



كلية الطب
Faculty of Medicine



***Medical Doctorate (MD) degree
Program & Courses' Specifications
of
Medical Physiology
2022-2023***

نموذج رقم (١٣)

**Program Specification for Doctorate Degree (MD) in Medical Physiology
(2022/2023)**

University: Minia.

Faculty(s): Medicine.

Department: Medical Physiology

A. Basic Information:

1. **Program title:** M.D. Degree of Medical Physiology.
2. **Program type:** single.
3. **Program code:** PY 100
4. **Department responsible for offering the degree:** Medical Physiology Department.
5. **Department(s) involved:** Medical Physiology department and public health and Preventive Medicine Department.
6. **Program duration:** 3.5 years.
7. **Number of program courses:** 3
8. **Coordinator(s):** Dr. Elshymaa Abdel-Hady Abdel-Hakeem
9. **Evaluator(s):**
 - **External:** Prof. Dr/ Enas Ahmed Hamed Omran
 - **Internal:** Prof. Dr/ Selim Mahmoud Abdel-Hakim
10. **Program management team:**

Professor. Dr. Merhan Mamdouh Ragy
Head of Medical Physiology Department

Dr. Elshymaa Abdel-Hady Abdel-Hakeem
Coordinator of the Program

Sally Wahba Ayed Wahba
Samar Mohammed Abdel-Raouf
Editors of the Program

B. Professional Information:

1. Program aims:

Graduates with doctorate degree in physiology can pursue careers in research, teaching or management in academia, the pharmaceutical and biotechnology industries, private research institutions, government science or regulatory agencies, or medicine and health care.

The program of Doctorate Degree in Medical Physiology aims to:

- 1.1. Prepare highly qualified medical physiologists familiar with basic and advanced scientific knowledge in medical Physiology, research and its ethics.
- 1.2. Enable the candidates to develop basic concepts and principles of human physiology logically and clearly to correlate and analyze physiological phenomena.
- 1.3. Enable students to improve their skills in research and undergraduate teaching.
- 1.4. Demonstrate in-depth the cellular basis of medical physiology, structure and function of organ systems of the body and the control systems of the human body and varies body functions in health and disease.
- 1.5. Develop knowledge concerning recent updates in medical physiology.
- 1.6. Understand and get the best of published scientific research.
- 1.7. Demonstrate skills in oral and written presentations.
- 1.8. Provide an understanding of quality assurance issues.
- 1.9. Develop professional skills in techniques used for experimental physiology.
- 1.10. The acquisition of life-long habits of reading, literature searches, and consultation with colleagues, attendance at scientific meetings, and the presentation of scientific work that is essential for continuing professional development (CPD).

2. Intended Learning Outcomes (ILOS):

2.A. Knowledge and understanding:

By the end of the study of doctorate program in **Medical Physiology**, the candidate should be able to:

2.A.1 Discuss theories, basics and updates biomedical clinical epidemiology and socio behavioural science relevant to medical physiology as well as the evidence-based application of this knowledge to practice, including:

- Basic concepts and principles of human physiology and explain and critically evaluate the control systems of the human body and various body functions in health and disease.
- Sport and diving physiology.
- Basics of Geriatrics and organ transplantation physiology.
- Updated pathophysiology topics.

2.A.2. Define the recent and update developments in the most important themes related to Medical Physiology.

2.A.3. Explain basics, methodology, tools and ethics of scientific medical, experimental research.

2.A.4. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Medical Physiology.

2.A.5. Mention principles and measurements of quality assurance and quality improvement in medical education and in practice of the Medical Physiology.

2.A.6. Mention public health and health policy issues relevant to medical physiology and principles and methods of system-based improvement related to his practice in the field of Medical Physiology.

2.B. Intellectual skills

By the end of the doctorate program in **Medical Physiology** the candidate should be able to:

2.B.1 Correlate the basic and clinically supportive sciences which are appropriate to medical physiology related conditions/ problem/ topics.

2.B.2 Solve problems relevant situations related to Medical Physiology.

2.B.3 Plan research projects.

2.B.4 Write scientific paper.

2.B.5 Participate in clinical or laboratory risk management activities as a part of clinical governance.

2.B.6 Plan for quality improvement in the field of medical education and practice in Medical Physiology.

2.B.7 Create and innovate plans, systems, and other issues for improvement of performance in his practice.

2.B.8 Interpret his/her data in front of a panel of experts.

2.B.9 Formulate management plans and alternative decisions in different situations in the field of Medical Physiology.

2.C. Professional and practical skills

By the end of the study of doctorate program in physiology the candidate should be able to:

2.C.1 Practice the skills relevant to Medical Physiology for all common techniques and/or experiments including:

- Preparation and recording skeletal muscle contraction and how-to assess different factors affecting it.
- Assessment of factors affecting clonus and tetanus.
- Recording of smooth muscle contractility (gastrointestinal tract, urinary bladder, uterus, etc...) and study the effect of ions, autonomic receptors agonists and antagonists and drugs on muscle contractility.
- Isolated perfuse heart (rabbit & frog) experiments, assessment of factors affecting cardiac muscle contraction, making model of heart block experiment.
- Assessment of haemoglobin contents, bleeding time, prothrombin time, ESR, blood groups, blood haemolysis and blood indices in human.
- Making electrocardiograph (ECG) and ability for interpretation of waves, intervals and signals of normal ECG.
- Recording of arterial blood pressure (ABP), heart sounds in humans and experimental animals.
- Assessment of pulmonary function tests and interpretation of different lung volumes and capacities and its ability to differentiate between different lung diseases.
- Assessment of the central nervous system (CNS) including, cranial nerves examination, sensory, motor, co-ordination and vestibular apparatus).
- Recording electroencephalogram (EEG), electromyogram (EMG) and nerve conduction velocity.
- Assessment of visual acuity, visual field, intraocular pressure and fundus examination.
- Recording of audiometer.
- Indirect estimation of basal metabolic rate (BMR).

- Different methods of estimation of hormones, testicular function tests, ovulation tests and pregnancy tests.
- Kidney function tests as estimation of glomerular filtration rate (GFR), renal blood flow and urine and blood analysis.

2.C.2 Practice the skills with non-routine, laboratory skills and techniques and increasingly difficult circumstances, while demonstrating appropriate and effective competency.

2.C.3 Perform available complex laboratory techniques and handling unexpected complications.

2.C.4 Gather essential and accurate information about practical/laboratory skills of Medical Physiology related conditions.

2.C.5 Decide the diagnostic laboratory tests for Medical Physiology related conditions.

2.C.6 Develop and carry out diagnostic and teaching plans for all Medical Physiology related conditions/skills.

