



مجلس الاعتماد الأكاديمي وضمان الجودة
Council for Accreditation & Quality Assurance

Program Specification of Laboratory Medicine

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Date of preparation:

2025

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Contents

PROGRAM SPECIFICATION DOCUMENT	2
1. PROGRAM IDENTIFICATION AND GENERAL INFORMATION:	2
2. INTRODUCTION:.....	3
3. UNIVERSITY VISION. MISSION. AND OBJECTIVES:.....	3
4. FACULTY OF LABORATORY MEDICINE VISION. MISSION AND OBJECTIVES	4
5. MISSION. OBJECTIVES AND LEARNING OUTCOMES OF THE PROGRAM	5
6. PROGRAM STANDARDS & BENCHMARKS:	6
7. GRADUATES ATTRIBUTES:	7
8. INTENDED LEARNING OUTCOMES: (PILOS).....	7
9. TEACHING AND LEARNING STRATEGIES:.....	9
10. ASSESSMENT METHODS:	10
11. ALIGNMENT OF PROGRAM INTENDED LEARNING OUTCOMES (PILOS) WITH TEACHING STRATEGIES AND ASSESSMENT METHODS:	11
12. PROJECT ASSESSMENT	12
13. TRAINING COURSE ASSESSMENT (IF ANY):	12
14. PROGRAM STRUCTURE:	13
1 UNIVERSITY REQUIREMENTS	13
2. FACULTY REQUIREMENTS	14
3. PROGRAM REQUIREMENTS	14
15. STUDY PLAN:	16
16. DISTRIBUTION OF TOTAL CREDIT HOURS:.....	19
17. ADMISSION REQUIREMENTS:	20
18. ATTENDANCE AND GRADUATION REQUIREMENTS:	20
19. GRADING SYSTEM:	20
20. FACILITIES REQUIRED FOR RUNNING THE PROGRAM:	21
21. PROGRAM ASSESMENT:	21
22. PROGRAM QUALITY STANDARDS:	21
23. INTERNAL AND EXTERNAL TRAINING TO SATISFY PROGRAM STANDARDS:	21
24. PROGRAM POLICIES:	22
ANNEX -1. SURVEY OF NAMES SIMILAR ACCREDITED PROGRAMS AT INTERNATIONAL UNIVERSITIES (BENCHMARKS)	23
ANNEX- 2. SURVEY OF PILOS FOR SIMILAR ACCREDITED PROGRAMS AT NATIONAL AND INTERNATIONAL UNIVERSITIES	24
ANNEX-3. SURVEY OF CREDIT HOURS OF SIMILAR PROGRAMS:	25
PREPARATION COMMITTEE	27

PROGRAM SPECIFICATION DOCUMENT

1-Program Identification and General Information:

1	Scientific name of the program:	Bachelor of Laboratory medicine
2	Total credit hours required to award the degree	138 Credit Hours
3	Number of years needed for completion of the program:	4 Years (8 Academic semesters) + 6-months internship
4	The body responsible for granting the degree:	21 September University of Medical & Applied Sciences
5	The body responsible for the program:	Faculty of Laboratory Medicine
6	Award granted on completion of the program:	Bachelor's degree
7	Study system:	Semesters
8	Study Language of the Program:	English
9	Entry requirements:	General Secondary School Certificate
10	Departments participating in the program:	None
11	Starting year of the program:	2016/2017 updated 2024-2025
12	Study methods in the program:	lecture and practical
13	Location of Delivery:	University Campus
14	The program resources:	21 September University of Medical & Applied Sciences
15	Minimum grade requirements:	As per Regulations of the Ministry of Higher Education and Scientific Research
16	Other admission requirements:	According to the University Rules and Regulations
17	Date of current development of the program:	May 2025
18	Prepared by:	Prof. Dr.Khaled A. Al-Moyed Associate Prof. Dr. Ebtesam Al-Zabedi Assistant prof. Dr. Gamil Abdul-Mughni Assistant prof. Dr Ghamdan Al-Tahish Assistant prof. Dr Nawal Al-Henhena
19	Program coordinator:	Assistant prof. Dr. Gamil Abdul-Mughni
20	Council Approval Date	

2- Introduction:

Laboratory Medicine providing graduated students who assist in the diagnosis, monitoring, and treatment of disease. The Bachelor of Laboratory Medicine is the perfect degree to prepare you for a career in specialized medical or pathology laboratories. Your studies will build knowledge in chemistry, anatomy, physiology, histology, immunology, cell and molecular biology, biochemistry, hematology, clinical biochemistry and medical microbiology

Promising Jobs:

- 1- Medical Lab technologist
- 2- Microbiology Specialist
- 3- General lab manger
- 4- Infection control specialist

3- University Vision. Mission. Values. and Objectives:

University vision:

A contemporary university with national responsibility and a faith identity

University mission:

Leading the transformation in the management and delivery of health care with all partners by setting a standard of excellence in education and medical and applied research in a way that meets the needs of Yemeni society, its privacy and regional influence.

