كلية الطب
Faculty of Medicine

Medical Doctorate (M.D.) Degree Program and Courses Specifications for Medical Pharmacology (2023)

Pharmacology Department

Faculty of Medicine

Minia University

Contents

Program Specification for Doctorate Degree (MD) in Pharmacology (FA100)

(٢٠٢٣)

A- Basic Information:

1. **Minia University**
2. **Faculty of Medicine**
3. **Medical Pharmacology department**
4. **Program title:** MD in Medical Pharmacology.
5. **Final award:** Doctorate in Medical pharmacology**.**
6. **Program type:** single double multiple
7. **Responsible department:** Medical Pharmacology department.
8. **Departments involved in the programme:** Medical Pharmacology department, Medical Biochemistry department, Medical Physiology department.
9. **Program duration:** 3.5 years
10. **Number of program courses:** 4 courses
    a) **Three compulsatory courses:**
    - Medical Pharmacology.
    - Medical statistics and research methodology.
    - Use of computer in medicine.

    b) **One of the two elective courses:**
    - Medical Physiology
    - Medical Biochemistry

11. **Coordinator: Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber**
12. **External evaluator: Prof. Dr. Ashraf Mohamed Abu Elwafa.**
13. **Program management team:** Ass. Prof. Dr. Seham Abdel-Wakeel, Ass. Prof. Dr. Walaa Yehia, Ass. Prof. Dr. Heba Mostafa

B- Professional Information:

1- Program aims:

The aim of this program is to provide the candidate of MD degree in pharmacology with:

1.1. Recent and advanced Pharmacological knowledge and skills essential to allow the postgraduate student to become self-standing independent researcher in the field of pharmacology.

1.2. Different mechanisms of drug actions and establish advanced scientific knowledge essential for practicing pharmacological research independently.

1.3. Proper knowledge about each prototype drug and drug derivatives for a better understanding of updated practices in drugs and therapeutics research.

1.4. Marinating of learning abilities necessary for continuous medical education.

1.5. Upgrade research interest and abilities necessary for becoming an

independent researcher, deal with scientific research equipment, capable of supervising postgraduate students, and able to publish international researches competently.

2. Intended Learning Outcomes:

2.1. (a) Knowledge and understanding:

By the end of the study of master program in **Pharmacology** the candidate should be able to:

A.1. Discuss the advanced knowledge about the biochemical and physiological activities, their disturbances and how to be corrected.

A.2. Recall and upgrade the general pharmacokinetics as well specific properties of different groups of drugs putting into consideration age, sex and genetic-related variations that affect the response to drugs (pharmacogenetics).

A.3 Discuss the updated knowledge regarding the general pharmacodynamics as well as specific properties of different groups of drugs that include the drug's mechanism of action and pharmacological effects.

A.4 Explain the pharmacotherapeutics which reflects the role of drugs in prevention, diagnosis and treatment of diseases as well as prevention of conception. It includes also pathopharmacology of diseases and drugs, indications, contraindications, adverse reactions and drug interactions especially in high risk groups (extremes of age, pregnancy and lactation, liver kidney and cardiac diseases). Pharmaco-economics is included in this category.

A.5 Define and know in depth the systemic pharmacology which includes drugs acting on different body systems such as cardiovascular, autonomic, respiratory, gastrointestinal, endocrine, blood ,…….

A. 6- Discuss the updated chemotherapeutic drugs which includes anticancer and antimicrobials pharmacology.

A.7 Identify the basic, and ethics of scientific research.

A.8. Define the recent advances in in therapeutics, biostatistics, research methodology related to the field of pharmacology.

A.9. Discuss the recent drugs that manage the environmental induced diseases and the pharmacological treatment of such diseases.

A.10. Define the updated measures of quality assurance and quality improvement in medical education and in practice of the Pharmacology and list their positive effects on the work environment.

A.11. Recall and upgrade the knowledge regarding different metabolic diseases and their alteration by drugs.

A.12 Identify the different hormonal levels to diagnose, treat, follow up the endocrinal diseases

A.13. State the impact of disturbance in normal physiological function and how to be pharmacologically corrected.

A14. Discuss ethical, medico logical principles and bylaws relevant to his practice in the field of Pharmacology.

A.15- Identify the public health and health policy issues relevant to pharmacology and principles and methods of system-based improvement related to his practice in the field of Pharmacology.

A16. Identify the basic information of statistics, and computer sciences and their application in the medical and pharmacological research.

2.2. (b) Intellectual skills

B.1- Interpret the medical problems arising from use of drugs and the development of resistance or tolerance encouraging them to search for alternative approaches after revising the diagnosis and develop the ability to solve it

B.2- Select and use the skills in selecting and using drugs safely and efficiently knowing their limits and the potential risks.

B.3- Interpret an investigatory and analytic thinking "problem-solving" approaches to relevant situations related to Pharmacology.

B.4- Compare between the research projects.

B5. Design different types of study thesis and apply a research plane for detection of new drugs, new chemicals, or new applications of the approved drugs.

B.6- Write a scientific paper.

B.7. Interpret and statistically analyse all types of data related to the medical scientific research.

B.8. Formulate a plane for participation in clinical or laboratory risk management activities as a part of clinical governance.

B.9. Develop different methods for data presentation.

B.10. Design management plans and alternative decisions in different situations in the field of Pharmacology.

B.11.Assess risk in research and experimentation using new drugs and/or chemicals.

B.12. Plan for the development of performance in the field of therapeutics and pharmacological researches.

B.13.Assess different clinical problems and formulate pharmacological researches to solve such problems.

B.14. Analyse different professional problems and combine knowledge foe their solving.

B.15. Combine knowledge and interpret the physiological principle mediate the action of different pharmacological drugs

B.16. Construct an international research papers related to the medical field.

B.17. Construct a scientific discussion with others using evidence-based strategies during teaching, thesis discussion or conferences presentations.

3.2. Skills:

3.2.1 (c) Professional and practical skills

By the end of the study of doctoral program in pharmacology the candidate should be able to:

C.1 Perform advanced skills of research including how to retrieve the literature data and use the different laboratory equipment and their maintenance.

C.2 Perform different method for evaluation of the need of the career to join the major advances in drug information and give suggestions to cover it.

C.3 Design different basic and alternative plans for performing experiments and researches related to pharmacology.

C.4- Write diagnostic and teaching plans for all Pharmacology related conditions/skills.

C.5 Practice different lab skills related to medical pharmacology including including handling of samples, devices, safety, and maintenances of laboratory equipments.

C.6 Use information technology in some of the pharmacology related situations.

C.7. Manipulate informed decisions about diagnostic laboratory tests for Pharmacology related conditions.

C.8. Recall and upgrade the understanding of the normal structure and function to be covered by the pharmacological drugs.

C.9. Evaluate reports for situations related to the field of pharmacology (lab reports, experiments reports,…..).

C.10. Design different organ experiments what ever ivivo or invitro experiments to detect the normal versus abnormal physiological function and its modification by pharmacological agents.

3.2.2. (d) General and transferable skills

D.1.Communicate and cooperate with colleagues and interact with professors.

D.2. Cooperate in performing and upgrading practice-based improvement activities using a systemic methodology (share in audits and risk management activities and use logbooks).

D.3. Apply different and updated learning facilities of students, lab technical staff and other professionals including their evaluation and assessment and improvement.

D4- Adopt different technological methods for collection and verification of data.

D5-Appraise evidence from scientific studies.

D.6- Adopt the information technology (web sites, journals and digital libraries) to remain current with advances in knowledge and practice (self-learning).

D7- Communicate, cooperate effectively with others as a leader or member of a research group and/or a health care team.

D8- Provide information using effective nonverbal, explanatory, questioning, electronic, and writing skills.

D9- Select and use appropriate education methods and materials in the field of Medical Pharmacology.

D10- Apply the ethical principles of scientific research and learn it to other colleagues.

D11- Select and use appropriate method for cost-effective health care practice and updated resource allocation that does not compromise quality of care.

D12- Communicate with others to become a partner with health care managers and health care providers for assessment, coordination, and improving health care to upgrade the different system performance.

D.13. Maintain competences of leading scientific meeting and skills of effective time management.

3- Program Academic Reference Standards

Faculty of Medicine, Minia University adopted the general national academic reference standards provided by the national authority for quality assurance and accreditation of education (NAQAAE) for all postgraduate programs. (Faculty Council Degree No.6854, in its cession No.177 Dated: 18/5/2009). {Annex 1}.

• Faculty of Medicine, Minia University has developed the academic standards (ARS) for Medical Doctorate (MD) program and was approved in faculty Council degree No.7528, in its session No.191, dated: 15-3-2010), last update: 20-2-2023 {Annex I}.
• Then, Pharmacology department has developed the intended learning outcomes (ILOs) for doctorate (MD) program in Pharmacology and the Date of program specifications first approval was by department council: 13-5-2013, last update: 6-3-2023{Annex 2}.

4. Program External References

Faculty of Medicine, Minia University adopted the standards provided by "Accreditation council for graduate Medical Education" (http: acgme.org). (Date and NO. of faculty council approval, 177, 15/3/2010).

5- Program structure and contents:

5.A. Program duration: ≥ 3.5 years

5.B. Program structure

- **First part:**

Compulsatory courses

1- Medical statistics and research methodology

- Lectures:30 hours
- Practical:15 hours
- Total:**45** hours

2- Use of computer in medicine.

- Lectures:20 hours
- Practical:10 hours
- Total:**30** hours

Elective courses Either physiology or biochemistry

1- Physiology

- Lectures:50 hours
- Practical:20 hours
- Total:70 hours

2- Biochemistry

- Lectures:50 hours
- Practical:4 hours
- Total:54 hours

Weight percentage (100%) of first part curriculum

- Medical statistics and research methodology: Percentage 33.3 %
- Use computer in medicine: Percentage 33.3 %
- Physiology **or** Biochemistry: Percentage 33.3 %

- **Second part:**

❖ **Medical Pharmacology teaching hours**

- Lectures:76 hours
- Practical:26 hours
- Total:102 Hours

Weight percentage (100%) of second part curriculum: Percentage 100 %

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Program courses:

Number of courses: 4 (3 compulsory and one of the 2 elective courses).

NB: Course' specifications & Correlations of Program ILOs with courses in Annex III.