2.C.7 Use information technology to support practical decisions and student education in all Medical Physiology related practical situations.

2.C.8. Provide health care or any relevant services aimed at preventing the speciality related health problems (if applied).

2.C.9 Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in Medical Physiology related conditions.

2.C.10 Write competently all forms of professional reports related to Medical Physiology (lab reports, experiments reports).

2.D. General and transferable skills

By the end of the study of doctorate program in physiology the candidate should be able to:

2.D.1. Continuously improve his/her practice based on constant self-evaluation and lifelong learning.

2.D.2. Design guidelines and standard protocols for different techniques and procedures.

2.D.3. Participate in medical audits and research projects.

2.D.4 Use information technology to manage information, access on-line medical information for the important topics.

2.D.5 Practice skills of evidence-based medicine (EBM).

2.D.6. Facilitate learning of students, lab technical staff and other health care professionals including their evaluation and assessment.

- 2.D.7** Master interpersonal and communication skills to provide information using effective nonverbal, explanatory, questioning, and writing skills.
- 2.D.8.** Work effectively with others as a member or leader of a scientific research group or health care team.
- 2.D.9** Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.
- 2.D.10** Demonstrate a commitment to ethical principles of scientific research and clinical practice.
- 2.D.11** Demonstrate sensitivity and responsiveness to patients' culture, age, gender and disabilities.
- 2.D.12** Practice cost-effective health care and resource allocation that does not compromise quality of care.
- 2.D.13** Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance.
- 2.D.14** Work effectively in relevant health care delivery settings and systems including good administrative and 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 Decree No.6854, in its session No.177, dated: 18\5\2009).

Faculty of Medicine Minia University has developed the academic standards (ARS) for MD program and approved in faculty Council decree No.7528, in its session No.191, dated: 15\3\2010), and these standards (Faculty ARS) have been updated and approved in faculty Council No.52\2 dated :20\2\2023 . **{Annex 1}**.

Then, in view of the adopted general standards, Medical Physiology department has developed the intended learning outcomes (ILOs) for MD program in medical physiology the Date of program specifications first approval was by department council: 13-5-2013 and the last date of program specification approval by department council: 6\3\2023 **{Annex 2}**.

- 4. Program External References:** ACGME (Accreditation Council for Graduates Medical Education): <http://www.acge.org/ac Website/navPages/nav -Public.asp>

5. Program Structure and Contents:

5.1 Program duration: 3.5 years.

5.2 Program structure:

- Total number of hours:
 - Didactic: 260 hrs.
 - Practical: 135 hrs.
- *1st part:*
 - Didactic: 50 hrs., Practical 35 hrs., Total 85 hrs.
- *2nd part:*
 - Didactic 210 hrs. (4h/week), Practical 100 hrs. (2h/week), Total 310 hrs.
- Thesis
- According to the currently applied bylaws:
 - Compulsory courses: 100 %
 - Optional courses: NA
 - Training programs & scientific activities: Distributed all through the whole program.

5.3. Levels of program in credit hours system: Not applicable

5.4. Program courses:

Three courses are compulsory **{Annex 3}**. To ensure complete coverage of all program ILOs by courses, the following correlation between them has been done.

Matrix of courses versus Program ILOs they cover.

Courses List	Total No. of Hours	No. of hours			Program ILOs Covered
		Lect.	Practical	tutorial	
FIRST PART (Level of course):					
Use of Computer in Medicine	30	20	10		2.A.1, 2.B.7, 2.C.7, 2.D.1, 2.D.4, 2.D.12
Medical Statistics and Research Methodology	45	30	15		2.A.1, 2.A.3, 2.A.4, 2.A.5, 2.A.6, 2.B.3, 2.B.4, 2.D.1 to 2.D.14
SECOND PART (Level of course):					

<u>Advanced Physiology PY100</u>	310	210	100	2.A.1, 2.A.2, 2.B.1, 2.B.2, 2.B.5, 2.B.6, 2.B.9, 2.C.1, 2.C.2, 2.C.3, 2.C.4, 2.C.5, 2.C.6, 2.C.9, 2.C.10, 2.D.1, 2.D.6, 2.D.7, 2.D.8, 2.D.9
<u>THIRD PART</u>	Thesis and at least two published research from it are required for the MD thesis.			2.A.3, 2.B.3, 2.B.4, 2.B.8, 2.C.1, 2.C.2, 2.C.3, 2.D.2, 2.D.3,

This matrix was last updated and approved by the department council 06/03/2023

6. Program admission requirements

1- General requirements:

- A. Candidates should have MBBCh Degree from any Egyptian Faculty of Medicine or equivalent Degree from Medical Schools approved by the Ministry of Higher Education.
- B. Master's degree in medical Physiology
- C. Candidates should follow the regulatory rules of postgraduate studies of Minia University.

2- Specific requirements:

- A. Candidates graduated from Egyptian Universities should have at least "Good grade" in their final year examination, and grade "Good" in Physiology Course too.
- B. Master's degree in Physiology with at least "Good Rank".
- C. Candidate should be fluent in English (study language).
- D. Candidate should know have computer skills.

3- Vacations and study leave

The current departmental policy is to release M.D. candidates from teaching duties for 7 days prior to the scheduled date for the first and final certifying M.D. degree examination

4- Fees

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

7. Regulations for progression and program completion

Duration of program is 4 years, starting from registration till acceptance of the thesis; divided to:

First Part: (≥6 months):

- All courses as specified in the internal bylaws.
- At least six months after registration should pass before the student can ask for examination in the 1st part.
- Two sets of exams: 1st in April — 2nd in October.
- For the student to pass the first part exam, a score of at least 60% in each curriculum is needed.
- Those who fail in one curriculum need to re-exam it only.

Second Part: (≥24months): Program related specialized Courses.

- Minimum 2 years
- Program-related academic and specialized science courses and ILOs
- Students are not allowed to set the exams of these courses before 2 years from applying to the MD degree
- Two sets of exams: 1st in April— 2nd in October.
- At least 60 % of the written exam is needed to be admitted to the oral and practical exams.

Thesis:

- Thesis and at least two published research from it – one in local journal and one in an international journal- are required for the MD thesis.
- MD thesis subject should be officially registered after approval of department and faculty council after one and a half year from applying to the MD degree.
- Discussion and acceptance of the thesis should not be set before 24 months from registering the MD subject and maximally after 4 years.
- It could be discussed and accepted after passing the second part of examination.

