اعتماد
NCAAA

T4

2020

Course Specifications

Course Title:	Basic Medical Statistics
Course Code:	370113-3
Program:	Bachelor in Clinical Laboratory Sciences; Level-6 (Program Code: 373000)
Department:	Clinical Laboratory Sciences Department
College:	College of Applied Medical Sciences
Institution:	Taif University

Table of Contents

A. Course Identification

1. **Credit hours:** 3 Hours Theory	

2. Course type
a. University ☐   College ☒   Others ☐   ☐
b. Required ☒   Elective ☐

3. Level/year at which this course is offered: 3rd Level / First 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	5 hours /week= 50 hours/semester	100%
2	Blended	None	0%
3	E-learning	None	0%
4	Distance learning	None	0%
5	Other	None	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	50
2	Laboratory/Studio	N/A
3	Tutorial	N/A
4	Others (specify)	NA
	Total	50 Hours

B. Course Objectives and Learning Outcomes

1. Course Description

Studying some important topics in statistics such as: Types of variables, Sampling techniques, descriptive statistics, normal distribution, point estimation and testing hypothesis.\

2. Course Main Objective
At the end of the course, the student should be able to identify and recall different types of variables and basic concepts of probability. They should also be able to calculate the measures of tendency and variation, probabilities from the normal and point estimate of a certain parameter.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Identify different types of variables.	**K1**
1.2	Memorize the different ways of representation ion the data.	**K1**
1.3	Recall some basic concepts of probability.	**K1**
1.5	State the basic concepts of estimation	**K1**
1.6	Describe the basic concepts of testing hypothesis	**K1**
2	**Skills**	
2.2	Calculate the measures of tendency and the measures of variation.	**S2**
2.3	Calculate the probabilities from the normal.	**S2**
2.4	Calculate the point estimate of a certain parameter.	**S2**
3	**Values:**	
3.2	Display professional attitude at work related to the field.	**V1**

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Bio-Statistics **(Book Chapter1)**	3
2	Variables and their types **(Book Chapter1)**	4
3	Data collection: Sources of data used in medical field, Methods of data collection and types of questionnaires **(Book Chapter1)**	4
4	Sampling Design: Steps in sample selection & Sampling frame **(Book Chapter1)**	4
5	Sampling techniques & Sample size	4
6	Tabular presentation of data	4
7	Graphical presentation of data	4
8	Descriptive statistics for numerical data: measures of central tendency (mean, median, mode) **(Book Chapter2)**	3
9	Descriptive statistics for nominal data: ratios, proportions, percentages and rates **(Book Chapter2)**	4
10	Measures of Dispersion (variability): the range, the variance, the standard deviation, standard error and coefficient of variation **(Book Chapter2)**	3
11	Types and characters of distribution curves & Applications on normality of distribution **(Book Chapter/Chapters 4&5**	4
12	Hypothesis testing, errors in research **(Book Chapter/Chapters 6 & 7)**	3
13	Tests of significance **(Book Chapter/Chapters 6 & 7)**	3
14	Continue tests of significance **(Book Chapter/Chapters 6 & 7)**	3
	Total	**50**

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 and Understanding**		
1.1	Identify different types of variables.	Lecture	Written Exams
1.2	Memorize the different ways of representation ion the data.	Lecture	Written Exams
1.3	Recall some basic concepts of probability.	Lecture	Written Exams
1.4	State the basic concepts of estimation	Lecture	Written Exams
1.5	Describe the basic concepts of testing hypothesis	Lecture	Written Exams
2.0	**Skills**		
2.1	Calculate the measures of tendency and the measures of variation.	Lecture	Written Exams
2.2	Calculate the probabilities from the normal	Lecture	Written Exams
2.3	Calculate the point estimate of a certain parameter	Lecture	Written Exams
3.0	**Values**		
3.1	Display professional attitude at work.	Lecture	Written Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodic exam 1	3 Week	10
2	Periodic exam 2	7 Week	10
3	Mid-Term Exam	5 Week	30
4	Final Exam	12/13thWeek	50

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- Course instructors are available for individual consultation in their free time. They are usually full-time permanent members present on-campus from 8:00 am to 2:30 pm on all working days. Appointments can be made in person with the instructor through email etc. Days and time availability of each instructor are posted on their doors. Course instructors provide a range of academic and course management advice including course planning and its progression.

