Deanship of Academic Development
and International Outreach

The Hashemite University

COMMUNITY MEDICINE 1 (161501401)

Fourth Year - Summer Semester







2024/2025

Syllabus*: Community Medicine 1 (161501401)

Fourth Year–Summer Semester–2024/2025

COURSE INFORMATION		
Course Name: Community Medicine 1 **Semester:** Summer **Department:** Pharmacology, Public Health and Clinical Skills		**Course Code:** 161501401 **Core Curriculum**: MD program **Faculty:** Medicine
Day(s) and Time(s): Sunday Monday Tuesday Wednesday	10:40-11.55 12:00- 1:15	**Credit Hours:** 6 **Prerequisites**: None
Classroom:	• Al Harith Great Hall (Tues., Wed.) • Online on Microsoft teams (Sun., Mon).	

COURSE DESCRIPTION

- This course will introduce the students to the methods of biostatistics in the health field (quantitative and qualitative).
- This course will provide the students with the core statistical skills they need to conduct quantitative research and how they can interpret and present their research results.
- The course will focus on descriptive and inferential statistics as applied to medical practice.
- The course starts with understanding descriptive measures and probability concepts.
- The students will be trained to use a computer software (SPSS) in solving assigned exercises. The students will be trained to recognize the different types of variables, organize the data on Excel and SPSS, write a null hypothesis and conduct statistical inferences by estimation and Hypothesis testing, Chi-square analysis, Analysis of Variance (ANOVA), regression, correlation and non-parametric tests are discussed with relevant clinical examples.
- Teaching methods include face to face and online lectures, class discussions, worksheets, quizzes and exercises.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom-based discussion
- Live Online delivered lectures through Microsoft Teams

- Relevant papers and reading materials
- E-learning resources: e-reading assignments, videos, virtual meetings, and practice quizzes through Microsoft Teams and Forms.

COURSE COORDINATOR INFORMATION

Name	**Dr. Omnia Mohammed Anwer Elmahdy**
Academic Title:	Assistant Professor- Public Health
Office Location:	Second floor room 3030, Faculty of Medicine – Hashemite University
Email Address:	omnia@hu.edu.jo
Office Hours:	Tuesday 9.30:10:30am 1.15: 2.00pm Wednesday 9.30:10:30am 1.15: 2.00pm or by appointment via email. You can ask anytime by team message to: omnia@staff.hu.edu.jo

REFERENCES AND LEARNING RESOURCES

- Medical statistics at a glance, 4th Edition 2019, A Petrie, C Sabin, Wiley-Blackwell PUBLISHER
- Medical Statistics Made Easy, 4th edition 2020, M Harris, G Taylor, Scion Publishing Ltd.
- Medical Statistics from Scratch: An Introduction for Health Professionals, 4th edition 2019, D Bowers Wiley-Blackwell PUBLISHER,
- How to use SPSS by Taylor & Francis, tenth edition second edition, published 2018 by Routledge.
- Selected articles and handout documents on community medicine (will be available to students as paper or electronic versions)

The course objectives

By the end of the course, the student will be able to:

- Understand the concept of community medicine and its applications.
- Organize, summarize and present data related to medical sciences.
- Estimate population parameters (means and proportions) based on the information contained in the sample.
- Test research hypothesis.
- Draw scientific conclusions from data.
- Calculate and interpret measures of associations such as the relative risk, odds ratio, correlation coefficient, and attributable risk.
- Select appropriate data collection methods.
- Plan and perform the basic statistical analysis.
- Interpret study findings and draw valid conclusions.
- Identify the statistical decision tree and its applications.
- Practice the statistical software application SPSS.
- Have an idea about systematic review and meta-analysis.

