

Republic of Yemen  
Ministry of Higher Education and scientific Research

Emirates International University



# Medical Laboratory Program Specification

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## Reviewed and audit:

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**2017 - 2016**



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\* \* \*

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## Medical Laboratory Program Specification

### 1. Program Identification and General Information:

|    |                                                       |                                                                                                            |
|----|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1  | Scientific name of the program:                       | Bachelor of Medical Laboratory                                                                             |
| 2  | Total credit hours required to award the degree       | 147Credit Hours                                                                                            |
| 3  | Number of years needed for completion of the program: | 4 Years [8 Academic semesters] + 6 months Internship Program.                                              |
| 4  | The body responsible for granting the degree:         | Emirates International University                                                                          |
| 5  | The body responsible for the program:                 | Department of Medical Laboratory, Faculty of Medicine and Health Sciences                                  |
| 6  | Award granted on completion of the program:           | Bachelor of Medical Laboratory (B.M. L)                                                                    |
| 7  | Study system:                                         | Regular attendance-Minimum Attendance 70%                                                                  |
| 8  | Study Language of the Program:                        | English                                                                                                    |
| 9  | Entry requirements:                                   | Secondary School Certificate (Scientific Section)                                                          |
| 10 | Departments participating in the program:             | Department of Medical Laboratory                                                                           |
| 11 | Starting year of the program:                         | 2014                                                                                                       |
| 12 | Study methods in the program:                         | Full time.                                                                                                 |
| 13 | Location of Delivery:                                 | Emirates International University, Faculty of Medicine and Health Sciences.                                |
| 14 | The program resources:                                | Emirates International University.                                                                         |
| 15 | Minimum grade requirements:                           | As per the admission rules made by Ministry of Higher Education and Scientific Research, Republic of Yemen |
| 16 | Other admission requirements:                         | According to the University Rules and Regulations                                                          |
| 17 | Prepared by:                                          | Assistant Prof. Dr. Taha A. Saeid Kaid<br>Assoc. Prof. Dr. Jamil M.A.S. Obaid                              |
| 18 | Program coordinator and reviewed:                     | Assoc. Prof. Dr. Abdulbasit Al-Ghoury                                                                      |

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## 2. Introduction:

Emirates International University and the Faculty of Medicine and Health Sciences, provide, in its broad vision, a comprehensive medical education service through a recent program of Medical Laboratory (ML). This program is designed according to accredited similar Program Benchmarks to the most important and famous similar programs accredited in international and regional universities and in accordance with the standards of the Council for Academic Accreditation and Quality Assurance of Yemeni Higher Education. This program covers the study of Medical Laboratory Sciences in the six laboratory disciplines: Biochemistry, Hematology, Tissue technology, Microbiology, Parasitology, Transfusion Science, Body Fluids, Epidemiology and Immunology. In order to build and expand the student's (intellectual and professional knowledge skills). The graduate will be fully qualified to work in clinical laboratory diagnostics even in difficult environment vulnerable to epidemics. Therefore, it was necessary to provide the faculty with a program prepared and approved by the best professors' experts in this field.

## 3. University Vision, Mission, Values, Objectives, and Goals:

### 3.1-University Vision:

The Emirates International University (EIU-Yemen) aspires to be one of the nationally leading and regionally distinct universities.

### 3.2-University Mission:

EIU Yemen seeks to Provide a distinguished education and research services That meet the needs of the National and regional labour Market through qualified Human Resources quality academic programs, scientific research directed to knowledge Production, applications, and providing a supportive university environment and effective Community partnership.

### 3.3-University Core values:

Quality, excellence, creativity, a adherence To ethical professional standards institutional loyalty, teamwork and partnership. Teamwork.

### 3.4-Special University Objectives (Educational):

- 1- To provide improving governance and management systems, developing organizational Structure, promoting decentralization and adopting equality and transparency principles.
- 2- Expending infrastructure and developing self-resource.
- 3- Improving the quality of academic programs to meet development needs.
- 4- Enhancing the values of professional development and investing human resources on professional basis In accordance with the strategic framework of the University.
- 5- Developing a university environment conducive to teaching and learning with a view to achieve the professional competencies of the graduate.
- 6- Building and guiding scientific research capacities and planning that is linked to development goals.

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- 7- Establishing a genuine and effective partnership with the local community, other universities as well as the national and international Labour market.

### **3.5-Strategic goals (Strategic):**

In order to achieve the vision and mission of the University, seven strategic goals have been set, representing a road map for the University for the next five years, namely.

#### **First Orientation:**

Improving governance and management systems, developing organizational Structure, promoting decentralization and adopting equality and transparency principles.

#### **Second orientation:**

Expending infrastructure and developing self-resources.

#### **Third Orientation:**

Improving the quality of academic programs to meet development needs.

#### **Fourth orientation:**

Enhancing the values of professional development and investing human resources on professional basis In accordance with the strategic framework of the University.

#### **Five orientation:**

Developing a university environment conducive to teaching and learning with a view to achieve the professional competencies of the graduate.

#### **Sixth orientation:**

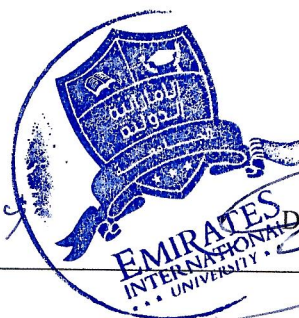
Building and guiding Scientific research capacities based On planning that is linked to development goals.

#### **Seventh orientation:**

Establishing genuine and effective partnerships with the local community, other universities as well as the national and international Labor market.

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#### 4. Faculty Vision, Mission, Values, and Objectives:

##### 4.1-Vision:

To excel in medical education, Scientific research and community service locally and regionally.

##### 4.2-Mission:

To qualify graduates who are able to provide quality Medical services at the local and regional Levels through academic programs that Conform to Quality standards, academic accreditation and an educational environment that promotes creative thinking and establishes the values of medical practice in an ethical is and human context .

##### 4.3-Values:

1. Humanity
2. Lifelong Learning
3. Integrity and Professionalism
4. Working in a team (Teamwork)

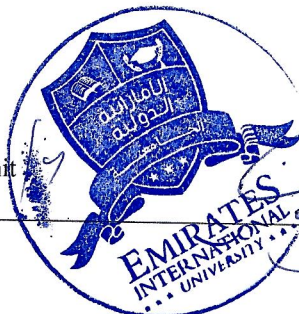
##### 4.4-Faculty Objectives (Educational):

1. Complementing governance and management systems, in a way that decentralizes promotes transparency and accountability.
2. Improving the quality of university academic programs, in accordance with the quality standards and academic accreditation and meeting the needs of the individual and the community.
3. Attracting Human resources for the academic and administrative staffs who are recognized for their scientific and professional competence and developing them through continuous education programs.
4. Focusing On the learner by establishing and developing are university environment conducive to teaching and learning in a way that promotes their scientific levels at the theoretical and applied levels.
5. Completing in infrastructure of the faculty, including laboratories classrooms and training medical clinics, and organizing them in order to achieve its goals.
6. Building scientific research capabilities based on planning linked to overall development goals.
7. Establishing a genuine partnership with the corresponding faculties Locally,regionally and international

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## 5. Department Vision, Mission, Values, and Objectives:

### 5.1- Department Vision:

Excel in medical laboratory sciences education, research, and community services at the national and regional levels.

### 5.2- Department Mission:

Our mission is to provide high-quality education and training to aspiring medical laboratory professionals capable of competing locally and regionally through qualified programs, highly qualified professors, practical and clinical training, and community-oriented research and healthcare activities. .

### 5.3- Department Values:

1. Honesty and confidentiality
2. Integrity and Professionalism
3. Lifelong Learning
4. Teamwork

### 5.4- Department Objectives:

1. Qualify, train, and equip a good medical graduate to excel in the field of medical laboratory diagnosis.
2. Equipping students with the necessary knowledge and skills in medical laboratory sciences enables them to make decision in clinical diagnosis practice.
3. Empowering students with knowledge to understand disease influences by age, gender, sociocultural, and genetic factors as well as disease transmission, prevention and their impact on laboratory test results.
4. Enhance professionalism and teamwork characters in clinical diagnosis work and medical research execution based on ethical guidelines and lifelong learning skills.
5. Building strong partnerships with local health and education institutions and relevant authorities that create a supportive learning environment

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## 6. Medical Laboratory Program Mission, Values, and Objectives

### 6.1- Program Mission:

Program mission is to provide a comprehensive and rigorous education in medical laboratory sciences in the best academic environment using highly qualified professors, technical expertise, and clinical and laboratory training programs provided by all facilities. The program equips graduate with the necessary knowledge and skills to be professional and researcher in the clinical laboratory field, competing locally and regionally.

### 6.2-Program Objectives- :

1. Prepare highly qualified and properly trained graduates in medical laboratory diagnosis.
2. Providing graduates with information and abilities in medical laboratory sciences helps them make good decisions in clinical diagnosis practice.
3. Providing students with basic knowledge to understand factors that influence disease development, diagnosis, and preventive measures.
4. Learn the students the most popular methods in clinical laboratory diagnosis, either the primitive manual methods or the advanced automated ones.
5. Improve professionalism, capacity and teamwork behaviour in clinical diagnosis laboratories and medical research; undertake ethical principles and lifelong learning as his first priorities.
6. Establishing collaboration with local health and education institutions and agencies to foster a conducive learning environment.

Annex- 1, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientations of the University and Faculty:

## 7. Program Standards & Benchmarks:

### 7.1- Program Standards: -

#### A. Academic Standards:

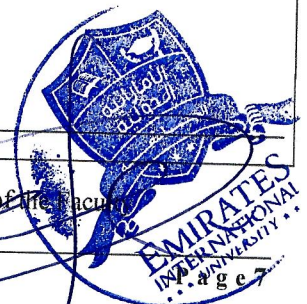
1. Standards and regulations of Council of Accreditation and Quality Assurance, Sana'a, Yemen.
2. In addition, the program construction depends on similar programs presented by universities including Local University (University of Science and Technology, &Ibb University), Regional University (Jordan University of Science and Technology, Qatar University and King Saud University), and International University (USA). as well as high-standard regional and international universities as follows:

Annex- 2, Academic Standards Curriculum Criteria of Accreditation Board

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## 7.2-Program Benchmarks:

- 1- **Medical Laboratory Sciences, Ibb University – Yemen.**  
[https:// www.ibbuniv.edu.ye](https://www.ibbuniv.edu.ye)
- 2- **Medical Laboratory Sciences, University of Science and Technology, Yemen.**  
<https://www.ust.edu.ye>
- 3- **Medical Laboratory Sciences, King Saud University, K.S.A.**  
<https://www.ksu.edu.sa/>
- 4- **Biomedical Sciences, Qatar University , Qatar**  
<https://qu.edu.qa-department-of-biomedical-science>
- 5- **Medical Laboratory Sciences, Jordan University of Science and Technology, Jordan**  
<https://www.just.edu.jo>
- 6- **Medical Laboratory Sciences, Eastern Kentucky University ,USA**  
<https://www.eku.edu.sa/>
7. **Medical Laboratory Science, University of New Hampshire, USA**  
<https://www.colsa.unh.edu/>

### B. Strategies: -

- 1- University Strategy.
- 2- Faculty Strategy.

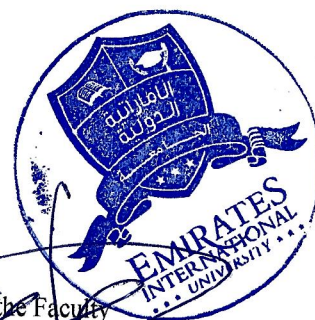
### C. Rules and Regulation: -

- 1- Higher Education rules.
- 2- Private Education Laws.
- 3- Student affairs regulation.

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## 8. Graduate Attributes:

Upon successful completion of an undergraduate Medical Laboratory program, graduates will be able to:

1. Demonstrate a strong understanding in the foundations of basic medical sciences.
2. Demonstrate excellent knowledge in biochemistry, hematology, immunology, microbiology, Parasitology, and blood banking to conduct laboratory investigations.
3. Prove efficiency in the conduct of clinical laboratory investigations, reporting, and interpretation of results.
4. Prove comprehensive knowledge in the principles of total quality management and bio-risk principles and their applications in medical laboratories.
5. Exhibit a proper distinction between laboratory analysis results obtained for healthy and disease states.
6. Apply skills of critical thinking and problem-solving in laboratory diagnosis decision making.
7. Demonstrate professionalism, confidentiality, and ethical principles in communication with patients, their families, and healthcare personnel.
8. Ensure lifelong learning and effective engagement in scientific debate, surveys, and community-based activities in the medical laboratory field

### 8.1. The career opportunities for a graduate from the program:

The field is available for graduates to work as follows:

- Special laboratories and Medical Research Laboratories.
- Hospital laboratories, health centers and Medical Clinics.
- Public and Private health service facilities.
- Blood Banks Services
- Genetics Laboratories
- Demonstrators and Technician in Universities -Faculty of Medical Laboratory Sciences
- Lecturer in Community College and Technology to students of Medical Laboratory Sciences.
- Areas of Biotechnology.
- Food and Water Laboratories.
- Veterinary Clinic Laboratories
- Organization of Public Health
- Employed as Technical or sales representatives for corporations.

