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| --- | --- |
| **Course Title:** | **BIOSTATISTICS** |
| **Course Code:** | **341 PHCL-2** |
| **Program:** | **Pharmaceutical Sciences** |
| **Department:** | **Pharmacology** |
| **College:** | **Pharmacy** |
| **Institution:** | **Najran University** |

Table of Contents

[A. Course Identification 3](#_Toc951372)

[6. Mode of Instruction (mark all that apply) 3](#_Toc951373)

[B. Course Objectives and Learning Outcomes 3](#_Toc951374)

[1. Course Description 3](#_Toc951375)

[2. Course Main Objective 3](#_Toc951376)

[3. Course Learning Outcomes 4](#_Toc951377)

[C. Course Content 5](#_Toc951378)

[D. Teaching and Assessment 5](#_Toc951379)

[1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 5](#_Toc951380)

[2. Assessment Tasks for Students 5](#_Toc951381)

[E. Student Academic Counseling and Support 5](#_Toc951382)

[F. Learning Resources and Facilities 5](#_Toc951383)

[1.Learning Resources 5](#_Toc951384)

[2. Facilities Required 6](#_Toc951385)

[G. Course Quality Evaluation 6](#_Toc951386)

[H. Specification Approval Data 6](#_Toc951387)

# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** | | | | **2(1+1)** | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | | **√** | Department | | | |  | Others |  |  |
| **b.** | | Required | | | | **√** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | **3ed level/2rd year** | | | | |
| **4. Pre-requisites for this course** (if any)**:** **None**. | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**: None.** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 45 | 100 % |
| **2** | **Blended** | -- | -- |
| **3** | **E-learning** | -- | -- |
| **4** | **Correspondence** | -- | -- |
| **5** | **Other** | -- | -- |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** | | |
| **1** | **Lecture** | **15** |
| **2** | **Laboratory/Studio** | **30** |
| **3** | **Tutorial** | **--** |
|  | **Total** | **45** |
| **Other Learning Hours\*** | | |
| **1** | **Study** | **30** |
| **2** | **Assignments** | **5** |
| **3** | **Library** | **5** |
| **4** | **Projects/Research Essays/Theses** | -- |
| **5** | **Others** (Office hours) | -- |
|  | **Total** | **85** |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

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# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course is a part of introductory biostatistics and acquaints the students with the basic concepts and methods of Biostatistics. This course introduces basic concepts of descriptive statistics i.e. central tendency and dispersion, linear correlation and regression model, data summarization and presentation. We urge the student to read the examples carefully. Through our chosen courses we prepare the students for develops ability to read the scientific literature to critically evaluate study designs and methods of data analysis. |
|  |
| 2. Course Main Objective |
| Upon successful completion of the course, the student is expected to:  2.1. Have knowledge about relevant statistical terminology and the role of statistics as scientific method recognize different types and structures of data.  2.2. Differentiate between different types of variables.  2.3. Construct frequency distribution table for values and grouped data.  2.4. Evaluate proportion.  2.5. Calculate measures of central tendency for values and grouped data.  2.6. Evaluate correlation and regression coefficients.  2.7. Understand basic statistical concepts for central tendency, dispersion and linear correlation. |

## 

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | List the basic statistical terminology | K1 |
| 1.2 | Describe different types and structures of data and summarize data in tables, graphs. | K1 |
| 1.3 | List and describe basic statistical concepts about measures of central tendency, dispersion, Correlation, and Regression …etc. | K1 |
| 1.4 | Distinguish between different measures | K1 |
| **2** | **Skills :** |  |
| 2.1 | Compute and interpret the scientific data related to health science | S3 |
| 2.2 | Apply various techniques to solve problem under study | S2 |
| **3** | **Competence:** |  |
| 3.1 | Work independently, professionally, and communicate clearly by verbal and written means. | C2 |
| 3.2 | Implement self-directed learning to enhance physiotherapy skills. | C3 |

# C. Course Content: (Theoretical + practical)

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Fundamental basic Concepts in biostatics. | 1 |
| 2 | Classification of data & Data summarizing. | 1 |
| 3 | Frequency distribution tables: Relative frequency tables; Percentage frequency tables. | 1 |
| 4 | Cumulative frequency tables 'less than'; Cumulative frequency tables ' more than'; Bivariate frequency tables; Class mark; real bounds of classes. | 1 |
| 5 | Data presentation: Tabular Methods. | 1 |
| 6 | Data presentation: Graphical Methods. | 1 |
| 7 | Measures of central tendency: Arithmetic mean (grouped data, ungrouped data, and some properties of arithmetic mean. | 1 |
| 8 | Measures of central tendency: Median; Mode (grouped, ungrouped data). | 1 |
| 9 | Measures of dispersion: Range, Semi interquartile range, Mean deviation (grouped, ungrouped data). | 1 |
| 10 | Measures of dispersion: Variance, Standard deviation (grouped, ungrouped data)., Coefficient of variation…. | 1 |
| 11 | Simple Correlation: Person's correlation coefficient of linear correlation, Coefficient of contingency | 1 |
| 12 | Regression (Regression line). | 1 |
| 13 | Relation between Correlation and Regression. | 1 |
| 14 | Examinations and assessment (First midterm exam) | 1 |
| 15 | Examinations and assessment (Second midterm exam) | 1 |
| **Total** | | 15 |

