Lecture No	031940			
Subject title	Introduction to Biostatistics		Subject ID	GP—b3319—L
Instructors	髙橋 邦彦, 安齋 達彦[TAKAHASHI Kunihiko, ANZAI Tatsuhiko]			
Semester	Spring 2025	Level	1st year	Units	2

Course by the instructor with practical experiences	

Instructor(s):

Kunihiko Takahashi, Professor, Department of Biostatistics

Tatsuhiko Anzai, Associate Professor, Department of Biostatistics

Availability in English: All classes are taught in English.

Key word: Biostatistics

Lecture place

Refer to the course schedule

Course Purpose and Outline

Course Purpose:

This course introduces the basic techniques important for analyzing data from epidemiologic, biomedical and other public health related research. Statistical reasoning will be emphasized through problem solving and practical applications.

Outline:

Biostatistics is the application of statistical methods to data in biological, biomedical and health sciences. It is a key technique for the collection, analysis, and presentation of data especially in quantitative studies. This course gives lectures on fundamental biostatistical methods through their applications to data in medical research field including clinical and epidemiological studies.

Course Objective(s)

By the end of this course, students will be able to:

a) Interpret basic statistical terminologies.

b) Explain assumptions and conditions for basic statistical techniques, and judge which statistical technique to use in a given situation.

c) Conduct basic statistical techniques both by hand and using a statistical software, and present results using publication quality tables.

d) Describe results of statistical analysis using standard statistical expressions.

Lecture plan

No	Date	Time	Room	Lecture theme	Staff	Learning objectives・Learning methods・Instructions
1	5/26	08:50–10:20	On–demand	Lecture: Introduction to Biostatistics (online video)	TAKAHASHI Kunihiko	
2	5/26	10:45–12:15	On–demand	Lecture: Data presentation; Numerical summary measures (1) (online video)	ANZAI Tatsuhiko	
3	5/27	08:50–10:20	On–demand	Lecture: Data presentation; Numerical summary measures (2) (online video)	ANZAI Tatsuhiko	
4	5/27	10:45–12:15	On–demand	Lecture: Probability and Theoretical distributions (1) (online video)	ANZAI Tatsuhiko	
5	5/29	08:50–10:20	On–demand	Lecture: Probability and Theoretical distributions (2) (online video)	TAKAHASHI Kunihiko	
6	5/29	10:45–12:15	On–demand	Lecture: Estimation (online video)	TAKAHASHI Kunihiko	
7	5/29	13:30–15:00	On–demand	Laboratory session (online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 1

8	5/29	15:25–16:55	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 2
9	5/30	08:50–10:20	On-demand	Lecture: Comparing groups – continuous data (1)　(online video)	TAKAHASHI Kunihiko	
10	5/30	10:45–12:15	On-demand	Lecture: Comparing groups – continuous data (2)　(online video)	TAKAHASHI Kunihiko	
11	5/30	13:30–15:00	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 3
12	5/30	15:25–16:55	Live	Q&A session　(via real-time zoom)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 4
13	6/2	08:50–10:20	On-demand	Lecture: Comparing groups – categorical data　(online video)	ANZAI Tatsuhiko	
14	6/2	10:45–12:15	On-demand	Lecture: Analysis of Variance; Multiple comparison　(online video)	ANZAI Tatsuhiko	
15	6/2	13:30–15:00	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 5
16	6/2	15:25–16:55	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 6
17	6/3	08:50–10:20	On-demand	Lecture: Correlation; linear regression (online video)	TAKAHASHI Kunihiko	
18	6/3	10:45–12:15	On-demand	Lecture: Multivariate analysis (1) (online video)	TAKAHASHI Kunihiko	
19	6/3	13:30–15:00	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 7
20	6/3	15:25–16:55	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 8
21	6/5	08:50–10:20	On-demand	Lecture: Multivariate analysis (2) (online video)	ANZAI Tatsuhiko	
22	6/5	10:45–12:15	On-demand	Lecture: Multivariate analysis (3) (online video)	ANZAI Tatsuhiko	
23	6/5	13:30–15:00	On-demand	Laboratory session　(online video)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 9
24	6/5	15:25–16:55	Live	Q&A session　(via real-time zoom)	TAKAHASHI Kunihiko, ANZAI Tatsuhiko	Optional 10
25	6/6	08:50–10:20	On-demand	Lecture: Survival analysis　(online video)	ANZAI Tatsuhiko	
26	6/6	10:45–12:15	On-demand	Lecture:　Genomics data analysis (online video)	ANZAI Tatsuhiko	

Lecture Style

This course will consist of lectures and optional laboratory sessions (online video). Q&A system on WebClass and some optional hours will be prepared. There will be some reports. (Details will be announced later.)

Course Outline

Refer to the course schedule

Grading System

Grades will be based on the following elements:

Participation (Watch online video (Lecture): 60% or more) 50%

Reports 50%

Prerequisite Reading
Reading materials will be available online at the course webpage. Students are expected to have worked thorough the materials before attending the corresponding class.
Module Unit Judgment
2 units
Reference Materials
Pagano M, Gauvreau K. Principles of Biostatistics. 2nd ed. Belmont: Brooks/Cole; 2000.
Rosner B. Fundamentals of Biostatistics. 8th ed. Brooks/Cole; 2015.
Altman DG. Practical Statistics for Medical Research. Chapman & Hall; 1991.
Armitage P. Statistical Methods in Medical Research. 4th ed. Blackwell Science Ltd; 2002.
Important Course Requirements
For students not in the MPH course, instructor's permission is required before registering to the course. Also, students are required to have TOEFL iBT with a minimum score of 80 or IELTS with a minimum score of 6.5.   Please submit an email when you receive permission through the Forms below.   https://forms.office.com/r/iVjqUEipAR
Note(s) to Students
Online Q&A system is available during the course, and a realtime Q&A session (optional, May 30 and June 5, 2025, via zoom or face-to-face class) is prepared.
This course uses the Stata and other statistical software. Stata is available for each student during the course.
Students are expected to perform basic algebra, including logarithms and exponentials, by hand or using calculator.
This course is a prerequisite for Biostatisitcs II /Introduction to Biostatistics.
Email
TAKAHASHI Kunihiko: biostat.dsc@tmd.ac.jp
Instructor's Contact Information
TAKAHASHI Kunihiko: Weekdays only. Advanced appointments are required.
Contact to Department of Biostatistics, M&D Data Science Center(E-mail: biostat.dsc@tmd.ac.jp).