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## 9. Program Intended Learning Outcomes (PILOs):

### A. Knowledge and Understanding:

**Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

- A1. Demonstrate an understanding in the basic and medical sciences (biology, chemistry, anatomy, histology, physiology, human genetics and molecular biology).
- A2. Demonstrate knowledge of medical laboratory sciences including biochemistry, hematology, immunology, immunohematology, microbiology and Parasitology.
- A3. Define the most popular medical laboratory investigations, involved samples, processing, and the suspected result in health and disease states
- A4. Identify the principles of epidemiology, biostatistics, and their effective use in clinical diagnosis and research conduction
- A5. Define the principles of Bio-risk management and quality assurance in medical laboratories.

### B- COGNITIVE/INTELLECTUAL SKILLS:

**Upon successful completion of an undergraduate Medical Laboratory program, the graduates will be able to:**

- B1. Integrate the concepts and principles of the basic and applied medical sciences to reach the correct diagnosis of the patient.
- B2. Interpret the results properly, taking into consideration errors that may affect the results and troubleshoot them
- B3. Analyze biomedical evidence and problems in medical laboratory diagnosis.
- B4. Design an effective plan for quality assurance and Bio-risk management programs in medical laboratories.

### C. Practical and Professional Skills:

**Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

- C1. Properly collect, transport, process, preserve, and store samples according to Standard Operating Procedures (SOPs).
- C2. Professionally carry out the most popular laboratory diagnostic methods using different techniques, and simple and advanced equipment.
- C3. Execute quality management systems and Bio-risk management procedures in laboratory practice.

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- C4. Conduct research projects at all stages, either alone or within a team
- C5. Exhibit the ability to properly deal with and use newly emerging and advanced equipment for biomedical analysis.

**D. General and Transferable Skills:**

**Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

- D1. Effectively communicate with his colleagues, patients, and other health professionals and realize his responsibilities within the health care system.
- D2. Demonstrate harmonious and effective collaboration in the team work of clinical laboratory practice and research projects
- D3. Use IT and computer skills in developing his knowledge, lifelong learning and advances in clinical laboratory diagnosis
- D4. Demonstrate leadership and management skills in his behavior at working environment of health care institutions.

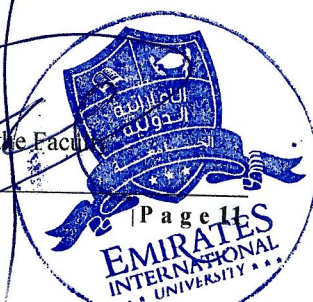
**10. Teaching and Learning Strategies:**

- Interactive lectures with discussion.
- Practical session
- Laboratory training
- Self-learning
- Case studies
- Presentation
- Seminars

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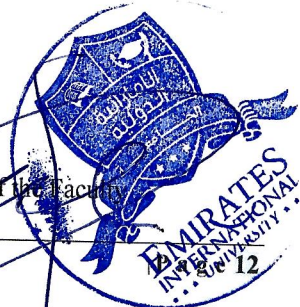


| Teaching Strategy                    | Description                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interactive lectures with discussion | It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-100) or in sessions, which consist of more than one group gathered in one classroom. Discussion is interactive measure by which the lecturer explores the level of understanding the subject among students |
| Practical session                    | A practical session is a course format characterized by a high level of interaction between the teaching staff and the student, with the teaching staff acting as supervisor.                                                                                                                                                           |
| Laboratory training                  | This training is an essential part to help students develop skills and abilities that support professional studies and prepare them for work later on.                                                                                                                                                                                  |
| Self-learning                        | Students improving the knowledge itself outside the classroom and without direct supervision.                                                                                                                                                                                                                                           |
| Case studies                         | Study the clinical cases in depth, training the details of history taking, examination, analysis the gathering data and obtaining diagnosis.                                                                                                                                                                                            |
| Presentation                         | Presentations are typically demonstrations, introduction, lecture, of a new idea. and conveys information from some student to a group of students.                                                                                                                                                                                     |
| Seminars                             | A group of students studying under observation of the lecturer with each doing original research and all exchanging results through reports and discussions.                                                                                                                                                                            |

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## 11. Assessment Methods:

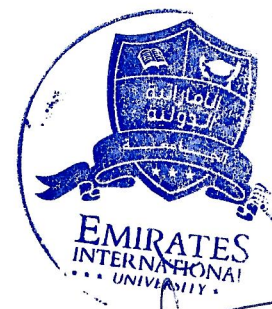
- Short essays and Quizzes.
- Assignments & Homework
- Midterm theoretical & Practical exam.
- Final practical exam.
- Final theoretical exam.
- Field study with Logbooks.

| Assessment Strategy      | Description                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short essays and Quizzes | Short essays and quizzes help students develop self-confidence, readiness, and accuracy in major exams.                                                                                                              |
| Assignments & Homework   | Homework assessment is a set of tasks assigned to students by their teachers to be completed outside the classroom (Individual assessment).                                                                          |
| Midterm theoretical exam | Mid-term exam is an exam given near the middle of an academic grading term or semester. It is conducted in the 7 <sup>th</sup> and 8 <sup>th</sup> week of semester.                                                 |
| Final practical exam     | Final practical exam is carried at the end of each course in order to examine the student's practical skills.                                                                                                        |
| Final theoretical exam   | Final theoretical exam is conducted at the end of each course.                                                                                                                                                       |
| Field study with logbook | Field study is the collection and analysis of specimen and raw data outside the laboratory to increase understanding of a topic or issue. and logbook is maintained by a trainee to record the learning experiences. |

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## 12. Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

| PILOs                                                            | Teaching Strategy                                                                                                                                                                      | Assessment Methods                                                                                                                                                                                               |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Knowledge and Understanding</b><br>A1, A2, A3, A4, A5         | <ul style="list-style-type: none"> <li>- Interactive lectures with discussion.</li> <li>- Seminars.</li> <li>- Self learning.</li> </ul>                                               | <ul style="list-style-type: none"> <li>- Short essays and quizzes.</li> <li>- Midterm theoretical exam.</li> <li>- Final theoretical exam.</li> </ul>                                                            |
| <b>Intellectual Skills</b><br>B1, B2, B3, B4                     | <ul style="list-style-type: none"> <li>- Interactive lectures with discussion.</li> <li>- Seminars.</li> <li>- Discussion.</li> <li>- Case Study.</li> <li>- Self learning.</li> </ul> | <ul style="list-style-type: none"> <li>- Midterm theoretical exam.</li> <li>- Final Oral Exam.</li> <li>- Final theoretical exam.</li> <li>- Final practical exam.</li> <li>- Assignment and homework</li> </ul> |
| <b>Professional &amp; practical skills</b><br>C1, C2, C3, C4, C5 | <ul style="list-style-type: none"> <li>- Interactive lectures with discussion.</li> <li>- Practical session.</li> <li>- Laboratory training.</li> </ul>                                | <ul style="list-style-type: none"> <li>- Quizzes.</li> <li>- Final theoretical exam.</li> <li>- Midterm and Final practical exam.</li> </ul>                                                                     |
| <b>General &amp; Transferable Skills</b><br>D1, D2, D3, D4       | <ul style="list-style-type: none"> <li>- Lectures with discussion.</li> <li>- Seminars.</li> <li>- Case Study.</li> <li>- Self learning.</li> <li>- Presentation.</li> </ul>           | <ul style="list-style-type: none"> <li>- Short essays and quizzes.</li> <li>- Midterm exam.</li> <li>- Assignment</li> <li>- Final theoretical exam.</li> <li>- Field studies</li> </ul>                         |

## 13. Project Assessment:

Each project will be assessed by a committee of three members as follows

| Items                        | Marks Distribution |
|------------------------------|--------------------|
| Research project supervisor  | 50                 |
| Internal examiner            | 25                 |
| External or Faculty examiner | 25                 |
| <b>Total</b>                 | <b>100</b>         |

## 14. Training Course Assessment:

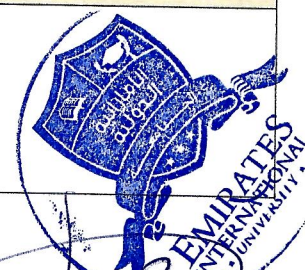
The training course will be assessed through:

- Log-Book
- Case discussion
- Internship

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## 15. Program Structure:

| No | Requirements               |             | No. of Courses | Credit Hours | Rational Weight % |
|----|----------------------------|-------------|----------------|--------------|-------------------|
| 1  | University Requirements    | Compulsory  | 5              | 12           | 8.2%              |
|    |                            | Elective    |                |              |                   |
| 2  | Faculty Requirements       | Compulsory  | 7              | 19           | 12.9 %            |
|    |                            | Elective    |                |              |                   |
| 3  | Department Requirements    | Compulsory  | 9              | 24           | 16.3%             |
|    |                            | Elective    |                |              |                   |
| 4  | Program Requirements       | Compulsory* | 30             | 90           | 61.2%             |
|    |                            | Elective    |                |              |                   |
| 5  | Graduation Project Courses | Compulsory  | 1              | 2            | 1.4%              |
|    |                            | Elective    |                |              |                   |
|    | Total:                     |             | 52             | 147          | 100%              |

\* In addition to this credit hours, the student should take the Internship Program

### 15.1 University Requirements

#### Compulsory Courses (5 courses/ 10 C. Hrs.)

| No.   | Level-Sem. | Course Name         | اسم المقرر     | Cr. Hrs. | L  | T | P |
|-------|------------|---------------------|----------------|----------|----|---|---|
| 1.    | 1 / 1      | Arabic Language     | لغة عربية      | 2        | 2  | 0 | 0 |
| 2.    | 1 / 1      | Islamic culture     | ثقافة اسلامية  | 2        | 2  | 0 | 0 |
| 3.    | 1 / 1      | English language I  | لغة انجليزية 1 | 2        | 2  | 0 | 0 |
| 4.    | 1 / 2      | English language II | لغة انجليزية 2 | 3        | 3  | 0 | 0 |
| 5.    | 1 / 2      | Computer Skills     | مهارات حاسوب   | 3        | 2  | 0 | 2 |
| Total |            |                     |                | 12       | 11 | 0 | 2 |

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## 15.2. Faculty Requirements

### Compulsory Courses (7 courses/ 19 C. Hrs.)

| No.          | Level-Sem. | Course Name         | اسم المقرر    | Cr. Hrs.  | L         | T        | P        | Prerequisites, Co-requisites |
|--------------|------------|---------------------|---------------|-----------|-----------|----------|----------|------------------------------|
| 1            | 1 / 1      | Biology             | علم الاحياء   | 3         | 2         | 0        | 2        | General Chemistry            |
| 2            | 1 / 1      | General Chemistry   | كيمياء عامة   | 3         | 2         | 0        | 2        | None                         |
| 3            | 1 / 1      | Medical Physics     | فيزياء طبية   | 3         | 2         | 0        | 2        | None                         |
| 4            | 1 / 2      | Organic Chemistry   | كيمياء عضوية  | 3         | 2         | 0        | 2        | General Chemistry            |
| 5            | 1 / 2      | Medical Terminology | مصطلحات طبية  | 3         | 3         | 0        | 0        | English Language II          |
| 6            | 2 / 2      | Biostatistics       | احصاء طبي     | 2         | 2         | 0        | 0        | Use Computer excel cheat     |
| 7            | 3 / 1      | Medical Ethics      | اخلاقيات مهنة | 2         | 2         | 0        | 0        | Islamic Culture              |
| <b>Total</b> |            |                     |               | <b>19</b> | <b>15</b> | <b>0</b> | <b>8</b> |                              |

## 15.3

Elective Courses: None

## 15.4. Department requirements

### Compulsory Courses (9 course / 24 C. Hrs.)

| No.          | Level-Sem. | Course Name                   | اسم المقرر                 | Cr. Hr s. | L         | T        | P         | Prerequisites, Co-requisites                                                                                |
|--------------|------------|-------------------------------|----------------------------|-----------|-----------|----------|-----------|-------------------------------------------------------------------------------------------------------------|
| 1            | 1 / 2      | Analytical Chemistry          | كيمياء تحليلية             | 3         | 2         | 0        | 2         | General Chemistry                                                                                           |
| 2            | 1 / 2      | General Anatomy               | تشريح عام                  | 3         | 2         | 0        | 2         | Biology /General Histology                                                                                  |
| 3            | 1 / 2      | General Histology             | انسجة عامة                 | 3         | 2         | 0        | 2         | Biology / General Anatomy                                                                                   |
| 4            | 2 / 1      | Human Physiology I            | وظائف اعضاء 1              | 3         | 2         | 0        | 2         | Biology                                                                                                     |
| 5            | 2 / 2      | Human Physiology II           | وظائف اعضاء 2              | 3         | 2         | 0        | 2         | Human Physiology I                                                                                          |
| 6            | 2 / 2      | Laboratory Management         | إدارة مختبرات              | 3         | 3         | 0        | 0         | Instrumentation & Lab. Q. Assurance<br>Hematology I / Basic bacteriology/ Basic Immunology/ biochemistry II |
| 7            | 3 / 2      | Pharmacology                  | علم ادوية                  | 2         | 2         | 0        | 0         | General Chemistry / Physiology                                                                              |
| 8            | 3 / 2      | Toxicology                    | علم السموم                 | 3         | 2         | 0        | 2         | Pharmacology                                                                                                |
| 9            | 3 / 2      | Clinical Concepts & Emergency | المفاهيم السريرية والطوارئ | 1         | 1         | 0        | 0         | Medical Ethics                                                                                              |
| <b>Total</b> |            |                               |                            | <b>24</b> | <b>18</b> | <b>0</b> | <b>12</b> |                                                                                                             |