Courses

Course Title	Total No. of Hours	No. of hours		Program ILOs Covered
		Lect.	Practical	
FIRST PART (Level of course):				
1. Medical statistics & computer & Research Methodology	45	30	15	A.7, A.8, A15, A16 B3, B4, B5, B6, B7,B12,B16 C1,D3, D5
2. Use of computer in medicine.	30	20	10	A16, B3, B4, B5, B6, B7,B12,B16 C6, D3, D5
3-Physiology Or Biochemistry	70 54	50 50	20 4	A1, A11, A12, A13, B15, C9
Training programs and workshops, field visits, seminars& other scientific activities	Continuous			
SECOND PART (Level of course):				
3- Medical Pharmacology	102	76	26	A1, A2, A3, A4, A5, A6, A9, A1، B1, B2, B3, B5, B10, C1,C2, C3, C4,C5, C6, C7, C8, C10 D1,D2,D3,D4,D5,D6,D7,D8,D9,D10,D11,D12,D13,
Training programs and workshops, field visits, seminars& other scientific activities	Continuous			
THIRD PART (Level of course): Thesis				

6-**Requirements for registration**

1- Electronic enrolment to MD program is permitted twice/ year, in March and September.
2- Master's degree in Pharmacology with at least" Good Rank" from any universities in the Arab Republic of Egypt, or an equivalent degree from another scientific institute recognized by the university.
3- Follows postgraduate regulatory rules of postgraduate studies of Minia faculty of medicine.

4- Fees payment:

- For candidates enrolled in the Ministry of Health or other agencies: 6230 EGP + 150 EGP for stamps and registration form.
- For the assistant lecturers in Minia University: 210 EGP for stamps and registration form.

7- Regulations for progression and program completion:.

Duration of program is ≥3.5 years, starting from registration till acceptance of the thesis; divided to:

First Part: (≥6 months from the date of registration):

- All courses as specified in the internal bylaw.
- A minimum of 6 months following registration before enrollment for the exam.
- The exam is set twice a year in April and in October.
- Student are requested to achieve a minimum score 60% in each curriculum to pass.
- Failed students are permitted to reset the exam in the failed curriculum only.

Second Part: (2 years after passing the 1st part):

- Program related specialized courses.
- A minimum 24 months after passing the first part to permit enrolment to the second part exam.
- Fulfilment of the requirements in each course as described in the template recorded in the logbook is a prerequisite for candidates to be assessed and undertake exams; as following:
  a) Seminars
  b) Workshops
  c) Journal club
  d) Conference attendance

- Two sets of exams: in October and in April.
- Student are requested to achieve a minimum score 60% in the written exam to go for the oral and practical exams.
- Passing the written exam permits successful students to go to the practical and oral.
  Passing the written exam but failing the practical and oral exams permits students to undertake the practical and oral exams only. Failure 4 times, obligate them to retake the written exams.

Requirements for enrolment into 1st and 2nd parts:

- Approval of the candidate's department to enroll the doctoral exam.
- Approval of the other departments in which the exam will be held to enroll the exam.
- Department's logbook that explains the training program, participation in various scientific activities, attending scientific conferences, and discussing university theses.
- In case of work break holidays, a back to work notice should be submitted 3 months before the exam.

Thesis: (2-4 years from the date of enrolment):

- Can start after enrolment and should be completed, defended and accepted after

passing the second part final examination, and after a minimum of 24 months following official registration of the thesis protocol.

- Publication of 2 research papers with at least one published in international journal *(listed in WOS or/and Scopus, cite score ≥ 0. 5, have ISSN)* is required for thesis discussion.
- Thesis discussion is enough to pass this part.

The maximum duration for completion and acceptance of thesis is 4 years. Extension for a maximum of 8 years is allowed under certain condition but subjected to the approvals of the supervisors, the dean and the university president.

8- Teaching and learning methods:

1- 2 hours of lectures per week throughout the course.
2- 2 hours of practical training and demonstration weekly throughout the course.
3- Self training activities such as use of internet and multimedia.
4- Regular weekly seminars, presentations, and assignments.
5- Training courses and workshops.
6- Thesis discussion.
7- Conference attendance

Teaching and learning methods	The assessed ILOs
Lectures	A1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 B 1,2,13.15
Practical sessions	B3,9,14,17 C.1,2,3,5,10
Presentations/seminars	C4, 6,9,10 D3,4,5,8,9
Training courses and work shops	C1,2,3,4,5,6,7,8,9,10 D1,2,3,4,5,6,7,8,9,10,11,12,13

9- Assessment methods and rules:

Method of assessment	The assessed ILOs
1. Written Exams: • Short assay • MCQ • Problem solving	**a.** Knowledge & understanding **b.** Intellectual skills
2. Practical Exams: • Interpret slides	**c.** Professional & practical skills

• OSPE • Detection of unknown drug	
3. Oral Exams	**a.** knowledge & understanding **b.** Intellectual skills **c.** Professional and practical skills **d.** General & transferable skills

10- Weighing of assessments;

It is mandatory to pass all the papers of written exams separately

- Total percentage 100%
- Written exams 100%
- Oral exams 100%
- Practical exams exams 100%.

11- Program Evaluation:

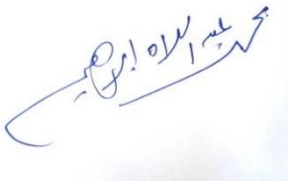
Evaluator (By whom)	**Method/tool**	**Sample**
1. Senior students (Students of last year	Questionnaires	Attached to the file
2. Graduates (Alumni)	Questionnaires	Attached to the file
3. Stakeholders	Meeting Questionnaires	Attached to the file
4. External & Internal evaluators and external examiners	Reports	Attached to the file
5. Quality Assurance Unit	Reports Questionnaires Site visits	Attached to the file

Program coordinator:
Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber

Program management team:
Ass. Prof. Dr. Seham Abdel-Wakeel,
Ass. Prof. Dr. Walaa Yehia
Ass. Prof. Dr. Heba Mostafa

Head of the Pharmacology department:

Prof. Dr. Mohamed Abdellah Ibrahim



Date of 1st approval 13/5/2013.
Date of update **6/ 3/2023**

Annex (1): Comparison between National Academic Quality Assurance & Accreditation (NAQAAE) General Academic Reference Standards (GARS), Faculty Academic Reference Standards (ARS)

٣. المعايير القياسية ا ٤. لعامة: NAQAAE General Academic	2. Faculty Academic Reference Standards (ARS) for MD Program

برامج الد كتوراه NAQAAE	Faculty Doctorate (MD) Program
1. مواصفات الخريج: خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:	1. Graduate attributes: Graduate of doctorate (MD) program in any specialty should be able to:
1.1. إتقان أساسيات ومنهجيات البحث العلمي.	1.1. Mastery of basic research skills and types of study design.
1.2. العمل المستمر علي الإضافة للمعارف في مجال التخصص.	1.2. Contribute to development, application, and translation of new medical knowledge in his scholarly field through research.
1.3. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص والمجالات ذات العلاقة.	1.3. use analytical and critical skills in observing, collecting and interpreting data.
1.4. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا ومطورا للعلاقات البينية بينها.	1.4. Integrate biomedical sciences with clinical information to explore scientific basis of medical practice for improvement of management of diseases.
1.5. إظهار وعيا عميقا بالمشاكل الجارية والنظريات الحديثة في مجال التخصص.	1.5. Demonstrate an awareness of current health problems and recent theories in his scholarly field
1.6. تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها.	1.6. Identify and create solutions for occupational problems and medical malpractice conditions.
1.7. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص	1.7. perform a wide range of professional skills in his scholarly field.

Reference Standards "GARS" for MD Programs	
1.2. المعرفة والفهم: **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:**	**2.1. Knowledge and understanding:** Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:
1.1.2. النظريات والأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة	2.1.1. Theories, basics and updated knowledge in his scholarly field and related basic sciences.
2.1.2. أساسيات ومنهجيات وأخلاقيات البحث العلمي وأدواته المختلفة	2.1.2. Basic, methods and ethics of medical research.
3.1.2. المبادئ الأخلاقية والقانونية للممارسة المهنية في مجال التخصص	2.1. 3. Ethical and medicolegal principles of medical practice.
4.1.2. مبادئ وأساسيات الجودة في الممارسة المهنية في مجال التخصص	2.1. 4. Identify Principles and fundamental of quality in professional medical practice.
5.1.2. المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها	2.1.5. Knowledge related to effects of professional practice on public health and methods of maintenance and system-based improvement of public health.
2.2. المهارات الذهنية: **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**	**2.2. Intellectual skills:** Upon completion of the doctorate program (MD), the graduate must be able to:
1.2.2.تحليل وتقييم المعلومات في مجال التخصص والقياس عليها والاستنباط منها	2.2.1 Analysis and evaluation of information to correlate and deduce from it.
2.2.2. حل المشاكل المتخصصة استنادا على المعطيات المتاحة	2.2.2. Problem solving skills based on analysis of available data for common health problems related to his scholarly field.
3.2.2. إجراء دراسات بحثية تضيف إلى المعارف	2.2.3. Carryout research projects related to his scholarly field.

4.2.2. صياغة أوراق علمية	2.2.4. Write and publish scientific papers.
5.2.2. تقييم المخاطر في الممارسات المهنية	2.2.5. Assess risk in professional medical practice.
6.2.2. التخطيط لتطوير الأداء في مجال التخصص	2.2.6. Establish goals, commitments and strategies for improved productivity and performance.
7.2.2. اتخاذ القرارات المهنية في سياقات مهنية مختلفة	2.2.7. Making professional decisions in different professional contexts.
8.2.2. الابتكار/ الإبداع	2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.
9.2.2. الحوار والنقاش المبني على البراهين والأدلة	2.2.9. Using Evidence-based strategies to during discussion or teaching others.
3.2. مهارات المهنية: **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**	**2.3. Professional skills:** Upon completion of the doctorate program (MD), the graduate must be able to:
١.٣.٢ . إتقان المهارات المهنية الأساسية والحديثة في مجال التخصص	2.3.1. Master the basic as well as modern professional practical and/or clinical skills.
٢.٣.٢ . كتابة وتقييم التقارير المهنية	2.3.2. Write and evaluate professional reports.
٣،٣،٢. تقييم وتطوير الطرق والأدوات القائمة في مجال التخصص	2.3.3. Evaluate and improve the methods and tools in the specific field.
٤،٣،٢. استخدام الوسائل التكنولوجي بما يخدم الممارسة المهنية	2.3.4. use of technological means to serve Professional practice.

