Specification for Biostatistics course

2025/2026

1-Basic information

Course title	Biostatistics							
Course code	AWD.122							
Department/s participating in delivery of the course	Animal Wealth Development							
Number of units/credit hours	Theoretical	1	Practical	1(2)	Other	0	Total	2(3)
Course Type	√ Obligatory Elective							
Academic level at which the course is taught	1st year							
Semester	Fall Semester							
Academic program	Bachelor of Veterinary Medicine (BVM)							
Faculty	Veterinary medicine							
University	Benha University							
Name of course coordinator	Prof. Dr. Eman Manaa.							
Course Specification Approval Date	Faculty council/ 27-8-2025							
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council/ 8-7-2025							

2-Course overview

- **Course contents written in the program bylaw:**
- Introduction; Description of the data; Measures of central tendency; measures of dispersion; probability laws; binomial distribution; normal distribution, testing hypothesis (independent T-test and paired T-test): (Latin square) and Nested design simple correlation and simple regression.

3- Course Learning Outcomes CLOs

	(NARS)		Course ILOS	
	Code	**Content**	**Code**	**Content**
Knowledge and understanding	2.1	Basic sciences of biology, chemistry, biophysics, genetics, biostatistics, computer science, and veterinary terminology.	a1	Understand the fundamental concepts, scope, and applications of biostatistics in veterinary medicine.
			a2	Recognize different types of data, variables, levels of measurement, and appropriate data collection techniques.
			a3	Understand the theoretical principles behind probability distributions and statistical inference.
			a4	Identify appropriate statistical tests (e.g., t-test, ANOVA, correlation, regression) and their assumptions.
Intellectual skills	4.3	Inculcate a rigorous approach to problem identification and solving.	b1	Differentiate between types of data and select suitable methods for organization and presentation.
			b2	Interpret descriptive statistics and draw logical conclusions from statistical summaries.
			b3	Evaluate hypotheses using statistical reasoning and appropriate test selection.
			b4	Analyze data outputs critically and detect anomalies, such as outliers or violations of test assumptions.
Professional and practical skills	3.1	Employ all the gained knowledge and understanding in clinical practice in a skillful pattern.	c1	Apply statistical techniques such as frequency distribution, data visualization, and summary statistics.
			c2	Perform hypothesis testing using statistical software or manual calculations.
			c3	Apply appropriate sampling

				strategies and manage real-world veterinary datasets.
General and transferable skills	5.4	Organize and control tasks and resources.	d1	Manipulate and organize tasks
	5.6	Utilize computer and internet skills.	d2	Utilize computer and internet skills, read paper via internet in biostatics.

4- Teaching and learning methods					
Lectures	√	**Discussion & seminar**	-	**Practical**	√
Presentation & movies	√	**Problem solving**	√	**Brain storming**	√
Others					

- Course Schedule:

Number of the Week	**Scientific content of the course (Course Topics)**	**Total Weekly Hours**	**Expected Number of the Learning Hours**			
			Theoretical teaching (lectures/discussion groups/ .....)	**Training (Practical/Clinical/ .....)**	**Self-learning (Tasks/ Assignments/ Projects/ ...)**	**Other (to be determined)**
W1	Introduction to Biostatistics.	**2(3)**	**1**	**1(2)**		0
W2	Tabular and graphic presentation of the data (Frequency distributions and graphs).	**2(3)**	**1**	**1(2)**		0

W3	Data description (Summary statistics). (Measures of central tendency)	**2(3)**	**1**	**1(2)**	Formative quiz	0
W4	Data description (Summary statistics). (Measures of dispersion)	**2(3)**	**1**	**1(2)**		0
W5	The normal probability distribution.	**2(3)**	**1**	**1(2)**		0
W6	Hypothesis testing.	**2(3)**	**1**	**1(2)**	Formative quiz	0
W7	Semester work (one hour exam)	----------				
W8	Hypothesis Testing 1: Comparing two means using Student's T-test. (Paired-samples T-test).	**2(3)**	**1**	**1(2)**		0
W9	Hypothesis Testing 1: Comparing two means using Student's T-test. (Unpaired-samples T-test n1= n2).	**2(3)**	**1**	**1(2)**		0