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### 15.5 Elective Courses: None

### 15.6. Program Major Courses

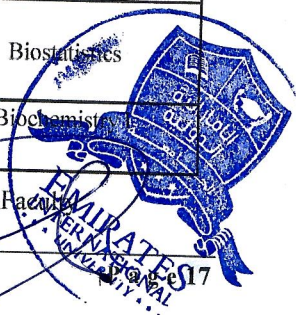
#### Compulsory Courses (31course / 92 C. Hrs.)

| No. | Level-Sem. | Course Name                         | اسم المقرر                 | Cr. Hrs. | L | T | P | Prerequisites, Co-requisites                                                    |
|-----|------------|-------------------------------------|----------------------------|----------|---|---|---|---------------------------------------------------------------------------------|
| 1   | 2 / 1      | Basic Bacteriology                  | اساسيات بكتيريا            | 3        | 2 | 0 | 2 | Biology                                                                         |
| 2   | 2 / 1      | Biochemistry I                      | كيمياء حيوية I             | 3        | 2 | 0 | 2 | General Chemistry                                                               |
| 3   | 2 / 1      | Medical Entomology                  | حشرات طبية                 | 3        | 2 | 0 | 2 | Biology                                                                         |
| 4   | 2 / 1      | Basic Immunology                    | اساسيات مناعة              | 3        | 2 | 0 | 2 | Biology / General Histology<br>Biochemistry I/ Basic Bacteriology/ physiology I |
| 5   | 2 / 1      | Instrumentation & Lab Q. Assurance  | أجهزة طبية وضمان جودة      | 2        | 2 | 0 | 0 | Hematology /Basic bacteriology, Biochemistry I, Basic Immunology                |
| 6   | 2 / 2      | Molecular Biology & Genetics        | بيولوجي جزيئي و وراثية     | 3        | 2 | 0 | 2 | Biology /Biochemistry II /Basic bacteriology /Lab. Instrumentation & Lab        |
| 7   | 2 / 2      | Biochemistry II                     | كيمياء حيوية 2             | 3        | 2 | 0 | 2 | Biochemistry I                                                                  |
| 8   | 2 / 2      | Medical Helminthology               | ديدان طبية                 | 3        | 2 | 0 | 2 | Medical Entomology                                                              |
| 9   | 2 / 2      | Hematology I                        | علم دم 1                   | 3        | 2 | 0 | 2 | General Anatomy / General Histology /Human Physiology I & II                    |
| 10  | 3 / 1      | Hematology II                       | علم دم 2                   | 3        | 2 | 0 | 2 | Hematology I                                                                    |
| 11  | 3 / 1      | Medical Protozoology                | اوليات طبية                | 3        | 2 | 0 | 2 | Medical Entomology / Medical Helminthology                                      |
| 12  | 3 / 1      | Systemic Bacteriology I             | بكتيريا جهازية 1           | 3        | 2 | 0 | 2 | Basic Bacteriology                                                              |
| 13  | 3 / 1      | Biochemistry III                    | كيمياء حيوية 3             | 3        | 2 | 0 | 2 | Biochemistry II                                                                 |
| 14  | 3 / 1      | Medical Virology                    | فيروسات طبية               | 2        | 2 | 0 | 0 | Basic Bacteriology                                                              |
| 15  | 3 / 1      | Immunohematology I ( Blood Bank )   | بنك دم 1                   | 3        | 2 | 0 | 2 | Hematology II& /Basic Immunology                                                |
| 16  | 3 / 2      | Hematology III                      | علم دم 3                   | 3        | 2 | 0 | 2 | Hematology-II                                                                   |
| 17  | 3 / 2      | Systemic Bacteriology II            | بكتيريا جهازية 2           | 3        | 2 | 0 | 2 | Systemic Bacteriology I                                                         |
| 18  | 3 / 2      | Immunohematology –II ( Blood Bank ) | بنك دم 2                   | 3        | 2 | 0 | 2 | Immunohematology- I ( Blood Bank )                                              |
| 19  | 3 / 2      | Biochemistry IV                     | كيمياء حيوية 4             | 3        | 2 | 0 | 2 | Biochemistry III                                                                |
| 20  | 3 / 2      | Medical Mycology                    | فطريات طبية                | 2        | 1 | 0 | 2 | Basic Bacteriology                                                              |
| 21  | 3 / 2      | Hematology IV                       | علم دم 4                   | 3        | 2 | 0 | 2 | Hematology III                                                                  |
| 22  | 4 / 1      | Histopathology and Micro-techniques | الانسجة المرضية وتقنياتها  | 3        | 2 | 0 | 2 | General Histology                                                               |
| 23  | 4 / 1      | Sanitary Microbiology               | ميكروبيولوجي الماء والغذاء | 3        | 2 | 0 | 2 | Systemic Bacteriology II / Medical Mycology                                     |
| 24  | 4 / 1      | Epidemiology                        | وبائيات                    | 2        | 2 | 0 | 0 | Biostatistics                                                                   |
| 25  | 4 / 1      | Body Fluids                         | سوائل الجسم                | 3        | 2 | 0 | 2 | Biochemist                                                                      |

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| No.          | Level-Sem. | Course Name                      | اسم المقرر                    | Cr. Hrs.  | L         | T        | P         | Prerequisites, Co-requisites                                        |
|--------------|------------|----------------------------------|-------------------------------|-----------|-----------|----------|-----------|---------------------------------------------------------------------|
| 26           | 4 / 1      | Clinical & Diagnostic Immunology | مناعة سريرية وتشخيصية         | 3         | 2         | 0        | 2         | Basic Immunology /Physiology II /Basic Bacteriology / Hematology IV |
| 27           | 4/ 2       | Diagnostic Hematology            | تشخيص امراض الدم              | 4         | 2         | 0        | 4         | Hematology IV                                                       |
| 28           | 4/ 2       | Diagnostic Microbiology          | علم الاحياء الدقيقة التشخيصية | 4         | 2         | 0        | 4         | Systemic Bacteriology I &II , Medical Mycology and Medical Virology |
| 29           | 4/ 2       | Diagnostic Parasitology          | تشخيص طفيليات                 | 4         | 2         | 0        | 4         | Medical Protozoology                                                |
| 30           | 4/ 2       | Clinical Chemistry               | كيمياء سريرية                 | 4         | 2         | 0        | 4         | Biochemistry IV                                                     |
| <b>Total</b> |            |                                  |                               | <b>90</b> | <b>59</b> | <b>0</b> | <b>62</b> |                                                                     |

| 15.7 Project Work Courses (1Course/ 2 Hrs.) |            |             |                    |            |          |          |          |          |                              |
|---------------------------------------------|------------|-------------|--------------------|------------|----------|----------|----------|----------|------------------------------|
| No                                          | Level-Sem. | Course Code | Course Name        | اسم المقرر | Cr. Hrs. | L        | T        | P        | Prerequisites, Co-requisites |
| 31                                          | 4/2        |             | Graduation Project | مشروع تخرج | 2        | 1        | 0        | 2        | Epidemiology                 |
| <b>Total</b>                                |            |             |                    |            | <b>2</b> | <b>1</b> | <b>0</b> | <b>2</b> |                              |

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## 16. Study Plan:

### Level 1

#### Semester – 1

| No.          | Level-Sem. | Course Name        | اسم المقرر     | Cr. Hrs.  | L         | T        | P        | Prerequisites, Co-requisites |
|--------------|------------|--------------------|----------------|-----------|-----------|----------|----------|------------------------------|
| 1            | 1 / 1      | Biology            | علم الأحياء    | 3         | 3         | 0        | 2        | General Chemistry            |
| 2            | 1 / 1      | General Chemistry  | كيمياء عامة    | 3         | 3         | 0        | 2        | None                         |
| 3            | 1 / 1      | Arabic Language    | لغة عربية      | 2         | 2         | 0        | 0        | None                         |
| 4            | 1 / 1      | Islamic Culture    | ثقافة اسلامية  | 2         | 2         | 0        | 0        | None                         |
| 5            | 1 / 1      | English Language I | لغة انجليزية 1 | 2         | 2         | 0        | 0        | None                         |
| 6            | 1 / 1      | Medical Physics    | فيزياء طبية    | 3         | 2         | 0        | 2        | None                         |
| 7            | 1 / 1      | Computer Skills    | مهارات حاسوب   | 3         | 2         | 0        | 2        | None                         |
| <b>Total</b> |            |                    |                | <b>18</b> | <b>16</b> | <b>0</b> | <b>8</b> |                              |

#### Semester – 2

| No.          | Level-Sem. | Course Name          | اسم المقرر     | Cr. Hrs.  | L         | T        | P        | Prerequisites, Co-requisites |
|--------------|------------|----------------------|----------------|-----------|-----------|----------|----------|------------------------------|
| 1            | 1 / 2      | Organic Chemistry    | كيمياء عضوية   | 3         | 2         | 0        | 2        | General Chemistry            |
| 2            | 1 / 2      | Analytical Chemistry | كيمياء تحليلية | 3         | 2         | 0        | 2        | General Chemistry            |
| 3            | 1 / 2      | General Anatomy      | تشريح عام      | 3         | 2         | 0        | 2        | Biology /General Histology   |
| 4            | 1 / 2      | English Language II  | لغة انجليزية 2 | 3         | 3         | 0        | 0        | None                         |
| 5            | 1 / 2      | Medical Terminology  | مصطلحات طبية   | 3         | 1         | 0        | 0        | English Language II          |
| 6            | 1 / 2      | General Histology    | انسجة عامة     | 3         | 2         | 0        | 2        | Biology / General Anatomy    |
| <b>Total</b> |            |                      |                | <b>18</b> | <b>12</b> | <b>0</b> | <b>8</b> |                              |

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| Semester 1 |            |                                     |                        |          |    |   |    |                                                                                 |
|------------|------------|-------------------------------------|------------------------|----------|----|---|----|---------------------------------------------------------------------------------|
| No.        | Level-Sem. | Course Name                         | اسم المقرر             | Cr. Hrs. | L  | T | P  | Prerequisites, Co-requisites                                                    |
| 1          | 2 / 1      | Basic Bacteriology                  | اساسيات بكتيريا        | 3        | 2  | 0 | 2  | Biology                                                                         |
| 2          | 2 / 1      | Biochemistry I                      | كيمياء حيوية 1         | 3        | 2  | 0 | 2  | General Chemistry                                                               |
| 3          | 2 / 1      | Medical Entomology                  | حشرات طبية             | 3        | 2  | 0 | 2  | Biology                                                                         |
| 4          | 2 / 1      | Basic Immunology                    | اساسيات مناعة          | 3        | 2  | 0 | 2  | Biology / General Histology<br>Biochemistry I/ Basic Bacteriology/ physiology I |
| 5          | 2 / 1      | Human Physiology I                  | وظائف اعضاء 1          | 3        | 2  | 0 | 2  | Biology                                                                         |
| 6          | 2 / 1      | Instrumentation & Lab. Q. Assurance | اجهزة طبية و ضمان جودة | 2        | 2  | 0 | 0  | Hematology /Basic bacteriology, Biochemistry I, Basic Immunology                |
| Total      |            |                                     |                        | 17       | 12 | 0 | 10 |                                                                                 |

| Semester 2 |            |                              |                      |          |    |   |    |                                                                                                             |
|------------|------------|------------------------------|----------------------|----------|----|---|----|-------------------------------------------------------------------------------------------------------------|
| No.        | Level-Sem. | Course Name                  | اسم المقرر           | Cr. Hrs. | L  | T | P  | Prerequisites, Co-requisites                                                                                |
| 1          | 2 / 2      | Molecular Biology & Genetics | بيولوجي جزيئي ووراثة | 3        | 2  | 0 | 2  | Biology /Biochemistry II /Basic bacteriology /Lab. Instrumentation & Lab Q .Assurance                       |
| 2          | 2 / 2      | Biochemistry II              | كيمياء حيوية 2       | 3        | 2  | 0 | 2  | Biochemistry I                                                                                              |
| 3          | 2 / 2      | Medical Helminthology        | ديدان طبية           | 3        | 2  | 0 | 2  | Medical Entomology                                                                                          |
| 4          | 2 / 2      | Biostatistics                | احصاء طبي            | 2        | 2  | 0 | 0  | Use computer excel cheat                                                                                    |
| 5          | 2 / 2      | Human Physiology II          | وظائف اعضاء 2        | 3        | 2  | 0 | 2  | Human Physiology I                                                                                          |
| 6          | 2 / 2      | Laboratory Management        | إدارة مختبرات        | 3        | 3  | 0 | 0  | Instrumentation & Lab. Q. Assurance<br>Hematology I / Basic bacteriology/ Basic Immunology/ biochemistry II |
| 7          | 2 / 2      | Hematology I                 | علم دم 1             | 3        | 2  | 0 | 2  | General Anatomy /Human Physiology II                                                                        |
| Total      |            |                              |                      | 20       | 15 | 0 | 10 |                                                                                                             |

