



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus:
Principles of Statistics

Course Syllabus

1	Course title	Principles of Statistics
2	Course number	(0301131)
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	None
5	Program title	B.Sc.
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Mathematics
10	Level of course	College requirement
11	Year of study and semester (s)	1 st year, all Semesters
12	Other department (s) involved in teaching the course	None
13	Delivery Method	Online
	Online Platforms	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....
14	Language of Instruction	English
15	Date of production/revision	01/09/2022

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Name: Dr. Ahmed Abdallah Office Number: 208 Phone Number: 22081 Email: farah@ju.edu.jo
Office Hours: 11:30 – 12:30 Sun, Tue, Thu.

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

Describing statistical data by tables, graphs and numerical measures, Chebychev's inequality and the empirical rule, counting methods, combinations, permutations, elements of probability and random variables, the binomial, the Poisson, and the normal distributions, sampling distributions, elements of testing hypotheses, statistical inference about one and two populations parameters.

19. Course aims and outcomes:**A- Aims:**

1. Describe the distribution of data sets using the basic measures of centrality, variation, positions, and shapes.
2. Apply the basic notions and rules of probability and how to relate these notions to statistical inference through sampling distributions.
3. Use the basic ideas of statistical inference to estimate population parameters by confidence intervals and to test hypothesis about population parameters.

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)
SLOs of the course								
Identify the population, sample, parameter and statistic, and classify types of data.	•							
2 Constructing frequency tables and graph some types of data and interpret the results.	•	•	•		•			
3 Apply the measures of central tendency, variation, and positions to different life experiments and interpret the results.	•		•		•			
4 Know the concept of probability and compute the probabilities for different life experiments by using the probability rules.	•		•		•			
5 Identify discrete and continuous probability distributions and apply them to real life examples by using the Binomial, Poisson, and Normal distributions.	•	•	•		•			
6. Construct the confidence intervals and apply the hypothesis testing for single and two population parameters and draw appropriate statistical conclusions.	•	•	•		•			

20. Topic Outline and Schedule:

Topic	Week	Achieved ILOs	Learning Method	Platform	Evaluation Methods	References
<p>Introduction to statistics(Ch.1):</p> <p>1.1- An overview of statistics (Q: 1-20, 25, 34, 35, 42-44).</p> <p>1.2- Data classification (Q: 1-6, 7, 10, 13, 15, 18, 20, 27, 29).</p>	1	1	Online	Microsoft Teams	Exam	Text Book
<p>Descriptive Statistics (Ch.2):</p> <p>2.1- Distribution tables, histograms, polygons, Ogives. (Q: 1-11, 15, 19, 21, 25).</p> <p>2.2- Stem and leaf plot, Dot plot, Scatter plot, Pie chart Pareto chart and time series chart. (Q: 1-4, 9, 11, 15, 16, 27, 30, 31).</p> <p>2.3- measures of centrality Mean, Median, and Mode, Weighted Mean and Mean of Grouped Data. The Shapes of Distributions and outliers. (Q: 1-17, 31, 33, 35, 41, 43, 51, 57, 59).</p> <p>2.4- Range, Variance and Standard Deviation, Interpreting Standard Deviation, Standard Deviation for Grouped Data, Coefficient of Variation, Emperical rule and Chebushev's theorem. (Q: 1-11, 14, 17-19, 21-23, 29, 35, 43, 45, 51, 53, 54).</p> <p>2.5- Measures of position: Quartiles, Percentiles and Other Fractiles. The Standard Score, box-and-whisker plot. (Q: 1-11, 13, 19-22, 29-32, 41, 49) .</p>	2-4	1,2,3,5			Exam	Text Book
<p>Elements of Probability (Ch.3):</p> <p>3.1- Basic concepts of probability: Probability Experiments, The Fundamental Counting Principle, Types of Probability, Complementary Events, Probability Applications, Sample space and events, basic laws of probability. (Q: 1-10, 25-32, 34, 36, 39, 53-56, 73, 81, 87, 88)</p> <p>3.2- Conditional Probability, Independent and Dependent Events, The Multiplication Rule, Bayes' Theorem (Q: 1-8, 10, 13, 14, 19, 22, 27, 33, 39, 41, 42).</p> <p>3.3- Mutually Exclusive Events. The Addition Rule . A Summary of Probability.(Q: 1-13, 15, 19, 23).</p> <p>3.4- Permutations. Combinations. Applications of Counting Principles. (Q: 1-6, 12, 14, 19-24, 43, 50, 55)</p>	5-6	1,3,5			Exam	Text Book
<p>Random Variables and Distributions (Ch.4): (2 week)</p> <p>Random variables, probability distribution, expectations and its properties, variances, binomial, and Poisson distributions (4.1: Q: 1-10, 13-18, 19, 25, 27, 29, 35, 36, 39).</p>	7-8	1,2,3,5			Exam	Text Book