8. Teaching & learning methods:

Matrix of teaching and learning methods versus program ILOS

Method of teaching/ learning	Taught/ learnt ILOs
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Lectures	From 2.A.1 to 2.B.9
Practical sessions	From 2.C.1 to 2.C.10
Self-learning (presentations and seminars)	From 2.D.1 to 2.D. 14

This matrix was last updated and approved by the department council 06/03/2023

9. Methods of student assessment:

Matrix of methods of assessments versus program iLOS

Method of assessment	The assessed ILOs
1. Written Exams: a) Short essay b) Problem solving	a. Knowledge & understanding b. Intellectual skills From 2.A.1 to 2.B.9 a. Knowledge & understanding skills b. Intellectual skills From 2.A.1 to 2.B.9
2. Practical/Clinical Exams	Professional & practical skills From 2.C.1 to 2.C.10
3. Oral Exams	a. knowledge & understanding b. Intellectual skills c. General & transferable skills From 2.A.1 to 2.B.9 and 2.D.1 to 2.D.1
4. Logbook assessment	a. Knowledge & understanding b. Intellectual skills c. Professional & practical skills d. General & transferable skills From 2.A.1 to 2.D.14
5. Research assignment	General & transferable skills 2.D.1 to 2.D.14

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Weighting of assessments:

- At least 60% in the written exam is needed to be admitted to the oral and practical exams.
- 4 times of oral and practical exams are allowed before the student has to re-attend the written exam.

Courses	Degrees			
	Written Exam	Oral exam	Practical Exam	Total
First Part				
Medical statistics and research methodology	100%	100%	100%	100%
Use of Computer in Medicine	100 %	100%	100%	100%
Second part	Written Exam	Oral Exam	Practical Exam	Total
Advanced Medical Physiology	100%	100%	100%	100%

10.Methods of Program Evaluation:

Evaluator (By whom)	Method/tool	Sample
1. Senior students (Students of last year)	Questionnaires	Almost all
2. Graduates (Alumni)	Questionnaires	10
3. Stakeholders	Questionnaires and meetings	2 at least
4. External & Internal evaluators and external examiners	Reports	2 at least
5. Quality Assurance Unit	Reports Questionnaires	

○ **Program Coordinator(s):**

Dr. Elshymaa Abdel-Hady Abdel-Hakeem

○ **Head of Department:**

Prof. Dr. Merhan Mamdouh Ragy

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

Date of approval of the last update: 6/3/2023

A handwritten signature in blue ink that reads "Merhan M. Ragy". The signature is written in a cursive style and is centered within a light gray rectangular box.

Annex (1): Comparison between General Academic Reference Standards (GARS) and Faculty Academic Reference Standards (ARS)

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

برامج الدكتوراه NAQAAE	Faculty Doctorate (MD) Program
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<p>1. مواصفات الخريج:</p> <p>خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:</p>	<p>1. Graduate attributes:</p> <p>Graduate of doctorate (MD) program in any specialty should be able to:</p>
<p>1.1. إتقان أساسيات ومنهجيات البحث العلمي.</p>	<p>1.1. Mastery of basic research skills and types of study design.</p>
<p>1.2. العمل المستمر علي الإضافة للمعارف في مجال التخصص.</p>	<p>1.2. Contribute to development, application, and translation of new medical knowledge in his scholarly field through research.</p>
<p>1.3. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص والمجالات ذات العلاقة.</p>	<p>1.3. use analytical and critical skills in observing, collecting and interpreting data.</p>
<p>1.4. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبها ومطورا للعلاقات البيئية بينها.</p>	<p>1.4. Integrate biomedical sciences with clinical information to explore scientific basis of medical practice for improvement of management of diseases.</p>
<p>1.5. إظهار وعيا عميقا بالمشاكل الجارية والنظريات الحديثة في مجال التخصص.</p>	<p>1.5. Demonstrate an awareness of current health problems and recent theories in his scholarly field</p>
<p>1.6. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها.</p>	<p>1.6. Identify and create solutions for occupational problems and medical malpractice conditions.</p>
<p>1.7. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص</p>	<p>1.7. perform a wide range of professional skills in his scholarly field.</p>
<p>1.8. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية.</p>	<p>1.8. Develop and improve new methods and approaches in the professional medical practice of the specific field.</p>
<p>1.9. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية</p>	<p>1.9. Use information technology to improve his professional medical practice including online medical information manage information and research.</p>

1.10. التواصل بفاعلية وقيادة فريق عمل في سياقات مهنية مختلفة.	1.10. Communicate effectively as a member or leader of health care group or other professional group and gain leadership skills.
1.11. اتخاذ القرار في ظل المعلومات المتاحة.	1.11. Make informed decisions based on available data (e.g. patient information, up to date scientific evidence and clinical judgment).
1.12. توظيف الموارد المتاحة بكفاءة وتنميتها والعمل على إيجاد موارد جديدة.	1.12. Effective management, development & improvement of available resources and have the competency to get new resources.
1.13. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة.	1.13. Be aware of his community needs related to his field and have the ability to improve & maintain health care and carryout system-based improvement.
1.14. التصرف ب ما يعكس الالتزام بالنزاهة والمصداقية وقواعد المهنة.	1.14. Demonstrate ethical behavior, moral reasoning, honesty, integrity, dependability, and commitment to service and health equity.
1.15. الالتزام بالتنمية الذاتية المستمرة ونقل علمه و خبراته للآخرين.	1.15. Critically reflect on one's own performance to set learning and improving goals and sharing his knowledge.
المعايير القياسية العامة: NAQAAE General Academic Reference Standards "GARS" for MD Programs	Faculty Academic Reference Standards (ARS) for MD Program
٢,١. 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:

٢,١,١ 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.
٢,١,٢ أساسيات ومنهجيات وأخلاقيات البحث العلمي وأدواته المختلفة	2.1.2. Basic, methods and ethics of medical research.
٢,١,٣ المبادئ الأخلاقية والقانونية للممارسة المهنية في مجال التخصص	2.1. 3. Ethical and medicolegal principles of medical practice.
٢,١,٤ مبادئ وأساسيات الجودة في الممارسة المهنية في مجال التخصص	2.1.4. Identify Principles and fundamental of quality in professional medical practice.
٢,١,٥ 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.
١,٢ .المهارات الذهنية: بانتهاج 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:
٢,٢,١ تحليل وتقييم المعلومات في مجال التخصص والقياس عليها والاستنباط منها	2.2.1 Analysis and evaluation of information to correlate and deduce from it.
٢,٢,٢ 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.
٢,٢,٣ إجراء دراسات بحثية تضيف إلى المعارف	2.2.3. Carryout research projects related to his scholarly field.
٢,٢,٤ صياغة أوراق علمية	2.2.4. Write and publish scientific papers.
٢,٢,٥ تقييم المخاطر في الممارسات المهنية	2.2.5. Assess risk in professional medical practice.
٢,٢,٦ التخطيط لتطوير الأداء في مجال التخصص	2.2.6. Establish goals, commitments and strategies for improved productivity and performance.