٥،٣،٢. التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين.	2.3.5. Planning for the development of professional practice and improve of the performance of others
.4.2. المهارات العامة والمنتقلة: **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**	**2.4. General and transferable skills** Upon completion of the doctorate program (MD), the graduate must be able to:
1.4.2. التواصل الفعال بأنواعه المختلفة	2.4.1. Communicate (in writing and orally) effectively and respectfully with peers, faculty, colleagues, and other members of the health care team, understanding the role of consultations and referrals.
2.4.2. استخدام تكنولوجيا المعلومات ب ما يخدم تطوير الممارسة المهنية	2.4.2. Use of information technology to serve Professional Practice Development.
3.4.2. تعليم الآخرين وتقييم أداءهم	2.4.3. Demonstrate effective teaching and evaluating others.
.4.2.4. التقييم الذاتي والتعلم المستمر.	2.4.4. Self-assessment and continuous learning.
5.4.2. استخدام المصادر المختلفة للحصول على المعلومات والمعارف.	2.4.5. Use physical information resources (print, analog), online (electronic, digital,) text, audio-video, book and journal to address medical questions and knowledge to sustain professional growth.
6.4.2. العمل في فريق وقيادة فرق العمل	2.4.6. Work as a member in larger teams and as well as a team leader knows how to develop "teaming strategy" to plan how people will act and work together.
7.4.2 إدارة اللقاءات العلمية والقدرة علي إدارة الوقت	2.4.7. Manage of scientific meetings and the ability to manage Time effectively.

Annex II: Comparison between Faculty Academic Reference Standards (ARS) and MD program for Pharmacology ILOs

2. Faculty Academic Reference Standards (ARS) for MD Program	2- Pharmacological department Standards for doctorate (MD) Program
2.1. Knowledge and understanding: Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:	**2.1. Knowledge and understanding:** Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:
2.1.1. Theories, basics and updated knowledge in his scholarly field and related basic sciences.	A.1. Discuss the advanced knowledge about the biochemical and physiological activities, their disturbances and how to be corrected. A.2. Recall and upgrade the general pharmacokinetics as well specific properties of different groups of drugs putting into consideration age, sex and genetic-related variations that affect the response to drugs (pharmacogenetics). A.3 Discuss the updated knowledge regarding the general pharmacodynamics as well as specific properties of different groups of drugs that include the drug's mechanism of action and pharmacological effects. A.4 Explain the pharmacotherapeutics which reflects the role of drugs in prevention, diagnosis and treatment of diseases as well as prevention of conception. It includes also pathopharmacology of diseases and drugs, indications, contraindications, adverse reactions and drug interactions especially in high risk groups (extremes of age, pregnancy and lactation, liver kidney and cardiac diseases). Pharmaco-economics is included in this category. A.5 Define and know in depth the systemic pharmacology which includes drugs acting on different body systems such as cardiovascular, autonomic, respiratory, gastrointestinal, endocrine, blood ,…….

	A. 6- Discuss the updated chemotherapeutic drugs which includes anticancer and antimicrobials pharmacology. A.7 Identify the basic, and ethics of scientific research. A.8. Define the recent advances in in therapeutics, biostatistics, research methodology related to the field of pharmacology. A.11. Recall and upgrade the knowledge regarding different metabolic diseases and their alteration by drugs. A.12 Identify the different hormonal levels to diagnose, treat, follow up the endocrinal diseases A.13. State the impact of disturbance in normal physiological function and how to be pharmacologically corrected. A14. Discuss ethical, medico logical principles and bylaws relevant to his practice in the field of Pharmacology. A.15- Identify the public health and health policy issues relevant to pharmacology and principles and methods of system-based improvement related to his practice in the field of Pharmacology. A16. Identify the basic information of statistics, and computer sciences and their application in the medical and pharmacological research.
2.1.2. Basic, methods and ethics of medical research.	A.7 Identify the basic, and ethics of scientific research. A.8. Define the recent advances in in therapeutics, biostatistics, research methodology related to the field of pharmacology.
2.1.3. Ethical and medicolegal principles of medical practice.	A14. Discuss ethical, medico logical principles and bylaws relevant to his practice in the field of Pharmacology.
2.1. 4. Identify Principles and fundamental of quality in professional medical practice.	A.10. Define the updated measures of quality assurance and quality improvement in medical education and in practice of the Pharmacology and list their positive effects on the work environment.

2.1.5. Knowledge related to effects of professional practice on public health and methods of maintenance and system-based improvement of public health.	A.15- Identify the public health and health policy issues relevant to pharmacology and principles and methods of system-based improvement related to his practice in the field of Pharmacology.
2.2. Intellectual skills: Upon completion of the doctorate program (MD), the graduate must be able to:	**2.2. Intellectual skills:** Upon completion of the doctorate program (MD) of pharmacology, the graduate must be able to:
2.2.1 Analysis and evaluation of information to correlate and deduce from it.	B.7. Interpret and statistically analyse all types of data related to the medical scientific research.
2.2.2. Problem solving skills based on analysis of available data for common health problems related to his scholarly field.	B.1- Interpret the medical problems arising from use of drugs and the development of resistance or tolerance encouraging them to search for alternative approaches after revising the diagnosis and develop the ability to solve it B.3- Interpret an investigatory and analytic thinking "problem-solving" approaches to relevant situations related to Pharmacology. B.13.Assess different clinical problems and formulate pharmacological researches to solve such problems. B.14. Analyse different professional problems and combine knowledge foe their solving.
2.2.3. Carryout research projects related to his scholarly field.	B5. Design different types of study thesis and apply a research plane for detection of new drugs, new chemicals, or new applications of the approved drugs.
2.2.4. Write and publish scientific papers.	B.6- Define and write a scientific paper. B.16. Construct an international research papers related to the medical field.

2.2.5. Assess risk in professional medical practice.	B.11.Assess risk in research and experimentation using new drugs and/or chemicals.
2.2.6. Establish goals, commitments and strategies for improved productivity and performance.	B.12. Plan for the development of performance in the field of erapeutics and pharmacological researches.
2.2.7. Making professional decisions in different professional contexts.	B.10. Design management plans and alternative decisions in different situations in the field of Pharmacology.
2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.	B.4- Compare between the research projects. B.12. Plan for the development of performance in the field of therapeutics and pharmacological researches.
2.2.9. Using Evidence-based strategies to during discussion or teaching others.	B.17. Construct a scientific discussion with others using evidence-based strategies during teaching, thesis discussion or conferences presentations.
4.3. Professional skills: Upon completion of the doctorate program (MD), the graduate must be able to:	**2.3. Professional skills:** Upon completion of the pharmacology doctorate program (MD), the graduate must be able to:
2.3.1. Master the basic as well as modern professional practical and/or clinical skills.	C.1 Perform advanced skills of research including how to retrieve the literature data and use the different laboratory equipment and their maintenance. C.7. Use information technology in some of the pharmacology related situations.

2.3.2. Write and evaluate professional reports.	C.10. Evaluate reports for situations related to the field of pharmacology (lab reports, experiments reports,…..).
2.3.3. Evaluate and improve the methods and tools in the specific field.	C.2 Perform different method for evaluation of the need of the career to join the major advances in drug information and give suggestions to cover it. C.3 Design different basic and alternative plans for performing experiments and researches related to pharmacology. C.7. Manipulate informed decisions about diagnostic laboratory tests for Pharmacology related conditions.
2.3.4. Use of technological means to serve Professional practice.	C.6. Use information technology in some of the pharmacology related situations.
2.3.5. Planning for the development of professional practice and improve of the performance of others	C.3 Design different basic and alternative plans for performing experiments and researches related to pharmacology.
2.4. General and transferable skills Upon completion of the doctorate program (MD), the graduate must be able to:	**2.4. General and transferable skills** Upon completion of the Pharmacology doctorate program (MD), the graduate must be able to:
2.4.1. Communicate (in writing and orally) effectively and respectfully with peers, faculty, colleagues, and other members of the health care team, understanding the role of consultations and referrals.	D.1.Communicate and cooperate with colleagues and interact with professors. D.13. Maintain competences of leading scientific meeting and skills of effective time management.
2.4.2. Use of information technology to serve	D.6- Adopt the information technology (web sites, journals and digital libraries) to remain current with advances in knowledge and practice (self-learning).

Professional Practice Development.	D8- Provide information using effective nonverbal, explanatory, questioning, electronic, and writing skills.
2.4.3. Demonstrate effective teaching and evaluating others.	D.3. Apply different and updated learning facilities of students, lab technical staff and other professionals including their evaluation and assessment and improvement. D9- Select and use appropriate education methods and materials in the field of Medical Pharmacology.
2.4.4. Self-assessment and continuous learning.	D.6- Adopt the information technology (web sites, journals and digital libraries) to remain current with advances in knowledge and practice (self-learning).
2.4.5. Use physical information resources (print, analog), online (electronic, digital,) text, audio-video, book and journal to address medical questions and knowledge to sustain professional growth.	D4- Adopt different technological methods for collection and verification of data. D.6- Adopt the information technology (web sites, journals and digital libraries) to remain current with advances in knowledge and practice (self-learning). D9- Select and use appropriate education methods and materials in the field of Medical Pharmacology.
2.4.6. Work as a member in larger teams and as well as a team leader knows how to develop "teaming strategy" to plan how people will act and work together.	D7- Communicate, cooperate effectively with others as a leader or member of a research group and/or a health care team.
2.4.7. Manage of scientific meetings and the ability to manage Time effectively.	D.13. Maintain competences of leading scientific meeting and skills of effective time management.