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### Level 3

#### Semester 1

| No.   | Level-Sem. | Course Name                        | اسم المقرر       | Cr. Hrs. | L  | T | P  | Prerequisites, Co-requisites               |
|-------|------------|------------------------------------|------------------|----------|----|---|----|--------------------------------------------|
| 1     | 3 / 1      | Medical Ethics                     | اخلاقيات مهنة    | 2        | 2  | 0 | 0  | Islamic Culture                            |
| 2     | 3 / 1      | Hematology II                      | علم دم 2         | 3        | 2  | 0 | 2  | Hematology I                               |
| 3     | 3 / 1      | Medical Protozoology               | اوليات طبية      | 3        | 2  | 0 | 2  | Medical Entomology / Medical Helminthology |
| 4     | 3 / 1      | Systemic Bacteriology I            | بكتيريا جهازية 1 | 3        | 2  | 0 | 2  | Basic Bacteriology                         |
| 5     | 3 / 1      | Biochemistry III                   | كيمياء حيوية 3   | 3        | 2  | 0 | 2  | Biochemistry I & II                        |
| 6     | 3 / 1      | Medical Virology                   | فيروسات طبية     | 2        | 2  | 0 | 0  | Basic Bacteriology                         |
| 7     | 3 / 1      | Immunohematology- I ( Blood Bank ) | بنك دم 1         | 3        | 2  | 0 | 2  | Hematology II & /Basic Immunology          |
| Total |            |                                    |                  | 19       | 14 | 0 | 10 |                                            |

#### Semester 2

| No.   | Level-Sem. | Course Name                         | اسم المقرر                  | Cr. Hrs. | L  | T | P  | Prerequisites, Co-requisites       |
|-------|------------|-------------------------------------|-----------------------------|----------|----|---|----|------------------------------------|
| 1     | 3 / 2      | Systemic Bacteriology II            | بكتيريا جهازية 2            | 3        | 2  | 0 | 2  | Systemic Bacteriology I            |
| 2     | 3 / 2      | Hematology III                      | علم دم 3                    | 3        | 2  | 0 | 2  | Hematology II                      |
| 3     | 3 / 2      | Immunohematology -II ( Blood Bank ) | بنك دم 2                    | 3        | 2  | 0 | 2  | Immunohematology- I ( Blood Bank ) |
| 4     | 3 / 2      | Pharmacology                        | علم الأدوية                 | 2        | 2  | 0 | 0  | General Chemistry / Physiology II  |
| 5     | 3 / 2      | Toxicology                          | علم السموم                  | 3        | 2  | 0 | 2  | Pharmacology                       |
| 6     | 3 / 2      | Biochemistry IV                     | كيمياء حيوية 4              | 3        | 2  | 0 | 2  | Biochemistry III                   |
| 7     | 3 / 2      | Medical Mycology                    | فطريات طبية                 | 2        | 1  | 0 | 2  | Basic Bacteriology                 |
| 8     | 3 / 2      | Clinical Concepts & Emergency       | المفاهيم السريرية و الطوارئ | 1        | 1  | 0 | 0  | Medical Ethics                     |
| Total |            |                                     |                             | 20       | 14 | 0 | 12 |                                    |

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## Level 4

### Semester 1

| No.          | Level-Sem. | Course Name                         | اسم المقرر                 | Cr. Hrs.  | L         | T        | P         | Prerequisites, Co-requisites                                        |
|--------------|------------|-------------------------------------|----------------------------|-----------|-----------|----------|-----------|---------------------------------------------------------------------|
| 1            | 4 / 1      | Histopathology and Micro-techniques | الانسجة المرضية وتقنياتها  | 3         | 2         | 0        | 2         | General Histology                                                   |
| 2            | 4 / 1      | Sanitary Microbiology               | ميكروبيولوجي الماء والغذاء | 3         | 2         | 0        | 2         | Systemic Bacteriology II / Medical Mycology                         |
| 3            | 4 / 1      | Hematology IV                       | علم دم 4                   | 3         | 2         | 0        | 2         | Hematology III                                                      |
| 4            | 4 / 1      | Epidemiology                        | وبائيات                    | 2         | 2         | 0        | 0         | Biostatistics                                                       |
| 5            | 4 / 1      | Body Fluids                         | سوائل الجسم                | 3         | 2         | 0        | 2         | Biochemistry I                                                      |
| 6            | 4 / 1      | Clinical & Diagnostic Immunology    | مناعة سريرية وتشخيصية      | 3         | 2         | 0        | 2         | Basic Immunology /Physiology II /Basic Bacteriology / Hematology IV |
| <b>Total</b> |            |                                     |                            | <b>17</b> | <b>12</b> | <b>0</b> | <b>10</b> |                                                                     |

### Semester 2

| No.          | Level-Sem. | Course Name             | اسم المقرر                    | Cr. Hrs.  | L        | T        | P         | Prerequisites, Co-requisites                                         |
|--------------|------------|-------------------------|-------------------------------|-----------|----------|----------|-----------|----------------------------------------------------------------------|
| 1            | 4/ 2       | Diagnostic Hematology   | تشخيص امراض الدم              | 4         | 2        | 0        | 4         | Hematology IV                                                        |
| 2            | 4/ 2       | Diagnostic Microbiology | علم الاحياء الدقيقة التشخيصية | 4         | 2        | 0        | 4         | Systemic Bacteriology I & II , Medical Mycology and Medical Virology |
| 3            | 4/ 2       | Diagnostic Parasitology | تشخيص طفيليات                 | 4         | 2        | 0        | 4         | Medical Protozoology                                                 |
| 4            | 4/ 2       | Clinical Chemistry      | كيمياء سريرية                 | 4         | 2        | 0        | 4         | Biochemistry IV                                                      |
| 5            | 4/ 2       | Graduation Project      | مشروع تخرج                    | 2         | 1        | 0        | 2         | Epidemiology                                                         |
| <b>Total</b> |            |                         |                               | <b>18</b> | <b>9</b> | <b>0</b> | <b>18</b> |                                                                      |

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### 16.1. Internship Training program

After completing the full academic program and announcing the results of the bachelor's degree with the student's success:

The graduate student must attend six training months (6 months) that the graduate spends in applied training in government and private central hospitals and laboratories under the name of a laboratory medicine student with distinction according to a training program.

| 5 <sup>th</sup> Year |                                           |                                       |
|----------------------|-------------------------------------------|---------------------------------------|
| No                   | Laboratory discipline                     | Duration                              |
| 1                    | Main specimen reception & Quality control | 6 working days (one week)             |
| 2                    | Phlebotomy                                | 12 working days (2 weeks)             |
| 3                    | Microbiology                              | 26 working days (one month)           |
| 4                    | Parasitology                              | 26 working days (one month)           |
| 5                    | Clinical chemistry                        | 26 working days (one month)           |
| 6                    | Hematology                                | 26 working days (one month)           |
| 7                    | Blood Banking & Transfusion               | 18 working days (3 weeks)             |
| 8                    | Serology and immunology                   | 12 working days (2 weeks)             |
| 9                    | Histopathology                            | 12 working days (2 weeks)             |
| Total                |                                           | 164 working days' training (6 months) |

\*Acutely Credited Hours =  $164 \times 6 = 984$  Contact hours.

### 17. Distribution of Total Credit Hours:

| Level       | Term   | University Requirements |              | Faculty Requirements |              | Program Requirements |              | Training       |              | Project        |              | Total Cr. Hrs. |              | Total Cr. Hrs./ Level |
|-------------|--------|-------------------------|--------------|----------------------|--------------|----------------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|-----------------------|
|             |        | 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 |                       |
| First       | First  | 4                       | 9            | 3                    | 9            | 0                    | 0            |                |              |                |              | 7              | 18           | 36                    |
|             | Second | 1                       | 3            | 2                    | 6            | 3                    | 9            |                |              |                |              | 6              | 18           |                       |
| Second      | First  |                         |              | 0                    | 0            | 6                    | 17           |                |              |                |              | 6              | 17           | 37                    |
|             | Second |                         |              | 1                    | 2            | 6                    | 18           |                |              |                |              | 7              | 20           |                       |
| Third       | First  |                         |              | 1                    | 2            | 6                    | 17           |                |              |                |              | 7              | 19           | 39                    |
|             | Second |                         |              | 0                    | 0            | 8                    | 20           |                |              |                |              | 8              | 20           |                       |
| Fourth      | First  |                         |              |                      |              | 6                    | 17           |                |              |                |              | 6              | 17           | 35                    |
|             | Second |                         |              |                      |              | 4                    | 16           |                |              | 1              | 2            | 5              | 18           |                       |
| Total:      |        | 5                       | 12           | 7                    | 19           | 39                   | 114          |                |              | 1              | 2            | 52             | 147          | 147                   |
| Percentage: |        | 8.2                     |              | 12.9                 |              | 77.5                 |              |                |              | 1.4            |              | 100%           |              |                       |

Annex- 8, Themes of Courses of Study and their Weightage

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### 18. 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 The National 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 if any.
4. Any necessary requirement for specialization, decided by the faculty.

### 19. 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 are 147 credit hours.
4. Minimum score for any student to pass any credit hours course is 50% marks.

### 20. 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 50% to less than 70%       | Pass      |
| Less than 50%                   | Poor/Fail |

### 21. 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.
5. Hospitals-Private/ Public. Or Specialized medical labs

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## 22. Program Assessment:

| Type of the Sample who Assess the program |                                                                                           | Instruments used | Sample                                |
|-------------------------------------------|-------------------------------------------------------------------------------------------|------------------|---------------------------------------|
| 1                                         | Exit survey after each final exam<br>To evaluate the program and student experience       | Questionnaire    | Random                                |
| 2                                         | Graduate survey.<br>To evaluate the program outcomes and to gather employment data.       | Questionnaire    | By the possible contact tools         |
| 3                                         | Employer and health authorities administrators survey.<br>To evaluate program outcomes.   | Survey           | By the possible contact tools         |
| 4                                         | Student evaluation of teaching effectiveness.                                             | Questionnaire    | Random                                |
| 5                                         | Revision with Guidelines and standards of Council of Accreditation and Quality Assurance. | Review checklist | Quality assurance department          |
| 6                                         | Internal and external reviewers.                                                          | Reports          | Administration and external reviewers |

## 23. Program Quality Standards:

- Continuous evaluation.
- Workshops.

