



Course Specifications

Course Title:	Clinical Virology and Mycology
Course Code:	373410-3
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

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A. Course Identification

1. Credit hours:	3 hours (2 T + 1 P)
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:	10 th Level/Fourth Year
4. Pre-requisites for this course (if any):	Basic of Medical Microbiology/ 373228-3
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	3 hours/week= 30 hours/semester	50%
2	Blended	N/A	0%
3	E-learning	N/A	0%
4	Distance learning	N/A	0%
5	Other	3 hours/week= 30 hours/semester	50%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	N/A
4	Others (specify)	N/A
	Total	60 Hours

B. Course Objectives and Learning Outcomes

1. Course Description

The course covers studying of the major viral human pathogens regarding: their properties, the diseases they cause to humans, their pathogenicity and the different laboratory methods for diagnosis of these diseases. The course also covers studying of the different groups of mycoses regarding the causative fungi and their morphological features, pathogenicity and different laboratory diagnostic methods.

2. Course Main Objective

By the end of this course, the students will gain adequate knowledge about different classes of viruses and fungi that infect human regarding their pathogenicity, laboratory characteristics and different methods for laboratory diagnosis of infections caused by these organisms, select and interpret the different diagnostic tests for viral and fungal infections. will be able to perform the different laboratory tests for diagnosing viral and fungal infections in a safe and effective manner both independently and within a team work.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Recall the classification, structure and morphological features of the different common human viral and fungal pathogens.	K1
1.2	Recognize the pathogenicity, virulence factors and mode of transmission of the different common human viral and fungal pathogens.	K1
1.3	Identify the different methods for laboratory diagnosis of infections caused by the common human viral and fungal pathogens.	K2
2	Skills:	
2.1	Select the proper laboratory diagnostic tests for the different suspected human viral and fungal infections and perform these in a safe and effective manner.	S1
2.2	Interpret correctly the results of the various laboratory viral and fungal diagnostic tests and evaluate these results in correlation with the clinical condition of the patient.	S2
3	Values:	
3.1	Exhibit responsible behaviour through creating awareness among community in context of the course.	V2

C. Course Content

(a) Course Content (Theory)

No	List of Topics	Contact Hours
1	Respiratory viruses (I): -Ortho and paramyxoviruses -Rhinoviruses (Presentation & Jawetz Melnick Medical Microbiology, chapters 36, 39 & 40)	3
2	Respiratory viruses (II): -Coronaviruses (SARS-CoV-1, MERS-CoV and SARS-CoV-2) -Bocaviruses (Presentation & Jawetz Melnick Medical Microbiology, chapter 41)	3
3	Enteroviruses Rubella virus Human rabies (Presentation & Jawetz Melnick Medical Microbiology, chapters 36, 40 & 42)	3
4	Hepatitis viruses -HAV, HBV, HCV, HDV and HEV (Presentation & Jawetz Melnick Medical Microbiology chapters 35)	3
5	Human Immunodeficiency viruses (HIV) (Presentation and Jawetz Melnick Medical Microbiology chapters 44)	3

6	Hemorrhagic fever viruses: -Dengue virus, Ebola, Marburg virus, Crimean-Congo virus, yellow fever and Lassa virus Viral infections of gastrointestinal tract (GIT): -Rotavirus, Norovirus, Sapovirus, Astrovirus and others (Presentation & Jawetz Melnick Medical Microbiology chapters 37 &38)	3
7	Human herpesviruses (Presentation& Jawetz Melnick Medical Microbiology chapters 33)	3
8	Other DNA viruses of medical importance: -Poxviruses -Adenoviruses -Parvoviruses -Polyomaviruses Oncogenic viruses: -EBV, HPV, HTLV, Kaposi's sarcoma-associated herpvirus and others (Presentation& Jawetz Melnick Medical Microbiology, chapters 31, 32, 34, 43)	3
9	Superficial Mycoses Cutaneous Mycoses Subcutaneous Mycoses (Presentation& Jawetz Melnick Medical Microbiology, chapter 45)	3
10	Systemic Mycoses Opportunistic Mycoses (Presentation& Jawetz Melnick Medical Microbiology, chapter 45)	3
Total		30

(b) Course Content (Practical)