Annex III: Matrices

جامعة/أكاديمية : المنيا

كلية / معهد: الطب

قسم: الفارماكولوجي

مسمى البرنامج	Pharmacology
كود البرنامج	FA100

1. Matrix of Coverage of MD program's ILOs by courses.

Courses (List of courses in 1st and 2nd parts)	Program Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Medical statistics and research methodology	A.7, A.8, A15, A16	B3, B4, B5, B6, B7,B12,B16	C1	D4, D6
Use computer in medicine	A16,	B3, B4, B5, B6, B7,B12,B16	C6,	D4, D6

Physiology Or Biochemistry	A1, A11, A12, A13	B15	C9	
Pharmacology	A1, A2, A3, A4, A5, A6, A9, A11, A13,14	B1, B2, B3, B5, B10,	C1,C2, C3, C4,C5, C6, C8, C10	D1,D2,D3,D4,D5,D6, D7,D8,D9,D10,D11, D12,D13
Thesis	A1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16	B1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15,16,17	C1,2,3,4,5,6	D1,4,5, 6,8,13

2- Matrix of Coverage of MD program's ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
	A	**B**	**C**	**D**
Lecture	A1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16	B1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15,16,17		
Practical • **Laboratory work** • **Observation of different slide** • **Computer programs and image analysis**			C1,2,3,4,5,6,7,8,9, 10	
Seminars	**A3,4,5,7,12**	B1,2,3,4,5,6,7,8	C3, 4	
Training courses & workshops	A8	B 1,2,3,4,5,6,7,8,9,10, 11,12,13,14	c1, c2, c3, c4, c5, c6 ,c7c8	d 1,2,3,4,5,6,7,8,9,10, 11,12,13

1. Matrix of Coverage of MD program's ILOs by Methods of Assessment

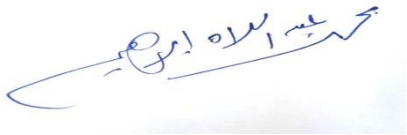
Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
	A	**B**	**C**	**D**
Written exam	A1,A2,A3,A4,A5,A6, A8,A9,A11,A12,A13,A14,A15,A16	B1, B2, B3, B15,B15		
Practical exam			C1,C3, C11	
Oral Exam	A1,A2,A3,A4,A5,A6 ,A8,A9,A11,A12,A13, A15	B1, B2, B3,B9,B14, B17	C9	D1, D5, D6, D11,D12

Course Coordinator:
Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber

Course management team:
Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber
Ass. Prof. Dr. Walaa Yehia
Ass. Prof. Dr. Heba Mostafa

Head of Department:

Professor Dr. Mohamed Abdellah Ibrahim



Annex IV: courses

Course specification of :

"Use of Computer in Medicine"

in MD degree

University: Minia

Faculty: Medicine

Department offering the course: Public health and preventive medicine department

Department offering the programme: All Clinical and Academic Postgraduate MD Students

Programme(s) on which the course is given: First part MD for all postgraduates

Academic year/ Level: First part of MD

1. Course Information		
Academic Year/level: **First part MD**	**Course Title:** **Use of Computer in Medicine**	Code:
• *Number of teaching hours:* - *Lectures:* ***20 hours*** - *Practical/clinical:* ***10 hours*** - *Total:* ***30 hours***		
2. Overall Aims of the course	***By the end of the course the student must be able to:*** 1. Recognize knowledge about the software and their applications in Medicine 2. Gain skills necessary for using and managing heath care information systems	
3. Intended learning outcomes of course (ILOs): ***Upon completion of the course, the student should be able to:***		

A. Knowledge and understanding	A.1. Define each part of computer hardware and its function A.2. Have a basic understanding of various computer applications in medicine - for instruction, information managing, and computer based medical record, etc. A.3. Define telemedicine and its importance A.4. Recognize importance of health information technology in improvement of healthcare A.5. Describe electronic medical records and obstacles facing it A.6. Identify the concept of big data analysis
B. Intellectual Skills	B.1. Criticize adoption of telemedicine B.2. Discover factors constraining adoption of telemedicine
C. Professional and Practical Skills	C.1. Design framework for understanding of health information system performance
D. General and transferable Skills	D.1. Utilize computers in conducting research D.2. Appraise adoption of telemedicine D.3. Discover skills to carry out the process of improving health information system performance

4. Course Contents

Topic	**No. of hours**	**Lecture**	**Tutorial/ Practical**
Use of Computer in Medicine			
General concepts Introduction to Microsoft PowerPoint	6	4	2
Health Information Systems (HIS)	6	4	2
Telemedicine	6	4	2
Software Used in the Health Care	6	4	2
Big Data Analysis in Health	6	4	2
Total	**30**	**20**	**10**

5. Teaching and Learning Methods	**Since COVID-19 pandemic, blended learning approach was adopted that mixes virtual face-to-face interaction activities with the online**

	learning. 60% of study method is offline and 40% of study is online **Online learning materials are available at Minia University site** ▪ Lectures: Face to face lectures, Pre-recorded video lectures ▪ Practical lessons ▪ Assignment ▪ Online quizzes
6. Teaching and Learning Methods for students with limited Capacity	• Outstanding student rewarded certificate of appreciation due to high level of achievement • Limited students divided into small group to make learning more effective
7. Student Assessment	
A. Student Assessment Methods	7.1- **Research assignment:** to assess general transferable skills, intellectual skills. 7.2- **Written exams:** • Short essay: to assess knowledge. • Commentary: to assess intellectual skills. 7.3- **Practical Exams:** to assess practical skills, intellectual skills. 7.4- **Oral Exams:** Oral exams to assess knowledge and understanding, attitude, communication 7.5- **Structured oral exams:** to assess knowledge.
B. Assessment Schedule (Timing of Each Method of Assessment)	Assessment 1: Final written exam week: 24-28 Assessment 2: Oral exam week: 24-28 Assessment 3: Practical exam week: 24-28
C. Weighting of Each Method of Assessment	Final Written Examination 100% Oral Examination 100% Practical Examination 100% Total 100%
8. List of References	
A. Course Notes/handouts	Department notes, lectures and handouts

B. Essential Books	Essential Medical Statistics, Betty R. Kirkwood and J. A. Sterne (2000), 2nd edition
C. Recommended Textbooks	Data Management and Analytics for Medicine and Healthcare: Begoli, Edmon, Fusheng Wang, and Gang Luo. Springer, 2017.
D. Periodicals, websites	- National Institutes of Health: http://www.nih.gov - American Medical Informatics Association: http://www.amia.org/

- **Course Coordinators:**

  ➢ **Coordinators:**

  1) **Lecturers:** Dr / Shaimma Mahmoud, Dr/ Chrestina Monir

  ٢)**Assistant coordinator: Assistant lecture Shaza Fadel**

- **Head of Department**:

  Professor Dr. Nashwa Nabil Kamal

Date of program specifications 1st approval by department council: 13 /5/2013.

Date of last update & approval by department council: 6/ 3 / 2023

نموذج رقم (١١)

أكاديمية :المنيا/جامعة

/معهد : الطب

الوقائي قسم: الصحة العامة والطب

Use of Computer in Medicine	**مسمى المقرر**
CM 100	**كود المقرر**

Matrix of Coverage of Course ILOs By Contents

Contents (List of course topics)	**Week No.**	**Intended Learning Outcomes (ILOs)**			
		A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
		A	**B**	**C**	**D**
Use of Computer in Medicine					
General concepts		A.1, A.2,			D.1

Introduction to Microsoft PowerPoint					
Health Information Systems (HIS)		A.4, A.5		C1	D.3
Telemedicine		A.3	B.1, .2		D.2
Software Used in the Health Care		A.5, A.6			D.1
Big Data Analysis in Health		A.6			

Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	**Intended Learning Outcomes (ILOs)**			
	A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
	A	**B**	**C**	**D**
Lecture	A.1 to A.6	B.1,		
Practical			C1	
Assignment	A.4	B.2		D1.D.2,D3

Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written paper based exam	A.1, to A.6	B.1		
Practical computer exam (For SPSS, PowerPoint)			C1	D.1
Oral Exam	A.4, A..6	B.2	C.1	D.2, D.3

Course Coordinators:

➢ **Coordinators:**

2) **Lecturers:** Dr / Shaimma Mahmoud, Dr/ Chrestina Monir

٢)Assistant coordinator: Assistant lecture Shaza Fadel

- **Head of Department**:

Professor Dr. Nashwa Nabil Kamal

Date of program specifications 1st approval by department council: 13 /5/2013.

Date of last update & approval by department council: 6/ 3 / 2023

Test blueprint for Uses of computer in Medicine course

Topic	Hour	% of topic	Total No. of items	Written exam (100 marks)		Marks (Percentages)	Modified marks (Percentages)
				Knowledge	Intellectual		
Use of Computer in Medicine							
General concepts Introduction to Microsoft PowerPoint	4	20%	6	4	2	30%	30%
Health Information Systems (HIS)	4	20%	4	4		20%	15%
Telemedicine	4	20%	6	2	4	25%	30%
Software Used in the Health Care	4	20%	5	4	1	20%	15%
Big Data Analysis in Health	4	20%	1	1		5%	10%
Total	20	100%	20			100%	100%

Course specification of:

"Medical Statistics and Research Methodology"

In MD degree

University: Minia

Faculty: Medicine

Department offering the course: Public health and preventive medicine department

Department offering the programme: All Clinical and Academic Postgraduate MD Students

Programme(s) on which the course is given: First part MD for all postgraduates

Academic year/ Level: First part of MD

1. Course Information		
Academic Year/level: **First part MD**	Course Title: **Medical Statistics and Research Methodology**	Code:
Number of teaching hours: *- Lectures:* ***30 hours*** *- Practical/clinical:* ***15 hours*** *- Total:* ***45 hours***		
2. Overall Aims of the course	***By the end of the course the student must be able to:*** 1. Gain skills necessary for proper practice in the field of Research Methods including diagnostic, problem solving and decision making skills. 2. Apply ethical principles of scientific research with good awareness about patient´s rights. 3. Use precisely the research methodology in researches 4. Influence the students to adopt an analytical thinking	

	for evidence-based medicine 5. Enable graduate students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data 6. To use precisely computer programs SPSS, Epi Info and Excel in data analysis
3. Intended learning outcomes of course (ILOs): ***Upon completion of the course, the student should be able to:***	
A. Knowledge and understanding	A.1. Define terms of research methodology . A.2. Describe the spectrum of research methodology . A.3. Explain tie strategies and design of research . A.4. Describe the study design, uses, and limitations . A.5. Explain evidence-based Medicine A.6. Define causation and association . A.7. Tell the principles and fundamentals of ethics. A.8. Describe the different sampling strategies A.9. Summarize the advantages and disadvantages of different sampling strategies A.10. Summarize different methods of samples size calculation A.11. Recognize the sources and the recent methods in data collection and analysis. A.12. Identify the types of variables A.13. Identify types of tabular and graphic presentation of data A.14. Describe the normal curves and its uses A.15. Identify the characters of normal distribution curve A.16. Identify measures of central tendency and measures of dispersion A.17. Explain regression analysis, its use and differentiate its types A.18. Define the screening tests pertinent to selected diseases and the at-risk approach in the application of screening tests A.19. Explain the usefulness of screening tests

