

## Course E-Syllabus

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

1	<b>Course Title</b>	Statistics and Probability
2	<b>Course Number</b>	0908211
3	<b>Credit Hours (Theory, Practical)</b>	2
	<b>Contact Hours (Theory, Practical)</b>	2 hours theoretical
4	<b>Prerequisites/ Corequisites</b>	Calculus (2) – 0301102
5	<b>Program Title</b>	B.Sc. in Mechatronics Engineering
6	<b>Program Code</b>	
7	<b>School/ Center</b>	School of Engineering
8	<b>Department</b>	Department of Mechatronics Engineering
9	<b>Course Level</b>	2 <sup>nd</sup> year
10	<b>Year of Study and Semester (s)</b>	2023/2024 2 <sup>nd</sup> Semester
11	<b>Other Department(s) Involved in Teaching the Course</b>	None
12	<b>Main Learning Language</b>	English
13	<b>Learning Types</b>	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14	<b>Online Platforms(s)</b>	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams
15	<b>Issuing Date</b>	24/2/2024
16.	<b>Revision Date</b>	21/3/2024

### 17 Course Coordinator:

Name: Prof. Osama Al-Habahbeh	Contact hours: As per schedule
Office number: Mechatronics Dept., 3 <sup>rd</sup> Floor	Phone number: 065355000 ext. 23031
Email: o.habahbeh@ju.edu.jo	

### 18 Other instructors:

None
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**19 Course Description:**

Basic Concepts of Statistics, Data Analysis, Visualization, Confidence Intervals, Regression, as well as descriptive and inferential statistics, Fundamentals of Probability, random variables, Probability Distributions, Conditional distributions, and Expected Value. Other topics covered include Availability, Reliability, and Maintainability.

**20. Program Intended Learning Outcomes:** (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

**SO:1:** An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

**21. Course Intended Learning Outcomes:** (Upon completion of the course, the student will be able to achieve the following intended learning outcomes):

1. Understand the basic concepts of statistics.
2. Define fundamentals of probability.
3. Explain confidence intervals, descriptive and inferential statistics.
4. Identify random variables, probability distributions, conditional distributions.
5. Analyze and visualize data.
6. Perform regression.
7. Calculate expected value.
8. Recognize availability, reliability, and maintainability.

Course ILOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analyzing	evaluating	Creating
1	✓	✓	✓			
2	✓	✓	✓			
3	✓	✓	✓			
4	✓	✓	✓			
5	✓	✓	✓	✓		
6	✓	✓	✓			
7	✓	✓	✓			
8	✓	✓	✓			

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

<b>Program ILOs</b> <b>SOs</b>	<b>ILO (1)</b> <b>SO: 1</b>	<b>ILO (2)</b> <b>SO: 2</b>	<b>ILO (3)</b> <b>SO: 3</b>	<b>ILO (4)</b> <b>SO: 4</b>	<b>ILO (5)</b> <b>SO: 5</b>	<b>ILO (6)</b> <b>SO: 6</b>	<b>ILO (7)</b> <b>SO: 7</b>
<b>Course ILOs</b>							
1							
2							
3							
4							
5	✓						
6							
7	✓						
8							

**23. Topic Outline and Schedule:**

<b>Week</b>	<b>Lecture</b>	<b>Topic</b>	<b>ILO/s Linked to the Topic</b>	<b>Learning Types (Face to Face/ Blended/ Fully Online)</b>	<b>Platform Used</b>	<b>Synchronous / Asynchronous Lecturing</b>	<b>Evaluation Methods</b>	<b>Learning Resources</b>
1	1.1	Ch-1: Introduction	1	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	1.2	Basic Concepts of Statistics	1	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	1.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
2	2.1	Ch-2: Fundamentals of Probability	2	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	2.2	Random variables	4	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	2.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
3	3.1	Ch-2: Conditional distributions	4	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	3.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27

	3.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
4	4.1	Ch-3: Probability Distributions	4	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	4.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	4.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
5	5.1	Ch-3: Expected Value	7	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	5.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	5.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
6	6.1	Ch-4: Visualization	5	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	6.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	6.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
7	7.1	Ch-6: Data Analysis	5	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	7.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	7.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
8	8.1	Ch-6: Descriptive statistics	3	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	8.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	8.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
9	9.1	Ch-8: Confidence Intervals	3	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	9.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	9.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
10	10.1	Ch-10: Inferential statistics-1	3	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	10.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	10.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
11	11.1	Ch-10: Inferential statistics-2	3	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	11.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	11.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
12	12.1	Ch-11: Regression	6	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	12.2			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	12.3			Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	13.1	Availability (2.6)	8	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27

13	13.2	Reliability (2.2)	8	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
	13.3	Maintainability (2.1)	8	Face to Face	Moodle	NA	Oral & written exams	Shown in 14 & 27
14	14.1	Review		Face to Face		NA		
	14.2							
	14.3							
15	15.1	Final Exams						
	15.2							
	15.3							

Notes:

- Weeks 1-12: Montgomery book, Week 13: Smith book

#### 24. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	ILO/s Linked to the Evaluation activity	Period (Week)	Platform
In-class participation	20	TBA		TBA	Verbal evaluation
Midterm Exam	30	Midterm material		TBA	On campus
Final Exam	50	Post Midterm material		TBA	On campus
Total	100%				

#### 25. Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Each student should have a Textbook, Computer, Internet access & Scientific calculator.

#### 26. Course Policies:

A- Attendance policies: Attendance will be taken every class and University policy will be enforced.  
 B- Absences from exams and submitting assignments on time: Absence not allowed and no Late submission.  
 C- Health and safety procedures: As per University policy  
 D- Honesty policy regarding cheating, plagiarism, misbehavior: Not tolerated as per University policy  
 E- Grading policy: As mentioned in Evaluation Methods above.  
 F- Available university services that support achievement in the course: Platforms, Instructor support, Administrative support.

#### 27. References:

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

Text book: Applied Statistics and Probability for Engineers, Douglas C. Montgomery, George C. Runger, Wiley, 6<sup>th</sup> Edition.

B- Recommended books, materials, and media:

Reference book: Reliability, Maintainability and Risk, Practical methods for engineers, Dr David J Smith, Butterworth Heinemann, 6<sup>th</sup> Edition.

**28. Additional information:**

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Name of the Instructor or the Course Coordinator:

**Prof. Osama Al-Habahbeh**

Signature:

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Date:

21/3/2024

Name of the Head of Quality Assurance Committee/  
Department

Signature:

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Date:

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Name of the Head of Department

Signature:

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Date:

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Name of the Head of Quality Assurance Committee/  
School or Center

Signature:

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Date:

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Name of the Dean or the Director

Signature:

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Date:

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