Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	08

1.	Course Title	Statistical techniques
2.	Course Number	0341332
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	0301131
5.	Program Title	B.Sc.
6.	Program Code	
7.	School/ Center	The University of Jordan
8.	Department	Science
9.	Course Level	Mathematics
10.	Year of Study and Semester (s)	all Semesters
11.	Other Department(s) Involved in Teaching the Course	none
12.	Main Learning Language	English
13.	Learning Types	üFace to face learning ☐Blended ☐Fully online
14.	Online Platforms(s)	üMoodle üMicrosoft Teams
15.	Issuing Date	October 31, 2022
16.	Revision Date	October 11, 2024

17. Course Coordinator:

Name: Amal Helu Contact hours: 10:30-11:30 am

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18. Other Instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:
Name:
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19. Course Description:

Tests involve one and two treatments, Simple and multiple regression, correlation coefficient, and the analysis of variance of one and two-factor experiments. Chi-square test for homogeneity, independence, and goodness of fit, non-parametric statistics: One sample Wilcoxon signed rank test, paired-sample Wilcoxon signed rank test, Mann-Whiteny for two independent samples, Spearman correlation coefficient and Kruskal-Wallis ANOVA.

20. Program Student Outcomes (SO's):

(To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

SO3) Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.

SO8) Utilize techniques, skills, and modern scientific tools such as mathematical packages, statistical software, graphing calculators, and online resources necessary for professional practice.

21. Course Intended Learning Outcomes (CLO's):

(Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. **Understand Sampling Distributions:** Define and explain the concept of sampling distributions for means, variances, and proportions, including $\bar{x}$, $(\bar{x}_1 - \bar{x}_2)$, $\hat{p}$, $(\hat{p}_1 - \hat{p}_2)$, s^2 and (s^2_1 / s^2).
2. **Perform Hypothesis Testing:** Identify the five steps in the hypothesis testing procedure and distinguish between parametric and nonparametric tests.
3. **Assess Assumptions for Statistical Tests:** Evaluate the assumptions necessary for statistical tests, including z-tests, t-tests, chi-square, ANOVA, and Regression.
4. **Apply Nonparametric Methods:** Understand and apply the principles of nonparametric inference to various data scenarios.
5. **Determine Appropriate Test Methods:** Decide whether statistical inference should be based on dependent/independent samples or parametric/nonparametric methods.
6. **Use Analysis of Variance (ANOVA):** Identify when ANOVA is appropriate and apply it to compare group means.
7. **Use Regression Analysis**: Identify appropriate scenarios for regression analysis and apply it to assess relationships between variables.
8. **Utilize Statistical Software**: Use Minitab to validate statistical test assumptions, perform analysis, and interpret results.
9. **Analyze Outputs from Statistical Software:** Interpret the output of statistical tests from Minitab and present findings in a clear manner.
10. **Apply Inferential Methods in Minitab:** Execute inferential statistical methods for means, variances, and proportions using Minitab and explain the outcomes.
11. **Compare Parametric and Nonparametric Tests**: Analyze and contrast parametric and nonparametric tests to choose the appropriate method for a given context.
12. **Select the Correct Statistical Test:** Identify the correct statistical test for a given research question and dataset.
13. **Translate Statistical Findings into Plain English:** Convert statistical results into meaningful conclusions using appropriate terminology.

Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
CLO 1: Understand Sampling Distributions.	✓	✓				
CLO 2: Perform Hypothesis Testing.	✓	✓	✓			
CLO 3: Assess Assumptions for Statistical Tests.		✓		✓		
CLO 4: Apply Nonparametric Methods.	✓		✓			
CLO 5: Determine Appropriate Test Methods.		✓		✓		
CLO 6: Use Analysis of Variance (ANOVA).	✓	✓	✓			
CLO 7: Use Regression Analysis.	✓	✓	✓			
CLO 8: Utilize Statistical Software for Validation and Analysis.		✓	✓			
CLO 9: Analyze Outputs from Statistical Software.				✓		
CLO 10: Apply Inferential Methods in Minitab.			✓			
CLO 11: Compare Parametric and Nonparametric Tests.		✓		✓		
CLO 12: Select the Correct Statistical Test for a Given Dataset.		✓			✓	✓
CLO 13: Translate Statistical Findings into Plain English.					✓	✓