B. Intellectual Skills	B.l. Apply research methods to different community health problems. B.2. Apply appropriate research strategies for use . B.3. Select appropriate research methods . B.4. Teach and advocate appropriately in the research design. B.5. Describe the normal curves B.6. Describe and summarize data B.7. Select the proper test of significance for a specific data. B.8. Interpret selected tests of significance and the inferences obtained from such tests
C. Professional and Practical Skills	C.1. Plan a research proposal for community diagnosis. C.2. Design questionnaires. C.3. Conduct research. C.4. Judge association and causation. C.5. Criticize for bias and confounding factors C.6. Design data entry file C.7. Validate data entry C.8. Manage data files C.9. Construct tables and graphs C.10. Calculate different samples sizes C.11. Calculate measures of central tendency and measures of dispersion C.12. Calculate sensitivity, specificity, and predictive values
D. General and transferable Skills	D.l. Lead a research team to conduct a specific study . D.2. Take part and work coherently with his associates to in research. D.3. Write scientific papers. D.4. Appraise scientific evidence D.5. Analyze and interpret data D.6. Use standard computer programs for statistical analysis effectively

4. Course Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Research methods			

Introduction : - Introduction to research. - Terminology and Rationale - Originality		3	
- Study design : -Cross sectional study and the prevalence rate -Cohort study, incidence rate, relative & attributable risk -Case-control study, Odd's ratio sampling -Experimental study and clinical trials		4	
- Sources of Errors in Medical Research **- Bias and confounding and its Control.**		3	
- Validity and reliability		2	
- The questionnaire design		2	
- Writing the Research Paper or Manuscript **- Protocol Writing**		2	2
- Critic technique for the literature review		2	2
- Association and causation		1	
- Evidence -based approach in medical practice		2	1
- Ethics of medical research		2	
Statistics			
Sampling		1	
Introduction to Sample Size Calculation		1	1
Data presentation		1	1
Tests of significance		2	
Introduction to SPSS		1	1
Proportion test			1
Chi-square test			1
Student T test, Paired T test			1
ANOVA test			1
Correlation (simple and multiple)			1
Regression			1
Screening		1	1
Total		**30**	**15**

5. Teaching and Learning Methods

Since COVID-19 pandemic, blended learning approach was adopted that mixes virtual face-to-face interaction activities with the online learning. 60% of study method is offline and 40% of study is online

Online learning materials are available at Minia University site

- Lectures: Face to face lectures, Pre-recorded video lectures
- Practical lessons
- Assignment
- Online quizzes

6. Teaching and Learning Methods for students with limited Capacity	• Outstanding student rewarded certificate of appreciation due to high level of achievement • Limited students divided into small group to make learning more effective
7. Student Assessment	
D. Student Assessment Methods	7.1- **Research assignment:** to assess general transferable skills, intellectual skills. 7.2- **Written exams:** • Short essay: to assess knowledge. • Commentary: to assess intellectual skills. 7.3- **Practical Exams:** to assess practical skills, intellectual skills. 7.4- **Oral Exams:** Oral exams to assess knowledge and understanding, attitude, communication 7.5- **Structured oral exams:** to assess knowledge.
E. Assessment Schedule (Timing of Each Method of Assessment)	Assessment 1: Final written exam week: 24-28 Assessment 2: Oral exam week: 24-28 Assessment 3: Practical exam week: 24-28
F. Weighting of Each Method of Assessment	- Final Written Examination 100% - Oral Examination 100% - Practical Examination 100% - Total 100%
8- List of References	
A. Course Notes/handouts	- Department notes, lectures and handouts
B. Essential Books	- The Lancet Handbook of Essential Concepts in Clinical Research
C. Recommended Textbooks	***Research methods:***

	- **Introducing Research Methodology**; A Beginner's Guide to Doing a Research Project - **Understanding Clinical Research**, Renato Lopes and Robert Harrington; ISBN-10: 0071746781 | ISBN-13: 978-0071746786 - **Users' guides to the medical literature: a manual for evidence-based clinical practice:** Guyatt, G., D. Rennie, M. Meade and D. Cook (2002), AMA press Chicago. - **Research Methods in Community Medicine:** Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials, 6th Edition Joseph Abramson, Z. H. Abramson ***Computer:*** - Discovering statistics using IBM SPSS statistics, Field, A. (2013). sage. - Medical Statistics: A Guide to SPSS, Data Analysis and Critical Appraisal, Belinda Barton, Jennifer Peat - 2nd EditionEveritt, Brian S. - Medical statistics from A to Z: a guide for clinicians and medical students. Cambridge University Press, 2021. - Bowers, David. Medical statistics from scratch: an introduction for health professionals. John Wiley & Sons, 2019. - Aviva, P. (2005): Medical Statistics at a Glance, Blackwell Company, 2nd , ed., Philadelphia
D. Periodicals, websites	- https://phrp.nihtraining.com/users/login.php - http://www.jhsph.edu/ - Journal of Biomedical Education

	- https://lagunita.stanford.edu/courses/Medicine/MedStats-SP/SelfPaced/about?fbclid=IwAR3nfirLM4wnuEqqUjLjk8TCR7lzPdnpGqwin06L-GjFq32a62w3j6R5s9c

- **Course Coordinators:**

  ➢ **Coordinators:**

  Lecturers: Dr / Chrestina Monir, Dr Shaimma Mahmoud

  Assistant Coordinator: Assis .lecturer Shaza Fadel

  Head of Department:

  Professor Dr. Nashwa Nabil Kamal

Date of program specifications 1st approval by department council: 13 /5/2013.

Date of last update & approval by department council: 6 / 3 / 2023

نموذج رقم (١١)

جامعة/أكاديمية : المنيا

كلية / معهد: الطب

قسم: الصحة العامة والطب الوقائي

Medical Statistics and Research Methodology	**مسمى المقرر**
CM 100	**كود المقرر**

Matrix of Coverage of Course ILOs By Contents

Contents **(List of course topics)**	**Week No.**	**Intended Learning Outcomes (ILOs)**			
		A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
		A	**B**	**C**	**D**
Introduction : - Introduction to research. - Terminology and Rationale - Originality		A.1, A.2,			
- Study design : -Cross sectional study and the prevalence rate -Cohort study, incidence rate, relative & attributable risk -Case-control study, Odd's ratio sampling -Experimental study and clinical trials		A.3, A.4,	B.l, B.2, B.3, B.4,	C.1,	
- Sources of Errors in Medical Research **- Bias and confounding and its Control.**			B.3,	C.5	
- Validity and reliability					
- The questionnaire design				C.2,	
- Writing the Research Paper or Manuscript **- Protocol Writing**			B.3,	C.3,	D.1, D.2, D.3
- Critic technique for the literature review					
- Association and causation		A.6,		C.4,	

- Evidence -based approach in medical practice		A.5,			
- Ethics of medical research		A.7			
Statistics					
Sampling		A.8, A.9, A.11			D.4
Introduction to Sample Size Calculation		A.10		C.10	D.4
Data presentation		A.13, A.14	B.6	C.9	D.4
Tests of significance		A.15, A16	B.5	C.11	D.4
Introduction to SPSS		A.12	B.6	C.6, C7, C8	D.5, D.6
Proportion test		A.11	B.7, B8		D.5, D.6
Chi-square test		A.11	B.7, B8		D.5, D.6
Student T test, Paired T test		A.11	B.7, B8		D.5, D.6
ANOVA test		A.11	B.7, B8		D.5, D.6
Correlation (simple and multiple)		A.11	B.7, B8		D.5, D.6
Regression		A.17	B.7, B8		D.5, D.6
Screening		A.18, A.19	B.7, B8	C.12	D.4

Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
	A	**B**	**C**	**D**
Lecture	A.1, A.2, A.3, A.4, A.5, A.6, A.7 , A.8,A9,A10,A11,A12,A13 A.14, A.15, A.16,A17, A.18	B.1, B.2, B.3, B.4, B5,B.6, B.7, B.8		
Practical			C1, C.3, C4, C.5, C.6, C.7, C.8. C.9, C.10, C11,C.12	
Assignment	A.11, A.13, A.18	B.7, B.8	C.2, C.6, C.8, C.9, C.10, C.12	D.1, D.2., D.4, D.5, D.6

Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written paper based exam	A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.14, A.15, A16, A18	B.3, B.5,		
Practical exam (Statistical exam)			C.1, C.2, C.5, C.6, C.7,C.8, C.9, C.10, C.11, C.12	
Oral exam	A.10, A11, A.12, A13, A.15, A.16, A.17, A18	B.1, B.2, B.6, B.7, B.8		D.1, D.2, D.5, D.6

- **Course Coordinators:**

➢ **Coordinators:**

Lecturers: Dr / Chrestina Monir, Dr Shaimma Mahmoud

Assistant Coordinator: Assis .lecturer Shaza Fadel

Head of Department:

Professor Dr. Nashwa Nabil Kamal

Date of program specifications 1st approval by department council: 13 /5/2013

Date of last update & approval by department council: 6 / 3 / 2023

Test blueprint for Research methodology course

Topic	Hour	% of topic	Total No. of items	Written exam (100 marks)		Marks (percentages)	Modified marks (Percentages)
				Knowledge	Intellectual		
Research							
Introduction: - Introduction to research. - Terminology and Rationale - Originality	3	10%	5	4	1	7%	5%
- Study design	4	13.3%	8	3	5	17%	17%
- Sources of Errors in Medical Research - Bias and confounding and its Control.	3	10%	4	2	2	13%	10%
- Validity and reliability	2	6.67%	3	2	1	7%	5%
- The questionnaire design	2	6.67%	3	1	2	5%	5%
- Writing the Research Paper or Manuscript - Protocol Writing	2	6.67%	4	1	3	13%	10%
- Critic technique for the literature review	2	6.67%	2	1	1	7%	5%
- Association and causation	1	3.33%	3	2	1	7%	8%
- Evidence -based approach in medical practice	2	6.67%	1	1		3%	5%

- Ethics of medical research	2	6.67%	2	2		3%	6%
Statistics							
Sampling	1	3.33%	2	1	1	4%	4%
Introduction to Sample Size Calculation	1	3.33%	1	1		2%	2%
Data presentation	1	3.33%	3	2	1	5%	4%
Tests of significance	2	6.67%	2	1	1	8%	8%
Introduction to SPSS	1	3.33%	1	1		3%	3%
Screening	1	3.33%	2	1	1	3%	3%
Total	**30**	**100%**					**100%**

Course Specifications of Medical Physiology

1st Part of MD Program of Medical Pharmacology

University: Minia

Faculty: Medicine

Department: Medical Physiology

1. **Course Information**		
• **Academic Year/level:** 1st part of MD in Medical Pharmacology	• **Course Title:** Basic Science Medical Physiology	• **Code:**
• **Number of teaching hours:** Lectures: 50 hours; 2 hours/week for 25 weeks Practical: 20 hours; 2 hours/week for 10 weeks		
2. **Overall Aims of the course**	*By the end of the course the student must be able to:* 1. Acquire satisfactory knowledge of the cellular basis of Medical Physiology, function of organ systems of the body and the control systems of the human body and various body functions in health and disease. 2. Acquire knowledge concerning the physiological mechanism of action of the pharmacological drugs. 3. Develop satisfactory skills in techniques used for experimental physiology on isolated organs, tissues and whole animals.	