University Core values:

Ensuring the application of quality standards and setting standards of excellence in medical and applied sciences, scientific research and community service.
The centrality of the student in the educational process, the partnership with them for life, the consolidation of the principles of national responsibility and faith identity, their care and the development of their capabilities after graduation and during work.
Attracting, employing and retaining scholars, cadres and highly specialized talents to gain minds and reverse the trend of “brain drain” in a way that enhances and ensures the creation of thinkers, businessmen and good citizens.
Continuous development of the distinguished academic infrastructure and the establishment of modern research and service centers with high efficiency and capable of making a real impact locally and regionally.
Enhancing the university's position as a preferred partner for local, regional and international partnership through implementing innovative models of education.

exchanging research and knowledge and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally

4-Faculty of laboratory Medicine Vision. Values. Mission and Objectives:
<u>Vision:</u>
Contemporary faculty in Laboratory medicine.
<u>Mission:</u>
Contribute to improving health services in laboratory medicine by achieving standards of excellence in education and scientific research in a way that meets the needs and privacy of society and contributes to addressing global health problems.
<u>Values:</u>
1. Academic freedom
2. Integrity and justice
3. Team work
4. Social responsibility
<u>Faculty Objectives (Educational):</u>
1. Preparing a highly qualified and skilled cadre in the field of laboratory medicine.
2. Building an educational system that keeps pace with development and conforms to academic quality standards.
3. Adopting, supporting and investing scientific research programs to meet the requirements of sustainable development and to contribute to solving global health problems.
4. Developing a culture of community partnership in the field of laboratory medicine and research.
5. Enhancing the facility position as a preferred partner for local, regional and international partnership through implementing innovative models of education, exchanging research and knowledge and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally

5. Mission. Objectives and Values of the program

A-Mission:

Preparing highly qualified laboratory medicine through advanced educational and research skills that achieve sustainable development and enhance the values of leadership, teamwork and community partnership.

B- Objectives

The Objectives of this program are to:

1. To provide students with a superior and comprehensive educational program in laboratory medicine
2. To graduate students with knowledge base required to practice laboratory medicine effectively and carefully
3. To graduate professionally competent laboratory medicine prepared to meet the workforce needs of Yemen and the regions
4. To graduate individuals exhibiting sense of commitment to the ethical and humane aspects of patient care, and recognizing the role in assuring quality health care.
5. To graduate students with effective communication, management and leadership, Team work, problem solving/ critical thinking skills that provide compassionate patient care.
6. To graduate students who value the importance of professional development to patient care and laboratory medicine field through life-long learning and meet the needs of the laboratory medicine community.

C-The values:

1. Leadership and Influence
2. Excellence and creativity
3. Work as one team

6- Program Standards & Benchmarks:
Academic Standards:
1. National Academic Reference Standards (NARS) for Undergraduate of Medical Laboratory program. Council for Accreditation & Quality Assurance. Republic of Yemen. Jan 2021 (First Edition). 2. Standards of the 1st level of accreditation. 2021. Council for Accreditation & Quality Assurance (CAQA). Yemen. 3. Unified Regulations for Student Affairs. Ministry of Higher Education and Scientific Research. Yemen
Government Rules and Regulations:
1. Act No. 13/2005 of the Law of Yemeni universities. 2. The executive regulations of Act No. 13/2005 of the Law of Yemeni universities. 3. strategic orientations of ministry of high education and scientific research 4. Strategic orientations of Council for Accreditation & Quality Assurance. Republic of Yemen. 5. Strategic orientations of 21 September University of Medical and Applied sciences.
Benchmarks
1. Jouf University https://www.ju.edu.sa/ 2. Jazan University https://www.jazanu.edu.sa/ 3. University of Sharjah/ department of Medical Laboratory Sciences https://www.sharjah.ac.ae/ 4. Jordan University of Science and Technology https://www.just.edu.jo/ 5. The City University of New York https://www.cuny.edu/ 6. University of Alberta https://www.ualberta.ca/
See Annexes 1. 2. 3. 4 and 5. Annex -1. Survey of names Similar Accredited Programs at International Universities (Benchmarks). (Annex -2 Survey of names Similar Accredited Programs at International Universities Benchmarks) (Annex - 3 Survey of Intended Learning Outcomes for Similar Accredited Programs at International Universities.) (Annex-4. Survey of Credit Hours of Similar Programs) (Annex-5. Survey of Course Names of Similar Program)

