

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	环境与人群健康研究方法与发展 Environment and Population Health: Research Methods and Advances
2.	课程性质 Compulsory/Elective	专业选修课 Elective
3.	开课单位 Offering Dept.	医学院 School of Medicine
4.	课程学分/学时 Course Credit/Hours	2/32
5.	授课语言 Teaching Language	中文 Chinese
6.	授课教师 Instructor(s)	梁凤超 Liang Fengchao
7.	开课学期 Semester	春季/秋季 Spring/Autumn
8.	是否面向本科生开放 Open to undergraduates or not	否 No
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.) 否 No
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>“环境与人群健康研究方法与发展”将环境暴露知识与人群健康效应有机整合起来, 结合实例分析与讨论, 建设前沿课程, 使学生掌握环境暴露与人群健康相关理论、研究方法和最新进展。通过学习使学生了解自然环境和生活居住环境与人群健康之间的关系, 掌握各种环境因素的人群健康效应研究和分析方法, 了解交叉学科技术在环境健康学研究中的应用, 充分认识到如何利用有利环境因素和控制不利环境因素预防疾病、促进人群健康。该课程不仅对提高学生环保和健康意识具有重要意义, 同时帮助学生梳理预防为主观念, 在医疗健康工作和日常生活中敏锐察觉与环境因素有关的健康问题。</p> <p>“Environment and Population Health: Research Methods and Advances” integrates the knowledge of environmental exposure and population health effects with case studies and discussions to build a cutting-edge course that enables students to grasp the theories, research methods and latest advances related to environmental exposure and population health. Students will understand the relationship between natural and living environment and population health, master the research and analysis methods of population health effects of various environmental factors, understand the application of cross-disciplinary techniques in environmental health research, and fully understand how to use positive environmental factors and control negative environmental factors to prevent diseases and promote population health. The course is not only important for raising students’ environmental awareness and health consciousness, but also helps students to sort out the concept of prevention and to be keenly aware of health problems related to environmental factors in medical and health work and daily life.</p>
11.	教学方法 Teaching Methods	<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>本课程拟运用理论与实际相结合的方式向学生讲授环境流行病学研究设计及针对不同人群的全生命周期健康。结合平时作业、课堂提问, 学生实际演练, 圆满完成授课任务。</p>

This course aims to introduce learners to the environmental epidemiological research design and life-cycle health for different populations. By integrating theory with practice. It is expected to successfully complete the teaching task by assigning homework, classroom questions, and practical exercises.

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.)

课程内容分为讲授和专题讨论两个部分。

讲授内容主要包括环境与人群健康研究设计及针对不同人群的全生命周期健康。教师将通过讲解研究设计的定义、特点、用途、优缺点、实施步骤以及国内外经典或著名的研究实例分析, 配合多媒体教学的方式, 将学科前沿发展与研究进行讲解。讨论部分, 学生以小组讨论形式提出并展示自己感兴趣的研究问题和研究计划, 实施步骤等。

The course content is divided into lectures and thematic discussions.

The lectures mainly include environmental epidemiological research design and life-cycle health for different populations.

Teachers will explain the cutting-edge development and research of the discipline by explaining the definition, characteristics, uses, advantages and disadvantages, implementation steps, and analysis of classic or famous research cases at home and abroad, combined with multimedia teaching. In the discussion part, students present and present their research questions and research plans, implementation steps, etc. in the form of group discussions.

Section 1

环境与人群健康概论与发展

- 1.1 环境与人群健康概论
- 1.2 环境与人群健康研究基本思路
- 1.3 环境与人群健康研究发展与挑战

Introduction and Development of Environment and Population Health

- 1.1 Introduction to Environment and Population Health
- 1.2 Basic Thoughts on Environmental and Population Health Research
- 1.3 Environmental and Population Health Research Developments and Challenges

Section 2

环境暴露评价

- 2.1 环境暴露的概念
- 2.2 环境暴露评价方法学
- 2.3 环境暴露组及暴露组学

Environmental Exposure Evaluation

- 2.1 Concept of Environmental Exposure
- 2.2 Methodology of Environmental Exposure Evaluation
- 2.3 Environmental Exposure Groups and Exposure Omics Study