3. Intended learning outcomes of course (ILOs): ***Upon completion of the course, the student should be able to:***	
A. Knowledge and Understanding	A.1. Mention the principles of: 1- Cellular and Basic Physiology 2- Excitable tissues (nerve & muscle) and physiology of ANS 3- Neurophysiology (sensory, motor & intellectual divisions of CNS -EEG & Sleep -Aqueous humor, glaucoma, near reflex, miosis & mydriasis) 4- Circulatory system (physiology of CVS & blood) 5- Gastrointestinal physiology (GI motility & secretions) 6- Respiration (Pulmonary functions - Gas transport between lungs and the tissues - Regulation of respiration). 7- Renal system (Mechanism of urine formation & concentration - Regulation of electrolyte balance, ECF volume and acid-base balance - Endocrine functions of kidney - Renal function tests – Micturition & diuretics). 8- Endocrine system and Reproduction (Mechanism of hormonal action – Pituitary, thyroid & adrenal glands - Calcium & glucose homeostasis - Sex hormones & Female reproductive cycles) A2 Discuss general metabolism and regulation of body temperature. A.3. State update and evidence base Knowledge related to the Cellular and Basic Physiology. A.4. State the impact of common problems related to Medical Physiology on the society and how good practice can improve these problems.
B. Intellectual Skills	B.1. Correlate the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to Medical Physiology B.2. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to Medical Physiology. B.3. Design and present audits, cases, seminars in common problems related to Medical Physiology. B.4. Formulate management plans and alternative decisions in different situations in the field of Medical Physiology.
C. Professional and Practical Skills	C.1. Perform, interpret & use the instruments essential in evaluation of the following basic lab skills essential to the course:

	•Isolated skeletal muscle and perfuse heart (rabbit & frog) experiments. •Recording normal arterial blood pressure, heart rates & ECG in human and experiment animals. •Effect of Autonomic drugs on intact frog heart. •Assessment of kidney functions as GFR, RBF and kidney tubular functions. •Spirometry. •Assessment of hemoglobin contents, bleeding time, prothrombin time, ESR, blood groups, blood hemolysis and blood. •Indirect method for measurement of metabolic rate and measurement of body temperature. C.2. Write and evaluate of the following reports: •Applied electrophysiology, passage of ions though cell membranes. C.3. Perform the following basic experiments in relating to basic sciences to be utilized in the research work: Cannulation-ECG recording-Cardiac perfusion.
D. General and transferableSkills	D.1. Perform practice-based improvement activities using a systematic methodology (audit, logbook) D.2. Appraises evidence from scientific studies. D.3. Participate in one audit or survey related to the course. D.4. Perform data management including data entry and analysis. D.5. Facilitate learning of junior students and other health care professionals. D.6. Maintain ethically sound relationship with others. D.7. Elicit information using effective nonverbal, explanatory, questioning, and writing skills. D.8. Provide information using effective nonverbal, explanatory, questioning, and writing skills. D.9. Work effectively with others as a member of a health care team or other professional group. D.10. Present a case. D.11. Write a report. D.12. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society. D.13. Demonstrate a commitment to ethical principles

	including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices. D.14. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities. D.15. Work effectively in relevant health care delivery setting and systems. D.16. Practice cost-effective health care and resource allocation that does not compromise quality of care. D.17. Assist patients in dealing with system complexities.

4. **Course Contents**

Topic	Lecture hours	Practical/Clinical Hours	Total No. of hours hours
ADVANCED MEDICAL PHYSIOLOGY			
1- General & cellular basis of physiology	2	2	4
2- Nerve and muscle.	3	2	5
3- Autonomic nervous system.	4	-	4
4- Central nervous system.	10	2	12
5- Special senses.	1	-	1
6- Cardiovascular system.	10	4	14
7- Blood.	4	2	6
8- Gastrointestinal system.	3	-	3
9- Respiration.	1	2	3
10- Kidney.	3	2	5
11- Endocrine and reproduction.	8	2	10
12- General metabolism and regulation of body temperature.	1	2	3
Total hours	50	20	70

5. Teaching and Learning methods:	5.1. Lectures, Presentations, Seminars. 5.2. Laboratory training.

	5.3. Oral communication & observation Senior staff experience. 5.4. Observation & supervision Seminars, Lectures, Hand on workshops.
6. Teaching and Learning Methods for students withlimited Capacity:	- Extra didactic (lectures, seminars, tutorial) - Extra laboratory work.
7. Student Assessment	
A. Student Assessment Methods	- Log book - Written exam - Practical exam - Oral exam
B. Assessment Schedule (Timing of Each Method ofAssessment)	- Log book: before the written exam - Written exam: at the end of the course - Practical exam: at the end of the course - Oral exam: after the written exam
C. Weighting of Each Method of Assessment	- Log book: required for the entry of written exam - Written exam: 100 % - Practical exam: 100 % - Oral exam: 100 %
8. List of References	
A. Course Notes/handouts	- Lecture notes (Medical physiology books) by Staff Members of the Department of Medical physiology, Minia University
B. Essential Books	- Guyton AC, Hall JE: Textbook of Medical Physiology, 14th ed. Saunders, 2021. - William F. Ganong: Review of Medical Physiology, 26th Edition, McGraw-Hill Companies, 2019.
C. Recommended Text Books	- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxford core texts, 2006. - Robert M. Berne, Matthew N. Levy. Principles of Physiology. 3th edition on, Mosby, 2000. - Duane E. Haines: Fundamental Neuroscience. 2nd edition, Churchill Livingstone, 2002. - Michael Field, Carol Pollock, David Harris: The Renal System (basic science and clinical conditions). Churchill Livingstone, 2001. - Vander, Sherman, Luciano: Human Physiology (the mechanisms of body function), 8th edition, Mcgraw Hill, 2001. - Berne RM et al (editors): Physiology, 5th ed. Mosby, 2004. - Boron WF, Boulpaep EL (editors) Medical Physiology. Saunders, 2003. - McPhee SJ, Lingappa VR, Ganong WF:

	Pathophysiology of Disease. An Introduction to Clinical Medicine, 4th ed. McGraw-Hill, 2003. - Alberts B et al: Molecular Biology of the Cell, 4th ed.
D. Periodicals, websites	- American journal of physiology. - Journal of applied physiology. - Journal of clinical endocrinology and metabolism. - Physiological Review. - European Journal of Physiology. - Journals of all Egyptian Universities of Medical physiology.

Coordinator:

Dr. Wagdy Nashaat Habib

Head of Department:

Prof. Dr. Merhan Mamdouh Ragy

Date of last update & approval by department Council: 06/03/2023

نموذج رقم (١١أ)

جامعة/أكاديمية: جامعة المنيا

كلية/معهد: كلية الطب

قسم: الفسيولوجيا الطبية

مسمى المقرر	جزء اول دكتوراة الفارماكولوجي
كود البرنامج	

A. Matrix of Coverage of Course ILOs by Course Contents & activities

Contents	Intended Learning Outcomes (ILOs)																												
	A. Knowledge & Understanding				B. Intellectual Skills				C. Professional & Practical skills			D. General & Transferable Skills																	
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17
I. GENERAL PHYSIOLOGY TOPICS																												
1. General & cellular basis of physiology	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2. Nerve, muscle & ANS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3. Neurophysiology	X	X			X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4. Circulatory system	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5. Gastrointestinal system	X	X		X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6. Respiration.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7. Kidney	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8. Endocrine and reproduction.	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9. General metabolism and regulation of body temperature	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

II. SCIENTIFIC ACTIVITIES (Journal club, Training courses, Case presentation, Conference attendance, Seminars & Workshops)																											
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

B. Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	**Intended Learning Outcomes (ILOs)**			
	A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
Lectures	x	x		
Presentations			x	x
Seminars			x	x
Laboratory training		x	x	x
Oral communication & Observation senior staff experience	x	x	x	x
Observation & supervision Seminars, Lectures, Hand on workshops	x	x	x	

C. Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
Written exam	x	x		
Oral Exam	x	x		x
Practical Exam			x	
Log book	x	x	x	x

Test blueprint of medical physiology for 1st Part of MD of Medical Pharmacology course

Topic	Hours	% of topic	Written exam (100 %)		Marks%
			Knowledge	Intellectual	
➢ General & cellular basis of physiology	2	4%	75%	25%	4
➢ Nerve and muscle.	3	6%	75%	25%	6
➢ Autonomic nervous system.	4	8%	75%	25%	8
➢ Central nervous system.	10	20%	75%	25%	20
➢ Special senses.	1	2%	75%	25%	2
➢ Cardiovascular system.	10	20%	75%	25%	20
➢ Blood.	4	8 %	75%	25%	8
➢ Gastrointestinal system.	3	6%	75%	25%	6
➢ Respiration.	1	2%	75%	25%	2
➢ Kidney.	3	6%	75%	25%	6

➢ Endocrine and reproduction.	8	16%	75%	25%	16
➢ General metabolism and regulation of body temperature.	1	2%	75%	25%	2
Total	50	**100%**			**100%**

Course specification of medical biochemistry in MD degree of medical pharmacology

University: Minia

Faculty: Medicine

1- **Program on which the course is given:** MD degree of medical pharmacology

2- **Department offering the program:** Medical pharmacology Department

3- **Department offering the course:** Medical biochemistry Department

4- **Academic year:** Post graduate, MD degree Medical pharmacology (first part).

A- Basic Information

Title: Medical biochemistry

Hours per week: 1 hours for 24 weeks

Lecture: 1/week

Code: FA100

B- Professional Information

1. Overall Aims of Course:

- The aim of this course is to provide the postgraduate student with the medical Knowledge and skills essential for the practice of specialty necessary to gain.
- To provide master student with basic information about pharmacokinetics and pharmacodynamics of related medications.
- Understand the effect of many medications used in medical diseases on different tissue of the body.
- Maintenance of learning abilities necessary for continuous medical education.
- Maintenance of research interest and abilities.

2. Intended learning outcomes (ILOs):

A. Knowledge and Understanding:

By the end of the course, the candidate should be able to:

A.1 Discuss the clinical biochemical basics related to pharmacology.
A.2 List the basic and adverse effects that might affect their patients in response to prescribed medication.
A.3 Explain the biochemical basis of drug action.

