



Course Specification

(Bachelor)

| | |
|---------------------|--|
| Course Title: | Biostatistics |
| Course Code: | APOP4102 |
| Program: | Optician Diploma |
| Department: | |
| College: | Applied Collage |
| Institution: | Umm Al-Qura University, Makkah, Saudi Arabia |
| Version: | 1 |
| Last Revision Date: | Jan-2025 |



Table of Contents

| | |
|--|---|
| A. General information about the course: | 3 |
| B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods | 4 |
| C. Course Content..... | 4 |
| D. Students Assessment Activities | 5 |
| E. Learning Resources and Facilities..... | 5 |
| F. Assessment of Course Quality | 5 |
| G. Specification Approval | 6 |





A. General information about the course:

1. Course Identification

| | | | | | |
|---|--|----------------------------------|--|--------------------------------|---------------------------------|
| 1. Credit hours: (2h) | | | | | |
| 2 h | | | | | |
| 2. Course type | | | | | |
| A. | <input type="checkbox"/> University | <input type="checkbox"/> College | <input checked="" type="checkbox"/> Department | <input type="checkbox"/> Track | <input type="checkbox"/> Others |
| B. | <input checked="" type="checkbox"/> Required | | <input type="checkbox"/> Elective | | |
| 3. Level/year at which this course is offered: (2nd level / 2nd year) | | | | | |
| 4. Course General Description: | | | | | |
| The course will cover: Basic concepts of descriptive statistics – Different statistical Measures (central tendency measures, dispersion measures, measure of Positon) - simple linear regression. | | | | | |
| 5. Pre-requirements for this course (if any): | | | | | |
| Principles of Mathematics (APOP1101) | | | | | |
| 6. Co-requisites for this course (if any): | | | | | |
| NA | | | | | |
| 7. Course Main Objective(s): | | | | | |
| Giving the student a sufficient information and skills that help in dealing with : | | | | | |
| <ul style="list-style-type: none"> • Implementation of different methods of data processing and analysis • Calculating some statistical measure • Doing some statistical inferences about the average. | | | | | |

2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|--|---------------|------------|
| 1 | Traditional classroom | 3 | 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 | 3*15 |
| 2. | Laboratory/Studio | |
| 3. | Field | |



| | | |
|--------------|-------------------------|-----------|
| 4. | Tutorial | |
| 5. | Others (specify) | |
| Total | | 45 |

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

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|------|---|---------------------------------------|---|---|
| 1.0 | Knowledge and understanding At the end of this course the student will be able to : | | | |
| 1.1 | Outline basic Concepts of descriptive statistics | K1 | • Lectures. • Whole group discussions | - Short quizzes - Assignments - Written exam |
| 1.2 | Classify types of data and variables | K1 | | |
| 1.3 | Identify different statistical measures | K1 | | |
| 2.0 | Skills At the end of this course the student will be able to : | | | |
| 2.1 | Apply different methods of data processing and analysis | S4 | • Lectures. • Tutorial • Solved examples • Whole group discussions | - Short quizzes - Written exam - Homework assignments |
| 2.2 | Use appropriate methods for data organization and representation according to the data nature | S4 | | |
| 3.0 | Values, autonomy, and responsibility At the end of this course the student will be able to : | | | |
| 3.1 | Manage self-learning by collecting and classifying information on a specific topic | V2 | • Small group work. • Research activities • Class Activities | - Observations - Group assignments - Reports |
| 3.2 | Work cooperatively in a small group environment | V1 | | |

C. Course Content

| No | List of Topics | Contact Hours |
|----|--|---------------|
| 1. | Introduction and basic definitions : Definition of Biostatistics -Descriptive Statistics - inferential statistics (or inductive statistics) - Society and Sample - Classification of quantitative, qualitative, continuous and discrete variables-Summation notation | 6 |
| 2. | Data organization and representation: | 9 |



| | | |
|--------------|---|-----------|
| | Graphical representation of qualitative data (Bar graphs- pie charts). Organizing data in simple and aggregative frequency tables Frequency & Relative Frequency Dist. Graphical representation using Histogram, the repeating polygon and the Cumulative Frequency curve. Steam and Leaf display & Dot plots | |
| 3. | Measures of central tendency: The mean, median, and the mode of unclassified and classified data in simple frequency tables. Advantages and disadvantages of these measures. The arithmetic mean of data classified in a cumulative frequency table. | 6 |
| 4. | Measures of Dispersion: Range - Variance and standard deviation of raw and classified data. Coefficient of variation. | 3 |
| 5. | Discrete probability distributions: The concept of random variable and probability mass function - Random variable prediction - Binomial distribution - Poisson distribution - Mean and variance of these two distributions | 6 |
| 6. | Continuous probability distributions: Normal distribution –Application issues to normal distribution | 3 |
| 7 | Simple Linear Regressions. | 3 |
| 8 | Testing of statistical hypotheses: Null hypothesis - Alternative hypothesis- Confidence level - Level of significant - The formal procedures of the statistical hypothesis test about the average population of a large sample – Significant tests for quantitative data | 6 |
| Total | | 45 |

D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|----|-------------------------|-----------------------------------|--|
| 1. | Quiz 1 | 5 | 10 |
| 2. | Mid-term written Exam | 8 | 20 |
| 3. | Quiz 2 | 10 | 10 |
| 4. | Assignments | Along the term | 20 |
| 5. | Final written exam | 16 | 40 |

*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 | <ul style="list-style-type: none"> - Nancy A. Eyink Hasabelnaby, Elementary Biostatistics with Applications from Saudi Arabia, 3rd Edition, 2003. - Biostatistics for the biological and health sciences: 1st Edition by M. M. Triola and M. F. Triola, 2nd Edition, 2017 |
| Supportive References | Course notes on the university E-learning web-site |
| Electronic Materials | |
| Other Learning Materials | |

2. Required Facilities and equipment

| Items | Resources |
|---|-------------|
| facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | Classrooms, |
| Technology equipment (Projector, smart board, software) | Projector |
| Other equipment (Depending on the nature of the specialty) | |

F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Students | Direct: Questioner of course quality |
| Effectiveness of students' assessment | Peer reviewers | Direct: <ul style="list-style-type: none"> • Random grading report • Test Completion report for test Standards |
| Quality of learning resources | Students | Indirect: E-Survey of sufficiency of learning resources |
| The extent to which CLOs have been achieved | Instructor, Program leader and Course coordinator | Indirect: Check the results of quizzes, mid-term and final exams. |
| Other | | |

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

Assessment Methods (Direct, Indirect)



G. Specification Approval

| | |
|--------------------|--------------------------------|
| COUNCIL /COMMITTEE | Umm Al-Qura University Council |
| REFERENCE NO. | 851141114462/190386 |
| DATE | 1446/11/22 |

