

Course Description Template

Course Name	
Biostatistics	
Course Code:	
BST (308)	
3.(Semester-based)	
2024 / 2025 (Semester-based)	
4.Description preparation date:	
20/1/2025	
5.Available Attendance Modes: In-person	
6.Total Study Hours / Total Credits:	
Theoretical: 2 hours/week Practical: ----- Number of study hours (total)/ 30 theoretical hours Number of units (total): 2 units	
7.Course Coordinator(s) (if more than one, please specify):	
Instructor Name: Dr. Mohsen Jawad Aboud Email: drMohsen@hilla-unc.edu.iq	
7.Course Coordinator(s) (if more than one, please specify):	
<p>Cognitive Objectives: By the end of this program, the student should be able to:</p> <ol style="list-style-type: none"> 1. Provide a brief history of the emergence of statistics. 2. Understand the concept of statistics. 3. Identify the basic stages of the statistical process. 4. Describe the different methods of data collection. <p>Skills Objectives:</p> <ol style="list-style-type: none"> 1. Compare ungrouped and grouped data in statistics. 2. Differentiate between frequency tables, relative tables, and percentage frequency in data presentation. 3. Explain types of data. 4. Distinguish between descriptive data and quantitative data. 5. Classify types of probability and non-probability samples. 6. Identify measures of central tendency (mean, median, mode). 7. Distinguish between measures of dispersion (range, variance, standard deviation, coefficient of variation). 	<p style="text-align: center;">Learning Objectives</p>



9. Teaching and Learning Strategies

Teaching Methods:

- **Lectures:** To present basic information and theoretical concepts.
- **Group Discussions:** To enhance critical thinking and active participation among students.
- **Teamwork:** To develop collaboration skills and the practical application of concepts.
- **Brainstorming:** To generate creative ideas and solutions.
- **Problem-based Learning:** To encourage students to solve real-world problems.

Strategy

Assessment Methods:

- **Written Tests:** To measure theoretical understanding of concepts and terminology.
- **Practical Assessment (Applied Skills):** Through case studies or hands-on activities.
- **Participation in Group Discussions:** To assess interaction level and critical understanding.
- **Brainstorming:** To evaluate the creative input and solution-oriented thinking.
- **Reports:** To assess written communication and research capabilities.
- **Extracurricular Activities:** To evaluate engagement and learning outside the classroom.
- **Quizzes:** To measure quick understanding and recall of key concepts.

10. Course Structure

First Semester

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Learning Method	Assessment Method
1	2	- Understand statistics and its subjects. - Identify types of statistics. - Recognize the different fields where statistics is used.	Introduction to Biostatistics	Lecture Presentation, Group Discussions	Daily Quiz
2	2	- Understand different types of variables. - Identify methods of classifying variables.	Types of Variables	Lecture Presentation	Daily Quiz
3	2	- Ability to represent data simply. - Use graphs for data analysis.	Data Representation 1	Group Discussions	Daily Quiz



4	2	- Learn advanced techniques of data representation. - Understand the importance of data representation in biostatistics.	Data Representation 2	Lecture Presentation	Daily Quiz
5	2	- Understand measures of central tendency such as mean and standard deviation.	Measures of Central Tendency	Group Discussions	Daily Quiz
6	2	- Understand measures of dispersion such as range and variance.	Measures of Dispersion	Lecture Presentation	Daily Quiz
7	2	- Know methods of sample selection in scientific research. - Apply various sample selection techniques.	Sample Selection Methods for Scientific Research	Group Discussions	Daily Quiz
8	2	- Recognize basic concepts of probability. - Understand probability theory and its application in biostatistics.	Probability Theory: Basic Concepts	Lecture Presentation	Daily Quiz
9	-	- Assess the acquired knowledge through the midterm exam.	-	-	Midterm Exam
10	2	- Understand discrete and continuous probability distributions. - Be able to interpret the results of probability distributions.	Discrete and Continuous Probability Distributions	Lecture Presentation	Daily Quiz
11	2	- Understand estimation theory using confidence intervals. - Apply confidence intervals in biostatistics.	Estimation Theory (Confidence Intervals)	Lecture Presentation	Daily Quiz
12	2	- Know how to determine sample size. - Apply appropriate rules to determine the optimal sample size.	Determining Sample Size	Lecture Presentation	Daily Quiz
13	2	- Apply categorical data analysis using Chi-Square.	Categorical Data Analysis (Chi-Square)	Lecture Presentation	Daily Quiz