7- Graduates Attributes:

Upon successful completion of the program. graduates should be able to:

1. Demonstrate understanding of basic Biomedical Sciences in Laboratory Medicine.
2. Apply knowledge of Biochemical. Hematological. Immunological. Microbiological. Parasitological and Blood Banking in laboratory investigation.
3. Demonstrate an in-depth knowledge of the relationship between laboratory data and pathologic processes. and how laboratory data are related to health and disease.
4. Use critical thinking and problems solving skills in laboratory diagnosis to make evidence-based decisions.
5. Communicate effectively and demonstrate professionalism in dealing with patients. their families and other health care workers.
6. Maintain confidentiality. adhere to moral and ethical standards of investigations and comply with the government regulations applied to Medical Laboratory.

8- Program Intended Learning Outcomes: (PILOs)

A- Knowledge and Understanding:

Upon successful completion of the undergraduate of Laboratory medicine Program. the graduates will be able to:

A1	Discuss the core aspects of laboratory medicine including Biochemistry. Anatomy. histology. Physiology. Cell Biology. Pathology. Immunology. Microbiology. Epidemiology. and Public Health Medicine
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A2	Demonstrate advanced knowledge of his Laboratory Medicine specialist area; such as genetics. cellular pathology. clinical biochemistry. clinical immunology. hematology and transfusion science. and medical microbiology
A3	Define different diagnostic markers and laboratory tests for each human body organs and common medical conditions
A4	Explain all quality assurance measures and participate in performance improvement activities in the clinical laboratory
B- Cognitive/ Intellectual Skills:	
<i>When student has completed the program. he will be able to:</i>	
B1	- Integrate knowledge of basic Medical Sciences such as physiology. biochemistry ...etc. with the Applied and Clinical Medical Sciences such as Pathology. Clinical Biochemistry ...etc.
B2	- Diagnose common medical conditions affecting various organs of the human body.
B3	- Interpret and evaluate the medical laboratory experimental data and techniques and present the data in an appropriate format
B4	- Develop critical and analytical thinking to recognize errors and solve problems.
C- Practical and Professional Skills:	
<i>When student has completed the program. he/she will be able to:</i>	
C 1	- Perform clinical laboratory tests commonly encountered in a hospital laboratory in the areas of Clinical Chemistry. Hematology. Immunochemistry. Immunology. Microbiology. Histopathology and. Molecular Diagnostics.
C2	- Apply the safety laboratory rules and regulations in handling and processing of test samples and maintaining working environment.
C3	- Take responsibility in analysis and clinical decision-making such as recognizing and resolving issues related to pre-analytical. analytical. and post-analytical steps of the testing process
C4	- Demonstrate a high degree of professionalism in practicing ethical and social issues related to patient health and maintain confidentiality
D- General or Transferable skills	
<i>When student has completed the program. he will be able to:</i>	
D1	- Educate the general public and to assist patients through acceptable customer service interactions

D2	- Demonstrate oral and written effective communication skills.
D3	- Collaborate with patients. communities. organizations. and with members of the health team.
D4	- Demonstrate responsibility for professional Laboratory Medicine practice including the essential values of ethics. self-respect. honesty. autonomy. humanity and social justice.

9- Teaching and Learning Strategies:

- Interactive lectures
- Seminars
- Practical session
- Training
- Discussion
- Self-learning
- Presentation
- Case study (CBL)

Teaching Strategy	Description
Interactive lectures	These are interactive lectures weekly conducted in the class and supported with variety of teaching formats including. lectures and multimedia presentations. use of whiteboard to solve examples and illustrating different tasks and problems introduced by the presentation. and class discussions. in which concepts. approaches. and case studies are presented. explored. and shown students what they need to know.
Seminars	Discussion of specific topic by group of students under the observation of the lecturer.
Practical session	In highly equipped labs the student will trained by

Teaching Strategy	Description
	practicing certain topic.
Training	This training preformed in the hospital by such teaching strategy the students improve their clinical skills.
Discussion	It is interactive measure by which the lecturer explores the level of understanding the subject among students
Self-learning	Improving the knowledge by the student oneself without assistants.
Office hours	By which the lecturer discusses and answer for students' questions.
Presentation	An activity by which the student describes. explain something Infront of group of students.
Case studies (CBL)	Study the clinical cases in depth. training the details of history taking. examination. analysis the gathering data and obtaining diagnosis.