## 24. Internal and external training to satisfy program standards:

- Internally :- training in well equipped labs
- Externally :- Training in hospital and central health laboratories controlled by logbook

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## 25. Program Policies:

### Based on University Regulations

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>(Class Attendance) :</b><br>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 hours, student will be required to retake the entire course again. |
| 2. | <b>(Tardy) :</b><br>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. | <b>(Exam Attendance/Punctuality) :</b><br>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. | <b>(Assignments &amp; Projects) :</b><br>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. | <b>(Cheating) :</b><br>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. | <b>(Plagiarism) :</b><br>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. | <b>(Other policies) :</b> <ul style="list-style-type: none"><li>- 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.</li><li>- Mobile phones are not allowed in class during the examination.</li><li>- Lecture notes and assignments might be given directly to students using soft or hard copy.</li></ul>                               |

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**Annex- 1, Survey on the Strategic Orientations of the Department Alignment to the Strategic Orientations of the University and Faculty:**

**1- Mapping of Department Vision to the University and Faculty Visions:**

| University Vision                                                                                                                   | Faculty of Medicine and Health Sciences Vision                                                   | Medical Laboratory Department Vision                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| The Emirates International University (EIU-Yemen) aspires to be one of the nationally leading and regionally distinct universities. | To excel in medical education, Scientific research and community service locally and regionally. | Excel in medical laboratory sciences education, research, and community services at the national and regional levels. |

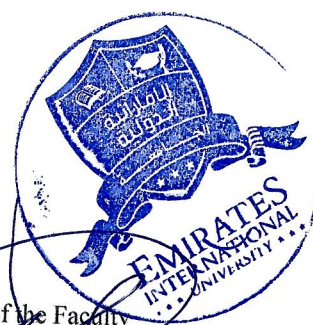
**2- Mapping of Department Mission to the University and Faculty Missions:**

| University Mission                                                                                                                                                                                                                                                                                                                                                  | Faculty of Medicine and Health Sciences Mission                                                                                                                                                                                                                                                                                               | Medical Laboratory Department Mission                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EIU Yemen seeks to Provide a distinguished education and research services That meet the needs of the National and regional labour Market through qualified Human Resources quality academic programs, scientific research directed to knowledge Production and applications and providing a supportive university environment and effective Community partnership. | To qualify graduates who are able to provide quality Medical services at the local and regional Levels through academic programs that Conform to Quality standards, academic accreditation and an educational environment that promotes creative thinking and establishes the values of medical practice in an ethical is and human context . | Our mission is to provide high-quality education and training to aspiring medical laboratory professionals capable of competing locally and regionally through qualified programs, highly qualified professors, practical and clinical training, and community-oriented research and healthcare activities. |

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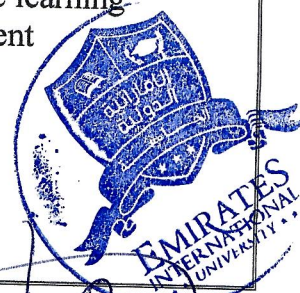
### 3- Mapping of Department Objectives to the University and Faculty Objectives:

| University Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Faculty of Medicine and Health sciences Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Medical Laboratory Department Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. To provide improving governance and management systems, developing organizational Structure, promoting decentralization and adopting equality and transparency principles.</li> <li>2. Expending infrastructure and developing self-resource.</li> <li>3. Improving the quality of academic programs to meet development needs.</li> <li>4. Enhancing the values of professional development and investing human resources on professional basis In accordance with the strategic framework of the University.</li> <li>5. Developing a university environment conducive to teaching and learning with a view to achieve the professional competencies of the graduate.</li> <li>6. Building and guiding scientific research capacities based on planning that is linked to development goals.</li> <li>7. Establishing a genuine and effective partnership with the local community, other universities as well as the national and international Labour market.</li> </ol> | <ol style="list-style-type: none"> <li>1. Complementing governance and management systems, in a way that decentralizes promotes transparency and accountability.</li> <li>2. Improving the quality of university academic programs, in accordance with the quality standards and academic accreditation and meeting the needs of the individual and the community.</li> <li>3. Attracting Human resources for the academic and administrative staffs who are recognized for their scientific and professional competence and developing them through continuous education programs.</li> <li>4. Focusing On the learner by establishing and developing are university environment conducive to teaching and learning in a way that promotes their scientific levels at the theoretical and applied levels.</li> <li>5. Completing in infrastructure of the faculty, including laboratories classrooms and training medical clinics, and organizing them in order</li> </ol> | <ol style="list-style-type: none"> <li>1. Qualify, train, and equip a good medical graduate to excel in the field of medical laboratory diagnosis.</li> <li>2. Equipping students with the necessary knowledge and skills in medical laboratory sciences enables them to make decision in clinical diagnosis practice.</li> <li>3. Empowering students with knowledge to understand disease influences by age, gender, sociocultural, and genetic factors as well as disease transmission, prevention and their impact on laboratory test results.</li> <li>4. Enhance professionalism and teamwork characters in clinical diagnosis work and medical research execution based on ethical guidelines and lifelong learning skills.</li> </ol> <p>1-Building strong partnerships with local health and education institutions and relevant authorities that create a supportive learning environment</p> |

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| University Objectives | Faculty of Medicine and Health sciences Objectives                                                                                                                                                                                                           | Medical Laboratory Department Objectives |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
|                       | <p>to achieve its goals.</p> <p>6. Building scientific research capabilities based on planning linked to overall development goals.</p> <p>7. Establishing a genuine partnerships with the corresponding faculties Locally, regionally and international</p> |                                          |

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## Annex- 2, Academic Standards Curriculum Criteria of Accreditation Board

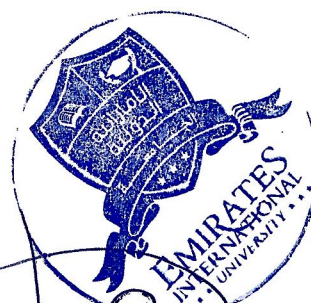


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## Medical Laboratory Program Specification

### Annex- 3, Unified Regulations for Student Affairs, Ministry of Higher Education and Scientific Research

#### Attached Separately

1. Prime Minister Law no. 40 for the year 2008 about the post-graduation studies system in Yemeni universities.

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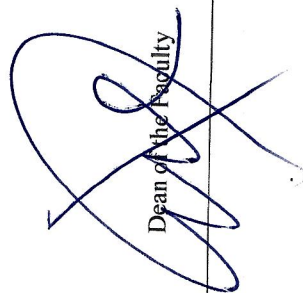
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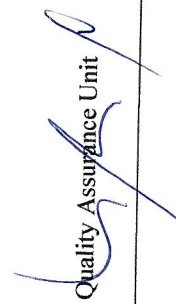


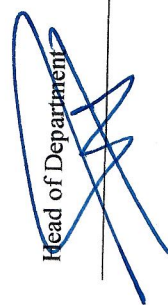
## Annex - 4, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

| Program No.                 | The Academic Program        | The University                              | Website                                                             | The Faculty                         | The Department               | The Country | Degree Award at Program Completion | Program Accrediting Body                                                                   | Year of Accreditation | Study Duration                  |
|-----------------------------|-----------------------------|---------------------------------------------|---------------------------------------------------------------------|-------------------------------------|------------------------------|-------------|------------------------------------|--------------------------------------------------------------------------------------------|-----------------------|---------------------------------|
| Current Program             | Medical Laboratory          | Emirates International University           | <a href="http://www.national-univ.net">www.national-univ.net</a>    | Medicine and Health Sciences        | Medical Laboratory           | Yemen       | ML                                 | Council for accreditation and quality assurance                                            |                       | 4 years and 6 months Internship |
| The 1 <sup>st</sup> Program | Medical Laboratory Sciences | University of Science and Technology        | <a href="https://ust.edu.ye/">https://ust.edu.ye/</a>               | Medicine and Health Sciences        | Medical Laboratory           | Yemen       | MLS                                | Council for accreditation and quality assurance                                            | 2013                  | 4 years and 6 months Internship |
| The 2 <sup>nd</sup> Program | Medical Laboratory Sciences | Ibb University                              | <a href="https://www.ibbuniv.edu.ye">https://www.ibbuniv.edu.ye</a> | Medicine and Health Sciences        | Medical Laboratory Sciences  | Yemen       | MLS                                | Council for accreditation and quality assurance                                            | 2016                  | 4 years and 6 months Internship |
| The 3 <sup>rd</sup> Program | Medical Laboratory Sciences | Jordan University of Science and Technology | <a href="https://www.just.edu.jo">https://www.just.edu.jo</a>       | Applied Medical Sciences            | Medical Laboratory Sciences  | Jordan      | MLS                                | Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI) | Before 2007           | 4 years and 6 months Internship |
| The 4 <sup>th</sup> Program | Biomedical Science          | University of Qatar                         | <a href="https://www.qu.edu.qa">https://www.qu.edu.qa</a>           | College of Health Sciences          | Biomedical Science           | Qatar       | Biomedical Science                 | NAACLS                                                                                     | 2014                  | 4 years and 6 months Internship |
| The 5 <sup>th</sup> Program | Medical Laboratory Sciences | King Saud University                        | <a href="https://www.Ksu.edu.sa">https://www.Ksu.edu.sa</a>         | College of Applied Medical Sciences | Clinical Laboratory Sciences | KSA         | MLS                                | NAACLS                                                                                     | 2006                  | 4 years and 1 year Internship   |
| The 6 <sup>th</sup> Program | Medical Laboratory Science  | Eastern Kentucky University                 | <a href="https://www.eku.edu.sa">https://www.eku.edu.sa</a>         | College of Health Sciences          | Medical Laboratory Sciences  | USA         | MLS                                | NAACLS                                                                                     | 2007                  | 4 years and 6 months Internship |



  
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**Annex- 5, Survey on department vision, and Mission and Objectives of the Program with Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and objectives**

**1- Survey on department vision and Mission of the Program and Similar Accredited Programs**

| University        | Emirates International University                                                                                    | University of Science and Technology                                                                                                                                                   | Ibb University                                                                                                                                                      | Jordan University of Science and Technology                                                                                                                             | University of Qatar                                                                                                                                                                                       | King Saud University                                | Eastern Kentucky University                                                                                                                                                                                                                                                                                                       |
|-------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Faculty           | Medicine and Health Sciences                                                                                         | Medicine and Health Sciences                                                                                                                                                           | Medicine and Health Sciences                                                                                                                                        | Applied Medical Sciences                                                                                                                                                | College of Health Sciences                                                                                                                                                                                | College of Applied Medical Sciences                 | College of Health Sciences                                                                                                                                                                                                                                                                                                        |
| Department        | Medical Laboratory Sciences                                                                                          | Medical Laboratory Sciences                                                                                                                                                            | Medical Laboratory Sciences                                                                                                                                         | Medical Laboratory Sciences                                                                                                                                             | Biomedical Science                                                                                                                                                                                        | Medical Laboratory Sciences                         | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                       |
| Program           | Medical Laboratory Sciences                                                                                          | Medical Laboratory Sciences                                                                                                                                                            | Medical Laboratory Sciences                                                                                                                                         | Medical Laboratory Sciences                                                                                                                                             | Biomedical Science                                                                                                                                                                                        | Medical Laboratory Sciences                         | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                       |
| Country           | Yemen                                                                                                                | Yemen                                                                                                                                                                                  | Yemen                                                                                                                                                               | Jordan                                                                                                                                                                  | <i>Qatar</i>                                                                                                                                                                                              | KSA                                                 | USA                                                                                                                                                                                                                                                                                                                               |
| Department Vision | Excel in medical laboratory sciences education, research, and community services at the national and regional levels | To be the premier center for excellence in education, learning and scientific research in the fields of medical laboratory sciences, in order to meet the health needs of the society. | Excellence locally and regionally in medical education and scientific research, in a manner that meets the needs of society in a humanitarian professional context. | To lead the nation and the region in quality research, world-class medical laboratory science education, and excellent health care promotion and delivery to societies. | To graduate a medical laboratory scientist, to assist physicians and nurses in choosing the best lab tests and ensure proper specimen collection methods. And play a vital role in the healthcare system. | Transforming lives through Curtin focused learning. | To expose students to advanced learning and help them explore research opportunities. They are encouraged to work on a research project in reputed institutions, hospitals, or even within the college. This rigorous training not only gives an early exposure to research but also helps them to gauge their research aptitude. |

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| University                     | Emirates International University                                                                                                                                                                                                                                                                           | University of Science and Technology                                                                                                                                                                                                                                                                                                       | Ibb University                                                                                                                                                                                                                                                                                                                                | Jordan University of Science and Technology                                                                                                                                                                  | University of Qatar                                                                                                                                                                                                                                                                                                                                                                       | King Saud University                                                                                                                                          | Eastern Kentucky University                                                                                                                                                                                                                                                             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Department and Program Mission | Our mission is to provide high-quality education and training to aspiring medical laboratory professionals capable of competing locally and regionally through qualified programs, highly qualified professors, practical and clinical training, and community-oriented research and healthcare activities. | To prepare outstanding scientific and practical specialists who are capable of teaching, learning and training in the fields of medical laboratory according to Islamic, Arabic and international standards. Moreover, it is to provide them with skills of communication and scientific research to meet the health needs of the society. | Prepare of specialists distinguished scientifically and practically in the field of medical laboratory sciences in accordance with Islamic, Arab and international standards and able to teach, learn and train for life and give them communication skills, communication and scientific research to meet the health needs of the community. | To be a premier educational and research-intensive department that improves human health through leadership and collaborative approach to discovery and innovation in research, education, and patient care. | The mission of the Biomedical Science major at Qatar University is to provide quality education that prepares future competent Biomedical Scientists with theoretical knowledge, practical, critical thinking and communication skills, with emphasis on ethics for the healthcare industry. Our graduates are committed to lifelong learning and adapt to the changing needs of society. | to develop broad and coherent knowledge and skills in a discipline for professional work and further learning to corresponding to AQF level 7 qualifications. | would qualify students to pursue a Masters course and subsequently enable them for Doctoral training. This will also equip them with knowledge and transferable skills necessary for their career in research, in the pharmaceutical or biotechnology fields or as a bio-informatician. |

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**2- Survey on Objectives of the Program and Similar Accredited Programs**

