

**Program SPECIFICATION FOR Professional Diploma in Medical Laboratories Management and Quality Excellence.**  
**Code: 1217400**

**University:** Alexandria

**Faculty:** Medical Research Institute

**Program Specification**

**A- Basic information**

**1- Program title: Professional Diploma in Medical Laboratories Management and Quality Excellence**

**2- Program type:** single  double  multiple

**3- Department(s): Chemical Pathology**

**4- Coordinator: Professor Dr/ Moyassar Ahmad Zaki**

**5- External evaluator(s): Professor Dr/ Prof. Dr. Ekbal Mohamed Abo-Hashem**

**6- Last date of program specification approval 29/5/2023**

**B- Professional Information**

**1- Program aims:**

- Recall essential knowledge and clinical skills required to manage clinical laboratories.
- Explore the basics of laboratory design, facility, financial and workforce management.
- Perform and interpret total quality management concepts and different accreditation requirements, covering total laboratory testing process.
- Distinguish essential basics of laboratory equipment and laboratory information management.

## **Graduate attributes**

*At the end of this program the graduate will be able to:*

1. Recognize basics of organization governance and management.
2. Acquire appropriate knowledge of basics of laboratory design, environment, and facility management.
3. Explore principles of financial, utilization and supply chain management.
4. Acquire detailed knowledge on work force management.
5. Distinguish the different accreditation requirements.
6. Practice laboratory testing process performance management and control.
7. Apply laboratory equipment management protocols.
8. Recall recent advances in laboratory information and e-health.

## **2- Intended learning outcomes (ILOS)**

### **A. Knowledge and understanding:**

- A1) Recognize the basic concept of strategic management and lab governance.
- A2) Describe lab design guidelines affecting workflow to ensure lab safety in relation to environment according to Egyptian national codes and international guidelines .
- A3) Explore basic principles of legality of financial information, supply chain and utilization management.
- A4) Identify different human resource management skills.
- A5) Identify methods and tools for quality management and different accreditation requirements .
- A6) Describe the whole laboratory testing process phases including analytical method performance, internal quality control program and proficiency testing in medical laboratories.
- A7) Recognize laboratory equipment management program covering selection, maintenance and calibration plans .
- A8) Recognize components of effective lab information system management.

## **B. Intellectual skills:**

- B1) Distinguish organizational governance, strategic planning & leadership principles.
- B2) Distinguish guidelines-based requirements for lab design, environment, facility and risk management.
- B3) Categorize best practice in financial, utilization, supply chain & inventory management and problems evaluation.
- B4) Distinguish staff planning, training programs & competency assessment.
- B5) Interpret laboratory quality management programs & compare different accreditation standards.
- B6) Analyze and solve problems in the whole testing processes using different laboratory statistical tools.
- B7) Analyze basics of instrumentation management & distinguish different emerging laboratory technologies and troubleshooting of encountered problems.
- B8) Examine the lab information system application in different laboratory units.
- B9) Appraise and judge different articles in lab and quality management.

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

- C1) Apply different lab design requirements, practice lab safety and infection control programs.
- C2) Choose appropriate financial and inventory management systems to reach effective lab utilization.
- C3) Evaluate appropriate lab quality programs and different accreditation requirements.
- C4) Analyze the whole lab testing process including pre-analytical, analytical and post-analytical to overcome existing challenges.
- C5) Practice different instruments, choose effective maintenance program according to accreditation requirements.
- C6) Apply laboratory information system in different units.

## **D. General and transferable skills:**

- D1) Manage scientific meetings and develop skills in presentation of scientific topics and appropriately utilize the time.
- D2) Use information technology, group discussion and oral presentation.
- D3) Learn different tools for self-improvement and assessment.
- D4) Develop skills in lab administrative and quality management.
- D5) Work effectively in groups and as a part of a team.

D6) Work as a team leader as well as a member in larger teams and develop ability to communicate with colleagues.