10- Assessment Methods:

- Written exam (mid and final terms and quizzes).
- Final practical exam
- Final oral exam
- Assignment:
 - Research
 - Homework
 - Team work

Assessment Strategy	Description
Written exam (mid and final terms and quizzes)	Mid-term test is conducted in the 8 th week and final exam is conducted at the end of each course. Both tests are closed book. closed notes. quizzes are related to past as well as topics discussed in the period. This helps students develop self-

Assessment Strategy	Description
	confidence. readiness. and accuracy in major exams.
Final practical exam	Final practical exam is carried on the end of each course in order to examine the student's practical skills.
Final oral exam	It's part of the final assessment of the student knowledge by which the examiner gives the question in spoken form.
Research project	At the end of study years. the students have to work in research project in order to achieve bachelor degree.
Homework	Individual assessment
Teamwork	Group assessment

11- Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding A1. A2. A3. A4	- Interactive lectures - Self-learning - Discussion	- Written exam (mid and final terms and quizzes) - Final oral exam
Intellectual Skills B1. B2. B3. B4	- Interactive lectures - Practical session - Discussion - Self-learning - Presentation	- Written exam (mid and final terms and quizzes). - Final practical exam - Final oral exam - Assignment
Professional & practical	Interactive lectures	Written exam (mid and final terms and quizzes).

11- Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
skills C1. C2. C3. C4	- Seminars - Practical session - Training - Discussion - Self-learning - Presentation - Case study (CBL)	- Final practical exam - Final oral exam - Assignment:
General & Transferable Skills D1. D2. D3. D4	- Seminars - Practical session - Training - Discussion - Case study (CBL)	- Final practical exam - Final oral exam - Assignment: - Research - Homework - Team work

12- Project Assessment:

Each project will be assessed as follows:

Item	Marks Distribution
Research project supervisor	70
Internal examiner: a member of the department teaching staff.	15
External examiner: a qualified external examiner (either from other departments of the college or from another university)	15
Total	100

13. Training Course Assessment:

The training course will be assessed through:

- Log Book
- Case discussion
- Internship

14.Program Structure:							
No	Requirements		No. of Courses	Credit Hours	Rational Weight %		
1	University Requirements	Compulsory	7	14	10.1 %		
		Elective	--	--			
2	Faculty Requirements	Compulsory	12	32	23.2 %		
		Elective	--	--			
3	Department and Program Requirements	Compulsory	31	92	66.7%		
		Elective	--	--			
	Total		50	138	100%		
14.1. University Requirements							
No.	Level-Sem.	Course Name	Course Code	Prerequisites – Co-requisites	L	P	T
1	L1 S1	Arabic 101	06.11.301	-	2	0	2
2	L1S2	Arabic 102	06.11.302	06.11.301	2	0	2
3	L1 S1	English 101	06.11.303	-	2	0	2
4	L1S2	English102	06.11.304	06.11.303	2	0	2
5	L1 S1	Islamic culture	06.11.305	-	2	0	2
6	L1 S1	National culture	06.11.306	-	2	0	2
7	L1S2	The Arab Israel conflict	06.11.307	-	2	0	2
Total					14	0	14

14.2. Faculty Requirements							
No.	Level-Sem.	Course Name	Course Code	Prerequisites – Co-requisites	L	P	T
1	L1 S1	General biology	03.01.311	-	2	2	3
2	L1 S1	Medical Ethics	05.02.314	-	2	0	2
4	L1S1	General & Analytical Chemistry	02.04.309	-	2	2	3
4	L1 S2	Medical physics	01.01.303	-	2	2	3
5	L1S2	Physiology	01.01.301	03.01.311	2	0	2
6	L1S2	Human Anatomy	01.01.302	-	2	2	3
7	L1S2	Computer Skill	05.03.315		2	2	3
8	L2S1	Histology & Cytology	01.01.304	-	2	2	3
9	L3S1	Pathology	01.01.305	01.01.304	2	2	3
10	L3S1	Drug monitoring and interference and Toxicology	02.03.311	-	2	2	3
11	L3 S1	Medical Statistic and Methodology	01.02.307	-	2	0	2
12	L4 S1	Community medicine and Epidemiology	05.02.318	-	2	0	2
Total					24	16	32

14.3. Department and Program requirements							
No.	Level-Sem.	Course Name	Course Code	Prerequisites – Co-requisites	L	P	T
1	L2 S1	Bacterial physiology	03.02.322	03.01.311	2	2	3
2	L2 S1	Medical Biochemistry I (introduction)	03.01.312	03.01.311	2	2	3
3	L2 S1	Medical Helminthology	03.04.344	-	2	2	3
4	L2 S1	Basic Immunology	03.02.323	-	2	2	3
5	L2 S1	Hematology I	03.03.334	-	2	2	3