B. Intellectual Skills:

By the end of the course, the candidate should be able to:

B1- Analyze of different diseases to reach a final diagnosis.

B2- Solve problems associated with metabolic diseases.

B3- Integrate metabolic pathways with diseases.

C. Practical skills:

After completing the course, the student should be able to :

C1. Organize groups, as a leader or as a colleague.

C2. Practice willingly the presentation skills through the attendance and participation in scientific activities.

D. General and Transferable Skills:

By the end of the program, the student should have the ability to:

Work in groups, as a leader or as a colleague.
D.1 Use the advanced biomedical information to remain current with advances in knowledge and practice (self-learning).
D.2 Participate in the medical progress by having advanced medical research studies.
D.3 Gain the presentation skills through the attendance and participation in scientific activities.

3- Contents: (topics)

Biochemistery:

- Metabolism of carbohydrates
- Lipid metabolism
- Protein metabolism
- Hormones
- Enzymes
- Heme metabolism
- Purine metabolism
- Pyrimidine metabolism
- Xenobiotics
- Recombinant DNA technology
- Respiratoy chain
- Minerals

4– Teaching and Learning Methods

- Lectures & discussions.
- Assignments
- Attending and participating in scientific conferences and workshops to acquire the general and transferable skills needed

5- Student Assessment Methods

- Written exam to assess the capability of the student for assimilation and application of the knowledge included in the course.
- Oral exam to assess the student intellectual and communication abilities regarding basic knowledge and understanding of the course topics, and to help the teaching staff to evaluate the percentage of achievement of the intended learning outcome of the course.

Assessment schedule

Assessment 1: One written exams by the end of the course.

Assessment 2: Oral exam, after the written exam.

Formative only assessment: simple research assignment, log book, slide box.

Weighting of assessments:

Written examination: 100%

Oral examination: 100%

Total: 100 %

6- List of References

Essential Books (Text Books):

1- Basic biochemistry.

Web Sites: To be determined and update during the course work.

- http://www.biochemistry-world.com
- http://www.rdruglist.com

Periodicals:

1- Egyptian J of Biochemistry
2- Science journal.

7-Facilities Required for Teaching and Learning

- **Adequate infrastructure:** including teaching places; hall and laboratory, comfortable desks, good source of aeration, good illumination, and security & safety.
- **Teaching tools:** including screen, computers, data show, white board, video player, and colored and laser printers

Course Co-ordinators: Prof. Dr. Salama Rabea in co-operation with all staff members of biochemistry department.

Date of last approval by department counsel: 5/3/2023.

Biochemistry course	مسمى المقرر
	كود المقرر

جامعة/أكاديمية : .....المنيا.....

كلية / معهد: .....الطب البشري.....

قسم: .....الفارما.....

A. Matrix of Coverage of Course ILOs By Contents

Contents (List of course topics)	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
• Metabolism of carbohydrates	A.1,A.2.A.3	B1, B2, B3	C1,C2	D.1,D.2,D.3

Lipid metabolism	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
Protein metabolism	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
Hormones	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
Enzymes	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
• **Heme metabolism**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**

• **Purine metabolism**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
• **Pyrimidine metabolism**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
• **Xenobiotics**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
• **Recombinant DNA technology**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**
• **Respiratory chain**	**A.1, A.2,A.3**	**B1, B2, B3**	**C1,C2**	**D1,D2,D3**

Minerals	**A.1,A.2, A.3**	**B1, B2, B3**	**C1,C2**	**D.1, D.2,D.3**

B. Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Lecture	A1,A2,A3	B1, B2, B3	C1,C2	D1,D2,D3
Practical				
Assignment	A1,A2,A3	B1		D1,D2,D3

B. Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written exam	A1,A2,A3	B1		D1,D2,D3
Practical exam				
Oral Exam	A1,A2,A3	B1		D1,D2,D3

Blueprint of Medical Biochemistry Department exam

1st part MD pharmacology Examination Paper

	Topic	Hours	Knowledge %	Intellectual %	% of topic	Marks%
1	**Carbohydrate metabolism and carbohydrates for therapy**	6	70	30	**12**	**12**
2	**Lipid metabolism and lipids for therapy**	6	70	30	**12**	**12**
3	**Protein metabolism and proteins for therapy**	6	70	30	**12**	**12**

4	**Nucleotide metabolism and gene therapy**	6	75	25	**12**	**12**
5	**Integration of metabolism**	6	75	25	**12**	**12**
6	**Minerals**	4	80	20	**8**	**8**
7	**Hormone signaling**	2	75	25	**4**	**4**
8	**Vitamins**	4	75	25	**8**	**8**
9	**Metabolism of Xenobiotics**	2	70	30	**4**	**4**
10	**Enzymes Kinitics, target and therapy**	4	75	25	**8**	**8**
11	**Heme metabolism**	2	70	30	**4**	**4**
12	**Free radicals and antioxidants**	2	80	20	**4**	**4**
	Total	**50**			**100 %**	**100%**

Course Specifications of

Pharmacology For MD Degree of Medical Pharmacology (Second part)

University: Minia University

Faculty: Faculty of Medicine

Department offering the course: Medical Pharmacology department
It is a part of Postgraduate (MD) program for Medical Pharmacology

Program in which the course is given: 2nd part of MD of Medical Pharmacology

Last date of update: 6/3//2023

1. Course Information		
Academic Year/level: Second part of MD Pharmacology	**Course Title:** Advanced and Systemic Pharmacology	**Code**:

Number of teaching hours: - **Lectures: Total of 72 hours; 2 hours/week** - **Practical/clinical: Total of 26 hours; 2 hours/week** - **Total: 98 hours**	
2. Overall Aims of the course	*By the end of the course the student must be able to:* 1- Gain basic Pharmacological knowledge and skills essential to gain further training and practice in the field of pharmacology through: a- Understanding the mechanisms of drug actions and establishing enough adequate scientific background essential for the practice of pharmacological research. 2- Aquire the basic information about each prototype drug for a better understanding of current practices and drug research in medicine and therapeutics. 3- Better select and use the research tools including internet to know how to retrieve digital literature, understand the evidence-based medicine, assess research needs and be able to solve scientific problems. 4- Acquire sufficient knowledge to deal with scientific research equipments. 5. Develop learning abilities necessary for continuous medical education and research interests.
3. Intended learning outcomes of course (ILOs): ***Upon completion of the course, the student should be able to:***	
A.Knowledge and Understanding	A.1. Recall and upgrade the general pharmacokinetics as well specific properties of different groups of drugs putting into consideration age, sex and genetic-related variations that affect the response to drugs (pharmacogenetics).

	A.2 Discuss the updated knowledge regarding the general pharmacodynamics as well as specific properties of different groups of drugs that include the drug's mechanism of action and pharmacological effects. A.3 Explain the pharmacotherapeutics which reflects the role of drugs in prevention, diagnosis and treatment of diseases as well as prevention of conception. It includes also pathopharmacology of diseases and drugs, indications, contraindications, adverse reactions and drug interactions especially in high risk groups (extremes of age, pregnancy and lactation, liver kidney and cardiac diseases). Pharmaco-economics is included in this category. A.4 Define and know in depth the systemic pharmacology which includes drugs acting on different body systems such as cardiovascular, autonomic, respiratory, gastrointestinal, endocrine, blood ,……. A. 5- Discuss the updated chemotherapeutic drugs which includes anticancer and antimicrobials pharmacology. A.6. Determine the recent advances in in therapeutics, biostatistics, research methodology related to the field of pharmacology. A.7. Discuss the recent drugs that manage the environmental induced diseases and the pharmacological treatment of such diseases. A.8. Define the updated measures of quality assurance and quality improvement in medical education and in practice of the Pharmacology and list their positive effects on the work environment. A.9. Recall and upgrade the knowledge regarding different metabolic diseases and their alteration by drugs. A.10. Detect optimal treatment of endocrinal diseases

	A.11. Define the pharmacological correction of physiological disturbances A12. Discuss ethical, medico logical principles and bylaws relevant to his practice in the field of Pharmacology.
A- Intellectual Skills	B.1- Interpret the medical problems arising from use of drugs and the development of resistance or tolerance encouraging them to search for alternative approaches after revising the diagnosis and develop the ability to solve it B.2- Select and use drugs safely and efficiently knowing their limits and the potential risks. B.3- Interpret an investigatory and analytic thinking "problem-solving" approaches to relevant situations related to Pharmacology. B4. Design different types of study thesis and apply a research plane for detection of new drugs, new chemicals, or new applications of the approved drugs. B.5. Formulate a plane for participation in clinical or laboratory risk management activities as a part of clinical governance. B.6. Develop different methods for data presentation. B.7. Design management plans and alternative decisions in different situations in the field of Pharmacology. B.8.Assess risk in research and experimentation using new drugs and/or chemicals. B.9. Plan for the development of performance in the field of therapeutics and pharmacological researches.

	B.10.Assess different clinical problems and formulate pharmacological researches to solve such problems. B.11. Analyse different professional problems and combine knowledge foe their solving. B.12 Combine knowledge and interpret the physiological principle mediate the action of different pharmacological drugs B.13. Construct an international research papers related to the medical field. B.14. Construct a scientific discussion with others using evidence-based strategies during teaching, thesis discussion or conferences presentations.
B- Professional and Practical Skills	C.1 Perform advanced skills of research including how to retrieve the literature data and use the different laboratory equipment and their maintenance. C.2 Evaluate the need of the career to join the major advances in drug information and give suggestions to cover it. C.3 Perform experiments and researches related to pharmacology. C.4- Write diagnostic and teaching plans for all Pharmacology related conditions/skills. C.5 Practice different lab skills related to Medical Pharmacology; including handling of samples, devices, safety, and maintenances of laboratory equipments. C.6 Use information technology in some of the pharmacology related situations.

	C.7. Manipulate informed decisions about diagnostic laboratory tests for Pharmacology related conditions. C.8. Recall and upgrade the understanding of the normal structure and function to be covered by the pharmacological drugs. C.9. Evaluate reports for situations related to the field of pharmacology (lab reports, experiments reports,…..). C.10. Design different organ experiments what ever ivivo or invitro experiments to detect the normal versus abnormal physiological function and its modification by pharmacological agents.
C- General and transferable Skills	D.1.Communicate and cooperate with colleagues and interact with professors. D.2. Cooperate in performing and upgrading practice-based improvement activities using a systemic methodology (share in audits and risk management activities and use logbooks). D.3. Apply different and updated learning facilities of students, lab technical staff and other professionals including their evaluation and assessment and improvement. D4- Adopt different technological methods for collection and verification of data. D5-Appraise evidence from scientific studies. D.6- Adopt the information technology (web sites, journals and digital libraries) to remain current with advances in knowledge and practice (self-learning). D7- Communicate, cooperate effectively with others as a leader or member of a research group and/or a health care team.