TOPICS DETAILS/ STUDENT LEARNING OUTCOMES MATRIX *

Course Student Learning Outcomes		
TOPIC(subjects & number of lectures/ subject)	**SUBJECT**	**Intended Learning Outcomes**
***T0 /;** **Introduction to the course:** (1 lecture)	• Definition. • Objectives. • Syllabus. • Teaching methods. • Assessment.	▪ Understand the course structure, objectives, content, and timeline. ▪ Explore the course syllabus. ▪ Identify the course MS Teams. ▪ Recognize the teaching methods used (lectures, videos, homework and quizzes). ▪ Clarify responsibilities and lecture rules. ▪ Identify assessment methods.
***T1** **The concept of community medicine:** (1 lecture)	• Definition • Fields • Scope	▪ 1.a. Define community medicine ▪ 1.b. Identify scope of community medicine ▪ 1.c. Classify community medicine main branches.
***T2** **Introduction to biostatistics:** (1 lecture)	• Definition and goals of biostatistics.	▪ 2.a. Define medical statistics, and identify its main goals. ▪ 2.b. Differentiate concepts of descriptive and inferential statistics. ▪ 2.c. Identify SPSS program installation.
***T3** **Data types and entry:** (2 lectures)	• Types of Data • Data entry	▪ 3.a. Organize data into numerical and categorical scales. ▪ 3.b. Describe the types of data, illustrated by examples. ▪ 3.c. Identify SPSS program main page, data view, and variable view. ▪ 3.d. Exercise data entry and coding using SPSS program. ▪ 3.e. Recognize how to check errors in data entry.
T4: **Data Organization & tabulation:** (2 lectures)	• Organization of Data • Grouped data • Tabular presentation of data.	▪ 4.a. Recognize the advantages and limitations of ordered array ▪ 4.b. Explain the method of construction of an ordered array ▪ 4.c. Explain the method of construction of a frequency distribution, a cumulative frequency distribution and cross tabulation ▪ 4.d. Tabulate a given set of data and comment on the results ▪ 4.e. Identify common mistakes in table construction. ▪ 4.f. Practice tabular presentation by SPSS program.

T5: Graphical Presentation of data: (1 lecture)	• Graphs. (Histogram, Frequency polygon, Line diagram, Pie chart, Pictogram, Statistical mapping)	▪ 5.a. Recognize the advantages of graphical presentation ▪ 5.b. Understand the indications and method of construction of the different types of graphs ▪ 5.c. Differentiate graphs according to the type of data. ▪ 5.d. Practice graphical presentation by Microsoft Excel and SPSS programs.
T6: Mathematical presentation of data: (3 lectures)	• Measures of Central Tendency • Measures of Dispersion	▪ 6.a. Define data summarization and identify its objectives. ▪ 6.b. Compute and interpret the following measures of central tendency: (Mode, Median, Arithmetic mean) ▪ 6.c. Compute and interpret the following measures of dispersion: (Range, Standard deviation, Inter-quartile range, variance, and Mean deviation) ▪ 6.d. Choose and apply the suitable measure of central tendency and dispersion ▪ 6.e. Compute mathematical presentation of grouped data. ▪ 6.f. Practice mathematical presentation of data by SPSS program.
T7: Basic Probability: (2 lectures)	• Normal Distribution • Z score • Skewness	▪ 7.a. Define probability. ▪ 7.b. Understand the topic of Normal Distribution and its importance in different disciplines. ▪ 7.c. Identify Z score and its applications. ▪ 7.d. Apply the basic knowledge of normal distribution to solve problems. ▪ 7.e. Differentiate skewed curves
T8: Hypothesis Testing: (3 lectures)	• Statements • P-value and interpretation • Significance level • Alpha and Beta errors.	▪ 8.a. Understand the concept of hypothesis testing. ▪ 8.b. List steps of hypothesis testing ▪ 8.c. Identify null and alternative hypotheses. ▪ 8.d. Recognize the P- value and significance level. ▪ 8.e. Illustrate types of errors in hypothesis testing. ▪ 8.f. Practice examples of interpretation of P value and errors.
T9: Confidence Interval: (1 lecture)	• Definition. • Standard error. • Factors. • Interpretation.	▪ 9.a. Understand the concept of confidence interval. ▪ 9.b. List factors affecting precision of confidence interval. ▪ 9.c. Identify standard error. ▪ 9.d. Practice examples of interpretation of confidence interval

