



# PUBHEHS 6390– Major Human Diseases in Global Public Health

**Instructor:** Qinghua Sun

**Office location and phone number:** Cunz Hall room 424; Tel: 614-247-1560

**E-mail:** sun.224@osu.eduvia Carmen/Canvas

**Instructor’s Office Hours:** Office hours are available to meet in person. If students have general questions or comments regarding the course, please communicate directly via Carmen or email to the instructor. In addition, digital office hours may also be available based on the feedback or need from the students.

**Prerequisites**: No

**Course Delivery**: This course is a 100% online distance learning (DL) course from the Division of Environmental Health Sciences in the College of Public Health. The course is hosted on OSU’s Carmen (Canvas™) learning course management system (https://carmen.osu.edu/). There are 14 weekly and asynchronously delivered course sessions consisting of topic-specific modules for a total of 160 minutes equivalent instruction time per session (~80 minutes per module). In addition to the equivalent instruction time per module, there are also corresponding supplemental readings and other materials for review and self-study. Much of the content for the course will include applied short case scenarios/papers from high impact journals for students to complete and self-assessment.

In addition, a few representative journal clubs/paper discussions may be held in classroom (with an option for online participation) to foster intensive debate and discussion, and a survey will be collected at the course beginning to facilitate selection of optimal meeting date and time.

**Expectations of Students**: This is a completely asynchronous online course (i.e., there are no times at which we all gather in person or virtually). The asynchronous design allows for more flexibility, but it also puts more responsibility on you to effectively manage your time and learning. You should expect to login multiple times per week to the site on Carmen, although most of the work could be done “off-line”. It is recommended to download the teaching materials, including the tests (once you are done with it), so that you will be able to review them later on (you may not have access to the tests after the due time is passed). These expectations are further discussed in this syllabus.

**Course Description**

Medicine is believed to primarily help diagnose, treat and cure individual patients after they have become ill or injured or to help manage already-existing chronic conditions. Public health, however, is focused on preventing illnesses and injuries or intervening to decrease the impact to populations of people. A clinician usually lacks public health-related knowledge while a public health professional usually lacks sufficient understanding of disease pathogenesis and evaluation. This course will integrate medical and public health contents and concepts relative to major human diseases and its public health impact from a global perspective. The course will emphasize basic physiology, pathophysiology and clinical evaluation of major human diseases that have significant global impact epidemiologically, politically, and economically with the focuses on disease causes and prevention. All the diseases discussed either have a history of global pandemic, or are having the potential to become globally pandemic. It is especially helpful to the students for their research and work in human diseases and its model design with an emphasis on addressing problems that are global or pandemic.

**Learning Objectives**

Upon completion of this course, students will be better prepared to:

1. Recognize the current major human diseases with global public health impact.
2. Outline the mechanisms of human disease initiation and manifestation.
3. Summarize the basic principles and concepts about disease etiology, epidemiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention and control.
4. Summarize population-based data on the most common health problems faced by people living in poverty or under specific scenarios.
5. Discuss and debate major factors on human disease initiation, development, and early detection.
6. Summarize possible actions and further research about major human diseases and public health policy impact.

**Applicable Foundational Knowledge**

1. Explain public health history, philosophy and values

2. Identify the core functions of public health and the 10 Essential Services

3. Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population’s health

4. List major causes and trends of morbidity and mortality in the US or other community relevant to the school or program

5. Discuss the science of primary, secondary and tertiary prevention in population health, including health promotion, screening, etc.

6. Explain the critical importance of evidence in advancing public health knowledge

7. Explain effects of environmental factors on a population’s health

8. Explain biological and genetic factors that affect a population’s health

9. Explain behavioral and psychological factors that affect a population’s health

10. Explain the social, political and economic determinants of health and how they contribute to population health and health inequities

11. Explain how globalization affects global burdens of disease

12. Explain an ecological perspective on the connections among human health, animal health and ecosystem health (eg, One Health)

**Applicable MPH Degree Core Competencies**

***Evidence-based Approaches to Public Health:***

1. Apply epidemiological methods to the breadth of settings and situations in public health practice

2. Select quantitative and qualitative data collection methods appropriate for a given public health context

4. Interpret results of data analysis for public health research, policy or practice

***Public Health & Health Care Systems:***

6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels

**MPH-EHS Specialization Competencies**

1. Explain the significance of the community and workplace environment to public health;

2. Outline the health challenges that natural and anthropogenic contaminants in the environment can pose to population health;