	D8- Provide information using effective nonverbal, explanatory, questioning, electronic, and writing skills. D9- Select and use appropriate education methods and materials in the field of Medical Pharmacology. D10- Apply the ethical principles of scientific research and learn it to other colleagues. D11- Select and use appropriate method for cost-effective health care practice and updated resource allocation that does not compromise quality of care. D12- Communicate with others to become a partner with health care managers and health care providers for assessment, coordination, and improving health care to upgrade the different system performance. D.13. Maintain competences of leading scientific meeting and skills of effective time management.

4. Course Contents (2nd t part of MD degree)

Topic	Lecture hours/week(s)	Practical/Clinical hours/week(s)	Total No. of hours hours/week(s)
Ion channels and their advances	2	-	**2**
Recent advances in drug receptors	2	-	**2**
Pharmacovigilance	2	-	**2**
Neurotransmitters, neuromodulators	4	-	**4**

and peptides			
Transport of drugs across cell membrane	2	-	**2**
Cytochrome system	2	-	**2**
Adverse drug reactions	2	-	**2**
The update in Immunopharmacology	2	-	**2**
Gene therapy	2	-	**2**
Stem cells	2	-	**2**
Drug Screening	2	4	**6**
Isolated organs (heart, intestine, skeletal muscle)	2	6	**8**
Measurement of blood pressure in experimental animals	2	4	**6**
Training on laboratory equipment	-	6	**6**
Experimental skills and Lab issues	4	6	**10**

General Pharmacology	4	-	**4**
Drug induced diseases	4	-	**4**
The updates in autonomic Pharmacology	4	-	**4**
The updates in cardiovascular Pharmacology	4	-	**4**
The updates in central nervous system pharmacology	4	-	**4**
The updates in endocrine Pharmacology	4	-	**4**
Drugs with Important action on blood, inflammation and gout	4	-	**4**
The updates in respiratory Pharmacology	2	-	**2**
The updates in chemotherapeutic drugs	6	-	**6**
Toxicology	2	-	**2**
Miscellaneous	2	-	**2**

Pharmacotherapy	2		
Applied pharmacology	2		
Total	**76**	**26**	**102**
5. Teaching and Learning Methods	1. Lectures 2. Department practical class and notes. 3. Practical lessons 4. Seminars 5. Presentations		
6. Teaching and Learning Methods for students with limited Capacity	Additional lectures, adjusting time and place of lectures according to their schedule and capacity		
7. Student Assessment			
A. Student Assessment Methods	**1.Written Exams:** • **Short essay** • **MCQs** • **Problem solving** **2. Practical Exams (OSPE)**		

	3. Oral Exams
B. Assessment Schedule (Timing of Each Method of Assessment)	**Assessment 1: Written exam by the end of the course** **Assessment 2: Practical exams** after the written exam (OSPE) **Assessment 3: Oral exam**, after the written exam
C. Weighting of Each Method of Assessment	• Written examination: 100 % • Practical examination: 100% • Oral examination: 100% **Total** **100 %**
8. List of References	
A. Course Notes/handouts	Course notes prepared by the staff members in the department.
B. Essential Books	Lippincotts pharmacology 6th Edition (2015)
C. Recommended Text Books	- Goodman & Gilman, 14th edition - Katzung Basic and clinical pharmacology 15th edition -Rang and Dale's Pharmacology, Seventh Edition- H. P. Rang
D. Periodicals, websites	Pharmacological Reviews - Journal of Pharmacology and Experimental therapeutics - British journal of pharmacology

	- European journal of pharmacology - Pharmacological research - Pharmacological reports - Pharmaceuticals - Frontiers in pharmacology - Biomedicine and Pharmacotherapy **http://www.ncbi.nlm.nih.gov/pubmed/**

Course Coordinator:

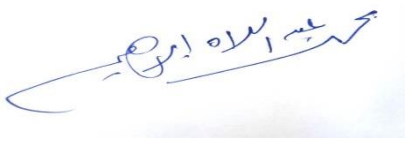
Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber

Course management team:

Ass. Prof. Dr. Seham Abdel-Wakeel Abdel-Gaber
Ass. Prof. Dr. Walaa Yehia
Ass. Prof. Dr. Heba Mostafa

Head of Department:

Professor Dr. Mohamed Abdellah Ibrahim



Matrix of Coverage of course ILOs By Topics

نموذج رقم (١١ب)

جامعة/أكاديمية : ....المنيا.....
كلية / معهد.....الطب البشري.....
قسم:.....الفارماكولوجي.....

Medical Doctorate (MD)of Pharmacology	**مسمى البرنامج**
FA100	**كود البرنامج**

Contents **(List of course topics)**	**Week No.**	**Intended Learning Outcomes (ILOs)**			
		A. Knowledge & Understanding	**B. Intellectual Skills**	**C. Professional & Practical skills**	**D. General & Transferable Skills**
		A	**B**	**C**	**D**
Ion channels and their advances		**X2**	**X1,2**		

Recent advances in drug receptors		**X2**	**X2,4**		
Pharmacovigilance		**X1,2,3**	**X3**	**X5,8**	**X5,6**
Neurotransmitters, neuromodulators and peptides		**X2,3,4**	**X1,2**	**X7**	
Transport of drugs across cell membrane		**X2,3**	**X8,11,12**	**X1**	
Cytochrome system		**X1,2,3**			
Adverse drug reactions		**X4**	**X1,12**		
Immunopharmacology		**X1,4,5,6**	**X10,12**	**X5**	
Gene therapy		**X2,9.10**	**X2,8,10,11,12**	**X3,5**	
Stem cells		**X2,9,10**			
Drug Screening		**X2**	**X 4,12**	**X 8, 10**	

Isolated organs (heart, intestine, skeletal muscle)		**X2**	**X 4,12**	**X 8, 10**	
Measurement of blood pressure in experimental animals		**X2**	**X 4,12**	**X 8, 10**	
Training on laboratory equipment				**X1,3,4,5,7**	**X6**
Experimental skills and Lab. Issues			**X3,4**	**X1,4,8**	
General Pharmacology		**X1,2,3,4**			
Drug induced diseases		**X4,7,11**	**X1,3,10**	**X8,10**	
Autonomic Pharmacology		**X1,2,3**	**X1,2,12**	**X8,10**	
Cardiovascular Pharmacology		**X1,2,3,4, 11**	**X1,2,3,7,10**	**X8,10**	
Central Nervous system		**X1,2,3,4, 11**	**X1,2,3,7,10**	**X8,10**	
Endocrine Pharmacology		**X1,2,3,4, 10, 11**	**X1,2,3,7,10**	**X8,10**	

Drugs with Important action on blood, inflammation and gout		**X1,2,3,4, 11**	**X1,2,3,7,9, 10**	**X8,10**	
Respiratory Pharmacology		**X1,2,3,4, 11**	**X1,2,3,7,10**	**X8,10**	
Chemotherapeutic drugs		**X1,2,3,4, 5, 11**	**X1,2,3,4, 7,10**	**X8,10**	
Toxicology		**X1,2,3,4, 5, 11**	**X1,2,3,4, 7,10**	**X8,10**	
Miscellaneous		**X1,2,3,4, 5, 11**	**X1,2,3,4, 7,10**	**X8,10**	
Pharmacotherapy		**X1,2,3,4, 5, 11**	**X1,2,3,4, 7,10**	**X8,10**	**X1,5**
Applied pharmacology		**X1,2,3,4, 5, 11**	**X1,2,3,4, 7,10**	**X8,10**	**X1,5**

Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Lecture	X1,2,3,4,5,6,7, 8,9,10,11,12			
Practical	X6, 8,12	X1-14		
Presentation/seminar	X6, 8,12	X1-14	X1-10	
Thesis discussion	X1-12	X1-14	X1-10	X1-13
Training courses & workshops	X1-12	X1-14	X1-10	X1-13

Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written Exam	X1-12	X2,7,11,13		
Practical Exam OSPE		X1-12	X1,8,10	
Oral Exam	X1-12	X1-12	X1-10	X1-13

Blueprint of Pharmacology MD 2nd Part

(Pharmacology Examination Papers)

Topic	Lecture hours/week(s)	Knowledge %	Intellectual %	% of topics	Marks%	Actual Marks%
1st paper						
1- Ion channels and their advances	2	100	0	2.9	2.9	3
2- Recent advances in drug receptors	2	100	0	2.9	2.9	3
3- Pharmacovigilance	2	100	0	2.9	2.9	3
4- Neurotransmitters, neuromodulators and peptides	4	100	0	5.8	5.8	6
5- Transport of drugs across cell membrane	2	100	0	2.9	2.9	3
6- Cytochrome system	2	100	0	2.9	2.9	3

7- Adverse drug reactions	2	70	30	2.9	2.9	3
8- Gene therapy	2	70	30	2.9	2.9	3
9-Stem cells	2	80	20	2.9	2.9	3
10-Drug Screening	2	50	50	2.9	2.9	3
11-General Pharmacology	4	100	20	5.8	5.8	5.5
12- Drug induced diseases	4	80	20	5.8	5.8	5.5
13- The updates in autonomic Pharmacology	4	100	0	5.8	5.8	6
2nd paper						
14- The update in Immunopharmacology	2	80	20	2.9	2.9	3
15- The updates in cardiovascular Pharmacology	4	75	25	5.8	5.8	5.5

16- The updates in central nervous system pharmacology	4	80	20	5.8	5.8	5.5
17- The updates in endocrine Pharmacology	4	60	40	5.8	5.8	6
18- Drugs with Important action on blood, inflammation and gout	4	60	40	5.8	5.8	6
19- The updates in respiratory Pharmacology	2	75	25	2.9	2.9	3
20- The updates in chemotherapeutic drugs	6	50	50	8.8	8.8	9
21- Toxicology	2	60	40	2.9	2.9	3
22- Miscellaneous	2	100	0	2.9	2.9	3
23-Pharmacotherapy	2	70	30	2.9	2.9	3

24-Applied pharmacology	2	70	30	2.9	2.9	3
Total	**68**			**100 %**	**100%**	**100%**