No	List of Topics	Contact Hours
1	Introduction to virology diagnostic techniques Electron microscope (Lab Manual)	3
2	Methods for virus isolation Types of cell culture (Lab Manual)	3
3	Cell culture protocol -Media preparation and subculture of cells -Infection of cell culture -Virus titration in cell culture (TCID ₅₀ and plaque assay) (Lab Manual)	3
4	Detection of virus replication in cell culture - Cytopathic effects - Haemadsorption, Interference, Neutralization and Others. (Lab Manual)	3
5	Immunoassays for laboratory diagnosis of viral infections (I) -Introduction to immunoassays used in the diagnosis of viral infections -Agglutination, haemagglutination and haemagglutination inhibition-test	3

	-Complement fixation test (Lab Manual)	
6	Immunoassays for laboratory diagnosis of viral infections (II) -Enzyme Linked Immune-sorbent Assay (ELISA) -Immunofluorescence -Radioimmunoassay (RIA) -Western blot (Lab Manual)	3
7	Molecular techniques for laboratory diagnosis of viral infections (I) -Conventional PCR -Real-time (quantitative) PCR	3
8	Molecular techniques for detection of viral genotypes and antiviral resistance mutations (II) - RFLP - Sanger sequencing method (1 st generation sequencing) - Next generation sequencing methods (2 nd , 3 rd , and 4 th generations sequencing) (Lab Manual)	3
9	Introduction to laboratory diagnosis of fungal infection -Specimen Collection -Methods for direct microscopic examination of fungal infections -Culture and Identification of fungi (Lab Manual)	3
10	Laboratory diagnosis of mycoses -Superficial, Cutaneous, Subcutaneous, systemic, and opportunistic mycoses (Lab Manual)	3
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 and Understanding		
1.1	Recall the classification, structure and morphological features of the different common human viral and fungal pathogens.	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written Exam
1.2	Recognize the pathogenicity, virulence factors and mode of transmission of the different common human viral and fungal pathogens.	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written Exam
1.3	Identify the different methods for laboratory diagnosis of infections caused by the common human viral and fungal pathogens.	<ul style="list-style-type: none"> Lecture Practical Session 	<ul style="list-style-type: none"> Written Exam Lab Report Practical Exam
2.0	Skills		
2.1	Select the proper laboratory diagnostic tests for the different suspected human viral and fungal infections and perform these in a safe and effective manner.	<ul style="list-style-type: none"> Practical Session 	<ul style="list-style-type: none"> Practical Exam Lab Report
2.2	Interpret correctly the results of the various laboratory viral and fungal diagnostic tests and evaluate these results in correlation with the clinical condition of the patient.	<ul style="list-style-type: none"> Lecture Practical Session Problem-Based Learning 	<ul style="list-style-type: none"> Written Exam OSPE
3.0	Values		
3.1	Exhibit responsible behaviour through creating awareness among community in context of the course.	<ul style="list-style-type: none"> Service Learning 	<ul style="list-style-type: none"> Activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	5 th Week	15%
2	Activity	Throughout	5%
3	Practical Report	Throughout	10%
4	Final Practical Exam	11 th Week	20%
5	Final Exam	12 th /13 th Week	50%
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

<p>Required Textbooks</p>	<ul style="list-style-type: none"> • Patricia Tille, Bailey & Scott's Diagnostic Microbiology, 2021, 15th Edition, Elsevier, ISBN-13: 978-0323681056, ISBN-10: 0323681050. • Stefan Riedel, Stephen Morse, Timothy Mietzner, Steve Miller, Jawetz Melnick & Adelbergs Medical Microbiology, 2019, 28th Edition, New York : McGraw Hill Medical, ISBN-13: 978-1260012026, ISBN-10: 1260012026
<p>Essential References Materials</p>	<ul style="list-style-type: none"> • Warren Levinson, Peter Chin-Hong, Elizabeth A. Joyce, Jesse Nussbaum, Brian Schwartz, Review of Medical Microbiology and Immunology, 2022, 17th Edition, New York : McGraw Hill Medical, ISBN-13: 978-1264267088, ISBN-10: 1264267088.
<p>Electronic Materials</p>	<ul style="list-style-type: none"> • Websites, Search engines (Saudi Digital Library, PubMed, GoogleScholar)
<p>Other Learning Materials</p>	<ul style="list-style-type: none"> • Journal of Bacteriology • Journal of Bacteriology and Parasitology • Journal of Clinical Microbiology • Journal of Medical Microbiology • Journal of Microbiology and Biotechnology

2. Facilities Required

Item	Resources
<p>Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p>	<p>Classrooms and Laboratories</p>
<p>Technology Resources (AV, data show, Smart Board, software, etc.)</p>	<p>Data show, Blackboard and A/V</p>
<p>Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	<ul style="list-style-type: none"> • Biological safety cabinet. • Kits & reagents for the different serological reactions for diagnosing viral infections. • Autoclave. • Hot air oven. • Incubator. • Stains for detection of fungi & media suitable for the growth of fungi.