- Each student at the department of Clinical Laboratory Sciences has an academic adviser who is available for individual consultation and guidance. Appointments can be made in person with the instructor through email etc. Days and time availability of each adviser are posted on their doors. The academic adviser can provide support with time management, exam preparation, clarification of subject requirements, feedback on performance and dealing with personal issues as well.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Wayne W. Daniel, Chad L. Cross, 11th Edition, BIOSTATISTICS A Foundation for Analysis in the Health Sciences, 2018. Wiley Publishers. ISBN: 978-1-119-49657-1.
Essential References Materials	M. H. Kutner, C. J. Nachtsheim, J. Neter, and W. Li, 5th Edition, Applied, Linear Statistical Models, 2005, McGraw- Hill/Irwin, New York. 2- List Recommended Textbooks and Reference Material (Journals, Reports, etc) DEBRA A. JANSEN and MARY L. KELLER, "Cognitive Function in Community-Dwelling Elderly Women," Journal of Gerontological Nursing, 29 (2003), 34–43
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and Laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, Blackboard and A/V
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student's feedback on effectiveness of teaching.	• Students	• **Indirect:** Questionnaire Survey at the end of each semester.
Quality of learning resources (laboratory and library) related to each course.	• Students • Staff members	• **Indirect:** Questionnaire Survey at the end of each semester related to learning resources.
Evaluation of teaching	• Peer evaluators	• **Indirect:** Peer evaluation
Evaluation of exam quality and assessment.	• Exam committee • Students	• **Direct:** Exam paper/ exam blueprint review • **Indirect:** Questionnaire Survey at the end of each semester.
Achievement of course learning outcomes	• Course Coordinators • Development and accreditation committee	• **Direct:** Student's Performance assessed through item analysis and rubrics.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Council
Reference No.	Meeting Number 11
Date	19/05/2022

قسم المختبرات Laboratory Department TU TAIF UNIVERSITY جامعة الطائف

Course Specifications

Course Title:	Medical Physics
Course Code:	370213-3
Program:	Bachelor in Clinical Laboratory Sciences; Level-6 (Program Code: 373000)
Department:	Clinical Laboratory Sciences Department
College:	College of Applied Medical Sciences
Institution:	Taif University

Table of Contents

A. Course Identification

1. Credit hours: 3 hours	

2. Course type

a. University ☐ College 🟥 Department ☐ Others ☐

b. Required 🟥 Elective ☐

3. Level/year at which this course is offered: 3rd level/ 1st 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	None	0 %
2	Blended	60	100 %
3	E-learning	None	0 %
4	Distance learning	None	0 %
5	Other	None	0 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	--
3	Tutorial	20
4	Others (specify)	--
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

Medical Physics course is essential for all medical sciences programs as it is concerned with the basic knowledge of human body physics and mechanisms. Course deals with the applications of physics phenomena on the healthy performance of the human body.

2. Course Main Objective

The main objective of this course is to provide the students with the principles of physics and its applications as well as effects on human body organs' functions, and its clinical implication in medical specialties.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Identify basic concepts of different human body performances in the framework of physics.	K1
1.2	Describe the application of medical physics in the healthy performance of the human body	K1
2	**Skills:**	

	CLOs	Aligned PLOs
2.1	Analyze technologies and tools used in healthcare in the framework of physics.	S3
3	Values:	
None		