3. Explain the physiological factors that influence human exposure and the uptake of chemical and biological environmental agents;

4. Identify and explain individual (e.g., genetic, physiologic and psychosocial) and community (e.g., social, built, economic, race) susceptibility factors that heighten the risk for populations for adverse health outcomes from environmental hazards;

5. Apply various risk assessment, risk management and risk communication approaches for environmental hazards;

6. Explain exposure and the underlying mechanisms of toxicity and infectivity resulting from chemical, biological and physical agents;

9. Compare the principle components and influencing factors in the exposure continuum from source to disease; and,

10. Determine the role of exposure assessment in environmental and occupational health.

**MS-EHS Specialization Competencies**

2. Synthesize literature in student’s area of specialization relative to their thesis topic and its importance for public health.

3. Summarize relevant theories and conceptual models that inform their research.

6. Communicate in writing and orally a research project’s methods, results, limitations, conclusions and public health relevance.

7. Explain individual and community susceptibility and vulnerability factors that heighten the risk for populations for adverse health outcomes from environmental hazards.

8. Apply the environmental health paradigm (i.e., EHS Model) to characterizing hazardous physical, chemical and biological agents relative to sources, categories, exposure matrices/pathways, distribution, human exposures, responses, societal/regulatory actions, and technological controls.

**PhD-EHS Specialization Competencies**

2. Synthesize and critique existing literature in student’s area of specialization to identify gaps in the evidence base and justify their importance for public health.

3. Apply relevant theories and conceptual models to inform and ground research design and interpretation.

4. Formulate hypotheses, plan and conduct a research study using appropriate research methods, and ethical approaches.

6. Communicate in writing and orally a research study’s purpose, methods, results, limitations, conclusions and public health relevance to both informed and lay audiences.

7. Quantify individual and community susceptibility and vulnerability factors that heighten the risk for populations for adverse health outcomes from environmental hazards.

8. Apply the environmental health paradigm (i.e., EHS Model) to characterizing hazardous physical, chemical and biological agents relative to sources, categories, exposure matrices/pathways, distribution, human exposures, responses, societal/regulatory actions, and technological controls.

9. Work with various stakeholders and other professions to proactively and reactively address environmental and occupational regulatory, policy and human health issues and concerns.

A complete list of College of Public Health Competencies are located in Appendix C of the CPH Graduate Student Handbook that can be found at https://cph.osu.edu/students/graduate/handbooks/

**Reading References:** This course does not require a specific textbook. Assigned supplemental readings, such as journal articles, digital video clips, and applicable website contents/links, are required in most of the modules. The following is regarded as reference (not required to read before the lecture delivery unless specified otherwise) to facilitate the understanding of the lecture notes and will be available (loaded) in Carmen.

Harrison's Principles of Internal Medicine. New York: McGraw-Hill Medical, 2018. OSU library CALL # RC46 .H333 2018

**Course Activities and Assignments**

1. Lecture self-checks

For each topic taught in this course, you will be required to view a pre-recorded lecture, slides, or representative scientific papers. To assess your level of understanding of the lecture topics and contents, you will then be required to complete periodic self-checks. Self-checks may contain true/false, multiple choice, short answer, or other question forms.

2. Question/discussion participation

This class will utilize discussion boards to foster critical thinking skills. You must respond to the prompt questions posted by the instructor in the discussion board. Expectations and posting requirements can be found in the table in the Graduate/Professional Grading Structure section. A guide for creating quality discussion posts can be found in Carmen (Canvas). The week’s discussion board(s) will open on Tuesdays around 10am. You are encouraged to post early in the week, but it is understood that this may not always be possible. In addition to posting each week, you are required to respond substantively to one or more of your classmates’ posts. You are required to post your original reply first before seeing the posts of others. Everyone is expected to follow the discussion throughout the week. It is expected that your level of participation may vary from week to week. Weekly discussion boards will wrap up on Mondays.

3. Midterm test

To practice how to write a hypothesis-based research proposal, and facilitate case report/research proposal in the final exam, a brief research proposal focusing primarily on innovative ideal/hypothesis will be required, and feedback/critiques will be provided from the instructor. Detailed requirements will be provided in Carmen.