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program SO's / Course CLO's	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)	SO (6)	SO (7)	SO (8)
CLO (1)			✓					
CLO (2)			✓					
CLO (3)			✓					✓
CLO (4)			✓					
CLO (5)			✓					✓
CLO (6)			✓					
CLO (7)			✓					
CLO (8)			✓					✓
CLO (9)			✓					✓
CLO (10)			✓					✓
CLO (11)			✓					
CLO (12)			✓					✓
CLO (13)			✓					✓

23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1-2	1.1	Significance Tests: Mean, Proportion, Variance, Errors	CLO 1, CLO 2, CLO 3, CLO 10, CLO 12	Face-to-Face	None	Synchronous	Quiz	Essentials of Statistics (Chapter 7)

3-4	2.1	Comparisons of Two Groups: Means, Proportions, Variances	CLO 2, CLO 3, CLO 4, CLO 11	Face-to-Face	None	Synchronous	Homework	Essentials of Statistics (Chapter 8)
5-7	3.1	One-Way Analysis of Variance (ANOVA)	CLO 3, CLO 6, CLO 7, CLO 12	Face-to-Face	None	Synchronous	Midterm Exam 1	Essentials of Statistics (Chapter 10)
8-9	4.1	Two-Way Analysis of Variance (ANOVA)	CLO 3, CLO 6, CLO 7, CLO 12	Face-to-Face	None	Synchronous	Midterm Exam 2	Essentials of Statistics (Chapter 11)
10	5.1	Analyzing Association Between Categorical Variables	CLO 3, CLO 4, CLO 8, CLO 9, CLO 11	Face-to-Face	None	Synchronous	Project	Essentials of Statistics (Chapter 12)
11-12	6.1	Linear Regression and Correlation	CLO 3, CLO 7, CLO 9, CLO 10, CLO 12	Face-to-Face	None	Synchronous	Homework	Essentials of Statistics (Chapter 13)
13-14	7.1	Multiple Regression and Correlation	CLO 7, CLO 9, CLO 10, CLO 12	Face-to-Face	None	Synchronous	Midterm Exam 3	Essentials of Statistics (Chapter 14)
15	8.1	Nonparametric Tests: Wilcoxon, Mann Whitney, Kruskal-Wallis	CLO 4, CLO 5, CLO 11, CLO 12, CLO 13	Face-to-Face	None	Synchronous	In class activity	Essentials of Statistics (Chapter 15)

24. Evaluation Methods:

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

Evaluation Activity	Mark	Topics Covered	Linked CLOs	Evaluation Date (Period)	Type of Platform Used
First Midterm Exam	20%	Chapters: 7,8,10 & 11	CLOs: 1-4, 6,7,10-12	Week 6 - 14/11/24	Classroom
Second Midterm Exam	20%	Chapters: 13 & 14	CLOs: 3,7,9,10,12	Week 12 - 22/12/24	Classroom
Quizzes and projects	10%	Spread throughout the semester, covering all chapters.	All CLOs	Random Weeks (Unannounced)	Classroom
Final Exam	50%	Comprehensive Coverage of All Chapters	All CLOs	Last Week of Semester	Classroom

25. Course Requirements:

Whiteboard, Minitab, Microsoft Teams (each student must have Account on Microsoft Teams)

26. Course Policies:

Attendance is essential to succeeding in this course. You are expected to attend every class; please notify your instructor if you know you will 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.

If a student is absent for more than 15% of the lectures without a valid excuse (such as sickness or other unavoidable circumstances), they will not be allowed to take the final examination and will receive a failing grade in the course.

Students who need to be excused from exams due to medical reasons should provide a medical certificate to the University Physician for approval. The approved certificates should then be submitted to the Dean of the Faculty within two weeks of the student no longer attending classes.

After grading, test papers will be returned to the students. One week after the papers are returned, the student's mark will be considered final.

Cheating is strictly prohibited in this course. Any student found cheating in exams or homework will be subject to the University's cheating regulations, which will be enforced without exception.

27. References:

Essential of Statistics for Business and Economics 7th edition by Anderson, Sweeney, Williams, Camm and Cochran.

28. Additional information:

Name of the Instructor or the Course Coordinator: **Prof. Amal Helu**	Signature: ……	Date: 11/10/2025
Name of the Head of Quality Assurance Committee/ Department: **Prof. Manal Ghanem**	Signature: ……	Date: ……
Name of the Head of Department: **Prof. Baha Alzalg**.	Signature: ……	Date: ……
Name of the Head of Quality Assurance Committee/ School of Science: **Prof. Emad A. Abuosba**	Signature: ……	Date: ……
Name of the Dean or the Director: **Prof. Mahmoud I. Jaghoub**	Signature: ……	Date: ……