٢,٢,٧ اتخاذ القرارات المهنية في سياقات مهنية مختلفة	2.2.7. Making professional decisions in different professional contexts.
٢,٢,٨ الابتكار/ الإبداع	2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.
٢,٢,٩ الحوار والنقاش المبني على البراهين والأدلة	2.2.9. Using Evidence-based strategies to during discussion or teaching others.
٢,٣ مهارات المهنية: بانتهاج 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:
٢,٣,١ إتقان المهارات المهنية الأساسية والحديثة في مجال التخصص	2.3.1. Master the basic as well as modern professional practical and/or clinical skills.
2.3.2 كتابة وتقييم التقارير المهنية	2.3.2. Write and evaluate professional reports.
2.3.3 تقييم وتطوير الطرق والأدوات القائمة في مجال التخصص	2.3.3. Evaluate and improve the methods and tools in the specific field.
٢,٣,٤ استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية	2.3.4. use of technological means to serve Professional practice.
2.3.5. 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: بانتهاج 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:

٢,٤,١ 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.
٢,٤,٣ تعليم الآخرين وتقييم أداءهم	2.4.3. Demonstrate effective teaching and evaluating others.
٢,٤,٤ التقييم الذاتي والتعلم المستمر.	2.4.4. Self-assessment and continuous learning.
٢,٤,٥ 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.
٢,٤,٦ 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.
٢,٤,٧ إدارة اللقاءات العلمية والقدرة علي إدارة الوقت	2.4.7. Manage of scientific meetings and the ability to manage Time effectively.

This matrix was last updated and approved by the department council 06/03/2023

Annex (2): ARS VS. MD PROGRAM of Medical Physiology

Annex (2): ARS VS. MD PROGRAM of Medical Physiology

Faculty Academic Reference Standards (ARS) for MD Program	Intended Learning Outcomes (ILOs) of MD Program in Medical Physiology
<p>2.1. Knowledge and understanding:</p> <p>Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:</p>	<p>2.A. Knowledge and Understanding</p> <p>Upon completion of the doctorate Program (MD) in the Medical Physiology the graduate should have be able to:</p>
<p>2.1.1. Theories, basics and updated knowledge in his scholarly field and related basic sciences.</p>	<p>2.A.1 Discuss theories, basics and updates biomedical clinical epidemiology and socio behavioural science relevant to medical physiology as well as the evidence-based application of this knowledge to practice, including:</p> <ul style="list-style-type: none"> - Basic concepts and principles of human physiology and explain and critically evaluate the control systems of the human body and various body functions in health and disease. - Sport and diving physiology. - Basics of Geriatrics and organ transplantation physiology. - Updated pathophysiology topics.
<p>2.1.2. Basic, methods and ethics of medical research.</p>	<p>2.A.3. Explain basics, methodology, tools and ethics of scientific medical, experimental research.</p>
<p>2.1. 3. Ethical and medicolegal principles of medical practice.</p>	<p>2.A.4. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Medical Physiology.</p>
<p>2.1.4. Identify Principles and fundamental of quality in professional medical practice.</p>	<p>2.A.5. Mention principles and measurements of quality assurance and quality improvement in medical education and in practice of the Medical Physiology.</p>
<p>2.1.5. Knowledge related to effects of professional practice on public health and methods of maintenance and system-based improvement of public health.</p>	<p>2.A.6. Mention public health and health policy issues relevant to medical physiology and principles and</p>

	methods of system-based improvement related to his practice in the field of Medical Physiology.
2.2. Intellectual skills: Upon completion of the doctorate program (MD), the graduate must be able to:	2.B. Intellectual skills Upon completion of the doctorate program (MD) in the Medical Physiology , the graduate must be able to:
2.2.1 Analysis and evaluation of information to correlate and deduce from it.	2.B.1 Correlate the basic and clinically supportive sciences which are appropriate to medical physiology related conditions/ problem/ topics.
2.2.2. Problem solving skills based on analysis of available data for common health problems related to his scholarly field.	2.B.2 Solve problems to relevant situations related to Medical Physiology.
2.2.3. Carryout research projects related to his scholarly field.	2.B.3 Plan research projects.
2.2.4. Write and publish scientific papers.	2.B.4 Write scientific paper.
2.2.5. Assess risk in professional medical practice.	2.B.5 Participate in clinical or laboratory risk management activities as a part of clinical governance.
2.2.6. Establish goals, commitments and strategies for improved productivity and performance.	2.B.6 Plan for quality improvement in the field of medical education and practice in Medical Physiology.
2.2.7. Making professional decisions in different professional contexts.	2.B.8 Interpret his/her data in front of a panel of experts.
2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.	2.B.7 Create and innovate plans, systems, and other issues for improvement of performance in his practice.

2.2.9. Using Evidence-based strategies to during discussion or teaching others.	2.B.9 Formulate management plans and alternative decisions in different situations in the field of Medical Physiology.
2.3. Professional skills: Upon completion of the doctorate program (MD), the graduate must be able to:	3.C. Professional & Practical skills Upon completion of the doctorate program (MD) in the Medical Physiology , the graduate must be able to:
2.3.1. Master the basic as well as modern professional practical and/or clinical skills.	2.C.1 Practice the skills relevant to Medical Physiology for all common techniques and/or experiments 2.C.2 Practice the skills with non-routine, laboratory skills and techniques and increasingly difficult circumstances, while demonstrating appropriate and effective competency. 2.C.3 Perform available complex laboratory techniques and handling unexpected complications.
2.3.2. Write and evaluate professional reports.	2.C.10 Write competently all forms of professional reports related to Medical Physiology (lab reports, experiments reports).
2.3.3. Evaluate and improve the methods and tools in the specific field.	2.C.4 Gather essential and accurate information about practical/laboratory skills of Medical Physiology related conditions. 2.C.5 Decide the diagnostic laboratory tests for Medical Physiology related conditions. 2.C.6 Develop and carry out diagnostic and teaching plans for all Medical Physiology related conditions/skills.
2.3.4. use of technological means to serve Professional practice.	2.C.7 Use information technology to support practical decisions and student education in all Medical Physiology related practical situations.
2.3.5. Planning for the development of professional practice and improve of the performance of others	2.C.8. Provide health care or any relevant services aimed at preventing the speciality related health problems (if applied) 2.C.9 Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in Medical Physiology related conditions
1.4.General and transferable skills Upon completion of the doctorate program (MD), the graduate must be able to:	2.D General & Transferable Skills Upon completion of the doctorate program (MD) in the Medical Physiology , 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.	2.D.7 Master interpersonal and communication skills to provide information using effective nonverbal, explanatory, questioning, and writing skills.
2.4.2. Use of information technology to serve Professional Practice Development.	2.D.4 Use information technology to manage information, access on-line medical information for the important topics.
2.4.3. Demonstrate effective teaching and evaluating others.	2.D.6. Facilitate learning of students, lab technical staff and other health care professionals including their evaluation and assessment.
2.4.4. Self-assessment and continuous learning.	2.D.1. Continuously improve his/her practice based on constant self-evaluation and lifelong 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.	2.3D.2. Design guidelines and standard protocols for different techniques and procedures. 2.D.5 Practice skills of evidence-based medicine (EBM). 2.D.3.3.G.13 Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance.
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.	2.D.8. Work effectively with others as a member or leader of a scientific research group or health care team. 2.D.9 Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.
2.4.7. Manage of scientific meetings and the ability to manage Time effectively.	2.D.14 Work effectively in relevant health care delivery settings and systems including good administrative and time management.