4. Final exam

It includes both case report/research proposal and multiple choice test, which will be available during the university assigned final examination time (extended time).

1. Case report/research proposal: The goal is to promote innovative thinking and encourage high impact research in global public health by practicing “real world” research proposal drafting and discussion. It is required to write a case report (research proposal) by choosing one major human disease in the US that has significant global public health impact and propose a possible future study design in human or in animal model with key components (title, background/introduction, hypothesis, design/methods, expected results, alternative approaches, novelty, public health significance, and references) in minimum 4 pages (single space, font 12; in addition to the references) in Word. The rubric for evaluating case studies will also be provided. Detailed instructions about it can be found in Carmen (Canvas).
2. Multiple choice test: At the end of the course, you will be taking a multiple choice test. Detailed instructions on when the test will be available, how long you have to take the test and when the test is due (and the window will close) can be found in Carmen (Canvas).

Our quizzes and exams are open-book and open-notes. You may use any written materials, such as textbooks, printed handouts, homework assignments, or programs. Make-up exams will not be given except in case of a serious emergency for an extended time period since it has already provided some flexibility to the students. If so, you must contact the instructor before the event (or arrange for someone to do so) or as soon as possible. You must show evidence that you are physically unable to participate it, such as a clear and specific doctor's note mentioning the date, exam, and reason. Generally speaking, no make-ups will be granted for personal reasons such as travel, personal hardship, leisure, or to ease test week schedules, and no student will be permitted to take an exam beyond the scheduled and already-extended time period. The exceptions may be made at the instructor’s discretion.

Other additional assignments may also be announced.

**Grading Policy**

In order to receive credit for the course, participants are encouraged to complete as much as possible of the course activities with satisfactory responses. The overall grading is designed with the consideration that some students may occasionally miss some course activities. Therefore, a total of 105 points is designed for maximal earning towards final grading to avoid penalizing occasionally missed course activities. Quality work is expected from all students. Assignments/activities are to be completed and turned in by the due dates as posted in Carmen (Canvas). All assignment/activity due dates are also visible in the Syllabus section of your Carmen (Canvas) course. Some activities (such as self-checks) will be auto-graded and some activities (such as discussion participation) may be graded along with the finals.

Course activities are comprised of the following activities listed below and will be graded as follows:

|  |  |  |
| --- | --- | --- |
| Activity | Points counted in overall | Note |
| Academic integrity | 1 | Must do |
| Lecture self-checks  | 26 |  |
| Question/discussion participationMidterm | 2810 |  |
| Final-case report/research proposal | 20 |  |
| Final-multiple choice test | 20 |  |
| Total | 105 |  |

Grade scale

|  |  |  |
| --- | --- | --- |
| LETTER | POINTS | DESCRIPTION |
| A | >93 | Outstanding performance; consistent exceptional depth of understanding and/or creative application of concepts.  |
| A- | 92.9 – 90 | Very strong performance with demonstrated depth of understanding and/or ability to apply course concepts  |
| B+ | 89.9 – 87  | Performance at an expected level; work is complete and shows solid understanding and application of course concepts  |
| B | 86.9 – 83 | Adequate performance; work is complete but shows some limitations in grasp or ability to apply course concepts  |
| B- | 82.9 – 80  | Marginally acceptable; work is conducted only to meet minimum course requirements  |
| C+ | 79.9 – 77 | Grades below B- indicate significant problems in understanding or applying course concepts and/or failure to meet stated course requirements.  |
| C | 76.9 – 73 |  |
| C- | 72.9 – 70 |  |
| D+ | 69.9 – 67 |  |
| D | 66.9 – 60 |  |
| E | <60 |  |

**Attendance:** Your attendance is required and is based, at least in part, on your online activity and participation using Carmen. Student access to posted course modules and contents will be tracked to ensure there is ongoing access, activity, and productivity.

