

# Public Health Biology

Code: 31-3306 1st year 2units  
Course ID: GP-b3306L

## 1. Instructor(s)

Takeo Fujiwara, Professor, Department of Global Health Promotion  
Hisanori Hasegawa, Lecturer, Department of Rheumatology  
Yoshimitsu Akiyama, PhD Junior Associate Professor, Department of Molecular Oncology  
Sadakatsu Ikeda, MD, PhD Associate Professor, Cancer Center, Medical Hospital  
Masahiro Ishizuka, MD, PhD Assistant Professor, Department of Pulmonary Immunotherapeutics  
Janelle Moross, RN Associate Professor, Institute of Global Affairs  
Shun Nakagama, MD Specially Appointed Assistant Professor, Department of Cardiovascular Medicine  
Hiroshi Noto, MD, PhD Director, Endocrinology Department, St. Luke's International Hospital  
Koh Okamoto, MD, PhD Associate Professor, Department of Infectious Diseases  
Yasuaki Tagashira, MD, PhD Junior Associate Professor, Department of Infectious Diseases  
Toshihiro Tanaka, MD, PhD Professor, Department of Human Genetics and Disease Diversity  
Akihito Uezato, MD, PhD Professor, Center for Basic Medical Research, International University of Health and Welfare

## 2. Classroom/Lab

Refer to the course schedule

## 3. Course Purpose and Outline

### Course Purpose

The goals of this course are to provide students with a fundamental understanding of the biology and pathophysiology underlying major human diseases which cause significant morbidity or mortality that are necessary for the practice of public health. This course is mandatory for MPH students without MD, DDS, DMD, or RN.

### Outline

Discusses the molecular, cellular, physiological, genetic and immunological determinants of human diseases and disease susceptibility, including infectious disease, pulmonary diseases related to air pollution, diabetes and obesity, cardiovascular diseases, stress-related conditions, psychiatric diseases, perinatal complications, and cancer. Focuses how biological principles help to understand the development, treatment and prevention of disease, and to assess risk from potentially hazardous agents and behaviors.

## 4. Course Objective(s)

Upon successfully completing this course, students will be able to:

- Describe the public health strategies for the prevention of the infectious diseases of public health concern worldwide
- Explain how a vaccine works to achieve resistance to an infectious organism, define the term herd immunity, and explain how it provides protection for the non-immunized person as well as its philosophical consideration
- Describe the psychophysiological effector mechanisms that represent the stress response and the effect of the stress response on the target organ systems and its public health implications
- Describe the prevalence, clinical manifestations, natural history and societal impact, pathophysiology, and management of mood and anxiety disorders, schizophrenia, developmental disorders, and dementia
- Outline normal pregnancy and parturition and describe the effects of host environment on fetus
- Describe the public health strategies for the prevention of the pulmonary diseases related to air pollution and the respiratory tract infection of public-health concerns
- Describe the public health burden (domestic and global) of and the public health strategies for the prevention of cardiovascular diseases
- Describe the public health burden (domestic and global) of and the public health strategies for the prevention of diabetes/obesity
- Define genetics and its relationship to the health of individuals and populations, and define major ethical, legal, and social implications of genetics as applied in the clinical setting and in public health
- Describe the effects of epigenetic states on health outcomes related to cardiovascular and respiratory disease, aging, reproductive health, neurological and neuropsychological diseases, and cancer
- Describe the public health burden (domestic and global) of and the public health strategies for various cancer

## 5. Format

All sessions will use both the didactic method and the case method with class discussion and group work.

## 6. Course Description and Timetable

Refer to the course schedule

## 7. Grading System

A curved grading system will be used for the final grade based on the sum of all points granted, using a scale of A+, A, B, C, and F. In principle, the standard grading curve is A+ (15%), A (25%), B (30%), and C (30%). For those students who fail to meet the requirements for grading, the grade will be marked as “F (ineligible for grading)”. The final evaluation of the course will be determined based on your grade:

A+, A, B, C: Completed, credit granted

F: Not completed, credit not granted

### Grading Criteria

Grades are finalized by taking into account the sum of all points granted for the following items.

#### (1) Preparation Assignment: 15% of the total course points

Points will be granted upon each Preparation Assignment submission. However, a Preparation Assignment may not be accepted if it is judged to be incomplete.

#### (2) Class Participation: 15% of the total course points

The statements you make during each class will be graded from both qualitative and quantitative perspectives, taking into account your grasp of the assigned materials, the responsiveness to in-class questions posed by the instructor and the quality of contributions made to in-class discussions and debate, for the purpose of assessing your contribution to the class. Key evaluative questions are:

- How deeply did each student analyze issues?
- How well did one mobilize learning of fellow students in the class?

#### (3) Final Report: 70% of the total course points

The evaluation of Final Report will be based NOT on the quantity (the length) but on the quality (content and organization) by taking into account the following factors:

- Analytical ability and insights
- Reasoning skills
- Ability to develop and evaluate hypotheses
- Comprehension of learned concepts and frameworks
- Strength of the argument presented

## 8. Prerequisite Reading

Preparation (reading, viewing, assignments, etc) will be specified in the course syllabus which will be provided to registered students on WebClass.

## 9. Required Textbooks

Please purchase the following textbooks before the session “Genetics for public health students”.