Section 3

人群健康结局的测量与评价

- 3.1 人群健康效应终点的收集与选择
- 3.2 暴露-反应关系评价
- 3.3 高危人群
- 3.4 人群健康结局的选择与偏倚

Measurement and Evaluation of Population Health Outcomes

- 3.1 Collection and Selection of Population Health Effect Endpoints
- 3.2 Exposure-Response Relationship Evaluation
- 3.3 High-Risk Populations
- 3.4 Selection and Bias of Population Health Outcomes

Section 4

环境与人群健康研究设计——生态学研究

- 4.1 生态学研究基本概念与原理
- 4.2 生态学研究的应用场景及特点
- 4.3 生态学研究实例分析

Study Design of Environment and Population Health - Ecology Study

- 4.1 Basic Concepts and Principles of Ecological Research

	4.2 Application Scenarios and Characteristics of Ecological Research 4.3 Case study of Ecological Research
Section 5	环境与人群健康研究设计——病例对照研究 5.1 病例对照研究基本概念与原理 5.2 病例对照研究的应用场景及特点 5.3 病例对照研究实例分析 Study Design of Environment and Population Health – Case-Control Study 5.1 Basic Concepts and Principles of Case-Control Studies 5.2 Application Setting and Characteristics of Case-Control Studies 5.3 Case Study of Case-Control Study
Section 6	环境与人群健康研究设计——队列研究 6.1 队列研究基本概念与原理 6.2 队列研究的应用场景及特点 6.3 队列研究实例分析 Study Design of Environment and Population Health - Cohort Study 6.1 Basic Concepts and Principles of Cohort Research 6.2 Application Setting and Characteristics of Cohort Studies 6.3 Case Study of Cohort Study
Section 7	环境与人群健康研究设计——定组研究 7.1 定组研究基本概念与原理 7.2 定组研究的应用场景及特点 7.3 定组研究实例分析 Study Design of Environment and Population Health - Panel Study 7.1 Basic Concepts and Principles of Panel Study 7.2 Application Setting and Characteristics of Panel Study 7.3 Case Study of Panel Study
Section 8	环境与人群健康研究设计——时空分析 8.1 时空分析基本概念与原理 8.2 时空分析的应用场景及特点 8.3 时空分析实例 Study Design of Environment and Population Health - Spatial and Temporal Analysis 8.1 Basic Concepts and Principles of Spatial and Temporal Analysis 8.2 Application Scenarios and Characteristics of Spatial and Temporal Analysis 8.3 Case Study of Spatial and Temporal Analysis
Section 9	全生命周期健康——孕期环境暴露与人群健康 9.1 孕期环境暴露特点与评价 9.2 孕期环境暴露的人群健康影响 9.3 孕期环境暴露与人群健康实例分析 Health Across the Lifespan – Maternal Environmental Exposure and Population Health 9.1 Maternal Environmental Exposure Characteristics and Evaluation 9.2 Population Health Effects of Maternal Environmental Exposure 9.3 Case Study of Maternal Environmental Exposure and Population Health
Section 10	全生命周期健康——儿童期环境暴露与人群健康 10.1 儿童期环境暴露特点与评价