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| University         | Emirates International University                                                                                                                                                                                                                                                                                                                                                                                                                                       | University of Science and Technology                                                                                                                                                                                                                                                                                                                                                 | Ibb University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Jordan University of Science and Technology                                                                                                                                                                                                                                                                                                                                                                                        | University of Qatar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | King Saud University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Eastern Kentucky University                                                                                                                                                                                                                                                                                                                            |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Faculty            | Medicine and Health Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                            | Medicine and Health Sciences                                                                                                                                                                                                                                                                                                                                                         | Medicine and Health Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Applied Medical Sciences                                                                                                                                                                                                                                                                                                                                                                                                           | College of Health Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | College of Applied Medical Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | College of Health Sciences                                                                                                                                                                                                                                                                                                                             |
| Department         | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                             | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                          | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                        | Biomedical Science                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                            |
| Program            | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                             | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                          | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                        | Biomedical Science                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Medical Laboratory Sciences                                                                                                                                                                                                                                                                                                                            |
| Country            | Yemen                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Yemen                                                                                                                                                                                                                                                                                                                                                                                | Yemen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Jordan                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>Qatar</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | KSA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | USA                                                                                                                                                                                                                                                                                                                                                    |
| Program Objectives | <ol style="list-style-type: none"> <li>1. Qualify, train, and equip a good medical graduate to excel in the field of medical laboratory diagnosis.</li> <li>2. Equipping students with the necessary knowledge and skills in medical laboratory sciences enables them to make decision in clinical diagnosis practice.</li> <li>3. Empowering students with knowledge to understand disease influences by age, gender, sociocultural, and genetic factors as</li> </ol> | <ol style="list-style-type: none"> <li>1. To qualify highly competent bachelor specialists in the field of medical laboratory sciences.</li> <li>2. To provide Yemen with qualified medical specialists in the field of medical laboratory.</li> <li>3. To prepare well qualified graduates who have the ability to communicate effectively with patients, colleagues and</li> </ol> | <ol style="list-style-type: none"> <li>1. High-quality specialists at the bachelor's level in the field of medical laboratory sciences</li> <li>2. Covering Yemen's need for qualified health personnel in the field of medical laboratory science</li> <li>3. Numbers and qualifications of qualified graduates who have the ability to communicate effectively with patients, colleagues and other members of the health team and have the ability to lead and manage efficiently in the practice of the profession.</li> </ol> | <ol style="list-style-type: none"> <li>1. Research: provide a dynamic and motivating environment for performing quality and multidisciplinary research in medical and health sciences for both the faculty and students.</li> <li>2. Education and advancement: become leaders in the movement towards reforming and promoting education and career development of medical laboratory sciences.</li> <li>3. Health care</li> </ol> | <ol style="list-style-type: none"> <li>1. Acquire knowledge related to the field of biomedical science.</li> <li>2. Gain practical skills related to the laboratory field.</li> <li>3. Develop communication skills.</li> <li>4. Enhance critical thinking skills.</li> <li>5. Employ modern information technology related to the health field.</li> <li>6. Sustain high professional ethics and behavior</li> <li>7. Conduct research related to biomedical science</li> <li>8. Maintain</li> </ol> | <ol style="list-style-type: none"> <li>1. Apply general and discipline specified knowledge to the performance of laboratory medicine.</li> <li>2. The application of knowledge critically and ethically in the laboratory medicine setting.</li> <li>3. Obtain and critically appraise information from a range of resources applicable to the practice of medical science.</li> <li>4. Communicate effectively specialized knowledge relevant to laboratory medicine.</li> <li>5. The selection and</li> </ol> | <p>The expected learning outcomes that an undergraduate student of B.Sc. (Hons) Biomedical Science should be able to demonstrate for the award of the qualification may include the following:</p> <p>i) Demonstrate fundamental knowledge and understanding of the principles and processes underlying various interdisciplinary subjects related</p> |

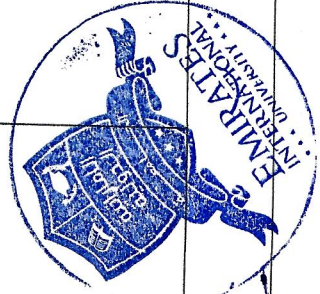
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|  | <p>well as disease transmission, prevention and their impact on laboratory test results.</p> <p>4. Enhance professionalism and teamwork characters in clinical diagnosis work and medical research execution based on ethical guidelines and lifelong learning skills.</p> <p>5. Building strong partnerships with local health and education institutions and relevant authorities that create a supportive learning environment solutions, and make thoughtful recommendations to overcome on these problems.</p> <p>6. Apply total quality management, safety precautions in different laboratories to work</p> | <p>other members of the health team, and they also have the ability of official leadership and management in the practice of the profession.</p> <p>4. To provide the students with modern technologies in various fields of medical laboratory.</p> <p>5. To provide the students with sufficient information and medical skills theoretically and practically in the fields of medical laboratory.</p> <p>6. To conduct researches, statistics and surveys related to endemic diseases and epidemics as well as to help control them.</p> <p>7. To update plans and courses of medical</p> | <p>4. Qualifying students with the latest modern technologies in various disciplines of medical laboratories.</p> <p>5. Providing students with medical information and skills theoretically and practically in the field of medical laboratories.</p> <p>6. Conducting and assisting in controlling research, statistics and surveys on endemic diseases and epidemiology</p> <p>7. to Update plans and courses in the field of medical laboratories.</p> <p>8. Achieving laboratory safety in medical laboratory science disciplines</p> <p>9. To encourage and support the scientific research environment, establish research groups and actively participate in training programs in the field of specialization.</p> <p>10. Student participation in community service</p> | <p>delivery: graduate top health care providers and deliver quality community medical laboratory services.</p> <p>4. Collaboration and outreach: transform the future of medical laboratory sciences, clinical research, and education by fostering novel collaborative alignments among basic and clinical scientists, clinicians, and educators throughout the University, as well as with local and international public and private partners.</p> <p>5. Integrity and accountability: create a culture of the highest ethical standards, honesty, and transparency.</p> <p>6. Diversity and inclusion: create a diverse and inclusive culture</p> | <p>interest in lifelong learning and career development.</p> | <p>effective use of appropriate technologies to generate valid data.</p> <p>6. Recognition of the need for on-going learning in the Medical Science profession.</p> <p>7. An awareness of global differences in disease patterns and diagnostic medicine.</p> <p>8. Recognition of cultural difference and its impact on Medical Science.</p> <p>9. Recognition of the necessity for probity and ethical behavior and a professional approach to medical science</p> | <p>to Biomedical Science, e.g. physiology, cell biology, biochemistry, biotechnology, computational biology, genetics, molecular biology, medicinal chemistry, toxicology, pharmacology, microbiology, etc.</p> <p>ii) Apply appropriate methodologies for planning and executing experiments related to different aspects of life sciences. Also analyze and interpret the results of the experiments performed.</p> <p>iii) Ability to reason scientifically and analytically.</p> <p>iv) Undertake hands-on lab work and practical activities which develop</p> |
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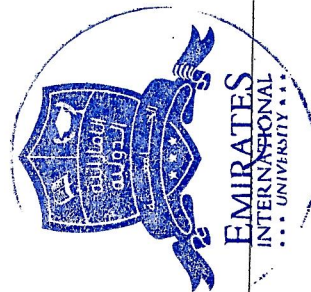
Head of Department

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|  | <p>in risk-free environment and safe laboratory practice.</p> <p>7. Effectively use information technology in professional practices to collect, analyse, interpret and write the report according to the standard operating procedure.</p> <p>8. Work independently or as a member of a team with respect to superiors, colleagues and any other members of the health worker.</p> | <p>laboratory.</p> <p>8. To achieve laboratory safety in the fields of medical laboratory.</p> <p>9. To encourage and support the scientific research environment, form research groups, and participate effectively in related training programs.</p> <p>10. To give the students an opportunity to participate in community services programs that are related to this field.</p> <p>To qualify the students for related post graduate programs.</p> | <p>programs related to specialization</p> <p>Qualifying students to attend graduate programs related to specialization.</p> | <p>that integrate students, knowledge, and ideas from different backgrounds.</p> |  | <p>problem solving abilities, required for careers in research.</p> |
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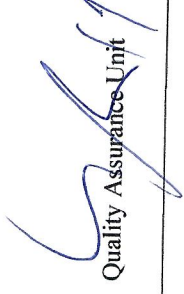
### 3- Mapping of Program Mission with the University, Faculty and Department Missions:

| University Mission                                                                                                                                                                                                                                                                                                                                                        | Faculty of Medicine and Health Sciences Mission                                                                                                                                                                                                                                                               | Department of Medical Laboratory Mission                                                                                                                                                                                                                                                                        | Medical Laboratory Program Mission                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>EIU Yemen seeks to Provide a distinguished education and research services That meet the needs of the National and regional labor Market through qualified Human Resources quality academic programs, scientific research directed to knowledge Production and applications and providing a supportive university environment and effective Community partnership.</p> | <p>Preparing scientifically and practically qualified cadres in the medical fields who are able to compete locally and regionally by providing distinguished educational programs in accordance with quality standards and requirements in a manner that meets the needs of the labor market and society.</p> | <p>Preparing specialized cadres in the field of laboratory medicine, scientifically, practically and ethically, through an academic program prepared systematically in accordance with high-quality standards, to meet the community's needs for medical services and the requirements of the labor market.</p> | <p>Qualifying distinguished cadres in the field of laboratory medicine capable of professional participation in diagnosing any pathological sample in accordance with comprehensive quality management, and responding ethically with a constructive contribution to the local community and in diverse environments.</p> |

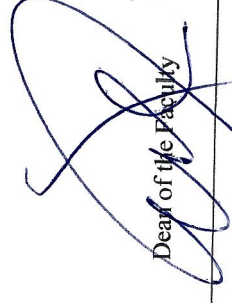
Head of Department



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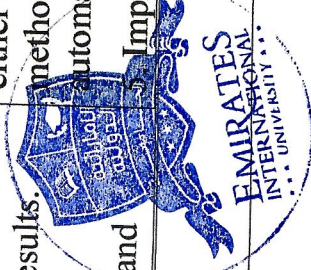

#### 4- Mapping of Program Objectives with the University, Faculty and Department Objectives:

| University Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Faculty of Medicine and Health Sciences Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Department of Laboratory Medicine Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Medical Laboratory Program Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1- Preparing highly qualified cadres in various scientific fields capable of keeping pace with the requirements of sustainable development and engaging in the labour market.</p> <p>2- Creating and developing academic programs to keep pace with modern scientific developments in line with the needs of the labor market.</p> <p>3- Encouraging scientific research and participating in conferences and scientific activities internally and externally.</p> <p>4- Contributing to community service through studies, consultations, and continuous training programs.</p> | <p>1- Preparing a specialized and qualified cadre in medical fields with theoretical and applied foundations, professional skills and ethical values, through academic programs in accordance with quality standards.</p> <p>2- Developing students' scientific and practical skills using modern educational methods.</p> <p>3- Supporting scientific research and developing the student's capabilities in his field of specialization through participation in research projects and cooperation with different research sectors.</p> <p>4- Effective contribution to community service and meeting the requirements of the labor market.</p> | <p>1. Qualify, train, and equip a good medical graduate to excel in the field of medical laboratory diagnosis.</p> <p>2. Equipping students with the necessary knowledge and skills in medical laboratory sciences enables them to make decision in clinical diagnosis practice.</p> <p>3. Empowering students with knowledge to understand disease influences by age, gender, sociocultural, and genetic factors as well as disease transmission, prevention and their impact on laboratory test results.</p> <p>4. Enhance professionalism and</p> | <p>1. Prepare highly qualified and properly trained graduates in medical laboratory diagnosis.</p> <p>2. Providing graduates with information and abilities in medical laboratory sciences helps them make good decisions in clinical diagnosis practice.</p> <p>3. Providing students with basic knowledge to understand factors that influence disease development, diagnosis, and preventive measures.</p> <p>4. Learn the students the most popular methods in clinical laboratory diagnosis, either the primitive manual methods or the advanced automated ones.</p> |

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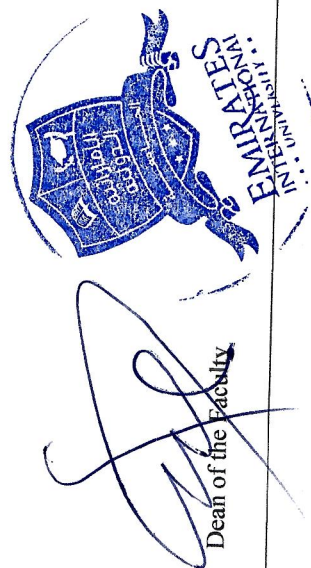




| University Objectives                                                                                                        | Faculty of Medicine and Health Sciences Objectives | Department of Laboratory Medicine Objectives                                                                                                                                                                                                                                                              | Medical Laboratory Program Objectives                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>5. Communication and partnership with universities and research institutions locally, regionally and internationally.</p> |                                                    | <p>teamwork characters in clinical diagnosis work and medical research execution based on ethical guidelines and lifelong learning skills.</p> <p>5. Building strong partnerships with local health and education institutions and relevant authorities that create a supportive learning environment</p> | <p>capacity and teamwork behaviour in clinical diagnosis laboratories and medical research; undertake ethical principles and lifelong learning as his first priorities.</p> <p>6. Establishing collaboration with local health and education institutions and agencies to foster a conducive learning environment.</p> |