Course Specifications

Course Title:	Laboratory Management and Quality Control
Course Code:	373423-2
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

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1. Learning Resources	6
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G. Course Quality Evaluation	6
H. Specification Approval Data	7

A. Course Identification

1. Credit hours:	2 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:	10 th Level/Fourth 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	3 hours/week= 30 hours/semester	100%
2	Blended	N/A	0%
3	E-learning	N/A	0%
4	Distance learning	N/A	0%
5	Other	N/A	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	N/A
3	Tutorial	N/A
4	Others (specify)	N/A
	Total	30 Hours

B. Course Objectives and Learning Outcomes

<p>1. Course Description</p> <p>Students will get complete conceptual knowledge as well as the practical abilities required to become a laboratory manager in this laboratory management course. To achieve performance goals, you must first understand laboratory operations and processes. This course looks at the fundamentals of lab management, including financial and regulatory considerations. Quality control and assessment are addressed as techniques for achieving excellence in lab service. It is discussed how lab information systems can be used as managerial resources as well as for business and strategic planning. In the framework of professional practice, human resource management is discussed.</p>
<p>2. Course Main Objective</p> <ol style="list-style-type: none"> Determine the impact of management and leadership ideas and models on a clinical laboratory. Apply basic quality assurance, quality control, safety, and compliance principles/requirements to selected programs and/or data in the context of clinical laboratory operations. Identify and explain critical aspects of the accreditation process

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
NONE		
2	Skills:	
2.1	Explain the significance of different components of laboratory testing procedure.	S3
2.2	Evaluate the total quality management process in an appropriate manner.	S3
2.3	Employ outstanding management skills to make the most use of time and resources.	S4
3	Values:	
3.1	Serve as a role model for ethical behavior and patient-centred attitude in health care setting.	V1

C. Course Content

No	List of Topics	Contact Hours
1	An Introduction to Laboratory Management, Management theories, Management functions, Organization and Components of the laboratory (Presentation)	2
2	The general plan of administrative organization of diagnostic & reference laboratories, Material management/ Planning process (Presentation)	4
3	Human Resources roles in laboratory settings, Staffing of the laboratory. (Presentation)	2
4	Procedures of equipment selection, operation, maintenance, and the safety procedures in laboratories (Presentation)	4
5	Specimen collection, transportation, preservation & storage (Presentation)	2
6	Management functions (Problem-solving: Decision making, and the role of Information system in the laboratory settings) (Presentation)	4
7	Quality Management System (Pro-analytical, Analytical, Post-analytical) (Presentation)	2
8	Total Quality Management and its Tools, Concept, Component and Dimension of Quality (Presentation)	2
9	Quality Control, Quality assurance, and Quality Improvement (Presentation)	4
10	Quality Standards and Criteria, Quality of Care Evaluation & Accreditation (Presentation)	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 and Understanding		
	NONE		
2.0	Skills		
2.1	Explain the significance of different components of laboratory testing procedure.	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written Exam
2.2	Assess the total quality management process in an appropriate manner.	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written Exam
2.3	Employ outstanding management skills to make the most use of time and resources.	<ul style="list-style-type: none"> Problem-Based Learning Group Discussion 	<ul style="list-style-type: none"> Written Exam Scientific Activity
3.0	Values		
3.1	Serve as a role model for ethical behavior and patient-centred attitude in health care setting.	<ul style="list-style-type: none"> Group Discussion 	<ul style="list-style-type: none"> Activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	5 th week	30%
2	Activity	Throughout the semester	10%
3	Final Exam	12 th / 13 th week	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	<ul style="list-style-type: none">• Lynne S. Garcia, Clinical Laboratory Management (2014), 2nd edition, American Society for Microbiology (ASM Press) Publishers, ISBN 978-1-55581-727-5; ISBN 978-1-55581-728-2 (e-ISBN).• Laboratory Quality Management System Handbook, World Health Organization (2011), Version 1.1, WHO Press, ISBN 978 92 4 154827 4.
Essential References Materials	None
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
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 and quality of courses.	Students	Direct: Questionnaire Survey at the end of each semester.
Alignment map of course ILOs with that of program ILOs.	Development accreditation committee and	Direct and Indirect: Student's Performance
Availability of learning resources, facilities and equipments related to each course.	Students and faculty	Direct: 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 accreditation committee and	Direct: 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 Number 11
Date	19/05/2022