	<p>10.2 儿童期环境暴露的人群健康影响</p> <p>10.3 儿童期环境暴露与人群健康实例分析</p> <p>Health Across the Lifespan - Childhood Environmental Exposure and Population Health</p> <p>10.1 Characteristics and Evaluation of Childhood Environmental Exposure</p> <p>10.2 Population Health Effects of Childhood Environmental Exposure</p> <p>10.3 Case Study of Childhood Environmental Exposure and Population Health</p>
Section 11	<p>全生命周期健康——成人职业环境暴露与人群健康</p> <p>11.1 成人职业环境暴露特点与评价</p> <p>11.2 成人职业环境暴露的人群健康影响</p> <p>11.3 成人职业环境暴露与人群健康实例分析</p> <p>Health Across the Lifespan - Occupational Environmental Exposure and Population Health</p> <p>11.1 Characteristics and Evaluation of Occupational Environmental Exposure</p> <p>11.2 Population Health Effects of Occupational Environmental Exposure</p> <p>11.3 Case Study of Occupational Environmental Exposure and Population Health</p>
Section 12	<p>全生命周期健康——老年期环境暴露与人群健康</p> <p>12.1 老年期环境暴露特点与评价</p> <p>12.2 老年期环境暴露的人群健康影响</p> <p>12.3 老年期环境暴露与人群健康实例分析</p> <p>Health Across the Lifespan - Elderly Environmental Exposure and Population Health</p> <p>12.1 Elderly Environmental Exposure Characteristics and Evaluation</p> <p>12.2 Population Health Effects of Elderly Environmental Exposure</p> <p>12.3 Case Study of Elderly Environmental Exposure and Population Health</p>
Section 13	<p>组学技术在环境与人群健康研究中的应用</p> <p>13.1 组学技术的基本概念、分类与研究进展</p> <p>13.2 组学技术在环境与人群健康研究中的应用</p> <p>13.3 实例分析</p> <p>Application of Omics techniques in the Study of Environmental Health</p> <p>13.1 Basic Concepts, Classification and Research Progress of Omics techniques</p> <p>13.2 Application of Omics Techniques in Environmental and Population Health Research</p> <p>13.3 Case Studies</p>
Section 14	<p>卫星遥感技术在环境与人群健康研究中的应用</p> <p>14.1 卫星遥感技术的基本概念与研究进展</p> <p>14.2 卫星遥感技术在环境与人群健康研究中的应用</p> <p>14.3 实例分析</p> <p>Application of Satellite Remote Sensing Technology in the Study of Environmental Health</p> <p>14.1 Basic Concepts and Research Progress of Satellite Remote Sensing Technology</p> <p>14.2 Application of Satellite Remote Sensing Technology in Environmental and Population Health Research</p> <p>14.3 Case Studies</p>
Section 15	<p>R 和 ArcGIS 软件在环境与人群健康研究中的应用</p>

	<p>15.1 R 和 ArcGIS 软件基本应用介绍</p> <p>15.2 R 和 ArcGIS 软件在环境与人群健康研究中的应用</p> <p>15.3 实例分析</p> <p>Application of R and ArcGIS Software in the Study of Environmental Health</p> <p>15.1 Introduction to the basic applications of R and ArcGIS software</p> <p>15.2 Application of R and ArcGIS Software in Environmental and Population Health Research</p> <p>15.3 Case Studies</p>
<p>Section 16</p>	<p>环境与人群健康研究挑战与机遇（小组讨论与答辩）</p> <p>16.1 小组讨论</p> <p>16.2 交流与问答</p> <p>Challenges and Opportunities in the Research Field of Environmental Health (Group Discussion and Presentation)</p> <p>16.1 Group Discussion</p> <p>16.2 Communication and Q&A</p>
<p>13. 课程考核 Course Assessment</p>	
<p>（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.）</p> <p>本课程考核方式为考查，期末考核满分 100 分。主要从出勤（Attendance）：20%；课堂表现（Class Performance）：30%；平时作业（Assignments）：20%；期末报告（Final Presentation and report）：30%。</p>	
<p>14. 教材及其它参考资料 Textbook and Supplementary Readings</p>	
<p>Nadakavukaren, A. (2010). 我们的全球环境：健康视角（第 7 版）.展望高地：Waveland 出版社；</p> <p>Yassi, A., Kjellstrom, T., de Kok, T., Guidotti, T. L. (2001). 环境健康基础. 纽约：牛津大学出版社；</p> <p>Dade W.Moeller. (2011). 环境健康：第四版. 哈佛大学出版社；</p> <p>Jerome O. Nriagu. (2019). 环境健康百科全书.爱思唯尔；</p> <p>Ray M. Merrill (2008) 环境流行病学。原理和方法：原理与方法。Jones & Bartlett Learning; 第 1 版</p> <p>杨克敌, 鲁文清. (2019). 现代环境卫生学. 人民卫生出版社。</p> <p>Selected chapters from the following textbooks will be used as appropriate:</p> <p>Nadakavukaren, A. (2010). Our global environment: A health perspective (7th ed.). Prospect Heights: Waveland Press, Inc.</p> <p>Yassi, A., Kjellstrom, T., de Kok, T., Guidotti, T. L. (2001). Basic environmental health. New York: Oxford University Press.</p> <p>Dade W.Moeller. (2011). Environmental Health:Fourth Edition. Harvard University Press.</p> <p>Jerome O. Nriagu. (2019). Encyclopedia of Environmental Health. Elsevier.</p> <p>Ray M. Merrill (2008) Environmental Epidemiology: Principles and Methods: Principles and Methods. Jones & Bartlett Learning; 1st edition</p> <p>Yang, KD, Lu WQ. (2019). Modern environmental Health. People's Medical Publishing House. (Chinese)</p>	