



Course Specifications

Course Title:	Laboratory Skills
Course Code:	373225-3
Program:	Bachelor's in Clinical Laboratory Sciences (Level-7)
Department:	Clinical Laboratory Sciences
College:	Applied Medical Sciences
Institution:	Taif University



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A. Course Identification

1. Credit hours: 3 hours
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Level 3/second Year
4. Pre-requisites for this course (if any): N/A
5. Co-requisites for this course (if any): N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 hours /week= 60 hours/semester	100%
2	Blended	None	0%
3	E-learning	None	0%
4	Correspondence	None	0%
5	Other	None	0%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	None
4	Others (specify)	None
	Total	60
Other Learning Hours*		
1	Study	52
2	Assignments	2
3	Library	None
4	Projects/Research Essays/Theses	None
5	Others(specify)	None
	Total	54

*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

B. Course Objectives and Learning Outcomes

1. Course Description

Laboratory skills involves a large amount of practical work in laboratories and it involve instructions from the lab instructor, following a practical schedule, learning techniques, taking measurements, observing and recording data, calculating and presenting data. The references which will be used in the course will emphasize 'essential' skills and the practical steps required to use equipment and learn several techniques related to the specialty.

2. Course Main Objective

The main objective of this course is to make students learn and develop skills required for working in different specialties of clinical laboratory sciences.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Recognize the general laboratory knowledge and skills in safety, use of the clinical microscope and photometer, and ability to perform tests manually by measuring volume and weight of analytes.	K2
2	Skills:	
2.1	Evaluate accurate measurement of analytes and data obtained on testing.	S3
2.2	Use proper mathematical and statistical methods in laboratory procedures.	S4
3	Competence:	
3.1	Conduct experiments in safe and effective manner in laboratory environment.	C1

C (a) Course Content(Theory)

No	List of Topics	Contact Hours
1	Laboratory Safety and Regulations <ul style="list-style-type: none"> • Disinfectants • Chemical safety • Biological safety • Safety from radiation 	4
2	Microscopy and Histology <ul style="list-style-type: none"> • Light microscopy • Slide preparation • Cell Counting 	4
3	Units of Measure: <ul style="list-style-type: none"> • Units, measurements and SI Units • Measuring the volumes of liquids 	4

	<ul style="list-style-type: none"> • Pipetting • Weighing 	
4	Preparing Solutions and reagents: <ul style="list-style-type: none"> • Common terms defining solutions • Precautions in making solutions • Making solutions • Molar solutions 	4
5	Acid – Base and pH: <ul style="list-style-type: none"> • Acidic solutions • Basic solutions • Buffers • Solubility and solubility product 	2
6	Clinical Laboratory Supplies: <ul style="list-style-type: none"> • Glassware • Plasticware • Thermometer equipment's selection 	2
7	Basic Separation Techniques: <ul style="list-style-type: none"> • Filtration • Centrifugation • Chromatography • Electrophoresis 	2
8	Laboratory Mathematics and Calculations: <ul style="list-style-type: none"> • Concentration • Dilutions • Calculations involving solutions 	2
9	Phlebotomy: <ul style="list-style-type: none"> • Venipuncture • Preanalytical Considerations 	3
10	Specimen Considerations: <ul style="list-style-type: none"> • Types of Samples • Sample Processing 	3
Total		30

(b) Course Content (Practical)

No	List of laboratory Topics	Contact Hours
1	Laboratory Safety Rules	2
2	<u>Lab glassware and Pipetting</u> <ul style="list-style-type: none">• Measure volume using appropriate glassware and pipettes Demonstrate the basic use and maintenance of the centrifuge,, and balances	2
3	<u>Instrumentation</u> <ul style="list-style-type: none">• Demonstrate the basic use, operation and maintenance of the, microscope.• pH – Meter Conductivity Meter	2
4	Preparation of solution	2
5	Flame photometer	2
6	Dilution of Solutions	4
7	<ul style="list-style-type: none">• Standardization of HCl• Determination of the % of Purity of sodium hydroxide solution• Determination of the % of Purity of commercial	2
8	<u>Specimen Collection</u> <p>A. Collecting and transporting of Urine specimens</p> <p>B. Urine analysis</p> <ul style="list-style-type: none">• Procedures• Chemical analysis• Microscopic analysis	2
9	<u>Instrumentation</u> <p>Demonstrate the basic use and maintenance of the, spectrophotometer.</p>	4
10	Standardization of potassium permanganate - Determination of the % of Purity of sodium oxalate solution	4
11	Compleximetric Reactions and EDTA Titrations	4
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	Recognize the general laboratory knowledge and skills in safety, use of the clinical microscope and photometer, and ability to perform tests manually by measuring volume and weight of analytes.	<ul style="list-style-type: none"> - Lectures. - Practical sessions. 	<ul style="list-style-type: none"> - Exams - Lab reports
2.0	Skills		
2.1	Evaluate accurate measurement of analytes and data obtained on testing.	<ul style="list-style-type: none"> - Lectures. - Practical sessions. - Problem based learning. 	<ul style="list-style-type: none"> - Exams
2.2	Use proper mathematical and statistical methods in laboratory procedures.	<ul style="list-style-type: none"> - Lectures. - Student learning activities. 	<ul style="list-style-type: none"> - Assessment of scientific activities.
3.0	Competence		
3.1	Conduct experiments in safe and effective manner in laboratory environment.	<ul style="list-style-type: none"> - Lectures. - Practical sessions. 	<ul style="list-style-type: none"> - Exams - Lab reports

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	8 th Week	15%
2	Activity	Throughout the semester	5%
3	Practical Report	Throughout the semester	10%
4	Final Practical Exam	16 th Week	20%
5	Final Exam	17 th / 18 th Week	50%
6	Total		100%

*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	Essential Laboratory Skills for Biosciences, M.S. Meah and E. Kebede-Westhead University of East London
Essential References Materials	None
Electronic Materials	Saudi Digital Library, PubMed, Google Scholar
Other Learning Materials	Journals, Scientific Magazines and Articles.

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)	ELISA, Flow cytometry, Class 2 Biological Safety Cabinets

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 equipments 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
Reference No.	Meeting No.10
Date	10-9-1440