G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student's feedback on effectiveness of teaching and quality of courses.	Students	Direct: Questionnaire Survey at the end of each semester.
Alignment map of course ILOs with that of program ILOs.	Development and accreditation committee	Direct and Indirect: Student's Performance
Availability of learning resources, facilities and equipments related to each course.	Students and faculty	Direct: 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	Direct: 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 Number 11
Date	19/05/2022





Course Specifications

Course Title:	Research in Health Sciences
Course Code:	373414-2
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

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1. Learning Resources	5
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	7

A. Course Identification

1. Credit hours: 2 Hours
2. Course type
a. University <input type="checkbox"/> College <input checked="" 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: 10 th Level/ Fourth 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	N/A	0%
2	Blended	3 hours/week= 30 hours/semester	100%
3	E-learning	N/A	0%
4	Distance learning	N/A	0%
5	Other	N/A	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	N/A
3	Tutorial	N/A
4	Others (specify)	N/A
	Total	30 Hours

B. Course Objectives and Learning Outcomes

1. Course Description

The course highlights the significance of scientific research for the community and its role in development of a nation. It prepares students in designing a research proposal using different types of scientific and clinical research methods. At the end of studying the course, students should be able to demonstrate the skills required to conduct the research work independently.

2. Course Main Objective

- The main purpose of this course is to provide students with skills required to plan, conduct, analyze and present the findings of the research conducted, in an effective way.
- The course will also prepare students with writing a professional research proposal and report, use library resources and search engines to find suitable journals and articles relevant to their work and extract important information from these.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding: None	
2	Skills:	
2.1	Employ effective communication skills with colleagues and supervisors at all levels.	S4
2.2	Design research project by using different research information and resources.	S5
3	Values:	
3.1	Represent professional behavior at all times coherent with laboratory technologist's code of ethics in handling patient samples, data and when dealing with patients.	V1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: Significance of scientific research/ different sections of research (Presentation) <ul style="list-style-type: none"> • Definition of the Research 	3
2	Types Researches (Book chapter/ Chapter 1; Pages 11-20) <ul style="list-style-type: none"> • Applied Research • Objective Research • Quantitative & Qualitative Research 	3
3	Types of Medical Research (Presentation) <ul style="list-style-type: none"> • Epidemiological Research • Experimental Research 	3
4	Referencing Guidelines (Presentation) <ul style="list-style-type: none"> • References & Bibliographies • Different Sources of References • Guidelines for Referencing 	3
5	Quotations, Paraphrasing and plagiarism (Presentation) <ul style="list-style-type: none"> • Quotations • Summarizing • Paraphrasing • Plagiarism 	3
6	Review of Related Literature (Book chapter/ Chapter 3; Pages 48-61) <ul style="list-style-type: none"> • Sources of Literature • Searching for the existing literature 	3
7	Document Formatting for Proposal and Thesis (Presentation) <ul style="list-style-type: none"> • Page Format • Font Format • Paragraph Format • Page Number • Adjusting Format • General Format Rules 	3

8	Writing a Research Proposal and Thesis (Book chapters/ Chapters 13 & 17; Pages 256-274/ 354-362) <ul style="list-style-type: none"> • Difference between Research Proposal & Research Thesis • Steps of Scientific Research • Functions of Research Proposal • Contents of A Research Proposal • Parts of Research Thesis 	3
9	Research Ethics (Presentation + Applied for National Committee of Bio Ethics) <ul style="list-style-type: none"> • Research Ethics Requirements • Steps for Applying in National Committee to get a Bio-Ethics 	3
10	Hypothesis Formulation, Research design and methods of data collection (Presentation) <ul style="list-style-type: none"> • Formulating a Research Problem • Considerations in Selecting A Research Problem • Functions of A Research Design • Different Methods of Data Collection 	3
Total		30 hours