6	L2 S2	Medical Biochemistry II (Metabolism)	03.01.313	03.01.312	2	2	3
7	L2 S2	Molecular Biology and Genetics	03.01.315	03.01.311	2	2	3
8	L2 S2	Medical Entomology	03.04.345	-	2	2	3
9	L2 S2	Medical Bacteriology 1	03.02.324	03.02.322	2	2	3
10	L2 S2	Hematology II	03.03.335	03.03.334	2	2	3
11	L2 S2	Clinical Immunology	03.02.325	03.02.323	2	2	3
12	L3 S1	Medical Bacteriology 2	03.02.326	03.02.324	2	2	3
13	L3 S1	Enzymes and Vitamins	03.01.316	03.01.312	2	2	3
14	L3 S1	Medical protozoology	03.04.346	-	2	2	3
15	L4 S1	Anemia	03.03.341	-	2	2	3
16	L3 S1	Medical Virology	03.02.327	-	2	2	3
17	L3 S2	Quality Control. Assurance and biosafety in medical lab	03.03.337	-	2	2	3
18	L3 S2	Hormones	03.01.318	03.01.313	2	2	3
19	L3 S2	Medical Mycology	03.02.328	-	2	2	3
20	L3 S2	Blood Bank	03.03.339	03.03.334	2	2	3
21	L4 S1	Diagnostic Hematology 1	03.03.340	-	2	2	3
22	L4 S1	Body fluid	03.01.319	-	2	2	3
23	L4 S1	Diagnostic Microbiology1	03.02.329	-	2	2	3
24	L4 S1	Diagnostic Parasitology	03.04.347	-	2	2	3
25	L4 S1	Leukemia	03.03.342	-	2	2	3
26	L4 S1	Sanitary Microbiology and Infection Control	03.02.330	-	2	2	3
27	L4 S2	Diagnostic Microbiology II	03.02.331	03.02.329	2	2	3
28	L4 S2	Clinical Chemistry	03.01.320	03.01.313	2	2	3
29	L4 S2	Diagnostic Hematology II	03.03.343	03.03.340	2	2	3
30	L4 S2	Molecular Diagnostics	03.02.333	03.02.331, 03.01.315	2	2	3
31	L4 S2	Graduation Project	03.01.321	-	2	0	2
Total					62	60	92

15.Study Plan:

Level 1 –Sem 1.	NO.	Course Name	Course Code	Course type	L	P	T
L1 S1	1	General & Analytical Chemistry	02.04.309	FACT	2	2	3
L1 S1	2	General Biology	03.01.311	FACT	2	2	3
L1 S1	3	English 101	06.11.303	UNIV	2	0	2
L1 S1	4	Arabic 101	06.11.301	UNIV	2	0	2
L1 S1	5	Islamic culture	06.11.305	UNIV	2	0	2
L1 S1	6	National culture	06.11.306	UNIV	2	0	2
L1 S1	7	Medical Ethics	05.02.314	FACT	2	0	2
TOTAL					14	4	16

Level 1- Sem.2	NO.	Course Name	Course Code	Course type	L	P	T
L1 S2	1	Physiology	01.01.301	FACT	2	0	2
L1 S2	2	Human Anatomy	01.01.302	FACT	2	2	3
L1 S2	3	Computer Skill	05.03.315	FACT	2	2	3
L1 S2	4	Medical physics	01.01.303	FACT	2	2	3
L1 S2	5	The Arab Israel conflict	06.11.307	UNIV	2	0	2
L1 S2	7	Arabic 102	06.11.302	UNIV	2	0	2
L1 S2	8	English102	06.11.304	UNIV	2	0	2
TOTAL					14	6	17

Level-Sem.	NO.	Course Name	Course Code	Course type	L	P	T
L2 S1	1	Bacterial physiology	03.02.322	PROG	2	2	3
L2 S1	2	Medical Biochemistry 1 (Introduction)	03.01.312	PROG	2	2	3
L2 S1	3	Medical Helminthology	03.04.344	PROG	2	2	3
L2 S1	4	Basic Immunology	03.02.323	PROG	2	2	3
L2 S1	5	Histology & Cytology	01.01.304	FACT	2	2	3
L2 S1	6	Hematology I	03.03.334	PROG	2	2	3
TOTAL					12	12	18