ANNEX II: Faculty ARS VS. MD PROGRAM of Medical Physiology

This matrix was last updated and approved by the department council 06/03/2023

Annex (3): Courses

Course specification of :

“Use of Computer in Medicine”

in MD degree

2022-2023

University: Minia

Faculty: Medicine

Department delivering the course: Public health and preventive medicine department.

Program(s) in which the course is offered: Medical physiology MD students

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

Academic year/ Level: First part of MD

1) Course Information		
Academic Year/level: First part MD	<ul style="list-style-type: none">• Course Title: Use of Computer in Medicine	<ul style="list-style-type: none">• Code: PY 100
<ul style="list-style-type: none">• Number of teaching hours:<ul style="list-style-type: none">• 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: <ol style="list-style-type: none">1) Recognize knowledge about the software and their applications in Medicine2) Gain skills necessary for using and managing health care information systems	
3) Intended learning outcomes of course (ILOs): <i>Upon completion of the course, the student should be able to:</i>		

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

4) Course Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Use of Computer in Medicine			
General concepts	6	4	2
Introduction to Microsoft PowerPoint			
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	<p>Due to 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</p> <p>Online learning materials are available at Minia University site</p> <ul style="list-style-type: none"> ▪ Lectures: Face to face lectures, Pre-recorded video lectures ▪ Practical lessons ▪ Assignment ▪ Online quizzes 		
6) Teaching and Learning Methods for students with limited Capacity	<ul style="list-style-type: none"> • 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	<p>7.1- Research assignment: to assess general transferable skills, intellectual skills.</p> <p>7.2- Written exams:</p> <ul style="list-style-type: none"> • Short essay: to assess knowledge. • Commentary: to assess intellectual skills. <p>7.3- Practical Exams: to assess practical skills, intellectual skills.</p> <p>7.4- Oral Exams: Oral exams to assess knowledge and understanding, attitude, communication</p> <p>7.5- Structured oral exams: to assess knowledge.</p>		

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

○ **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

Use of Computer in Medicine	مسمى المقرر
P Y 100	كود المقرر

قسم: الصحة العامة والطب الوقائي

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 Introduction to Microsoft PowerPoint		A.1, A.2,			D.1
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			

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

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			C.1	
Assignment	A.4	B.2		D.1,D.2, D.3

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

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	A.1, to A.6	B.1		
Practical exam			C.1	D.1
Oral Exam	A.4, A..6	B.2	C.1	D.2, D.3

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	Modified marks
				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

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

Nashwa N. Kand

Course specification of:

“Medical Statistics and Research Methodology”

In MD degree

2022-2023

University: Minia

Faculty: Medicine

Department offering the course: Public health and preventive medicine department.

Department offering the programme: Medical physiology MD Students.

Programme(s) on which the course is given: First part MD.

Academic year/ Level: First part of MD

1. Course Information		
Academic Year/level: First part MD	Course Title: Medical Statistics and Research Methodology	Code: PY 100
Number of teaching hours: <ul style="list-style-type: none">- Lectures: 30 hours- Practical/clinical: 15 hours- Total: 45 hours		
2. Overall Aims of the course	<i>By the end of the course the student must be able to:</i> <ol style="list-style-type: none">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.	

	<ol style="list-style-type: none"> 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
<p>3. Intended learning outcomes of course (ILOs): <i>Upon completion of the course, the student should be able to:</i></p>	
<p>A. Knowledge and understanding</p>	<ol style="list-style-type: none"> A.1. Define terms of research methodology . A.2. Describe the spectrum of research methodology . A.3. Explain the 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 sample 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

	<p>A.16. Identify measures of central tendency and measures of dispersion</p> <p>A.17. Explain regression analysis, its use and differentiate its types</p> <p>A.18. Define the screening tests pertinent to selected diseases and the at-risk approach in the application of screening tests</p> <p>A.19. Explain the usefulness of screening tests</p>
B. Intellectual Skills	<p>B.1. Apply research methods to different community health problems.</p> <p>B.2. Apply appropriate research strategies for use .</p> <p>B.3. Select appropriate research methods .</p> <p>B.4. Teach and advocate appropriately in the research design.</p> <p>B.5. Describe the normal curves</p> <p>B.6. Describe and summarize data</p> <p>B.7. Select the proper test of significance for a specific data.</p> <p>B.8. Interpret selected tests of significance and the inferences obtained from such tests</p>
C. Professional and Practical Skills	<p>C.1. Plan a research proposal for community diagnosis.</p> <p>C.2. Design questionnaires.</p> <p>C.3. Conduct research.</p> <p>C.4. Judge association and causation.</p> <p>C.5. Criticize for bias and confounding factors</p> <p>C.6. Design data entry file</p> <p>C.7. Validate data entry</p> <p>C.8. Manage data files</p> <p>C.9. Construct tables and graphs</p> <p>C.10. Calculate different samples sizes</p> <p>C.11. Calculate measures of central tendency and measures of dispersion</p> <p>C.12. Calculate sensitivity, specificity, and predictive values</p>

D. General and transferable Skills	<p>D.1. Lead a research team to conduct a specific study .</p> <p>D.2. Take part and work coherently with his associates to in research.</p> <p>D.3. Write scientific papers.</p> <p>D.4. Appraise scientific evidence</p> <p>D.5. Analyze and interpret data</p> <p>D.6. Use standard computer programs for statistical analysis effectively</p>
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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	<p>Due to 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.</p> <p>Online learning materials are available at Minia University site</p> <ul style="list-style-type: none"> ▪ Lectures: Face to face lectures, Pre-recorded video lectures ▪ Practical lessons ▪ Assignment ▪ Online quizzes 		
6. Teaching and Learning Methods for students with limited Capacity	<ul style="list-style-type: none"> • 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	<p>7.1- Research assignment: to assess general transferable skills, intellectual skills.</p> <p>7.2- Written exams:</p> <ul style="list-style-type: none"> • Short essay: to assess knowledge. • Commentary: to assess intellectual skills. 		

