



TEHRAN UNIVERSITY  
OF  
MEDICAL SCIENCES

## « Course plan of biostatistics and research methods»

### Details of course:

Educational group providing the course: Digital Health

Course title: Biostatistics and research methods

Course ID: 04

Type and number of units: 2 theoretical units

Name of the person responsible for the course: Dr. Ardalan Shariat

Instructor/ Instructors: Dr. Ardalan Shariat

Prerequisites/simultaneous: none

Field and level of education: Master's degree in Digital Health

### Course instructor information:

Academic level: Assistant Professor

Specialized field: PhD in Digital Health

Workplace: Department of Digital Health, Faculty of Medicine, Tehran University of Medical Sciences

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General description of the course (the person in charge of the course is expected to describe the different content parts of the course in the form of one or two paragraphs while providing general explanations):

General goals:

Practical familiarity with research methods and statistical methods in such a way that they can design, implement and finally write and publish a research paper.

**Specific goals/ sub-themes of each ability:**

- 1- Investigating qualitative and quantitative statistics along with various variables and statistical hypotheses
- 2- Research population, sample size and sampling
- 3- Data collection tools as well as validity and reliability
- 4- Analyzing the collected data and how to report academically

After the end of this course, it is expected that the student:

Creating capabilities in a comprehensive way to achieve specific goals

**Educational approach:**

Virtual and in person

**Teaching-learning methods according to the chosen educational approach:**

Problem Based Learning (PBL)

Discussion

Speech

**Combined approach**

A combination of virtual and face-to-face educational approaches is used.

**Sessions of the course:**

Instructor	Tasks of student	Teaching technique	Topic	Session
<b>Dr.Ardalan Shariat</b>	-	<b>Combined approach</b>	Brief introduction of students. The teacher clearly explains the goals and evaluation methods. Students present their needs from the course.	1
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Introducing qualitative and quantitative research through the review of published articles.</b>	2
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Examining the types of hypotheses and analyzing the hypotheses of a research plan</b>	3
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Familiarity with types of variables</b>	4
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Research population and calculation of sample size</b>	5
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Regression and correlation through the review of published articles</b>	6
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Validity and reliability</b>	7
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Data collection tools</b>	8

Instructor	Tasks of student	Teaching technique	Topic	Session
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>How to report for different articles and designs</b>	9
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>General principles of writing research plans and how to refer to Mendeley</b>	10
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Writing a hypothetical research project</b>	11
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>General principles of writing different types of articles</b>	12
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Write a short article and help to publish it</b>	13
<b>Dr.Ardalan Shariat</b>	Conversation question and answer Shorthand Presentation of students	<b>Combined approach</b>	<b>Q&amp;A</b>	14

2 sessions will added based on the needs of students with focus on team work in class.

If any of the sessions are canceled for any reason, compensatory sessions will be held.

#### **Duties and expectations from the student:**

Attending class regularly, checking resources and reading texts before attending class, doing homework

Student evaluation method:

Oral questions in different sessions

Quiz

Midterm exam

End of semester exam.

**References:**

- 1- Chong, Z. S., & Clohisey, S. (2021). How to build a well-rounded CV and get hired after your PhD. *The FEBS Journal*, 288(10), 3072-3081.
- 2- Crano, W. D., Brewer, M. B., & Lac, A. (2014). *Principles and methods of social research*. Routledge.
- 3- Bhattacharjee, A. (2012). *Social science research: Principles, methods, and practices*. USA.
- 4- Supino, P. G., & Borer, J. S. (Eds.). (2012). *Principles of research methodology: A guide for clinical investigators*. Springer Science & Business Media.
- 5- Kleinbaum, D. G., Kupper, L. L., & Morgenstern, H. (1991). *Epidemiologic research: principles and quantitative methods*. John Wiley & Sons.