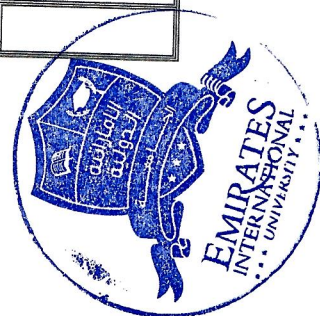
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**Annex- 6, Alignment of Program Intended Learning Outcomes (PILOs) to the Faculty Objective**

| Program PILOs | Faculty Objectives |       |       |       |       |
|---------------|--------------------|-------|-------|-------|-------|
|               | FObj1              | FObj2 | FObj3 | FObj4 | FObj5 |
| A1            | √                  | √     | √     |       | √     |
| A2            |                    | √     |       | √     | √     |
| A3            | √                  |       | √     |       | √     |
| A4            | √                  |       | √     | √     |       |
| A5            | √                  | √     | √     |       | √     |
| B1            | √                  | √     | √     | √     | √     |
| B2            | √                  | √     |       | √     | √     |
| B3            |                    | √     |       | √     | √     |
| B4            |                    | √     | √     | √     | √     |
| C1            |                    |       | √     |       | √     |
| C2            | √                  | √     | √     |       | √     |
| C3            | √                  |       | √     |       | √     |
| C4            | √                  | √     | √     | √     | √     |
| C5            | √                  |       |       |       | √     |
| D1            | √                  | √     | √     |       | √     |
| D2            | √                  | √     | √     | √     | √     |
| D3            | √                  |       | √     |       | √     |
| D4            | √                  |       | √     | √     |       |



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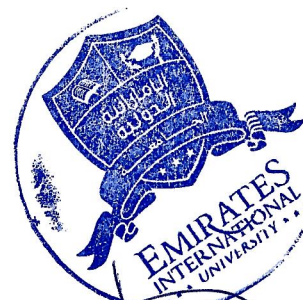
**Annex-7, Alignment of Program Intended Learning Outcomes (PILOS) to Program Objectives (POs)**

| Program PILOs | Program Objectives |       |       |       |       |       |
|---------------|--------------------|-------|-------|-------|-------|-------|
|               | PObj1              | PObj2 | PObj3 | PObj4 | PObj5 | PObj6 |
| A1            | √                  |       |       |       |       |       |
| A2            | √                  |       | √     |       | √     |       |
| A3            | √                  | √     |       |       |       |       |
| A4            | √                  |       | √     | √     |       | √     |
| A5            | √                  | √     | √     |       | √     |       |
| B1            | √                  |       | √     | √     |       |       |
| B2            | √                  | √     |       | √     | √     | √     |
| B3            | √                  |       | √     | √     | √     |       |
| B4            | √                  | √     |       | √     | √     | √     |
| C1            |                    |       | √     |       | √     |       |
| C2            | √                  | √     | √     |       | √     |       |
| C3            |                    | √     |       | √     | √     | √     |
| C4            | √                  | √     | √     |       | √     |       |
| C5            | √                  | √     | √     |       | √     |       |
| D1            | √                  |       | √     |       | √     | √     |
| D2            | √                  |       | √     | √     |       | √     |
| D3            | √                  |       | √     |       | √     |       |
| D4            | √                  | √     | √     | √     | √     | √     |

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### Annex- 8, Themes of Courses of Study and their Weightage

| #                    | Themes                     | No. of Courses | Credit Hours | Percentage of Cr. Hrs. |
|----------------------|----------------------------|----------------|--------------|------------------------|
| 1                    | University Requirements    | 5              | 12           | 8.2                    |
| 2                    | Faculty Requirements       | 7              | 19           | 12.9 %                 |
| 3                    | Department Requirements    | 9              | 24           | 16.3                   |
| 4                    | Program Compulsory Courses | 30             | 90           | 61.2                   |
| 5                    | Program Elective Courses   | .....          | .....        | .....                  |
| 6                    | Graduation Project Courses | 1              | 2            | 1.4                    |
| <b>Program Total</b> |                            | <b>52</b>      | <b>147</b>   | <b>100%</b>            |

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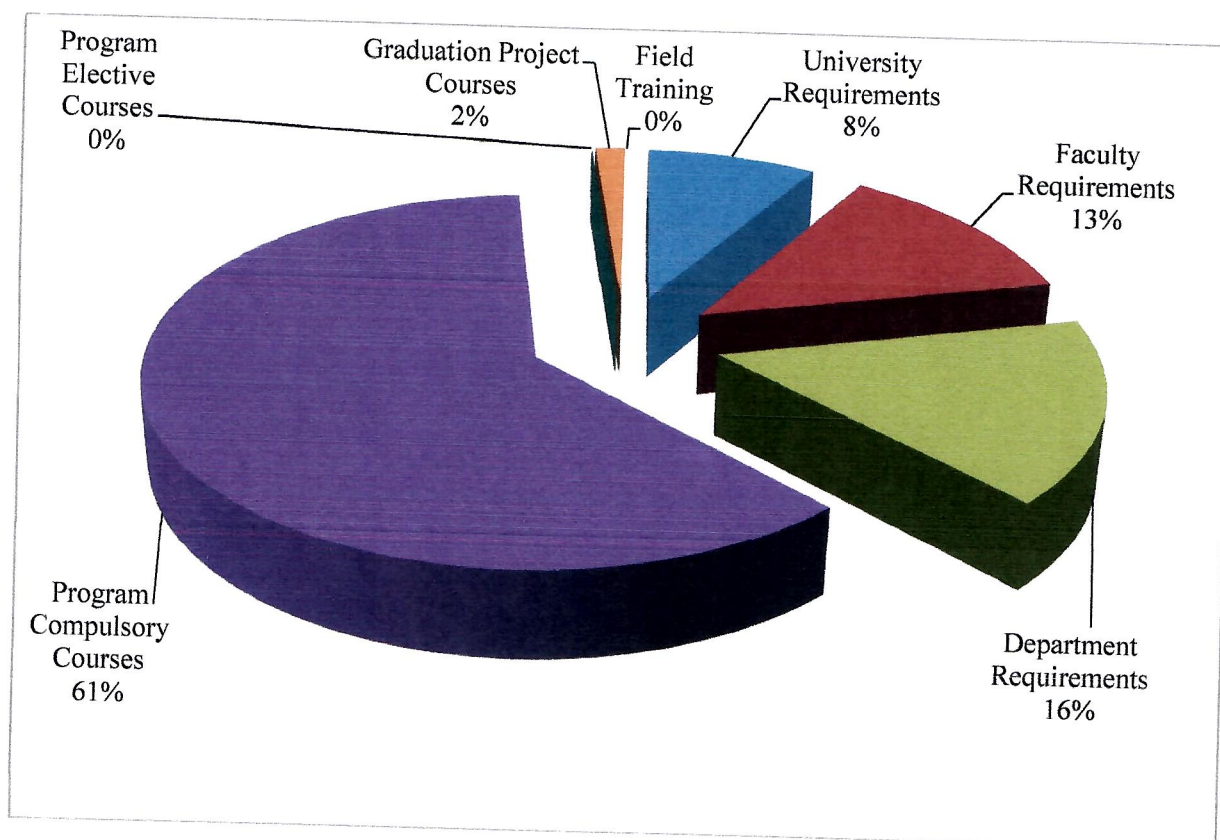
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## Annex- 9, Themes of Courses of Study and their Weightage



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## Annex- 10, Coding System

The course code consists of three character + three digits

### Abbreviation of character code:

**EUR:** University Requirement

**EFR:** Faculty Requirement

**EPR:** Program Requirement

### The three digits:

- First digit for Level
- Second digit for Semester; and
- Third digit for Course No.

Example:

Islamic Culture (EUR 111)

| University Requirement | Level | Semester | Course No. |
|------------------------|-------|----------|------------|
| EUR                    | 1     | 1        | 1          |

Medical Physics (EFR 112)

| Faculty Requirement | Level | Semester | Course No. |
|---------------------|-------|----------|------------|
| EFR                 | 1     | 1        | 2          |

Hematology I (EPR227)

| Program Requirement | Level | Semester | Course No. |
|---------------------|-------|----------|------------|
| EPR                 | 2     | 2        | 7          |

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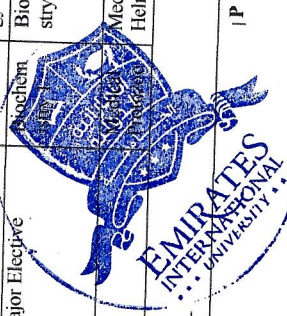
## Annex- 11, Survey of Course Names per Academic Semesters of Similar Programs

| Level       | Emirates International University Med. Lab. |                      | University of science and technology Med. Lab. Sciences |                          | King Saud University Med. Lab Sciences |                           | Qatar University Biomedical Sciences  |                          | Eastern Kentucky University Medical Laboratory Science |                         | University of new Hampshire Medical Laboratory Science |                         | Ibb university Med. Lab Sciences |                        |
|-------------|---------------------------------------------|----------------------|---------------------------------------------------------|--------------------------|----------------------------------------|---------------------------|---------------------------------------|--------------------------|--------------------------------------------------------|-------------------------|--------------------------------------------------------|-------------------------|----------------------------------|------------------------|
|             | 1 <sup>st</sup> sem.                        | 2 <sup>nd</sup> sem. | 1 <sup>st</sup> sem.                                    | 2 <sup>nd</sup> sem.     | 1 <sup>st</sup> sem.                   | 2 <sup>nd</sup> sem.      | 1 <sup>st</sup> sem.                  | 2 <sup>nd</sup> sem.     | 1 <sup>st</sup> sem.                                   | 2 <sup>nd</sup> sem.    | 1 <sup>st</sup> sem.                                   | 2 <sup>nd</sup> sem.    | 1 <sup>st</sup> sem.             | 2 <sup>nd</sup> sem.   |
| First year  | 1                                           | Biology              | Organic Chemistry                                       | Gen. and organic chem... | Analytical chem.                       | English: Listening        | General Biology                       | Biology I                | Human Anatomy                                          | Intro. Chemistry        | First-Year Writing                                     | Biostatistics           | Arabic Language 101              | Arabic Language 102    |
|             | 2                                           | General Chemistry    | Analytical Chemistry                                    | Biology                  | Histology                              | Speaking English: Reading | General Chem.                         | General Chemistry I      | Human Histology                                        | English Composition A   | General Chemistry I                                    | General Chemistry II    | English Language 101             | English Language 102   |
|             | 3                                           | Arabic Language      | General Anatomy                                         | Skills                   | Anatomy                                | English: Writing          | Organic Chem.                         | Exp. General Chemistry I | Organic Chemistry                                      | College Algebra         | Anatomy & Physiology                                   | Anatomy & Physiology II | Medical Physics                  | Computer skills        |
|             | 4                                           | Islamic Culture      | English Language II                                     | E 1                      | Physiology                             | Biostatistics             | General Physics                       | Calculus I               | General Education                                      | Elective                | Intro. to BMS Careers                                  | Discovery course        | Biology and cytology             | Analytical Chemistry   |
|             | 5                                           | English Language I   | Medical Terminology                                     | Arabic                   | E 2                                    | IT Skills                 | English for H.S.                      |                          | General Education                                      | General Education       | Discovery course                                       | Biostatistics           | General Chemistry                | Biostatistics          |
|             | 6                                           | Medical Physics      | General Histology                                       | Islamic culture          | Critical think                         | Islamic Culture           |                                       |                          |                                                        |                         |                                                        |                         | Islamic culture                  | Cell biology           |
|             | 7                                           | Computer Skills      |                                                         | Skills                   | computer                               | Language Skills           |                                       |                          |                                                        |                         |                                                        |                         |                                  |                        |
| Second year | 1                                           | Basic Bacteriology   | Molecular Biology & Genetics                            | Epidemiology             | Molecular bio. & genetics              | H. Anatomy Physiology     | H. Histology and Histology techniques | Human Physiology         | Molecular Biology                                      | Medical Biochemistry    | Discovery course                                       | Body Fluids             | Medical ethics                   | Medical bacteriology 1 |
|             | 2                                           | Biochemistry I       | Biochemistry II                                         | Intr. Bacteriology       | Hematology                             | Math for Health Sciences  | Basic Biochemistry                    | Human Genetics           | Introduction to Pathology                              | Introductory Clin. Path | Discovery course                                       | Organic Chemistry       | Human physiology                 | Histology              |
|             | 3                                           | Medical Entomology   | Medical Helminthology                                   | Parasitology I           | Bacteriology I                         | Medical Terminology       | Analytical Chemistry                  | Introduction to Computer | Basic Biochemistry                                     | Cell & Mol. Biology     | General Microbiology                                   | Pathogenic Microbiology | Anatomy                          | Medical Entomology     |
|             | 4                                           | Basic Immunology     | Biostatistics                                           | Pharmacology             | Immunology                             | Emergent Healthcare       | Pathophysiology                       | Microbiology             | Experimental Biochemistry                              | Oral Communication      | Microbes in Human Disease                              | Major Elective          | Biochemistry                     | Biochemistry 2         |
|             | 5                                           | Human Physiology     | Human Physiology                                        | Biochemistry I           | Biochemistry 2                         | Intro. to Pathology       | Emergency Care                        | General Education        | General Education                                      | General Education       | Principles of                                          |                         | Medical Helminth                 |                        |