**3- Academic standards**

**3a- External references for standards (Benchmarks)**

- 1 Generic Academic Reference Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE). Last date of academic reference standards (ARS) approval by institute Council was 15/1/2023
- 2 Dominican University, (NY), Healthcare leadership, M.B.A.
- 3 Hunter University, (NY), MS in Biomedical Laboratory Management.
- 4 University of Maryland, MS Laboratory Management Track.
- 5 RUSH University (Chicago), Master of Science in Clinical Laboratory Management Program.
- 6 General Authority of Healthcare Accreditation and Regulation clinical laboratory standards (GAHAR).

**3b- Comparison of provision to selected external references.**

| Generic Academic Standards   | ARS of Professional Diploma in Medical Laboratories Management and Quality Excellence   |
|--|---|
| <b>A1) Basic facts, theories, of the specialty and related subjects/ fields.</b> | A1) Recognize the basic concept of strategic management and lab governance.<br>A3) Explore basic principles of financial information, supply chain and utilization management principles.<br>A8) Recognize different components of effective lab information system management.   |
| <b>A2) Fundamentals of ethical &amp; legal practice</b>                          | A3) Explore basic principles of legality of financial information, supply chain and utilization management.<br>A4) Recognize different human resource management skills.  |
| <b>A3) Quality standards of the practice</b>                                     | A5) Identify methods and tools for quality management and different accreditation main principles.<br>A6) Describe the whole laboratory testing process phases including analytical method performance, internal quality control program and proficiency testing in medical laboratories.<br>A7) Recognize laboratory equipment management program covering selection, maintenance, and |

|   |   |
|---|---|
|   | <p>calibration plans.</p> <p>A8) Recognize components of effective lab information system management.</p>   |
| <b>A4) Effect of the specialty practice on the environment including rules for environmental conservation</b> | A2) Describe lab design guidelines affecting workflow to ensure lab safety in relation to environment according to Egyptian national codes and international guidelines.  |
| <b>B1) Determine, analyze, and prioritize problems.</b>   | <p>B1) Distinguish organizational governance, strategic planning &amp; leadership principles.</p> <p>B3) Categorize best practice in financial, utilization, supply chain &amp; inventory management and problems evaluation.</p> <p>B4) Distinguish staff planning, training programs &amp; competency assessment.</p> <p>B7) Analyze basics of instrumentation management &amp; distinguish different emerging laboratory technologies and troubleshooting of encountered problems.</p> |
| <b>B2) Solve common problems effectively.</b>   | <p>B1) Distinguish organizational governance, strategic planning &amp; leadership principles.</p> <p>B5) Interpret laboratory quality management programs &amp; compare different accreditation standards.</p> <p>B7) Analyze basics of instrumentation management &amp; distinguish different emerging laboratory technologies and troubleshooting of encountered problems.</p>  |
| <b>B3) Critically appraise research and articles</b>  | B9) Appraise and judge different research articles.   |
| <b>B4) Evaluate professional risks</b>  | B2) Distinguish guidelines-based requirements for lab design, environment, facility and risk management.  |
| <b>B5) Make decisions to solve professional problems according to available data</b>                          | <p>B6) Analyze and solve problems in the whole testing processes using different laboratory statistical tools.</p> <p>B8) Examine the lab information system application in different laboratory units.</p>   |
| <b>C1) Practice basic professional skills (clinical/practical and procedural skills) competently</b>          | <p>C1) Apply different lab design requirements, practice lab safety and infection control programs.</p> <p>C2) Choose appropriate financial and inventory management systems to reach effective lab utilization.</p> <p>C3) Evaluate appropriate lab quality programs and</p>   |