**Time Management**: University rules stipulate that a student can expect to spend a minimum of 3 hours per week on a course for each credit hour, thus for this 3 credit hour course you should expect to devote roughly 9 hours per week. Workload will vary from week to week, with some weeks having more assignments and others having more active learning time. This is intended as a rough guide to help you plan your time accordingly. In a typical week, you can expect your time to be spent as follows:

* 1 hour – viewing lectures
* 1 hour - completing online knowledge self-checks
* 4 hour - completing assigned reading and homework assignments, viewing movies assigned to this course. This also includes preparing for Case Report and Final Exam
* 3 hours - reviewing materials and interacting on discussion boards

**Carmen**

The lecture notes, additional reading materials, test materials and other notices will be available in Carmen site for the course. You will also use Carmen for other class activities, such as to participate question posting and discussion, quizzes, exams, and submitting case reports. Should you require additional services to use these technologies, please request accommodations with the instructor. HELP DESK call 614-688-HELP at any time if you have a technical problem involving Carmen. Support is available at this number 24/7.

**Office of Student Life: Disability Services**

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Student Life: Disability Services at 614-292-3307 in Room 098 Baker Hall 113 W. 12th Ave. to coordinate reasonable accommodations for students with documented disabilities (<https://slds.osu.edu/>).

**Mental Health Services**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life’s Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](https://ccs.osu.edu/) or calling 614-- 292--5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614--292--5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-- 800--273--TALK or at suicidepreventionlifeline.org.

**Academic integrity**

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University, the College of Public Health, and the Committee on Academic Misconduct (COAM) expect that all students have read and understood the University’s Code of Student Conduct and the School’s Student Handbook, and that all students will complete all academic and scholarly assignments with fairness and honesty. The Code of Student Conduct and other information on academic integrity and academic misconduct can be found at the COAM web pages (<https://oaa.osu.edu/academic-integrity-and-misconduct>). Students must recognize that failure to follow the rules and guidelines established in the University’s Code of Student Conduct, the Student Handbook, and in the syllabi for their courses may constitute “Academic Misconduct.”

The Ohio State University’s Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University orr subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Please note that the use of material from the Internet without appropriate acknowledgement and complete citation is plagiarism just as it would be if the source were printed material. Further examples are found in the Student Handbook. Ignorance of the Code of Student Conduct and the Student Handbook is never considered an “excuse” for academic misconduct.

If I suspect a student of academic misconduct in a course, I am obligated by University Rules to report these suspicions to the University’s Committee on Academic Misconduct. If COAM determines that the student has violated the University’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact the instructor.

**Course Schedule**

Week 1

1. Introduction to Global Issues and Global Health in Medicine: This lecture will introduce some fundamental relationship between global issues, global health and medicine.

References:

1. David Hemenway. Why We Don’t Spend Enough on Public Health. N Engl J Med.2010; 362;18:1657-1658

2. Harrison's Principles of Internal Medicine. Part 17: Global Medicine

1. Basics in Human Health/Diseases: This lecture will introduce some basic definitions and knowledge in human health and disease.

References:

1. Harrison's Principles of Internal Medicine. Part 2: Cardinal Manifestations and Presentation of Diseases

Week 2

1. Environmental Exposures and Diseases: This lecture will summarize new concept of environmental medicine, a multidisciplinary field involving medicine, environmental science, chemistry and others.

References:

1. Harrison's Principles of Internal Medicine. Part 15: Disorders Associated with Environmental Exposures

2. Hurst's The Heart, 13e. Chapter: Environment and Heart Disease

1. Occupational and Environmental Lung Disease: This lecture will highlight major inhalational/occupational exposures and respiratory disorders.

References:

1. C. Arden Pope III, et al. Fine-Particulate Air Pollution and Life Expectancy in the United States. N Engl J Med 2009;360:376-86;

2. Robert K. Bush & David B. Peden. Advances in environmental and occupational disorders in 2008. J Allergy Clin Immunol. 2009;123:575-8;

3. Harrison's Principles of Internal Medicine. Chapter 283: Occupational and Environmental Lung Disease

Week 3

1. Major Global Infectious Diseases - Common Respiratory Infections，STD and AIDS: This lecture will introduce basic considerations in infectious diseases, and summarize common respiratory infections and human immunodeficiency virus disease, such as common cold, influenza, pneumonia, STD and AIDS, and their broad impact internationally.