Level-Sem.	NO.	Course Name	Course Code	Course type	L	P	T
L2 S2	1	Medical Biochemistry 2 (Metabolism)	03.01.313	PROG	2	2	3
L2 S2	2	Molecular biology and genetics	03.01.315	PROG	2	2	3
L2 S2	3	Medical Entomology	03.04.345	PROG	2	2	3
L2 S2	4	Medical Bacteriology 1	03.02.324	PROG	2	2	3
L2 S2	5	Hematology II	03.03.335	PROG	2	2	3
L2 S2	6	Clinical Immunology	03.02.325	PROG	2	2	3
TOTAL					12	12	18

level-Sem.	NO .	Course Name	Course Code	Course type	L	P	T
L3 S1	1	Medical Bacteriology 2	03.02.326	PROG	2	2	3
L3 S1	2	Minerals and Vitamins Metabolism	03.01.316	PROG	2	2	3
L3 S1	3	Medical protozoology	03.04.346	PROG	2	2	3
L3 S1	5	Medical Virology	03.02.327	PROG	2	2	3
L3 S1	6	Anemia	03.03.341	PROG	2	2	3
L3 S1	7	Pathology	01.01.305	PROG	2	2	3
TOTAL					12	12	18

Level-Sem.	NO .	Course Name	Course Code	Course type	L	P	T
L3 S2	1	Drug monitoring and interference and Toxicology	02.03.311	FACT	2	2	3
L3 S2	2	Hormones	03.01.318	PROG	2	2	3
L3 S2	3	Medical Mycology	03.02.328	PROG	2	2	3
L3 S2	4	Blood Bank	03.03.339	PROG	2	2	3
L3 S2	5	Quality Control. Assurance and biosafety in medical lab	03.03.337	PROG	2	2	3
L3 S2	6	Medical Statistic and Methodology	01.02.307	FACT	2	0	2
TOTAL					12	10	17
Level-Sem.	NO .	Course Name	Course Code	Course type	L	P	T
L4 S1	1	Diagnostic Hematology 1	03.03.340	PROG	2	2	3

L4 S1	2	Body fluid	03.01.319	PROG	2	2	3
L4 S1	3	Diagnostic Microbiology1	03.02.329	PROG	2	2	3
L4 S1	4	Diagnostic Parasitology	03.04.347	PROG	2	2	3
L4 S1	5	Leukemia	03.03.342	PROG	2	2	3
L4 S1	6	Community medicine and Epidemiology	05.02.318	FACT	2	0	2
TOTAL					12	10	17

Level-Sem.	NO.	Course Name	Course Code	Course type	L	P	T
L4 S2	1	Diagnostic Microbiology2	03.02.331	PROG	2	2	3
L4 S2	2	Clinical Chemistry	03.01.320	PROG	2	2	3
L4 S2	3	Diagnostic Hematology 2	03.03.343	PROG	2	2	3
L4 S2	5	Molecular Diagnostics	03.02.333	PROG	2	2	3
L4 S2	6	Sanitary Microbiology and Infection Control	03.02.330	PROG	2	2	3
L4 S2	7	Graduation Project	03.01.321	PROG	1	4	2
TOTAL					11	10	17

Six Months Practical Training (internship)

Topic	hours
Practical Contact hours	
Parasitology	50
Hematology	100
Pathology	100
Immunology	50
Microbiology	100
Clinical chemistry and drug monitoring	100
Blood bank and organ transplantation	50
Molecular genetics	50
Total	600

16. Distribution of Total Credit Hours:

L	Term	University Requirements		Faculty Requirements		Program Requirements		Program Electives		Training		Total Cr. Hrs		Total Cr. Hrs./ Level Percentage:	
		No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses %	Credit Hours %
1 st	First	4	8	3	8	-	-	-	-	-	-	7	16	14	11.6
	Second	3	6	4	11	-	-	-	-	-	-	7	17	14	12.35
2 nd	First	-	-	1	3	5	15	-	-	-	-	6	18	12	13
	Second	-	-	-	-	6	18	-	-	-	-	6	18	12	13
3 rd	First	-	-	1	3	5	15	-	-	-	-	6	18	12	13
	Second	-	-	2	5	4	12	-	-	-	-	6	17	12	12.35
4 th	First	-	-	1	2	5	15	-	-	-	-	6	17	12	12.35
	Second	-	-	-	-	6	17	-	-	-	-	6	17	12	12.35
Total		7	14	12	32	31	92	-	-	-	-	50	138	100	100
%		14	10.1	24	23.2	62	66.7	-	-	-	-	100	100	100	100

17. Admission requirements:

1. Admissions to the program shall be made as per the admission rules set by the Ministry of Higher Education and Scientific Research as well as university admission guidelines.
2. General Secondary school certificate (Science Section) or any equivalent certificate with grade as specified in the admission rules made by Ministry of Higher Education and Scientific Research.
3. Pass the aptitude test and personal interview.
4. Any necessary requirement for specialization. decided by the Scientific Section.