	<p>7.3- Practical Exams: to assess practical skills, intellectual skills.</p> <p>7.4- Oral Exams: Oral exams to assess knowledge and understanding, attitude, communication</p> <p>7.5- Structured oral exams: to assess knowledge.</p>
E. Assessment Schedule (Timing of Each Method of Assessment)	<p>Assessment 1: Final written exam week: 24-28</p> <p>Assessment 2: Oral exam week: 24-28</p> <p>Assessment 3: Practical exam week: 24-28</p>
F. Weighting of Each Method of Assessment	<ul style="list-style-type: none"> - 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	<p><u>Research methods:</u></p> <ul style="list-style-type: none"> - 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.

	<p>Meade and D. Cook (2002), AMA press Chicago.</p> <ul style="list-style-type: none"> - Research Methods in Community Medicine: Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials, 6th Edition Joseph Abramson, Z. H. Abramson <p><u>Computer:</u></p> <ul style="list-style-type: none"> - 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 Edition Everitt, 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
<p>D. Periodicals, websites</p>	<ul style="list-style-type: none"> - 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=IwAR3nfirmLM4wnuEqqUjLjk8TCR7lzPdnpgqwin06L-GjFq32a62w3j6R5s9c

○ **Course Coordinators:**

➤ **Coordinators:**

Lecturers: Dr / Chrestina Monir, Dr Shaimma Mahmoud

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
PY 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
<u>Introduction :</u> - 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.1, 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			
<i>Statistics</i>					
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

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

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, A.9, A.10, A.11, A.12, A.13, A.14, A.15, A.16, A.17, A.18	B.1, B.2, B.3, B.4, B.5, 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

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

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

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	Modified marks
				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

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

Course Specification of Advanced Medical Physiology for 2nd part MD degree in Medical Physiology 2022-2023

University: Minia

Faculty: Medicine

Department offering the course: Medical Physiology Department.

Department offering the programme: Medical physiology MD Students.

Programme(s) on which the course is given: second part MD.

Academic year/ Level: second part of MD

1. Course Information		
Academic Year/level: 2 nd part	Course Title: Advanced Medical Physiology	Code: PY 100
<ul style="list-style-type: none"> • Number of teaching hours: - Lectures: 4 h/week for 51 weeks and 6h/ week in the last week, total of 210 hrs. - Practical/clinical: 2 h/week for 50 weeks, total of 100 hours. 		
2. Overall aims of the course	<p><i>By the end of the course the student must be able to:</i></p> <p>2.1. • Acquire in-depth knowledge of the cellular basis of Medical physiology, structure and function of organ systems of the body and the control systems of the human body and varies body functions in health and disease.</p> <p>2.2. Acquire knowledge concerning molecular biology & the basis of genetics.</p> <p>2.3. Develop professional skills in techniques used for experimental physiology on isolated organs, tissues and whole animals.</p>	
<p>3. Intended learning outcomes of course (ILOs): <i>Upon completion of the course, the student should be able to:</i></p>		

<p>a. knowledge and understanding</p>	<p>A.1 Describe in depth common clinical conditions and diseases related to Medical Physiology.</p> <p>A.2 Describe in depth knowledge of the following:</p> <p><u>Unit 1 Advanced cell and general physiology</u></p>
	<ol style="list-style-type: none"> 1. Functional organization of the human body and control of internal environment. 2. The cell and its function. 3. Genetic control of protein synthesis, cell function and reproduction. 4. Transport of substances through the cell membrane. <p><u>Unit 2 Advanced Excitable tissues (nerve & Muscle) physiology</u></p> <ol style="list-style-type: none"> 1. Membrane potential and action potential. 2. Contraction of the skeletal muscle. 3. Neuromuscular transmission and excitation contraction coupling of skeletal muscle. 4. Excitation and contraction of smooth muscle. <p><u>Unit 3 Advanced cardiovascular physiology</u></p> <ol style="list-style-type: none"> 1. Cardiac muscle; the heart as a pump and functions of heart valves. 2. Rhythmical excitation of the heart. 3. The normal electrocardiogram. 4. Electrocardiographic interpretation of cardiac muscle & coronary blood flow abnormalities. 5. Cardiac arrhythmias and their electrocardio-graphic interpretation. 6. Biophysics of pressure, flow and resistance. 7. Vascular distensibility and functions of arterial and venous systems. 8. Microcirculation & lymphatic system; capillary fluid exchange, interstitial fluid & lymph flow. 9. Local and humeral control of tissue blood flow. 10. Nervous regulation of arterial blood pressure. 11. Role of the kidney in long-term regulation of arterial blood pressure & hypertension. 12. Cardiac output (COP), venous return (VR) and their regulation. 13. Muscle blood flow and COP during exercise; coronary circulation and ischemic heart disease. 14. Cardiac failure pathophysiology. 15. Heart valves and hear sounds valvular and congenital heart defects. 16. Circulatory shock and its treatment. <p><u>Unit 4 Advanced Central nervous system, special senses & Autonomic nervous system physiology</u></p> <ol style="list-style-type: none"> 1. Organization of the nervous system, basic functions of synapses and neurotransmitters.