References:

1. R Rennie, B Crowson. The management of upper respiratory tract infections. J R Nav Med Serv. 2013;99: 97-105.

2. Harrison's Principles of Internal Medicine. Chapter 194, 195, and 197: Common Viral Respiratory Infections; Influenza; Human

Immunodeficiency Virus Disease: AIDS and Related Disorders

1. Major Global Infectious Diseases – Tuberculosis: This lecture will introduce tuberculosis with its etiology, epidemiology, pathology and immunity, clinical manifestations, diagnosis, treatment, prevention and control, and its global impact.

References:

1. Catherine Anne Curley. Rule out pulmonary tuberculosis: Clinical and radiographic clues for the internist. Cleve Clin J Med. 2015. 82: 32-38

2. Harrison's Principles of Internal Medicine. Chapter 173: Tuberculosis

Week 4

1. Major Global Infectious Diseases – Malaria: This lecture will summarize malaria with its etiology, pathogenesis, epidemiology, host response, clinical features, chronic complications, diagnosis, treatment, and prevention, and its global health and other impacts.

References:

1. Lesho E, et al. Fever in a returned traveler. Cleve Clin J Med. 2005.72:921-927

2. Harrison's Principles of Internal Medicine. Chapter 219: Malaria

 B. Major Global Diseases - Malnutrition and Diarrhea: This lecture will introduce basic consideration in nutrition and associated diseases in malnutrition. It will also summarize common types of diarrheas with its etiology, pathogenesis, epidemiology, clinical features, chronic complications, diagnosis, treatment, and prevention, and its global health and other impacts.

References:

1. Walker CL, et al. Global burden of childhood pneumonia and diarrhea. Lancet. 2013;381:1405-16

2. Harrison's Principles of Internal Medicine. Chapter 128: Acute Infectious Diarrheal Diseases and Bacterial Food Poisoning, and Chapter 327: Malnutrition and Nutritional Assessment

Week 5

1. Major Global Non-Infectious Diseases - Major Respiratory Diseases-1: This lecture will introduce basic biology of respiratory system, and focus on some major respiratory diseases, such as asthma and chronic obstructive pulmonary disease (COPD).

References:

1. Fung V, et al. Financial barriers to care among low-income children with asthma: health care reform implications. JAMA Pediatr. 2014;168:649-56.

2. Harrison's Principles of Internal Medicine. Chapter 281 and 286: Asthma and COPD

1. Major Global Non-Infectious Diseases - Major Respiratory Diseases-2: This lecture will focus on some major respiratory diseases, such as cystic fibrosis and sleep apnea.

Reference:

1. Harrison's Principles of Internal Medicine. Chapter 285 and 291: Cystic Fibrosis and Sleep Apnea

Week 6

1. Major Global Non-Infectious Diseases - Cardiovascular Diseases-1: This lecture will introduce basic biology of cardiovascular system, and focus on some major disorders.

References:

1. Estruch R, et al. Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90

2. Harrison's Principles of Internal Medicine. Chapter 232 and 233: Basic Biology of the Cardiovascular System and Epidemiology of Cardiovascular Disease

1. Major Global Non-Infectious Diseases - Cardiovascular Diseases-2: This lecture will focus on vascular diseases, such as atherosclerosis and hypertension.

References:

1. Harrison's Principles of Internal Medicine. Chapter 267: Ischemic Heart Disease and Chapter 271: Hypertensive Vascular Disease

Week 7

1. Major Global Non-Infectious Diseases - Cardiovascular Diseases-3: This lecture will focus on vascular disease in the brain, such as stroke.

References:

1. Chen R, et al. Both low and high temperature may increase the risk of stroke mortality. Neurology. 2013;81: 1064-70

2. Harrison's Principles of Internal Medicine. Chapter 419: Cerebrovascular Diseases, Chapter 420: Ischemic Stroke and Chapter 421: Intracranial Hemorrhage

1. Major Global Non-Infectious Diseases - Cardiovascular Diseases-4: This lecture will focus on cardiac diseases, such as heart failure and cardiomyopathy.

References:

1. Harrison's Principles of Internal Medicine. Chapter 252: Heart Failure: Pathophysiology and Diagnosis; Chapter 253: Heart Failure: Management; Chapter 254: Cardiomyopathy and Myocarditis

Week 8

1. Journal club and research proposal: This lecture will discuss a few representative original scientific papers from high impact journals as examples how research proposal can be developed, especially about hypothesis-based human and animal research.