T10: **Tests of normality:** (1 lecture)	• Kolmogorov Smirnov Test • Shapiro Wilk Test	▪ 10.a. Identify importance of normality tests. ▪ 10.b. Classify tests of significance into parametric and non-parametric tests. ▪ 10.c. Describe Kolmogorov Smirnov and Shapiro Wilk tests and their interpretations. ▪ 10.d. Apply the basic knowledge of normality tests to solve problems by SPSS program.
T11: **Numerical data analysis-two groups: T–Test:** (2 lectures)	• 1- sample t-test • 2- sample t-test • Paired t- test	▪ 11.a. Define t- test, and identify its main uses. ▪ 11.b. Differentiate different subtypes: 1- sample t- test, 2- sample t- test, and Paired t- test ▪ 11.c. Apply the basic knowledge of t-tests to solve problems. ▪ 11.d. Practice examples of interpretation of t test by SPSS.
T12: **Homogeneity of variance:** (1 lecture)	• Levene's test	▪ 12.a. Identify the concept of homogeneity of variance. ▪ 12.b. List statistical situations that need testing homogeneity of variance. ▪ 12.c. Describe Levene's test and its interpretations. ▪ 12.d. Practice examples of interpretation of Levene's test by SPSS.
T13: **Numerical data analysis-more than two groups (Analysis of Variance)** (2 lectures)	• 1-Way • 2-Way • Repeated measures	▪ 13.a. Define ANOVA test, and identify its main uses. ▪ 13.b. Identify the criteria for using the ANOVA test. ▪ 13.c. Differentiate different types of ANOVA: (1-Way ANOVA, 2-Way ANOVA, Repeated measures ANOVA) ▪ 13.d. Apply the basic knowledge of ANOVA to solve problems. ▪ 13.e. Practice examples of interpretation of ANOVA test by SPSS
T14: **Nonparametric Statistics:** (2 lectures)	• Concept. • Signs and ranks • Examples of nonparametric tests	▪ 14.a. Identify the concept of nonparametric Statistics. ▪ 14.b. Illustrates examples of nonparametric tests and identify their uses: (Sign test, Wilcoxon Signed Rank test, Friedman test, Mann Whitney U test, Kruskal Wallis test). ▪ 14.c. Apply the basic knowledge of nonparametric tests to solve problems. ▪ 14.d. Practice examples of interpretation of nonparametric tests test by SPSS
T15: **Numerical data analysis: Statistical decision tree** (1 lecture)	• Statistical decision tree	▪ 15.a. List steps of statistical tests selection for numerical data analysis. ▪ 15.b. Identify the five questions summary. ▪ 15.c. Apply the choice of the appropriate test with practical examples.