C. Course Content

No	List of Topics (Theory)	Contact Hours
1	Introduction and basic definitions of radioactivity **(Ch. 11, p. 731-741)**	
2	Ionizing and non-ionizing radiation types, spectrum, and nuclear transformation. **(Ch. 11, p. 731-741)**	3
3	Radioactive decay, half-life, and isotopes. **(Ch. 11, p. 731-741)**	
4	Radiation protection, Clinical applications of different types of radiation **(Ch. 11, p. 731-741)**	3
5	An introduction of force in and on the human body. **(Ch. 2, p. 492-494)**	
6	Levers, types, laws, and conservation of energy. **(Ch. 2, p. 494-497)**	3
7	Friction Forces, Centrifuge Force, and its medical applications. **(Ch. 2, p. 497-500)**	3
8	How the blood and lungs interact. **(Ch. 8, p. 533-538)**	3
9	Physics and mechanism of the breathing. **(Ch. 8, p. 538-543)**	
10	Inhalation and Exhalation processes. **(Ch. 8, p. 543-551)**	3
11	Airways resistance and Compliance and time constant. **(Ch. 8, p. 551-564)**	
12	Lung Time constant, Physics of some common lung diseases. **(Ch. 8, p. 533-564)**	3
13	Electricity within the body and ions distribution. **(Ch. 12, p. 833-835)**	
14	Structure of nerve cell, action and polarization potential speed and propagation. **(Ch. 12, p. 836-839)**	3
15	Heart structure and heart cycle from physics point of view. **(Ch. 12, p. 840-848)**	3
16	Nerve conduction, Latency, EMG and ECG. **(Ch. 12, p. 849-855)**	3

No	List of Topics (Practical)	Contact Hours
1	Definition and presentation of data, information, and knowledge **(Lab Manual)**	3
2	Types of data presentation and how to express data as figures **(Lab Manual)**	
3	Measurements of Lung functions **(Lab Manual)**	3
4	Application on Spirometer and interpretation of the Spiro gram **(Lab Manual)**	3
5	Hook's law **(Lab Manual)**	3
6	Calculation of the relation between stress and strain **(Lab Manual)**	3
7	Gravity, friction, and Buoyant forces **(Lab Manual)**	
8	Calculation of the liquid viscosity **(Lab Manual)**	3
9	Inverse square law **(Lab Manual)**	3
10	Calculation of the relation between intensity and radiation exposure **(Lab Manual)**	3
11	Half value layer of the radiation source **(Lab Manual)**	3
12	Summary and Applications Application on ECG **(Lab Manual)**	3
Total		60

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 and understanding**		
1.1	Identify basic concepts of different human body performances in the framework of physics.	Lectures	Theoretical Exams
1.2	Describe the application of medical physics in the healthy performance of the human body	Lectures and Practical sessions	Theoretical Exams and Standardized oral examination (SOE)
2.0	**Skills**		
2.1	Analyze technologies and tools used in healthcare in the framework of physics.	Lectures and Practical sessions	Theoretical Exams and Standardized oral examination (SOE)
3.0	**Values**		
	None		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Theory Exam [Standardized Tests: MCQs]	5th	15 %
	Quiz (Online Test)	7th	5%
2	Final Practical Exam [SOE]	11th	20 %
3	Final Theory Exam [Standardized Tests: MCQs]	13th	60 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Course instructors are available for individual consultation in their free time. They are usually full-time permanent members present on-campus from 8:00 am to 2:30 pm on all working days. Appointments can be made in person with the instructor through email etc. Days and time availability of each instructor are posted on their doors. Course instructors provide a range of academic and course management advice including course planning and its progression.

- Each student at the department of Clinical Laboratory Sciences has an academic adviser who is available for individual consultation and guidance. Appointments can be made in person with the instructor through email etc. Days and time availability of each adviser are posted on their doors. The academic adviser can provide support with time management, exam preparation, clarification of subject requirements, feedback on performance and dealing with personal issues as well.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Physics of the Human Body, 2nd Edition, Irving P. Herman, Springer, 2016. ISBN: 978-3-319-23930-9. DOI : 10.1007/978-3-319-23932-3
Essential References Materials	Physics of the Human Body, 2nd Edition, Irving P. Herman, Springer, 2016. ISBN: 978-3-319-23930-9. DOI: 10.1007/978-3-319-23932-3
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Blackboard Access, Classrooms Science Laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show and software to access Blackboard
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student's feedback on effectiveness of teaching and quality of courses.	Students	Indirect: Questionnaire Survey at the end of each semester.
Alignment map of course ILOs with that of program ILOs.	Development and accreditation committee	Direct: Student's Performance.
Availability of learning resources, facilities and equipment related to each course.	Students and faculty	Indirect: Questionnaire Survey at the end of each semester.
Evaluation of teaching	Peer evaluators	Direct: Peer evaluation
Standard of student achievement	Examination Committee	Direct: Students grades
Periodical review of course effectiveness and planning for its improvement.	Teaching staff/ Development and accreditation committee	Indirect: Review by Department Committee

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Council
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