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: None		
2.0	Skills		
2.1	Employ effective communication skills with colleagues and supervisors at all levels.	<ul style="list-style-type: none"> • Group Discussion 	<ul style="list-style-type: none"> • Scientific Activity
2.2	Design research project by using different research information and resources.	<ul style="list-style-type: none"> • Lectures • Research Project 	<ul style="list-style-type: none"> • Assignment • Scientific Activity
3.0	Values		
3.1	Represent professional behavior at all times coherent with laboratory technologist's code of ethics in handling patient samples, data and when dealing with patients.	<ul style="list-style-type: none"> • Group Discussion 	<ul style="list-style-type: none"> • Activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Activity	Throughout the semester	50%
2	Final Exam	11 th /12 th Week	50%
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	<ul style="list-style-type: none"> Ranjit Kumar, Research Methodology, 2014, 4th edition, SAGE Publications, ISBN 978-1-4462-6997-8 Paul D. Leedy and Jeanne Eliis Ormrod, Practical Research Planning and Design, 2014, 10th edition, Pearson, ISBN 13: 978-1-292-02117-1
Essential References Materials	<ul style="list-style-type: none"> Wayne C. Booth, Gregory G. Colomb and Joseph M. Williams, The Craft of Research, 2008, 3rd edition, The University of Chicago Press, ISBN 978-0-226-06566-3 Judith Bell and Stephen Waters, Doing Your Research Project a guide for first-time researchers, 2014, 6th edition, McGraw-Hill, ISBN 978-0-335-26446-9
Electronic Materials	Plagiarism checker programs
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
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

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.

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





Course Specifications

Course Title:	Transfusion and Transplantation Sciences
Course Code:	373413-3
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

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A. Course Identification

1. Credit hours: 3 Hours (2 T + 1 P)
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: 10th Level / Fourth Year
4. Pre-requisites for this course (if any): Clinical Immunology (373311-2)
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	3 hours /week= 30 hours/semester	50%
2	Blended	None	0%
3	E-learning	None	0%
4	Distance learning	None	0%
5	Other (Laboratory)	3 hours /week= 30 hours/semester	50%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	N/A
4	Others (specify)	NA
	Total	60 Hours

B. Course Objectives and Learning Outcomes

1.	Course	Description
		This course focuses on major and minor blood group systems that are covered with emphasis on inheritance, principles of testing, terminology and problem recognition/resolution. It includes most commonly encountered blood group systems (other than ABO and Rh) with emphasis on genotypes, phenotypes, and antibody detection and identification. Blood bank test procedures, interpretation, and sources of error will be covered. Donor selection criteria, anticoagulants, indications and contraindications for transfusing various blood components, transfusion reactions and investigation of reactions will be discussed. Also this course is concerned with stem cell transplantation (SCT), sometimes referred to as bone marrow transplant, is a procedure in which a patient receives healthy stem cells to replace damaged stem cells.
2. Course Main Objective		
		Upon successful completion of this course, the student should be able to:
		<ul style="list-style-type: none"> Identify and describe the characteristics of the antigens and antibodies of the ABO, Rh, and other blood group systems, Describe the preparation and use of blood components and the donor selection process.

- They should be able to demonstrate improvement in the affective traits of organizational skills, work habits, attitude, interpersonal skills, and problem-solving ability.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Identify the characteristics of the antigens and antibodies of the ABO, Rh, and other blood group systems.	K1
1.2	State the intermediate level blood bank testing in the resolution of antibody problems, and transfusion reaction workups. the preparation and use of blood components, and stem cell transplantation procedure.	K2
2	Skills:	
2.1	Interpret results of tests done pre- and post-transfusion for donor and recipient.	S2
2.2	Perform quality assurance measures in blood bank and stem cell transplantation in an effective manner.	S3
3	Values:	
3.1	Demonstrate positive work ethics as well as professional attitude within context of the course.	V1
3.2	Exhibit responsible behaviour via creating awareness among community in relation to blood transfusion and transplantation sciences.	V2

C. Course Content (Theory)

No	List of Topics	Contact Hours
1	ABO and H Blood Groups (* Book Chapter 2; pages: 11-50)	4
2	Rh Blood Group System (* Book Chapter 5; pages: 182-240)	2
3	Other blood group systems (* Book Chapter 2 and 3; pages: 11-120)	4
4	Blood Components in Transfusion Medicine (Presentation)	4
5	Blood Donors, Blood Collection & Storage (Presentation)	2
6	Adverse Blood Transfusion Reaction (Presentation)	4
7	Blood Donation (Presentation)	4