18. Attendance and Graduation Requirements:

1. Student attendance should not be less than 75%.
2. Student will graduate after successfully passing all program requirements.
3. Total credit hours for the program is 159 credit hours.
4. Minimum score for any student to pass any credit hours course is 65 % degree.

19. Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 90%	Very Good
From 70 % to less than 80%	Good
From 65 % to less than 70 %	Pass
Less than 65 %	Poor/Fail

20. Facilities Required for Running the Program:

1. Sufficient Classrooms furnished with all necessary pieces and equipment.
2. Labs as per the course's specifications.
3. Computer Labs.
4. Academic and administrative staff offices.

21. Program Assessment:

Type of the Sample who Assess the program		Instruments used	Sample
1	Final year assessment	Questionnaire	Random
2	External examiner evaluation	Questionnaire	-Graduate Club - By Email
3	Graduated student evaluation	Reports	External University
4	External evaluator	Reports	External University
5	Council for Accreditation and Quality Assurance in Yemen	Reports	Review by team work

22. Program Quality Standards:

- Continuous evaluation
- Workshops

23. Internal and external training to satisfy program standards:

- Internally: - training in well-equipped labs
- Externally: -Training in hospital controlled by logbook

24. Program Policies:	
Based on University Regulations	
1.	(Class Attendance): A student should attend not less than 75 % of total hours of the subject; otherwise, he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hour, student will be required to retake the entire course again.
2.	(Tardy) : For late in attending the class, the student will be initially notified. If he repeated lateness in attending class, he/she will be considered as absent.
3.	(Exam Attendance/Punctuality) : A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	(Assignments & Projects) : Assignments and projects are given as per course specification; the student has to submit all the assignments for checking on time, mostly one week after given the assignment.
5.	(Cheating) : For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the faculty.
6.	(Plagiarism) : Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the faculty. The final disengagement of the student from the faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7.	(Other policies) : - Mobile phones are not allowed to use during a class lecture. It must be closed; otherwise the student will be asked to leave the lecture room. - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments might be given directly to students using soft or hard copy.

Annex- 1. Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

	The Academic Program	The University	The faculty	The Department	The Country	degree Award at Program Completion	Year of accreditation		Study Duration
Current Program	BACHELOR OF LABORATORY MEDICINE	University of 21 September for Medical Sciences	LABORATORY MEDICINE	- LABORATORY MEDICINE	Republic of Yemen	BACHELOR IN LABORATORY MEDICINE		138	4YEARS + (6 months)
The 1st Program	Bachelor Degree in Clinical Laboratory Sciences	Jouf University	Applied Medical Sciences	Clinical Laboratory Sciences	KSA.	Bachelor Degree		136	4+(6 months)
The 2nd Program	Medical Laboratory Technology	Jazan University	Applied Medical Sciences	Medical Laboratory Technology	KSA.	Bachelor Degree		136	4 years + one years
The 3rd Program	BACHELOR OF Medical Laboratory Sciences	Jordan University of Science and Technology	Faculty of Applied Medical Sciences	Medical Laboratory Sciences	Jordan	BACHEL IN Medical Laboratory Sciences		138	4+(6 months)
The 4th Program	BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES	University of Sharjah	College of Health Sciences	Department Medical Laboratory Sciences	UA Sharjah Main Campus	Bachelor of Science degree in Medical Laboratory Science		134	4+ (6 months)
The 5th Program	Medical Laboratory Science	The City University of New York	College of Staten Island.	Biology	USA	Bachelor of Science)		128	4= (6 months)
The 6th Program	Bachelor of Science in Medical Laboratory Science	University of Alberta	Faculty Medicine and Dentistry		Canada	Bachelor of Science (BSc) in Medical Laboratory Technology		1 50	4 yeas

Annex- 2. Survey of PILOs for Similar Accredited Programs at National and International Universities