<Sessions 9 and 10>

Human Genetic Diversity

by Julian C. Knight

Oxford University Press ISBN 978-0199227709

## 10. Reference Materials

Reference materials will be specified in the course syllabus on WebClass.

## **11. Important Course Requirements**

### **(1) Self Introduction**

Set your concrete goal for taking this course and post it, along with your self-introduction, to the course mailing list (phb@ml.tmd.ac.jp) at latest two days prior to the first class.

### **(2) Attendance**

- Attendance of at least 12 out of 17 sessions.
- You will be marked as absent if you are more than 10 minutes late or you leave the class more than 10 minutes before the class ends. However, if tardiness overall is excessive (in frequency and length, even if it does not go beyond the 10-minute allowance range), some points may be deducted when calculating your final grade.

### **(3) Preparation Assignments**

When indicated in the course syllabus, students are required to turn in Preparation Assignments. Preparation Assignments assist you in understanding the topic for the class and help you better prepare for class discussion. Write your Preparation Assignments on all of the exercises specified in the syllabus of approximately one to two pages in length and submit them to the specified e-mail address. The deadline for Preparation Assignment is the class starting time. A detailed guideline to preparing Preparation Assignments will be on the course syllabus. Preparation Assignments will only be accepted from students who have attended class and uploaded Preparation Assignments in the designated way. If students are absent, Preparation Assignments will be marked as “Not Submitted”. Note that a Preparation Assignment may not be accepted if it is judged to be incomplete.

### **(4) Preparation and Class Participation**

All sessions are conducted with the assumption that all students are fully prepared. Students attending class without having prepared will not benefit themselves and, even worse, hold back other students in group discussions. Therefore, all students are expected to prepare thoroughly.

### **(5) Submission of Final Report**

A report is required for the completion of the course and its deadline will be specified in the course syllabus. The most important point in completing Final Report is to develop and explain your own opinions which should be thought through thoroughly and lead you to make your own conclusion. Merely summarizing cases, methods or frameworks is not sufficient. Explain your thoughts clearly and concisely. Use simple and clear expressions. If you use any charts in your Report, clarify and explain what information those can tell readers. Detailed direction for Final Report will be given at the end of the course syllabus on WebClass. Final report is due at 9:00 am on June 20, 2022.

### **Note: Measures against cheating and plagiarism**

When writing your Final Report, it is strictly forbidden to copy or use ideas from Final Reports of your classmates or those students who took this course in past terms, handouts from other courses, or materials from past terms. Students should refrain from sharing solutions for Final Report exercises and any other information that could impact the outcome of it through any forms of communication. Both the provider and beneficiary of relevant information shall become disqualified from completing the course in the case of such cheating and plagiarism.

## **12. Availability in English**

All classes are taught in English.

## **13. Office hours**

Contact Dr. Hisanori Hasegawa to make an appointment (hasegawa.rheu@tmd.ac.jp)

## **14. Note(s) to students**

Preparation assignments, dates, time, location of each session are subject to change. Please check with the most updated course syllabus. For non-MPH students, instructor's permission is required before registration.

## Schedule

No	Day	Time	Topics Venue	Instructor
1	May 7, 2024	8:50-10:20	Host response to infection: the immune response and vaccination (G-Lab, M&D Tower 8F / Onsite. Live)	Hisanori Hasegawa
2		10:30-12:00	Host response to infection: the immune response and vaccination (G-Lab, M&D Tower 8F / Onsite. Live)	
3	May 9, 2024	13:00-14:30	Cardiovascular diseases for public health students (G-Lab, M&D Tower 8F / Onsite. Live)	Shun Nakagama
4		14:40-16:10	Cardiovascular diseases for public health students (G-Lab, M&D Tower 8F / Onsite. Live)	
5	May 10, 2024	8:50-10:20	Overview of infectious diseases (G-Lab, M&D Tower 8F / Onsite. Live)	Koh Okamoto
6		10:30-12:00	Antimicrobial resistance, One Health and Antimicrobial Stewardship (G-Lab, M&D Tower 8F / Onsite. Live)	Yasuaki Tagashira
7	May 13, 2024	8:50-10:20	Essentials of obstetrics for public health students (via Zoom)	Janelle Moross
8		13:00-14:30	Genetics for public health students (via Zoom)	Toshihiro Tanaka
9		14:40-16:10	Genetics for public health students (via Zoom)	
10	May 14, 2024	13:00-14:30	Stress Response / Essentials of neuroscience and psychiatric illness (via Zoom)	Akihito Uezato
11		14:40-16:10	Stress Response / Essentials of neuroscience and psychiatric illness (via Zoom)	
12	May 16, 2024	8:50-10:20	Pulmonary diseases related to air pollution and respiratory tract infection of public-health concern (G-Lab, M&D Tower 8F / Onsite. Live)	Masahiro Ishizuka
13		10:30-12:00	Epigenetics for public health students (G-Lab, M&D Tower 8F / Onsite. Live)	Yoshimitsu Akiyama
14		13:00-14:30	Diabetes and obesity for public health students (G-Lab, M&D Tower 8F / Onsite. Live)	Hiroshi Noto
15		14:40-16:10	Diabetes and obesity for public health students (G-Lab, M&D Tower 8F / Onsite. Live)	
16	May 17, 2024	8:50-10:20	Cancer for public health students (via Zoom)	Sadakatsu Ikeda
17		10:30-12:00	Cancer for public health students (via Zoom)	