

# SISR 621 (4814) Biostatistics in Biomedicine

## Update for Academic year 2023-2024

(Code: 4814, 1<sup>st</sup>~2<sup>nd</sup> year, 2 units)

(Course ID: GS-c4814-L)

### 1. Instructors

Name	Position	Department	Contact Information
Chutwichai Tovikkai	Assistant Professor	Division of General Surgery, Department of Surgery	Chutwichai.tov@mahidol.ac.th
Varut Lohsiriwat	Professor Dr.	Division of General Surgery, Department of Surgery	balloon@hotmail.com Varut.loh@mahidol.ac.th
Cherdsak Iramaneerat	Associate Professor	Division of General Surgery, Department of Surgery	Cherdsak.ira@mahidol.ac.th
Asada Methasate	Associate Professor	Division of General Surgery, Department of Surgery	Asada.met@mahidol.ac.th
Chulaluk Komoltri	Assistant Professor	Research Department	Chulaluk.kom@mahidol.ac.th

### 2. Classroom/Lab Lecture Location

Lecture: Udomposakrisna lecture room, 12<sup>th</sup> floor Syamindra Building, Siriraj Hospital

Computer lab: Computer lab, 6<sup>th</sup> floor Srisawarinthira Building, Siriraj Hospital

Online learning: Synchronous learning via Zoom, Asynchronous learning via SelecX

### 3. Course Purpose and Outline

The objectives are to provide students with an introduction to:

- basic knowledge of statistics, including essential statistical tests, basic descriptive and analytic statistics
- applying appropriate statistics to research questions
- the roles of database, spreadsheet and statistical software programs in analyzing clinical research data
- using statistical software programs to input, clean, manage, describe and analyze clinical research data
- applying these skills in analyzing students' own research project

#### 4. Course objectives

This course offers a general overview of biostatistics for surgeon researchers. Students will learn about how to enter and clean data (via database, spreadsheet and statistical software programs), principle of hypothesis testing, descriptive statistics, how to perform and interpret essential statistical tests (using commonly used statistical software programs) and how to calculate sample size.

#### 5. Format

Lecture and computer labs.

#### 6. Course Details

Course timetable

Class content will include lecture and computer lab per sessions

No.	Date	Time	Class Content	Instructor
1.	Wed 3-Jan-24	13:30-16:30	Introduction to biostatistics, Introduction to statistical programs	Assoc. Prof. Dr.Chutwichai Tovikkai
2.	Fri 12-Jan-24	14:00-16:30	Data type and data management	Assoc. Prof. Dr.Chutwichai Tovikkai
3.	Wed 24-Jan-24	13:30-15:30	Descriptive statistics	Assoc. Prof. Dr.Chutwichai Tovikkai
4.	Wed 17-Jan-24	13:30-15:30	Statistical hypothesis tests, t-test, ANOVA	Assoc. Prof. Dr.Asada Methasate
5.	Thu 22-Feb-24	17:00-20:00	Non-parametric test	Assoc. Prof. Dr.Cherdsak Iramaneerat
6.	Tue 27 Feb-24	13:00-16:00	Linear regression & correlation	Assoc. Prof. Dr.Cherdsak Iramaneerat
7.	Wed 7-Feb-24	13:00-16:00	Binary logistic regression	Chulaluk
8.	Wed 31-Jan-24	13:30-15:30	Survival analysis & Cox regression	Assoc. Prof. Dr.Asada Methasate
9.	Wed 14-Feb-24	13:00-16:00	Sample size calculation	Chulaluk
10.	Wed 7-Mar-24	13:00-16:00	Creating graphs and tables	Chulaluk
11.	Thu 14-Mar-24	13:00-16:00	Special consideration: missing data, propensity score matching	Chulaluk

Total 30 hr

## 7. Assessment

Grades are based on attendance at lecture, performances on assignments, and level of attitude, skill and knowledge.

## 8. Prerequisite Reading

When reading materials are distributed or specified in advance, students are expected to read those materials beforehand.

## 9. Reference Materials

1. Altman DG. Practical statistic for medical research. Chapman & Hall. London. 1991.
2. White SE. Basic & Clinical Biostatistics. Lange. 5<sup>th</sup> ed. McGraw-Hill Education. 2020.
3. Hand SJ. Statistics: A Very Short Introduction. Oxford University Press. Oxford. 2008.

## 10. Language used

All classes are conducted in English.

## 11. Office Hours

Mon – Fri: 9:00 AM – 17:00 PM

Contact: Chutwichai Tovikkai, Department of General Surgery

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Please contact the instructor regarding questions or consultations.

## 12. Note(s) to Students

None.