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|  |  |  |
| --- | --- | --- |
| **No** | **List of Practical Topics** | **Contact Hours** |
| 1 | Fundamental basic Concepts in biostatics. | 2 |
| 2 | Classification of data & Data summarizing. | 2 |
| 3 | Frequency distribution tables: Relative frequency tables; Percentage frequency tables. | 2 |
| 4 | Cumulative frequency tables 'less than'; Cumulative frequency tables ' more than'; Bivariate frequency tables; Class mark; real bounds of classes. | 2 |
| 5 | Data presentation: Tabular Methods. | 2 |
| 6 | Data presentation: Graphical Methods. | 2 |
| 7 | Measures of central tendency: Arithmetic mean (grouped data, ungrouped data, and some properties of arithmetic mean. | 2 |
| 8 | Measures of central tendency: Median; Mode (grouped, ungrouped data). | 2 |
| 9 | Measures of dispersion: Range, Semi interquartile range, Mean deviation (grouped, ungrouped data). | 2 |
| 10 | Measures of dispersion: Variance, Standard deviation (grouped, ungrouped data)., Coefficient of variation…. | 2 |
| 11 | Simple Correlation: Person's correlation coefficient of linear correlation, Coefficient of contingency | 2 |
| 12 | Regression (Regression line). | 2 |
| 13 | Relation between Correlation and Regression. | 2 |
| 14 | Examinations and assessment (First midterm exam) | 2 |
| 15 | Examinations and assessment (Second midterm exam) | 2 |
| **Total** | | 30 |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** | | |
| 1.1 | List the basic statistical terminology | Lectures | Written exams |
| 1.2 | Describe different types and structures of data and summarize data in tables, graphs. | Lectures | Written exams |
| 1.3 | List and describe basic statistical concepts about measures of central tendency, dispersion, Correlation, and Regression …etc. | Lectures | Written exams |
| 1.4 | Distinguish between different measures | Lectures | Written exams |
| **2.0** | **Skills** | | |
| 2.1 | Compute and interpret the scientific data related to health science | Practical classes | Practical exams |
| 2.2 | Apply various techniques to solve problem under study |
|  |  |  |
| **3.0** | **Competence** | | |
| 3.1 | Work independently, professionally, and communicate clearly by verbal and written means. | Practical classes | Observation card |
| 3.2 | Implement self-directed learning to enhance physiotherapy skills. | Assignments | Assignments |
|  |  |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| 1 | Midterm Exam-1 | 6th week | 15% |
| 2 | Midterm Exam-2 | 10th week | 15% |
| 3 | Practical Quizzes | Per semester | 5% |
| 4 | Student Activity/Assignment/Presentation | 12th Week | 5% |
| 5 | Observation card (Practical) | 2-12 Week | 5% |
| 6 | Final Practical Examination | 15th week | 15% |
| 7 | Final Theoretical Examination | 16-17th week | 40% |
| 8 | Total |  | 100% |

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : Two hours weekly is available to students to answer any questions and to explain any incomprehensible parts of the student.** |
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# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1. Mould ,F. R. (1998).Introductory Medical Statics. IOP Publishing Ltd. 2. Martin Bland. (2000). An Introduction to Medical Statistics. Oxford University Press. 3. Chap T. Le. (2003). Introductory Biostatics. Wiley – Interscience, A John Wiley & Sons Publication. |
| **Essential References Materials** | 1. Sharma, A.K. (2005). Text Book of Biostatistics I. Discovery Publishing House , New Delh-110002. 2. Gerstman, B.B. (2008). Basic Biostatistics. Statistics for Public Health Practice. Jones and Barlett Publishers. 3. Rumsey, D. (2010). Statistics Essential for Dummies. Wiley Publishing Inc. |
| **Electronic Materials** | * 1. <http://www.bettycjung.net/Statsites.htm>.   3. Basic Statistics Web Site:  4. <http://www.schoolofed.nova.edu/edl/secure/stats/>  5. http://www.basicstat.com/ |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | Suitable lecture room equipped with data show and internet access and sufficient number of seats. |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | Internet connection and a website for each faculty member; One computer in the classroom, Projector; Smart board; Data show |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | 1. Microsoft word software. 2. Microsoft PowerPoint software. 3. Microsoft Excel software. |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Effectiveness of teaching strategies | Head of departments  and students | Direct  Questionnaires (indirect) |
| Effectiveness of student assessment | Department faculty members  and Department council | Direct  Direct |
| Achievement of CLOs | Students  Department faculty members | Indirect  Direct |

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** | Pharmacology Department Council |
| **Reference No.** |  |
| **Date** | 9/5/1442 H |