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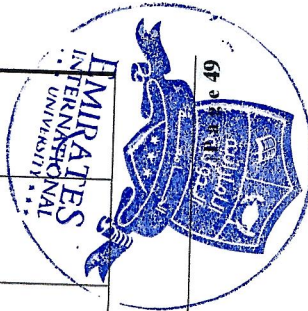
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| 1 | Histopathology and Micro-techniques | Diagnostic Hematology   | Diag. hematology   | Field train. micr. Imm    | Clinical Bacteriology-1        | Clinical Bacteriology-2         | Laboratory management          | CP in Chemistry          | Clinical Correlations | Clinical Chemistry Pract    | Elective Immunohematology                                                                             | Elective                                                                                                                                                                                                                  | Diagnostic Microbiology | Pathology                            |
|---|-------------------------------------|-------------------------|--------------------|---------------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------|-----------------------|-----------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------------------|
| 2 | Sanitary Microbiology               | Diagnostic Microbiology | Body fluids        | Field training paras.     | Clinical Imm. and Serology     | Blood Coagulation               | Histopathology                 | CP in Hematology         | Hematology Pract      | Clinical Microbiology Pract | Major Elective Case Studies                                                                           | Elective                                                                                                                                                                                                                  | Endocrinology           | Diagnostic Parasitology              |
| 3 | Hematology IV                       | Diagnostic Parasitology | Diag. microbiology | Field training histopath. | Immunohaematology              | Epidemiology and Bio-Statistics | Diagnostic Microbiology        | CP in Immunology         |                       | Lab Mgmt/Education          | Major Elective Biomedical Lab Mgt                                                                     | Elective                                                                                                                                                                                                                  | Pharmacology            | Body Fluid Analysis                  |
| 4 | Epidemiology                        | Clinical Chemistry      | Diag. parasitology | Field training hemat.     | Clinical Mycology              | Medical Genetics                | Immunohem. & Blood Bank        | CP in Microbiology       |                       | Clinical Laboratory Seminar | Discovery course                                                                                      | Elective                                                                                                                                                                                                                  | Clinical hematology 2   |                                      |
| 5 | Body Fluids                         | Graduation Project      | Research methods   | project                   | Gene Tech and Mol. Tech.       | Urinalysis and Body fluids      | Research                       | CP in Immunohematology   |                       | Urinalysis Pract            |                                                                                                       | Elective                                                                                                                                                                                                                  | Epidemiology            | Graduation Research Project          |
| 6 | Clinical & Diagnostic Immunology    |                         | elective           |                           |                                | Clinical Virology               | Forensic Science (or Elective) | Professional Development |                       | Blood Bank Pract            |                                                                                                       |                                                                                                                                                                                                                           | Molecular biology       | Quality Assurance and Lab Management |
| 7 |                                     |                         |                    |                           | Toxicology and Drug Monitoring |                                 |                                |                          |                       | Immunology Pract            |                                                                                                       |                                                                                                                                                                                                                           |                         |                                      |
|   |                                     |                         |                    |                           |                                |                                 |                                |                          |                       |                             |                                                                                                       |                                                                                                                                                                                                                           |                         |                                      |
|   |                                     |                         |                    |                           |                                |                                 |                                |                          |                       |                             | Discovery course (Statistics, Biology, Chemistry, Fine & Performing Arts, Humanities, World Cultures) | Elective (Biomedical Lab Management, Phlebotomy, Hematology/Clinical Hematology, Immunohematology, Medical Biochemistry/Clinical Chemistry, Endocrinology, Pathologic Basis of Disease, Immunology, Virology, Toxicology) |                         |                                      |



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## Annex- 12, Matrix of Mapping Program PILO's with Courses

**I =Introduction; E=Extension; A=Application**

| #  | Level semester | Course Code | Courses | Lectures | Training | Lab hours | Credit hours | Program ILOs                |     |     |     |     |                     |     |     |     |                                   |     |     |     |     |     |     |     |     |   |   |   |   |   |   | Transferable Skills |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|----|----------------|-------------|---------|----------|----------|-----------|--------------|-----------------------------|-----|-----|-----|-----|---------------------|-----|-----|-----|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|---|---|---|---|---|---|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|    |                |             |         |          |          |           |              | Knowledge and Understanding |     |     |     |     | Intellectual Skills |     |     |     | Professional and Practical Skills |     |     |     |     |     |     |     |     |   |   |   |   |   |   |                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|    |                |             |         |          |          |           |              | A 1                         | A 2 | A 3 | A 4 | A 5 | B 1                 | B 2 | B 3 | B 4 | C 1                               | C 2 | C 3 | C 4 | C 5 | D 1 | D 2 | D 3 | D 4 |   |   |   |   |   |   |                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1. | 1/1            | EUR112      | Biology | 2        | -        | 2         | 3            | ✓                           | ✓   | ✓   | ✓   | ✓   | ✓                   | ✓   | ✓   | ✓   | ✓                                 | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓                   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |

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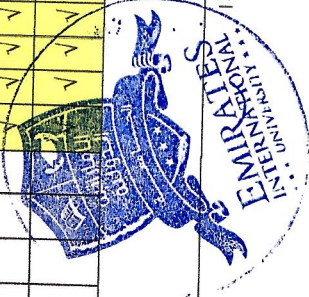


| #   | Level semester | Course Code | Courses         | Lectures | Training | Lab hours | Credit hours | Program ILOs                |        |        |        |        |                     |        |        |        |        |                                   |        |        |        |        |        |        |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|----------------|-------------|-----------------|----------|----------|-----------|--------------|-----------------------------|--------|--------|--------|--------|---------------------|--------|--------|--------|--------|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|     |                |             |                 |          |          |           |              | Knowledge and Understanding |        |        |        |        | Intellectual Skills |        |        |        |        | Professional and Practical Skills |        |        |        |        |        |        |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|     |                |             |                 |          |          |           |              |                             |        |        |        |        |                     |        |        |        |        |                                   |        |        |        |        |        |        |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|     |                |             |                 |          |          |           |              | A<br>1                      | A<br>2 | A<br>3 | A<br>4 | A<br>5 | B<br>1              | B<br>2 | B<br>3 | B<br>4 | C<br>1 | C<br>2                            | C<br>3 | C<br>4 | C<br>5 | D<br>1 | D<br>2 | D<br>3 | D<br>4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21. | 2/2            | EPR222      | Biochemistry II | 2        | -        | 2         | 3            | ✓                           | ✓      | ✓      | ✓      | ✓      | ✓                   | ✓      | ✓      | ✓      | ✓      | ✓                                 | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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Quality Assurance Unit

Dean of the Faculty





| #   | Level semester | Course Code | Courses                             | Lectures | Training | Lab hours | Credit hours | Program ILOs                |        |        |        |        |                     |        |        |        |        |                                   |        |        |        |        |        |        |        |  |  |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|     |                |             |                                     |          |          |           |              | Knowledge and Understanding |        |        |        |        | Intellectual Skills |        |        |        |        | Professional and Practical Skills |        |        |        |        |        |        |        |  |  | Transferable Skills |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |                |             |                                     |          |          |           |              | A<br>1                      | A<br>2 | A<br>3 | A<br>4 | A<br>5 | B<br>1              | B<br>2 | B<br>3 | B<br>4 | C<br>1 | C<br>2                            | C<br>3 | C<br>4 | C<br>5 | D<br>1 | D<br>2 | D<br>3 | D<br>4 |  |  |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42. | 4/1            | EPR411      | Histopathology and Micro-techniques | 2        | -        | 2         | 3            |                             | ✓      |        | ✓      | ✓      | ✓                   |        |        | ✓      | ✓      | ✓                                 | ✓      |        |        |        |        |        |        |  |  |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Head of Department

Quality Assurance Unit

Dean of the Faculty



**Program Intended Learning Outcomes (PILOs): Medical Laboratory Program at Emiratis International University**

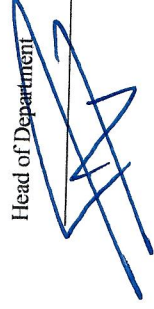
**Program Intended Learning Outcomes (PILOs):**

**A. Knowledge and Understanding**

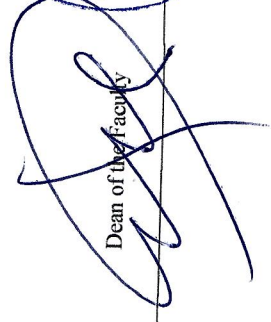
*Upon successful completion of the undergraduate Medical Laboratory education programs, the graduates will be able to demonstrate understanding of:*

**Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

- A1. Demonstrate understanding in the basic and medical sciences (biology, chemistry, anatomy, histology, physiology, human genetics and molecular biology).
- A2. Demonstrate knowledge of medical laboratory sciences including biochemistry, hematology, immunology, immunohematology, microbiology and Parasitology.
- A3. Define the most popular medical laboratory investigations, involved samples, processing, and the suspected result in health and disease states
- A4. Identify the principles of epidemiology, biostatistics, and their effective use in clinical diagnosis and research conduction
- A5. Define the principles of Biorisk management and quality assurance in medical laboratories.

Head of Department  


Quality Assurance Unit/1  


Dean of the Faculty  






## **B-COGNITIVE/INTELLECTUAL SKILLS:**

### **Upon successful completion of an undergraduate Medical Laboratory program, the graduates will be able to:**

- B1. Integrate the concepts and principles of the basic and applied medical sciences to reach the correct diagnosis of the patient.
- B2. Interpret the results properly, taking into consideration errors that may affect the results and troubleshoot them
- B3. Analyze biomedical evidence and problems in medical laboratory diagnosis.
- B4. Design an effective plan for quality assurance and Biorisk management programs in medical laboratories.

## **C. Practical and Professional Skills:**

### **Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

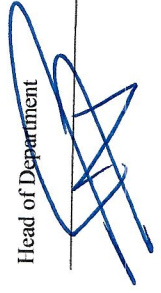
- C1. Properly collect, transport, process, preserve, and store samples according to Standard Operating Procedures (SOPs).
- C2. Professionally carry out the most popular laboratory diagnostic methods using different techniques, and simple and advanced equipment.
- C3. Execute quality management systems and Biorisk management procedures in clinical laboratory practice.
- C4. Conduct research projects at all stages, either alone or within a team
- C5. Exhibit the ability to properly deal with and use newly emerging and advanced equipment for biomedical analysis.

## **D. General and Transferable Skills:**

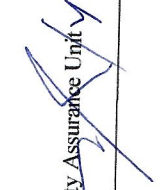
### **Upon successful completion of the undergraduate Medical Laboratory Program, the graduates will be able to:**

- D1. Effectively communicate with his colleagues, patients, and other health professionals and realize his responsibilities within the health care system.
- D2. Demonstrate harmonious and effective collaboration in the team work of clinical laboratory practice and research projects
- D3. Use IT and computer skills in developing his knowledge, lifelong learning and advances in clinical laboratory diagnosis
- D4. Demonstrate leadership and management skills in his behavior at working environment of health care institutions.

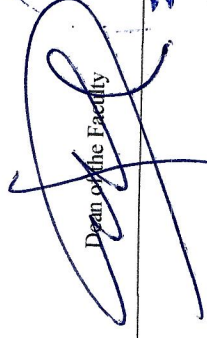
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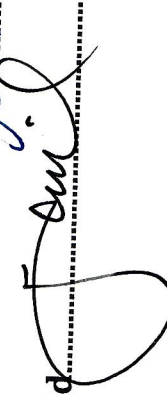


## Annex- 14 CVs for the Preparation Committee

Attached separately.

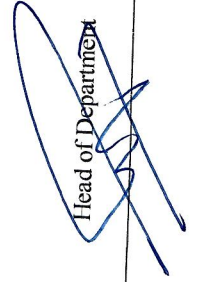
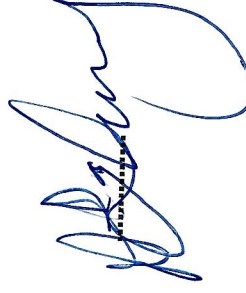
### Team's Member Signatures

#### **Preparation Committee by:**

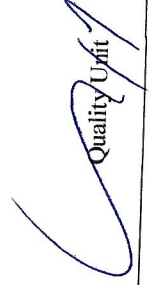
1. Assistant Prof. Dr. / Taha Abdul-Aziz Saeid Kaid ..... 
2. Associate Prof. Dr./ Jamil M.A.S. Obaid ..... 

#### **Reviewed and audit by:**

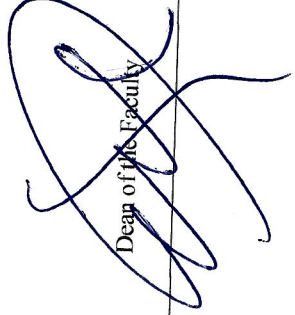
Assistant. Dr. / Abdulbasit Al-Ghoury



Head of Department



Quality Unit



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