Papers:

1. Aaron M. Cypess, et al. Identification and Importance of Brown Adipose Tissue in Adult Humans. N Engl J Med 2009;360:1509-17

2. Sun Q, et al. Long-term air pollution exposure and acceleration of atherosclerosis and vascular inflammation in an animal model. JAMA. 2005;294:3003-10

1. Midterm test: A brief case report/research proposal focusing on innovative ideal/hypothesis is required.

Week 9

1. Major Global Non-Infectious Diseases - Major Disorders in Endocrinology and Metabolism 1: This lecture will introduce principles of endocrinology and focus on thyroid disorders.

References:

1. Harrison's Principles of Internal Medicine. Chapter 369: Approach to the Patient with Endocrine Disorders; Chapter 376: Hypothyroidism; Chapter 377: Hyperthyroidism

1. Major Global Non-Infectious Diseases - Major Disorders in Endocrinology and Metabolism 2: This lecture will focus on diabetes mellitus and Metabolic Syndrome.

References:

1. The IDF worldwide definition of the metabolic syndrome. International Diabetes Federation, 2006

2. Alberti KG, et al. The metabolic syndrome--a new worldwide definition. Lancet. 2005;366:1059-62

3. Harrison's Principles of Internal Medicine. Section 3: Obesity, Diabetes Mellitus, and Metabolic Syndrome

Week 10

1. Major Global Non-Infectious Diseases - Major Neurologic Disorders 1: This lecture will introduce nervous system and its major disorders that we are facing globally, especially in developed countries, such as neurodegenerative disorders.

References:

1. Alzheimer's Disease. Nature. Vol. 475 No. 7355\_supp ppS1-S22 (6 papers)

2. Harrison's Principles of Internal Medicine. Chapter 417: Pathobiology of Neurologic Diseases and Chapter 423-426: Alzheimer’s Disease and Dementia

1. Major Global Non-Infectious Diseases - Major Neurologic Disorders 2: This lecture will focus on psychiatric and addiction disorders, such as alcoholism and drug dependency.

Reference:

1. Harrison's Principles of Internal Medicine. Section 5: Psychiatric and Addiction Disorders

Week 11

1. Major Global Non-Infectious Diseases - Hematopoietic Disorders: This lecture will introduce biology of blood and focuses on major hematopoietic disorders, such as anemia and leukemia.

Reference:

1. Harrison's Principles of Internal Medicine. Section 2: Hematopoietic Disorders

 B. Major Global Non-Infectious Diseases - Immune-Mediated Disorders: This lecture will introduce immune system and focuses on major immune-mediated disorders, such as rheumatoid arthritis.

Reference:

1. Harrison's Principles of Internal Medicine. Part 11: Immune-Mediated, Inflammatory, and Rheumatologic Disorders

Week 12

1. Major Global Non-Infectious Diseases – Cancer 1: This lecture will introduce cancer biology and genetics, cancer prevention and early detection.

Reference:

1. Harrison's Principles of Internal Medicine. Chapters 65-71

1. Major Global Non-Infectious Diseases – Cancer 2: This lecture will focus on some major cancers, such as skin and prostate cancers.

Reference:

1. Harrison's Principles of Internal Medicine. Chapter 72: Cancer of the Skin and Chapter 83: Benign and Malignant Diseases of the Prostate

Week 13

1. Major Global Non-Infectious Diseases – Cancer 3: This lecture will focus on lung and breast cancers.

Reference: Harrison's Principles of Internal Medicine. Chapter 74: Neoplasms of the Lung and Chapter 75: Breast Cancer

1. Major Global Non-Infectious Diseases – Cancer 4: This lecture will focus on malignant tumors in digestive system, such as tumors in pancreas and liver.

Reference: Harrison's Principles of Internal Medicine. Chapters 76-79

Week 14

1. Aging: This lecture will introduce the biology of aging and clinical problems associated with the aging process.

Reference: Harrison's Principles of Internal Medicine. Part 18: Aging

1. Frontiers: Emerging and advanced issues in human diseases are introduced and summarized, such as the roles of epigenetics, circadian biology, and climate change in health and disease

Reference: Harrison's Principles of Internal Medicine. Part 20: Frontiers and Chapter 120

Week 15

Final examination: case report/research proposal and multiple choice test