W10	Hypothesis Testing 1: Comparing two means using Student's T-test. (Unpaired-samples T-test n1≠ n2).	**2(3)**	**1**	**1(2)**	Formative quiz	0
W11	Hypothesis Testing 2: One-way analysis of Variance (ANOVA).	**2(3)**	**2**	**2(4)**		0
W12	Hypothesis Testing 3: Linear Correlation.	**2(3)**	**1**	**1(2)**		0
W13	Hypothesis Testing 3: Linear Regression.	**2(3)**	**1**	**1(2)**		0
W14	Revision	**2(3)**	**1**	**1(2)**	Formative quiz	0
W15	Practical exam	----------				

5- Methods of students' assessment

a- Assessment methods (summative and formative)

1. **Formative assessment**: including (weekly quizzes, homework assignments and surveys).
2. **Summative assessment** including (quizzes, class activities, semester work, practical exam, oral exams and final written exams).

b- Assessment schedule and weight

Assessment method	**Assessment Timing (Week Number)**	**Marks/ Scores**	Percent Percentage of total course Marks
Semester work including one hour exam	7th week	10	10%
Formative assessment	Through semester	--------	------

Practical exam	15th week	30	30%
oral exam	End of semester	10	10%
Written exam	End of semester	50	50%
Assignments / Project /Portfolio/ Logbook	--------	-------	-------
Field training	--------	----------	-------
Other (Mention)	-------	--------	-------
Total		100	100%

6- Learning resources and supportive facilities:

Learning resources	**Main reference**	**Student handbook**: Notes approved by Department
	Essential books (textbooks)	• N.A. Hasabelnaby Elementary Biostatistics with Applications from Saudi Arabia. King Saud University, 1996 • Bluman, A., 2014. Elementary Statistics: A step-by-step approach. 7th edition. McGraw-Hill. • Fowler, J., Cohen, L. and Jarvis, P., 2013. Practical statistics for field biology. 2nd edition. John Wiley & Sons
	Periodicals, Web sites, . . . etc	• http://en.wikipedia.org/wiki/Biostatistics. • http://www.hsph.harvard.edu/departments/biostatistics. • www.ekb.eg
	Learning platform	Thinqi
supportive facilities:	**Devices & instruments**	1- Data show. 2- White board. 3-Computer

Matrices:

A- Content and ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills

Introduction to Biostatistics.	a1	b1	c1	d1, d2
Tabular and graphic presentation of the data (Frequency distributions and graphs).	a2	b2,b3	c1	d1, d2
Data description (Summary statistics). (Measures of central tendency)	a2	b2,b3	c1	d1, d2
Data description (Summary statistics). (Measures of dispersion)	a2	b2,b3	c1	d1, d2
The normal distribution.	a2	b2,b3	c1,c2	d1, d2
Hypothesis Testing.	a2	b2,b3	c1,c2	d1, d2
Hypothesis Testing 1: Comparing two means using Student's T-test.	a1, a3	b2,b3	c1,c2	d1, d2
Hypothesis Testing 2: One-way analysis of Variance (ANOVA).	a3	b2,b3	c2	d1, d2
Hypothesis Testing 3: Linear Correlation and Regression.	a4	b4	c3	d1, d2

B- Teaching, learning methods and ILOS:

ILOs		Teaching and Learning methods			
		L	P&M	Ps	Bs
Knowledge and understanding	a1	√			
	a2	√			
	a3	√			

	a4	√			
Intellectual skills	b1	√			
	b2	√	√		√
	b3	√	√		√
	b4	√	√		√
Professional and practical skills	c1				
	c2				
	c3				
General skills	d1	√		√	√
	d2	√		√	√

L**: Lecture,** P&M**: Presentations & Movies,** Ps: **Problem solving,** Bs: **Brain storming**

C- Assessment methods and ILOS:

ILOs		assessment method			
		Formative assessment	Semester work (1 hr exam)	Oral	Written
Knowledge and understanding	a1		√	√	√
	a2		√	√	√
	a3			√	√
	a4			√	√
Intellectual skills	b1		√	√	√
	b2		√	√	√
	b3			√	√
	b4			√	√
ssional and practical	c1	√			
	c2	√			

	c3	√			
General skills	d1	√		√	
	d2	√		√	

-Course coordinator: **Prof. Dr.** EMAN Manaa.
Head of department **Prof. Dr.** Sherif Ramadan

-Program coordinator: **Prof. Dr.** Mahmoud Abouelroos