|   |  |
|---|--|
|   | <p>different accreditation requirements.</p> <p>C4) Practice the whole lab testing process including pre-analytical, analytical and post-analytical to overcome existing challenges.</p> <p>C5) Practice different instruments, choose effective maintenance program according to accreditation requirements.</p> <p>C6) Apply laboratory information system in different units.</p> |
| <b>C2) Write reports related to the profession (patients records, self-appraisal/ audit reports...etc.)</b> | C6) Apply laboratory information system in different units.  |
| <b>D1) Communicate effectively using all methods</b>  | D1) Manage scientific meetings and develop skills in presentation of scientific topics and appropriately utilize the time.   |
| <b>D2) Use information technology to improve his/her professional practice</b>                              | D2) Use information technology, group discussion and oral presentation   |
| <b>D3) Practice self appraisal and determines his learning needs</b>  | D3) Learn different tools for self improvement and assessment  |
| <b>D4) Use different sources of information to obtain data</b>  | D4) Develop research skills  |
| <b>D5) Work in teams</b>  | D5) Work effectively in groups and as a part of a team.  |
| <b>D6) Manage time effectively</b>  | D1) Manage scientific meetings and develop skills in presentation of scientific topics and appropriately utilize the time.   |
| <b>D7) Work as team leader in situations comparable to his work level</b>                                   | D4) Work as a team leader as well as a member in larger teams and develop ability to communicate with colleagues.  |
| <b>D8) Learn independently and seek continuous learning</b>   | D2) Use information technology , group discussion and oral presentation  |

#### 4- Curriculum structure and contents

1 **Program duration:** 1 year

2 **Program structure:**

4.b.i- No. of hours per week in each year/semester:

**Obligatory: 20 C.H (12 T, 16 P)**

**Elective: 4 C.H**

| Semester   | Number of hours (Theoretical; T) |
|--|----------------------------------|
| <b>First semester</b><br>(401, 2C.H, 1T,2P), (403, 2C.H, 1T,2P), (404, 2C.H, 2T,0P), (405, 2C.H, 1T,2P)  | <b>5 T</b>                       |
| <b>Second semester</b><br>(402, 3C.H, 2T,2P), (406, 5C.H, 3T, 4P) (407, 2C.H, 1T,2P), (408, 2C.H, 1T,2P) | <b>7 T</b>                       |

4.b.ii- No. of credit hours Lectures  Practical  Total

Compulsory  Elective  Optional

4.b.iii- No. of credit hours of specialized courses No.  %

4.b.iv- No. of credit hours of other courses No.  %

## 5- Program Courses

### 5.1- Compulsory (20C.H, 12T, 16P)

| Code No. | Course Title  | No. of credit hours | No. of hours /week |           |
|----------|---|---------------------|--------------------|-----------|
|          |   |                     | Lecture            | Practical |
| 1217401  | Organization governance and management                              | 2                   | 1                  | 2         |
| 1217402  | Basics of laboratory design, environment and facility management    | 3                   | 2                  | 2         |
| 1217403  | Financial, utilization and supply chain management                  | 2                   | 1                  | 2         |
| 1217404  | Work force management   | 2                   | 2                  | 0         |
| 1217405  | Laboratory quality management & accreditation                       | 2                   | 1                  | 2         |
| 1217406  | Laboratory total testing process performance management and control | 5                   | 3                  | 4         |
| 1217407  | Laboratory Equipment management                                     | 2                   | 1                  | 2         |
| 1217408  | Laboratory information management (LIM) and e-health                | 2                   | 1                  | 2         |
|          | Total   | 20                  | 12                 | 16        |

### 5.2- Elective I (total elective hours I and/or II is 4 C.Hs)

| Code No. | Course Title      | No. of credit hours | No. of hours /week |           |
|----------|-------------------|---------------------|--------------------|-----------|
|          |                   |                     | Lecture            | Practical |
| 1200674  | Health governance | 4                   | 3                  | 2         |
| 1205720  | Hematology        | 2                   | 1                  | 2         |
| 1206720  | Bacteriology      | 2                   | 1                  | 2         |
| 1721820  | Infection control | 1                   | 1                  | 0         |

### 5.3- Elective II (none)

### 5.4- Optional – (none)



## 6- Program admission requirements

1. يقبل الطالب الحاصل علي بكالوريوس الطب و الجراحة من احدي الجامعات المعترف بها من المجلس الاعلي للجامعات للدراسة ببرنامج الدبلومة المهنية اذا أستوفي شروط القبول بالبرنامج وهي:

ان يكون حاصلًا علي الدراسات العليا في: الباثولوجيا الكيميائية او الباثولوجيا الاكلينيكية او الميكروبيولوجيا او الطفيليات او الباثولوجيا او المناعة او الوراثة او امراض الدم او ما يعادلها من جامعة الاسكندرية او من احدي الجامعات المعترف بها من المجلس الاعلي للجامعات كما يقبل الحاصلين علي زمالة التحاليل الطبية من وزارة الصحة او ما يعادلها للدراسة ببرنامج درجة الدبلومة المهنية في ادارة المعامل الطبية و ادارة الجودة الشاملة.