		- Understand how to test the correlation between variables.			
14	2	- Understand inferential statistics and data analysis using hypothesis testing.	Inferential Statistics and Data Analysis (Hypothesis Testing)	Lecture Presentation	Daily Quiz
15	2	- Comprehensive review of course content. - Preparation for the final exam.	Review	Group Discussions	Final Exam

11. Course Evaluation

The semester grade (100) is distributed as follows:

- Coursework: 30%
- Final Exam: 70%
- Quizzes: 20%
- Participation in Group Discussions: 5 points (5%)
- Absence: 5 points (5%)

The final exam (70%) includes a comprehensive evaluation of learning outcomes, covering all course units.

12. Learning and Teaching Resources

<ul style="list-style-type: none"> • Required textbooks 	Required textbooks (methodology if any)
<ol style="list-style-type: none"> 1. Biostatistics: A Foundation for Analysis in the Health Sciences" by Wayne W. Daniel 2. "Statistics for Business and Economics" by Paul Newbold, William L. Carroll, and Betty Thorne 	Main References (Sources)
<ol style="list-style-type: none"> 3. "Practical Statistics for Medical Research" by Douglas G. Altma. 4. "Fundamentals of Biostatistics" by Bernard Rosner 5. "Applied Multivariate Statistical Analysis" by Richard A. Johnson and Dean W. Wichern <p>Scientific Journals:</p> <ol style="list-style-type: none"> 1. "Journal of Biostatistics" 2. "Statistics in Medicine" 3. "Journal of the American Statistical Association" 4. "Biostatistics" <p>Reports and Online Resources:</p>	Recommended supporting books and references (scientific journals, reports, etc.)



<ol style="list-style-type: none"> 1. World Health Organization (WHO) - Biostatistics Reports 2. Centers for Disease Control and Prevention (CDC) - Data and Statistics 3. National Institutes of Health (NIH) - Statistical Methodology Resources 4. Statistical Software Manuals (e.g., SPSS, SAS, R) 	
<ol style="list-style-type: none"> 1. PubMed - www.pubmed.ncbi.nlm.nih.gov 2. National Center for Biotechnology Information (NCBI) - www.ncbi.nlm.nih.gov 3. U.S. National Library of Medicine – Biostatistics - www.nlm.nih.gov/ 4. R Project for Statistical Computing - www.r-project.org 5. SAS Support - support.sas.com 6. Statistical Methods in Medical Research (Wiley Online Library) - onlinelibrary.wiley.com 7. StatTrek - www.stattrek.com <ul style="list-style-type: none"> ○ An educational resource with tutorials on statistics, including probability, hypothesis testing, regression analysis, and more, which can be highly useful for students learning biostatistics. 8. Biostatistics Online (SAGE) - journals.sagepub.com/home/bxj 9. Resources from Coursera and edX: <ul style="list-style-type: none"> ○ Coursera: www.coursera.org ○ edX: www.edx.org. 10. Biostatistics Wiki (Wikipedia) - en.wikipedia.org/wiki/Biostatistics. 	<p>Electronic references, websites</p>
<ul style="list-style-type: none"> • Collect student and faculty feedback through surveys and performance reviews. • Analyze assessment results to identify areas of improvement. • Update course content based on new research, advancements, and student needs. • Maintain flexibility in the curriculum to integrate modern trends in nursing and healthcare education. 	<p>Course Development Plan</p>