	<ol style="list-style-type: none"> 2. Sensory receptors, neural circuits for processing information. 3. Somatic sensations. 4. The eye and optics of vision. 5. Receptors and neural function of the retina 6. Central neurophysiology of vision. 7. The sense of hearing. 8. The chemical sense; taste and smell. 9. Motor functions of the spinal cord; spinal cord reflexes. 10. Supraspinal control of motor function. 11. Coordination of voluntary motor function; role of the cerebellum, basal ganglia & vestibular system. 12. Cerebral cortex; intellectual functions of brain, learning and memory. 13. Behavioral and motivational mechanisms of the brain; the limbic system and the hypothalamus. 14. States of brain activity; sleep, brain waves, epilepsy and psychosis. 15. The autonomic nervous system and adrenal medulla. 16. Cerebral blood flow, cerebrospinal fluid and brain metabolism. <p><u>Unit 5 Advanced Kidney and body fluids physiology</u></p> <ol style="list-style-type: none"> 1. Body fluid compartments: extracellular and intracellular and edema. 2. Urine formation by the kidney; glomerular filtration, renal blood flow and their control. 3. Tubular reabsorption and secretion. 4. Urine concentration and dilution, regulation of extracellular fluid osmolarity and sodium concentration. 5. Renal regulation of potassium, calcium, phosphate and magnesium; integration of renal mechanisms for control of blood volume and extracellular fluid volume. 6. Acid-base balance. 7. Diuretics and kidney diseases. <p><u>Unit 6 Advanced blood and immunity physiology</u></p> <ol style="list-style-type: none"> 1. Red blood cells, anemia and polycythemia. 2. Resistance of the body to infection: leukocytes, granulocytes, the monocyte-macrophage system, and inflammation. 3. Immunity and allergy innate immunity. 4. Blood groups, transfusion, tissue and organ transplantation. 5. Hemostasis and blood coagulation, <p><u>Unit 7 Advanced Respiration physiology</u></p> <ol style="list-style-type: none"> 1. Pulmonary ventilation. 2. Pulmonary circulation, pulmonary edema, pleural fluid.
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	<p>3. Physical principles of gas exchange; diffusion of oxygen and carbon dioxide through the respiratory membrane.</p> <p>4. Transport of oxygen and carbon dioxide in blood and tissue fluids.</p> <p>5. Regulation of respiration.</p> <p>6. Pathophysiology of respiratory insufficiency, diagnosis and oxygen therapy.</p> <p><u>Unit 8 Advanced Gastrointestinal physiology</u></p> <p>1. General principles of gastrointestinal motility, nervous control and blood circulation.</p> <p>2. Secretory functions of the alimentary tract.</p> <p>3. Digestion and absorption in the gastrointestinal tract</p> <p>4. Physiology of gastrointestinal disorders.</p> <p><u>Unit 9 Advanced metabolism and body temperature regulation physiology</u></p> <p>1. Carbohydrate metabolism and formation of adenosine triphosphate (ATP).</p> <p>2. Protein and lipid metabolism.</p> <p>3. Liver as an organ.</p> <p>4. Dietary balance; control of feeding, obesity and starvation.</p> <p>5. Energetics and metabolic rate.</p> <p>6. Body temperature regulation and fever.</p> <p><u>Unit 10 Advanced Endocrine and reproduction physiology</u></p> <p>1. Mechanisms of hormonal action.</p> <p>2. Pituitary hormones and their control by the hypothalamus.</p> <p>3. Thyroid hormones.</p> <p>4. Adrenocortical hormones.</p> <p>5. Calcium homeostasis.</p> <p>6. Glucose homeostasis.</p> <p>7. Reproductive and hormonal functions of male sex gonads (testicles).</p> <p>8. Female physiology before pregnancy and female sex hormones.</p> <p>9. Pregnancy and lactation.</p> <p>Fetal and neonatal physiology.</p> <p>A.3 Mention the details of different diagnostic tools of diseases related to Medical Physiology.</p> <p>A.4 State update and evidence-based knowledge related to Medical Physiology.</p> <p>A.5 Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to Medical Physiology.</p>
<p><u>b. Intellectual outcomes</u></p>	<p>B.1 Design and present cases, seminars in common problems related to Medical Physiology.</p>

	<p>B.2 Apply the basic and clinically supportive sciences which are appropriate to Medical Physiology related conditions / problem / topics.</p> <p>B.3 Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to Medical Physiology.</p> <p>B.4 Conduct or share in research projects.</p> <p>B.5 Write scientific papers.</p> <p>B.6 Participate in the management of risky conditions related to Medical Physiology.</p> <p>B.7 Plan for quality improvement in the field of medical education and professional practice in Medical Physiology.</p> <p>B.8 Create / innovate plans, systems and other issues for improvement of performance in his practice.</p> <p>B.9 Present and defend his/her data in front of a panel of experts.</p>
<p><u>c. Practical skills</u></p>	<p>C.1 perform the following basic lab skills essential to the course:</p> <ul style="list-style-type: none"> • Isolated skeletal muscle and perfuse heart (rabbit & frog) experiments. • Recording of 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 haemoglobin contents, bleeding time, prothrombin time, ESR, blood groups, blood haemolysis and blood indices in human. • Recording of smooth muscle contractility, study the effects of autonomic receptors agonists and antagonists on motility, secretion, gastric function tests. <p>C.2 Interpret the following noninvasive / invasive procedures/ experiments</p> <ul style="list-style-type: none"> • Isolated perfuse heart (rabbit & frog) experiments. • Recording normal arterial blood pressure, heart rates & ECG in human and experiment animals (e.g. recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG). • Measurement of activity of the baroreceptors on sympathetic and parasympathetic nervous. • Assessment of kidney functions as GFR, RBF and kidney tubular functions. • Indirect method for measurement of metabolic rate and measurement of body temperature <p>C.3 Use instruments and devices in evaluation of:</p> <ul style="list-style-type: none"> • Isolated skeletal muscle and perfuse heart (rabbit & frog) experiments. • Recording of smooth muscle contractility, study the effects of autonomic receptors agonists and antagonists on motility, secretion, gastric function tests. • Assessment of kidney functions as GFR, RBF and kidney tubular functions. <p>C.4 Counsel and educate students, technicians and junior staff, in the lab about condition related to Medical Physiology including handling of samples, devices, safety and maintenance of laboratory equipment.</p> <p>C.5 Use information technology to support education and experiments conduction.</p>

	C.6 Provide health care services aimed solving health problems and better understanding of the normal structure and function
<u>d. General Skills</u>	<p style="text-align: center;">Practice-Based Learning and Improvement</p> <p>D.1 Perform practice-based improvement activities using a systematic methodology (audit, logbook)</p> <p>D.2 Appraises evidence from scientific studies.</p> <p>D.3 Participate in one audit or survey related to the course.</p> <p>D.4 Perform data management including data entry and analysis.</p> <p>D.5 Facilitate learning of junior students and other health care professionals.</p> <p style="text-align: center;">Interpersonal and Communication Skills</p> <p>D.6 Maintain ethically sound relationship with others.</p> <p>D.7 Elicit information using effective nonverbal, explanatory, questioning, and writing skills.</p> <p>D.8 Provide information using effective nonverbal, explanatory, questioning, and writing skills.</p> <p>D.9 Work effectively with others as a member of a health care team or other professional group.</p> <p>D.10 Present a case.</p> <p>D.11 Write a report.</p> <p style="text-align: center;">Professionalism</p> <p>D.12 Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.</p> <p>D.13 Demonstrate a commitment to ethical principles in experiment conduction and research publishing.</p>