(4.2: Q: 1, 2, 11, 15, 19, 25, 31). (4.3: Q: 27, 31, 32).						
Normal Distribution (Ch.5): Normal distribution, normal approximation to binomial distribution, the central limit theorem, Sampling Distribution. (5.1, Q: 1-16, 19, 22, 54, 56). (5.2, Q: 1, 6, 7, 13) . (5.3, Q: 18, 20, 22, 23, 27, 29, 31, 38, 41, 42). (5.4, Q: 1, 5-8, 15, 19, 29, 41, 42). (5.5, Q: 9-14, 17, 19, 31, 32).	9-10	1,3,5			Exam	Text Book
Confidence Interval (Ch.6): Confidence Intervals for the Mean (σ Known), Confidence Intervals for the Mean (σ unknown), Confidence Intervals for Population Proportions, Confidence Intervals for Variance and Standard Deviation. (6.1, Q: 1-8, 17, 21, 32, 33, 35, 47, 59). (6.2, Q: 1, 5, 9, 13, 17, 35, 41). (6.3, Q: 1-7, 11, 17, 20, 29, 36, 37). (6.4, Q: 1-3, 9, 13, 17, 23).	11-12	1,2,3,5			Exam	Text Book
Hypothesis testing (Single Population) (Ch.7) Introduction to Hypothesis Testing, Hypothesis Testing for the Mean (σ Known), Hypothesis Testing for the Mean (σ Unknown), Hypothesis Testing for Proportions, Hypothesis Testing for Variance and Standard Deviation . (7.1, Q: 1-16, 21-24, 25, 29, 31, 32, 37, 40, 43, 53-56). (7.2, Q: 1-9, 15, 16, 19, 22, 24, 27, 31, 37, 43, 44). (7.3, Q: 1-9, 12, 14, 16, 18, 19, 27, 31). (7.4, Q: 1-7, 13, 19, 20). (7.5, Q: 1-5, 14, 15, 2, 22, 23).	13-14	1,2,3,5			Exam	Text Book

Hypothesis testing (Two Populations) (Ch.8): Testing the Difference Between Means (Independent Samples, σ_1 and σ_2 Known), Testing the Difference Between Means (Independent Samples, σ_1 and σ_2 Unknown), Testing the Difference Between Means (Dependent Samples), Testing the Difference Between Proportions. (8.1, Q: 1-8, 15, 25, 27, 29). (8.2, Q: 1- 5, 9, 12, 13, 23, 25, 26). (8.3, Q: 1-5, 9, 23). (8.4, Q: 1-4, 6, 7, 13 23, 24).	15	1,2,3,5			Exam	Text Book
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21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

In order to succeed in this course, each student needs to be an active participant in learning – both in class and out of class.

- The instructor will spend most of the class time on presenting the new material as well as on discussing homework problems.
- Group work in class is encouraged.
- To actively participate in class, you need to prepare by reading the textbook and to do all assigned problems before class. (Problems will be assigned each class period and discussed the following period).
- You should be prepared to discuss your homework at each class meeting.
- You are encouraged to work with other students and to ask questions and seek help from your professor (in and out of class).
- Students are also encouraged to use graphing calculators extensively and to use computer software supplements.

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First	30	Chapters 1,2,3	1,2,3,5		On Campus
Second	30	Chapters 4,5	1,2,3,5		On Campus
Final	40	All Chapters	1,2,3,5		On Campus

23. Course Policies:

1. Attendance is absolutely essential to succeed in this course. You are expected to attend every class; please notify your instructor if you know you are going to be absent. All exams must be taken at the scheduled times. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor.
2. If a student is absent for more than 10% of the lectures without an excuse (of sickness or due to other insurmountable difficulty), then the student shall be barred from sitting for the final examination. Also he/she will get a failing grade in the course.
3. Medical certificates for excuses of exam absences should be introduced to the University Physician for authorization. These authorized certificates should also be presented to the Dean of the Faculty within two weeks of the student's ceasing to attend classes.
4. Test papers shall be returned to students after correction. The student mark is considered final after a lapse of one week following their return to students.
5. Cheating is totally prohibited, where University cheating regulations will be applied on any student who cheats in exams or on homeworks.

24. Required equipment:

Each student must have:

- Computer
- Internet connection
- Webcam
- MATHEMATICA package
- Account on Microsoft Teams

25. References:

A- Required book (s), assigned reading and audio-visuals:

Elementary Statistics Elementary Statistics PICTURING THE WORLD GLOBAL EDITION, SEVENTH EDITION, by Ron Larson, Pearson.

B- Recommended books, materials, and media:

1. Introduction to Probability and Statistics, 14th edition. By W. Mendenhall, R. Beaver and B. Beaver. Publisher: Brooks/Cole 2013.
2. Introduction to Probability and Statistics, Principles and Methods, 3rd Edition. By R. A. Johnson and G. K. Bhattacharyya. Publisher: Wiley, New York 1996.

26. Additional information:

Name of Course Coordinator: Dr. Ahmed Abdallah Signature: ----- Date: 1.9.2022

Head of curriculum committee/Department: Signature: Ahmad Al Zghoul

Head of Department: Dr. Manal Ghanim Signature: -----

Head of curriculum committee/Faculty: _ Signature: -----

Dean: Dr. Mohammad Al-Jaghoop Signature: -----