diseases 8.3 微生物耐药性 The antimicrobial resistance |
| Section 9 生物安全实验室 Biosafety laboratory | 9.1 生物安全实验室的发展历程 The development of the biosafety labs 9.2 国外高等生物实验室的体系和现状 The current status of the biosafety system abroad 9.3 我国高等生物安全实验室的发展 The current status of the domestic biosafety labs |
| Section 10 高等级生物安全实验室操作规范 The practice specification of the high-level biosafety labs | 10.1 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 labs 10.2 高等级生物安全实验室的人员培训 The personal training of high-level biosafety labs 10.3 高等级生物安全实验室的材料处理 The waste management of high-level biosafety labs |
| Section 11 实验室生物安全专题 Special issue on laboratory biosafety | 11.1 高校实验室生物安全隐患 The potential risk of biosafety issues in campus 11.2 高校实验室生物安全应急预案 The emergency response to biosafety issues in campus |
| Section 12 人类遗传资源与生物资源安全 The human genetics and biological resources safety | 12.1 什么是人类遗传资源与生物资源? What are human genetic and biological resources? 12.2 人类遗传资源与生物资源研究和应用 The research and application on human genetic and biological resources 12.3 如何保障人类遗传资源与生物资源 The conservation of human genetic and biological resources |
| Section 13 人类生物遗传资源专题 Special issue on human biological genetic resources | 13.1 案例分析人类遗传物质资源面临哪些安全风险? Case study on the potential safety issues of human genetic resources 13.2 未来如何安全有效利用人类遗传物质资源? How to utilize human biological genetic resources in a safer way? |
| Section 14 生物恐怖与防范 Bioterrorism and prevention | 14.1 什么是生物恐怖生物武器 What is bioterrorism and bio-weapons? 14.2 生物恐怖主义的形式和防范措施 The form of bioterrorism and prevention 14.3 如何构建生物安全体系应对生物恐怖 How to establish national biosecurity system against bioterrorism threat |
| Section 15 生物恐怖与生物武器专题 Special issue on bioterrorism and bioweapons | 15.1 案例分析生物恐怖袭击 Case study on bioterrorism attacks 15.2 未来如何有效防范生物恐怖主义? How to prevent future bioterrorism? |
| Section 16 生物安全能力建设 The establish of biosecurity capabilities | 16.1 我们为什么需要建设生物安全能力? Why do we need to improve biosecurity capabilities? 16.2 世界各国生物安全能力评估 The assessment of biosecurity capabilities around the globe 16.3 生物安全能力建设的主要方向 The future perspective of biosecurity |
| Section 17 生物安全建设专题 Special issue on biosecurity system development | 17.1 生物安全建设是提高国门安全的必要途径 The development of biosecurity is a necessary path for the improvement of national security 17.2 生物安全能力主要体现在什么方面? What are the main aspects of biosecurity? |
| Section 18 生物安全产业与战略 Biosafety industry and stratagem | 18.1 什么是生物安全产业? What is biosafety industry? 18.2 生物安全产业发展的趋势 The trend of biosafety industry development 18.3 我国的生物安全产业战略 The national biosecurity stratagem |

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| | Seminar-1 专题研讨-1 后疫情时代生物安全 Biosafety in Post Pandemics | 1.新冠疫情对生物安全体系的冲击 The impact of Covid19 Pandemics on biosafety system 2.后疫情时代生物安全体系建设 The biosafety system development in post pandemic |
| | Seminar-2 专题研讨-2 公共卫生安全与同一健康 Public Health and One Health | 1. 什么是同一健康? What is One Health? 2. 同一健康理念下的公共卫生安全 Public Health security under the One Health |
| 13. 课程考核 Course Assessment | | |
| (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.) 1) 考核形式: 考试 2) 计分方式: 十三等级 3) 分数构成: 20%课堂参与+50%作业+30%期末考试 | | |
| 14. 教材及其它参考资料 Textbook and Supplementary Readings | | |
| 1.中华人民共和国生物安全法. 北京: 法律出版社, 2020 2.王广宏, 朱妹等 中国生物安全战略与对策. 北京: 中信出版社, 2022 3.汤宏斌主编.生物安全概论. 武汉: 湖北科学技术出版社, 2017 4.郑涛主编.生物安全学. 北京: 科学出版社有限责任公司, 2017 5.秦川主编.现代生活与生物安全. 北京: 科学普及出版社, 2008 6. Biosafety in Microbiological and Biomedical laboratories , 5th edition, 2020, Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH). 7. William H. Yong et al., Biobanking methods and Protocols , 2019 Humana press, Spring Nature, New York. 8. Fleming, Diane O., Hunt, Debra L., 4th edition 2006, Biological Safety , Principles and Practices. ASM press, Washington DC. | | |