4. Course Contents

Topics: ADVANCED MEDICAL PHYSIOLOGY	Lect. Hrs.	Pract. Hrs.	Total hrs.
Unit 1 Advanced cell and general physiology	10	4	14
Unit 2 Advanced Excitable tissues (nerve & Muscle) physiology	15	8	23
Unit 3 Advanced cardiovascular physiology	30	14	44
Unit 4 Advanced Central nervous system, special senses & Autonomic nervous system physiology	50	18	68
Unit 5 Advanced Kidney and body fluids physiology	25	12	37
Unit 6 Advanced blood and immunity physiology	10	8	18

Unit 7 Advanced Respiration physiology	15	8	23
Unit 8 Advanced Gastrointestinal physiology	15	6	21
Unit 9 Advanced metabolism and body temperature regulation physiology	10	8	18
Unit 10 Advanced Endocrine and reproduction physiology	30	14	44
Total hours	210	100	310
5. Teaching and Learning Methods	<p>5.1. Lectures, Books, journals, Tutorials, Seminars, Case study.</p> <p>5.2. Laboratory training.</p> <p>5.3. Oral communication & observation Senior staff experience.</p> <p>5.4. Observation & supervision, seminars, lectures, hand on workshops</p>		
6. Teaching/learning: for students with poor achievements	<p>6.1. Didactic (lectures, seminars, tutorial)</p> <p>6.2. Extra laboratory work</p> <p>6.3. Discussions.</p> <p>6.4. Exercises.</p> <p>6.5. Assignments</p>		
7. Student assessment			
A. Student Assessment Methods	<ul style="list-style-type: none"> - Logbook - Written exam. - Practical exam - Oral exam 		
B. Assessment Schedule (Timing of Each Method of Assessment)	<ul style="list-style-type: none"> - Logbook: 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	<ul style="list-style-type: none"> - Logbook: required for the entry of written exam - Written exam: 100% - Practical exam: 100% - Oral exam: 100% 		
8. List of references	<p>8.1. Lectures notes</p> <ul style="list-style-type: none"> • Staff members print out of lectures and/or CD copies. 		

- Medical physiology books by Staff Members of the Department of Medical physiology -Minia University

8.2. 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.

8.3. Recommended books

- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxfordcore texts, 2006.
- Robert M. Berne, Matthew N. Levy. Principles of Physiology. 3th ed. 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 func on), 8th edition, Mcgraw Hill, 2004.
- 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.

8.4. Periodicals, Web sites, ... etc

- 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. Elshymaa Abdel-Hady Abdel-Hakeem

Head of Department

Prof. Dr. Merhan Mamdouh Ragy

Date of first approval by department Council: 13 /5/2013

Date of last update & approval by department Council: 06/03/02023



Merhan M. Ragy

Post-Graduate Course Specifications of Advanced medical Physiology in MD degree in Medical Physiology	مسمى المقرر
P Y 100	كود المقرر

جامعة: المنيا
كلية: الطب البشري
قسم: الفسيولوجيا الطبية

A. Matrix of Coverage of Course ILOs By Contents

Topic	Covered ILOs			
	Knowledge & Understanding	Intellectual skills	Practical skills	General skills
Unit 1 Advanced cell and general physiology.	A.1 – A.5	B.1- B.9	C.4, C.5, C.6	D.1 – D.13
Unit 2 Advanced Excitable tissues (nerve & Muscle) physiology	A.1 – A.5	B.1- B.9	C.1, C.3, C.4	D.1 – D.13
Unit 3 Advanced cardiovascular physiology	A.1 – A.5	B.1- B.9	C.1, C.2, C.4	D.1 – D.13
Unit 4 Advanced Central nervous system, special senses & Autonomic nervous system physiology	A.1 – A.5	B.1- B.9	C.1, C.4	D.1 – D.13
Unit 5 Advanced Kidney and body fluids physiology	A.1 – A.5	B.1- B.9	C.1, C.2, C.3, C.4	D.1 – D.13

Unit 6 Advanced blood and immunity physiology	A.1 – A.5	B.1- B.9	C.1, C.4	D.1 – D.13
Unit 7 Advanced Respiration physiology	A.1 – A.5	B.1- B.9	C.1, C.4	D.1 – D.13
Unit 8 Advanced Gastrointestinal physiology	A.1 – A.5	B.1- B.9	C.3, C.4	D.1 – D.13
Unit 9 Advanced metabolism and body temperature regulation physiology	A.1 – A.5	B.1- B.9	C.2, C.4	D.1 – D.13
Unit 10 Advanced Endocrine and reproduction physiology	A.1 – A.5	B.1- B.9	C.2, C.4	D.1 – D.13

This matrix was last updated and approved by the department council 06/03/2023



Merhan M. Ragy

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
Seminars				X
Laboratory training		x	x	X
Oral communication & Observation senior staff experience	x	x		X
Observation & supervision Seminars, Lectures, Hand on workshops	x	x	x	

This matrix was last updated and approved by the department council 06/03/2023

Merhan M. Ragy

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	
Logbook	x	X	x	X

This matrix was last updated and approved by the department council 06/03/2023

Merhan M. Ragy



Test Blue print for second part Advanced Medical Physiology
course

Topic	Hours	% of topic	Written exam (100%)		Actual Marks	Modified marks
			Knowledge	Intellectual		
Advanced cell and general physiology	10	4.8%	75%	25%	4.8	5
Advanced Excitable tissues (nerve & Muscle) physiology	15	7.2%	75%	25%	7.2	7
Advanced cardiovascular physiology	30	14.4%	75%	25%	14.4	14
Advanced Central nervous system, special senses & Autonomic nervous system physiology	50	24%	75%	25%	24	24
Advanced Kidney and body fluids physiology	25	12%	75%	25%	12	12
Advanced blood and immunity physiology	10	4.8%	75%	25%	4.8	5
Advanced Respiration physiology	15	7.2%	75%	25%	7.2	7
Advanced Gastrointestinal physiology	15	7.2%	75%	25%	7.2	7
Advanced metabolism and body temprature regulation physiology	10	4.8%	75%	25%	4.8	5
Advanced Endocrine and reproduction physiology	30	14.4%	75%	25%	14.4	14
Total	210					100%

This matrix was last updated and approved by the department council 06/03/2023



Coordinator:

Assistant. Professor.Dr. Elshymaa Abdel-Hady Abdel-Hakeem

Head of Department:

Prof. Dr. Merhan Mamdouh RagY

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