Program PILOs	PILOs Similar Accredited Programs					Accreditation Bodies	
	Jouf University	Jazan University	University of Sharjah	Jordan University of Science and Technology	The City University of New York	NARS	International
A1	√	√	√	√	√	√	
A2	√	√	√	√	√	√	
A3	√	√	√	√	√	√	
A4	√	√	√	√	√	√	
B1	√	√	√	√	√	√	
B2	√	√	√	√	√	√	
B3	√	√	√	√	√	√	
B4	√	√	√	√	√	√	
C1	√	√	√	√	√	√	
C2	√	√	√	√	√	√	
C3	√	√	√	√	√	√	
C4	√	√	√	√	√	√	
D1	√	√	√	√	√	√	
D2	√	√	√	√	√	√	
D3	√	√	√	√	√	√	
D4	√	√	√	√	√	√	

Annex-3. Survey of Credit Hours of Similar Programs

Benchmarking	University	University of 21 September for Medical Sciences	Jouf University	Jazan University	University of Sharjah	Jordan University of Science and Technology	The City University of New York	University of Alberta
	Faculty	Laboratory medicine	Applied Medical Sciences	Applied Medical Sciences /	College of Health Sciences	Faculty of Applied Medical Sciences	College of Staten Island	Faculty Medicine and Dentistry
	Program	Laboratory medicine	linical Laboratory Sciences	Medical Laboratory science	Medical Laboratory Sciences	Medical Laboratory Sciences	Medical Laboratory Science	Bachelor of Science in Medical Laboratory Science
	Country	Republic of Yemen	KSA.	KSA.	UA	Jordan	<u>USA</u>	Canada
University Requirements	Credit Hours	14	25	31	24	15	23	20
	Percentage	10.1	18	23	17.9	11	18	13
University Electives	Credit Hours			0	6	15	5	5
	Percentage				4	11	4	3
Faculty Requirements	Credit Hours	32	17	23	24	21		30
	Percentage	23.2	15	17	18	15		20
Department and Major program Requirements	Credit Hours	92	81	88	86	87	100	95
	Percentage	66.7	60	64	64	63	78	64
Total Credit Hours		138	136	136	134	138	128	1 50

A. Knowledge and Understanding:	
<i>Upon successful completion of an undergraduate Laboratory medicine Program, graduates should be able to:</i>	
A1	Discuss the core aspects of laboratory medicine including Biochemistry, Anatomy, histology, Physiology, Cell Biology, Pathology, Immunology, Microbiology, Epidemiology, and Public Health Medicine
A2	Demonstrate advanced knowledge of his Laboratory Medicine specialist area; such as genetics, cellular pathology, clinical biochemistry, clinical immunology, hematology and transfusion science, and medical microbiology
A3	Define different diagnostic markers and laboratory tests for each human body organs and common medical conditions
A4	Explain all quality assurance measures and participate in performance improvement activities in the clinical laboratory

B. Cognitive/ Intellectual Skills:	
<i>Upon successful completion of an undergraduate Laboratory medicine program, graduates should be able to:</i>	
B1	- Integrate knowledge of basic Medical Sciences such as physiology, biochemistry ...etc. with the Applied and Clinical Medical Sciences such as Pathology, Clinical Biochemistry ...etc.
B2	- Diagnose common medical conditions affecting various organs of the human body.
B3	- Interpret and evaluate the medical laboratory experimental data and techniques and present the data in an appropriate format
B4	- Develop critical and analytical thinking to recognize errors and solve problems.

C. Practical and Professional Skills:	
<i>Upon successful completion of an undergraduate Laboratory medicine program, graduates should be able to:</i>	
C1	- Perform clinical laboratory tests commonly encountered in a hospital laboratory in the areas of Clinical Chemistry, Hematology, Immunohematology, Immunology, Microbiology, Histopathology and, Molecular Diagnostics.
C2	- Apply the safety laboratory rules and regulations in handling and processing of test samples and maintaining working environment.
C3	- Operate common lab equipment ranging from simple pipetting to the operation of sophisticated Medical Laboratory equipment.
C4	- Take responsibility in analysis and clinical decision-making such as recognizing and resolving issues related to pre-analytical, analytical, and post-analytical steps of the testing process
C5	- Demonstrate a high degree of professionalism in practicing ethical and social issues related to patient health and maintain confidentiality

C6 - Utilize laboratory information system, and work independently and in cooperation with others and Consult with other members of the health care team

D. General and Transferable Skills:

Upon successful completion of an undergraduate Laboratory medicine program, graduates should be able to:

D1	- Educate the general public and to assist patients through acceptable customer service interactions
D2	- Demonstrate oral and written effective communication skills,
D3	- Collaborate with patients, communities, organizations, and with members of the health team.
D4	- Demonstrate responsibility for professional Laboratory Medicine practice including the essential values of ethics, self-respect, honesty, autonomy, humanity and social justice.
D5	- Self learning skills and knowledge to new situations.
D6	use information technology in laboratory medicine and scientific research.

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