2. ان يستوفي الطالب شروط الاختيار التي يضعها مجلس القسم وان يحصل علي موافقة مجلس القسم علي التسجيل.

## 7- Teaching and learning methods (from matrix)

- 1- Lectures.
- 2- Group discussions.
- 3- Seminars using power point presentations.
- 4- Webinars.
- 5- Practical.
- 6- Problem based learning.
- 7- Role playing.
- 8- Self directed learning.
- 9- Brain storming.

## 8- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of professional diploma in medical laboratories management and quality excellence, the student must complete 24 credit hours with a CGPA of at least C+.

## 9- Evaluation of program intended learning outcomes.

| Evaluator   | Tool          | Sample                             |
|---|---------------|------------------------------------|
| 1- Senior students                                | Questionnaire | At least 50 %                      |
| 2- Alumni   | Questionnaire | Representative sample              |
| 3- Stakeholders (Employers)                       | Meeting       | Representative sample              |
| 4- External Evaluator(s) or External Examiner (s) | Reports       | Prof. Dr. Ekbal Mohamed Abo-Hashem |
| 5- Other  |               |                                    |

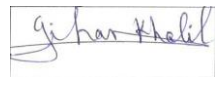
**Program coordinator:**

Name: Prof Dr /Moyassar Ahmad Zaki

Signature: 

**Department Head:**

Name: Prof Dr / Gihan Ibrahim Khalil

Signature: 

**Date of Department Council Approval: 29 / 8/2023**

**\*Program Aims vs ILOs matrix**

| Program aim/ILOs | a 1 | a 2 | a 3 | a 4 | b 1 | b 2 | b 3 | b 4 | b 5 | c 1 | c 2 | d 1 | d 2 | d 3 | d 4 | D 5 | D 6 | D 7 | D 8 |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1                | x   |     |     |     | x   | x   |     |     |     |     |     | x   |     |     |     |     |     | x   |     |
| 2                |     |     |     | x   |     |     |     | x   |     |     |     |     | x   |     |     |     |     |     | x   |
| 3                | x   | x   |     |     | x   |     |     |     |     |     |     |     |     | x   |     |     |     |     |     |
| 4                |     | x   | x   |     |     |     |     |     |     | x   |     |     |     |     | x   |     |     |     | x   |
| 5                |     |     |     |     |     | x   |     |     |     | x   |     |     |     |     |     | x   |     |     |     |
| 6                |     |     |     |     |     |     |     |     |     | x   | x   |     |     |     |     |     |     |     |     |
| 7                |     |     | x   |     | x   | x   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 8                | x   |     | x   |     |     |     |     |     | x   |     |     |     |     |     |     |     |     |     |     |
| 9                |     |     |     |     |     |     |     | x   |     |     |     |     |     |     |     |     |     |     |     |

**\* Courses vs Program ILOs matrix**

| Course title | a 1 | a 2 | a 3 | a 4 | a 5 | a 6 | a 7 | a 8 | b 1 | b 2 | b 3 | b 4 | b 5 | b 6 | b 7 | b 8 | c 1 | c 2 | c 3 | c 4 | c 5 | c 6 | d 1 | d 2 | d 3 | d 4 |   |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 1217401      | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     | x   | x   | x   | x   |   |
| 1217402      |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     | x   | x   | x   | x |
| 1217403      |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     | x   | x   | x   | x |
| 1217404      |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     | x   |     |     |     |     |     | x   | x   | x   | x |
| 1217405      |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     | x   |     |     |     | x   | x   | x   | x |
| 1217406      |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     | x   |     |     | x   | x   | x   | x |
| 1217407      |     |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     | x   |     | x   | x   | x   | x |
| 1217408      |     |     |     |     |     |     |     | x   |     |     |     |     |     |     |     | x   |     |     |     |     |     |     | x   | x   | x   | x   | x |