8	Hemolytic Disease of the Newborn (Presentation)	2
9	Stem cell transplantation (Presentation)	2
10	Quality control in the Blood Bank (Presentation)	2
Total		30

* **Required Textbook (Details on Page 7)**

(Practical)

No	List of Topics	Contact Hours
1	An introduction to blood bank practical (Presentation + Lab Manual)	2
2	Detection of ABO blood group system by slide method (Presentation + Lab Manual)	2
3	Detection of ABO blood group system by tube method (Presentation + Lab Manual)	2
4	Detection of Rh blood group system by slide method (Presentation + Lab Manual)	2
5	Detection of Rh blood group system by tube method. (Presentation + Lab Manual)	2
6	Detection of Subtypes A1, A2 (Presentation + Lab Manual)	2
7	Detection of H antigen (Presentation + Lab Manual)	2
8	Detection of D ^u antigen (Presentation + Lab Manual)	2
9	Cross matching (Presentation + Lab Manual)	2
10	Antibodies identification test (Presentation + Lab Manual)	3
11	Blood components (Presentation + Lab Manual)	3
12	Blood Transfusion (Presentation + Lab Manual)	3
13	Screening of Infectious diseases in blood bank (Presentation + Lab Manual)	3
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 and Understanding		
1.1	Identify the characteristics of the antigens and antibodies of the ABO, Rh, and other blood group systems.	• Lecture	• Written Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	State the intermediate level blood bank testing in the resolution of antibody problems, and transfusion reaction workups. the preparation and use of blood components, and stem cell transplantation procedure.	<ul style="list-style-type: none"> • Lecture • Practical Session 	<ul style="list-style-type: none"> • Written Exam • Practical Exam • Lab Report
2.0	Skills		
2.1	Interpret results of tests done pre- and post-transfusion for donor and recipient.	<ul style="list-style-type: none"> • Lecture • Practical Session • Problem-Based Learning 	<ul style="list-style-type: none"> • Written Exam • OSPE
2.2	Perform quality assurance measures in blood bank and stem cell transplantation in an effective manner.	<ul style="list-style-type: none"> • Lecture • Practical Session 	<ul style="list-style-type: none"> • Written Exam • Practical Exam
3.0	Values		
3.1	Demonstrate positive work ethics as well as professional attitude at work.	<ul style="list-style-type: none"> • Group Discussion 	<ul style="list-style-type: none"> • Activity
3.2	Exhibit responsible behaviour via creating awareness among community in relation to blood transfusion and transplantation sciences.	<ul style="list-style-type: none"> • Service Learning 	<ul style="list-style-type: none"> • Activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	5 th week	15%
2	Activity	Throughout	5%
3	Practical report	Throughout	10%
4	Final Practical Exam	11 th week	20%
5	Final Exam	12 th /13 th week	50%
	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.
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F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • Geoff Daniels. Human Blood Groups (2013), 3rd Edition. Wiley-Blackwell Publishers. ISBN: 978-1-444-33324-4
Essential References Materials	None
Electronic Materials	Websites, Search engines (Saudi Digital Library, PubMed, Google Scholar)
Other Learning Materials	TRANSFUSION Journal http://www.aabb.org/programs/publications/Pages/transfusion.aspx

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)	Blood bank laboratory established with different materials used in practical sessions

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student's feedback on effectiveness of teaching.	<ul style="list-style-type: none"> Students 	<ul style="list-style-type: none"> Indirect: Questionnaire Survey at the end of each semester.
Quality of learning resources (laboratory and library) related to each course.	<ul style="list-style-type: none"> Students Staff members 	<ul style="list-style-type: none"> Indirect: Questionnaire Survey at the end of each semester related to learning resources.
Evaluation of teaching	<ul style="list-style-type: none"> Peer evaluators 	<ul style="list-style-type: none"> Indirect: Peer evaluation
Evaluation of exam quality and assessment.	<ul style="list-style-type: none"> Exam committee Students 	<ul style="list-style-type: none"> Direct: Exam paper/ exam blueprint review Indirect: Questionnaire Survey at the end of each semester.
Achievement of course learning outcomes	<ul style="list-style-type: none"> Course Coordinators Development and accreditation committee 	<ul style="list-style-type: none"> 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)

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