T16: Categorical data analysis: Chi square tests: (2 lectures)	• Chi-Square Tests for Goodness of Fit and independence. • Fisher's exact • McNemar's test	▪ 16.a. Define Chi-Square test. ▪ 16.b. Identify uses and applications of Chi-Square tests. ▪ 16.c. List assumptions of using Fisher's exact test. ▪ 16.d. Apply the basic knowledge of chi-square tests to solve problems. ▪ 16.e. Define McNemar's test and identify its uses. ▪ 16.f. Practice examples of interpretation of Chi-Square and McNemar's tests by SPSS
T17: Correlation: (1 lecture)	• Concept. • Scatter diagram • Pearson's and Spearman's correlation tests	▪ 17.a. Define correlation and causation. ▪ 17.b. Identify Pearson's and Spearman's correlation tests and their uses. ▪ 17.c. Illustrate types of correlation and their plots. ▪ 17.d. Describe correlation coefficient and how to interpret. ▪ 17.e. Apply correlation on SPSS program.
T18: Regression: (3 lectures)	• Simple linear and Simple logistic regression. • Regression coefficient	▪ 18.a. Define regression ▪ 18.b. Identify simple linear regression ▪ 18.c. Describe regression coefficient and its interpretation ▪ 18.d. Differentiate between correlation and regression ▪ 18.e. Define multiple linear regression. ▪ 18.f. Define simple logistic regression ▪ 18.g. Apply regression on SPSS program
T19: Survival analysis (2 lectures)	• Terms • Kaplan–Meier method • Cox regression.	▪ 19.a. Define survival analysis and identify what is it used for. ▪ 19.b. Enumerate survival analysis terms. ▪ 19.c. Understanding how to display survival data: Kaplan–Meier method and cox regression. ▪ 19.d. Apply survival analysis on SPSS program
T20: Odds and risks (Measures of association) (2 lectures)	• Proportion, Ratio, Rate • Odds ratio • Relative & Attributable risks	▪ 20.a. Identify uses of indicators. ▪ 20.b. Differentiate using proportions and ratios. ▪ 20.c. Calculate and interpret measures of associations such as the incidence, prevalence, relative risk, odds ratio, correlation coefficient, and attributable risk. ▪ 20.d. Apply practical situations and calculations.
T21: Survey study (1 lecture)	• Classifications • Planning & conduction • Online Surveys • Errors	▪ 21.a. Define survey and identify its characteristics. ▪ 21.b. List different classifications of surveys. ▪ 21.c. Describe how to plan and conduct the survey. ▪ 21.d. Explore advantages and disadvantages of online surveys. ▪ 21.e. Illustrate the possible errors with surveys.

T22: Qualitative research (1 lecture)	• Participant observation • In-depth interviews • Focus groups	▪ 22.a. Define qualitative research and enumerate its value. ▪ 22.b. Difference between quantitative and qualitative methods of research. ▪ 22.c. Identify the most common qualitative methods: (participant observation, in-depth interviews, and focus groups. ▪ 22.d. Apply qualitative research methods with examples.
T23: Secondary sources of data (1 lecture)	• National census • Surveillance • Records • ICD	▪ 23.a. Define secondary sources of data ▪ 23.b. Identify different types of secondary sources of data, such as National census, Surveillance, health Records and International Classification of Diseases. ▪ 23.c. Apply with examples from Jordanian health data bases.
T24: An overview of Systematic review and Meta-Analysis (2 lectures)	• Systematic review • Meta-analysis	▪ 24.a. Define systematic review and meta-analysis. ▪ 24.b. Identify importance of systematic review and meta-analysis. ▪ 24.c. Explore steps of systematic review and meta-analysis as an overview.

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate, and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual needs.

Tel: 053903333 ext. 4132 / 4583 / 5023
Location: Deanship of Students Affairs
Email: **stydent@hu.edu.jo**

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

Plagiarism

Plagiarism is considered a serious academic offense and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviors that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected.

Late or Missed exams:

In all cases of assessment, students who fail to attend an exam, on the scheduled date without prior permission, and/or are unable to provide an accepted medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term assignment or class project on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission, in line with university regulations, an incomplete grade for the specific assessment will be awarded, and an alternative assessment or extension can be arranged.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment, and their final grade will be calculated from the forms of assessment as listed below, with their grade weighting taken into account.

Please use the following table:

Assessment	Grade Weighting	Deadline Assessment
Exam 1	50%	8/2025
Final Exam	50%	9/2025

Description of Exams

Test questions will predominately come from the material presented in the lectures. The exam will consist of multiple-choice questions for the regular exams and short essay questions for makeup exams (for students with accepted excuses, only documented absences will be considered as per HU guidelines).

Grades are not negotiable and are awarded to the *MD program* according to the following criteria*:

Test questions will predominately come from the material presented in the lectures. The exam will consist of multiple-choice questions for the regular exams and short essay questions for makeup exams (for students with accepted excuses, only documented absences will be considered as per HU guidelines).

Grades are not negotiable and are awarded to the *MD program* according to the following criteria*:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

The lectures schedule might be adjusted during the course process according to the students' feedback and the teachers' evaluation of the learning process.

WITH ALL MY BEST WISHES

DR. OMNIA MOHAMMED ANWER ELMAHDY