**\*ARS vs Program ILOs matrix**

| Program/<br>Academic<br>standard | A<br>1 | A<br>2 | A<br>3 | A<br>4 | B<br>1 | B<br>2 | B<br>3 | B<br>4 | B<br>5 | C<br>1 | C<br>2 | D<br>1 | D<br>2 | D<br>3 | D<br>4 | D<br>5 | D<br>6 | D<br>7 | D<br>8 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| A1                               | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A2                               |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A3                               | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A4                               |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A5                               |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A6                               |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A7                               |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| A8                               | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B1                               |        |        |        |        | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B2                               |        |        |        |        |        |        | X      | X      |        |        |        |        |        |        |        |        |        |        |        |
| B3                               |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B4                               |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B5                               |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B6                               |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B7                               |        |        |        |        | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| B8                               |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |
| B9                               |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |        |
| C1                               |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |
| C2                               |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |
| C3                               |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |
| C4                               |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |
| C5                               |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |
| C6                               |        |        |        |        |        |        |        |        |        | X      | X      |        |        |        |        |        | X      |        |        |
| D1                               |        |        |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        | X      |
| D2                               |        |        |        |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |
| D3                               |        |        |        |        |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |
| D4                               |        |        |        |        |        |        |        |        |        |        |        |        |        |        | X      |        |        | X      |        |
| D5                               |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | X      |        |        |        |

*Teaching and learning methods vs. course matrix (Degree: Diploma)*

(Code: 1217400)

| Teaching methods \ Courses | Courses |         |         |         |         |         |         |         |
|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|                            | 1217401 | 1217402 | 1217403 | 1217404 | 1217405 | 1217406 | 1217407 | 1217408 |
| Lecture                    | X       | X       | X       | X       | X       | X       | X       | X       |
| Practical                  | X       | X       | X       | X       | X       | X       | X       | X       |
| Brainstorming              | X       | X       |         | X       |         | X       |         |         |
| Discussion Groups          | X       | X       | X       | X       | X       | X       |         |         |
| Problem Solving            | X       |         | X       | X       | X       |         |         |         |
| Case Study                 |         |         | X       | X       | X       | X       | X       |         |
| Self-Directed Learning     | X       | X       |         | X       |         | X       |         | X       |

*Program aims versus graduate attributes matrix*

| <i>Generic Graduate</i> | <i>Graduate attributes</i> | <i>Program aims</i> |
|-------------------------|----------------------------|---------------------|
|-------------------------|----------------------------|---------------------|

| <b><i>Attributes of NAQAAE</i></b>   | <b><i>By the end of this program, the diploma graduate should be able to</i></b>  |  |
|--|---|--|
| Apply specialized knowledge related to professional skills in the field of specification.                  | Recognize basics of organization governance and management.   | Recall essential knowledge and clinical skills required to manage clinical laboratories.   |
| Identify professional problems in the field of specification and propose solutions to them.                | -Acquire appropriate knowledge in basics of laboratory design, environment and facility management.                             | Explore the basics of laboratory design, facility, financial and workforce management.   |
| Use available resources efficiently.   | -Explore principles of financial utilization, supply chain and work force management.   |  |
| Take professional decisions in case of available information.  |   |  |
| Master professional skills in the field of specification.  | -Distinguish the different accreditation requirements.  | Perform and interpret total quality management concepts and different accreditation requirements, covering total laboratory testing process. |
| Communicate and lead work teams in a systematic, professional manner.                                      | -Practice laboratory testing process performance management and control.  |  |
| Use appropriate technology means in his/her professional practice of the field of specification.           | -Apply laboratory equipment management protocols.<br>-Review recent advances in laboratory information management and e-health. | Distinguish essential basics of laboratory equipment and laboratory information management.  |
| Relate his/her studies to community development and environmental preservation.                            |   |  |
| Act in a manner that reflects a commitment to integrity, credibility, professionalism, and accountability. |   |  |
| Realize the need for self-development and engaging in continuous learning.                                 |   |  |

