



Course Specification

— (Bachelor)

Course Title: **Principles of Statistics**

Course Code: **STAT26212**

Program: **BSc in: Mathematics; Physics; Chemistry; Biology**

Department: **Mathematics**

College: **Science**

Institution: **University of Bisha**

Version: **3**

Last Revision Date: **25 July 2023**



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

A. University College Department Track Others
 B. Required Elective

3. Level/year at which this course is offered: (3rd level/ 2^{ed} year)

4. Course general Description:

This course covers the basic concepts of statistics and probability theory. It is designed as an introduction to statistics and probability theory emphasis on descriptive statistics and principles of probability for students of natural, biological sciences and engineering. The presentation of the material is aimed to give an understanding of the underlying principles, as well as practical guidelines of “how to do it” and “how to interpret it.” The topics include, Presenting and Summarizing Data, Correlation and Regression, Principles of Probability, Random Variables and Distribution Functions and Some Important Random Variables.

5. Pre-requirements for this course (if any):

MATH26111

6. Co-requirements for this course (if any):

Nil

7. Course Main Objective(s):

This course aims to provide students with basic knowledge, skills and positive attitudes in the sciences of statistics and probability theory. It is a preparation course for the study of other advanced courses in the science of statistics, probability theory and their applications. It also aims to provide students with basic skills in logical thinking, data analysis, problem solving and decision making.

2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning	-----	-----
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 	-----	-----
4	Distance learning	-----	-----

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	-----
3.	Field	-----
4.	Tutorial	-----
5.	Others (specify)	-----
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding: By successfully completing this course it is expected that the student will be able to:			
1.1	Define basic concepts of descriptive statistics.	K3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
1.2	State probability principles and probability function properties.	K3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
1.3	Define some important random variables.	K3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
2.0	Skills: By successfully completing this course it is expected that the student will be able to:			





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.1	Present and summarize data and calculate measures of tendency and dispersion.	S3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
2.2	Calculate probability statements and apply Bayes' theorem in real probability problems.	S3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
2.3	Discuss properties of some important random variables, distribution functions and prove properties of expected operator.	S3	Lecture Discussion Active Learning Cooperative Learning	Exercises or Written Tests
3.0	Values, autonomy, and responsibility: By successfully completing this course it is expected that the student will be able to:			
3.1	Exhibit self-learning and work in team.	V2	Lecture Discussion Active Learning Cooperative Learning	Group Project

C. Course Content

No	List of Topics	Contact Hours
1.	Presenting and Summarizing Data: Data and variables, frequency distribution, cumulative frequency distribution.	2
2.	Graphical presentation of data.	2
3.	Measures of tendency.	2
4.	Measures of dispersion.	2
5.	Correlation and Regression: Scatter diagram, Pearson's correlation coefficient, Spearman's rank correlation coefficient.	2
6.	Least squares regression line.	2
7.	Applications	2
8.	Principles of Probability: Random experiment, observations (sample) space, events, probability axioms, probability, equally likely single-element events.	2
9.	Counting techniques.	2
10.	Conditional probability, Independent and mutually exclusive events.	2
11.	Random Variables and Distribution Functions: Random variables, distribution function, probability density function.	2





12.	Applications	2
13.	Expectation of function of random variable, mean, variance, properties of expectation.	2
14.	Binomial and Bernoulli random variables.	2
15.	Normal and standard normal random variables.	2
Total		30

The matrix of consistency between the content and the learning outcomes of the course

Course Learning Outcomes							
Topics	1.1	1.2	1.3	2.1	2.2	2.3	3.1
1	√			√			√
2	√			√			√
3	√			√			√
4	√			√			√
5	√			√			√
6	√			√			√
7	√			√			√
8		√			√		√
9		√			√		√
10		√			√		√
11			√			√	√
12			√			√	√
13			√			√	√
14			√			√	√
15			√			√	√

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Exercises	6th, 13th	10%
2.	Exam I	7th	15%
3.	Exam II	12th	15%
4.	Group Project	14th	10%
5.	Final Exam	End of Semester	50%





*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<p>1. William Mendenhall, Robert J. Beaver, and Barbara M. Beaver" Introduction to Probability and Statistics" 15th Ed., Brooks/Cole, Cengage Learning, 2019.</p> <p>2. James T. McClave and Terry Sincich" Statistics" 13th Ed., Pearson Education Limited, 2018.</p>
Supportive References	<p>1. Allan G. Bluman "Elementary Statistics: A Step by Step Approach" 10th Ed., McGraw-Hill Education, 2018.</p> <p>2. Prem S. Mann "Introductory Statistics" 10th Ed., John Wiley & Sons, Inc., 2021.</p>
Electronic Materials	-----
Other Learning Materials	-----

2. Required Facilities and equipment

Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	Classrooms for 30 students.
<p>Technology equipment (projector, smart board, software)</p>	Smart board.
<p>Other equipment (depending on the nature of the specialty)</p>	-----

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of Students assessment	Peer Reviewer	Indirect
Quality of learning resources	Student	Indirect
The extent to which CLOs have been achieved	Program Leader	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)





G. Specification Approval

COUNCIL /COMMITTEE	FACULTY COUNCIL
REFERENCE NO.	20
DATE	17 AUGUST 2023

