Benha university
Faculty of medicine
Rheumatology, Rehabilitation & Physical Medicine department

Program Specification
(2025-2026)

1- Basic Information

2- **ProgramTitle**: M.D. in Rheumatology, Rehabilitation & Physical Medicine

3- **Nature of the program:** single

4- **Departments**:

- **Responsible Department:** Rheumatology, Rehabilitation& Physical Medicine
- **Participating Departments:** Anatomy, and Physiology departments

5- **Coordinator**: Prof. Gamal Hammad

Professor of Rheumatology, Rehabilitation and Physical Medicine, Benha University

6- **Internal evaluation of program specification**: Prof. Sahar Ganeb

Professor of Rheumatology, Rehabilitation and Physical Medicine, Benha University

6- External evaluation of program specification: Prof. Fatma Ali,

Professor of Rheumatology and Rehabilitation, Minya University

7- Date of approval of program specification:

- Department council:1 October 2024 (council no. 330)
- Faculty council: 22 October 2024 (council no. 490)

2- Program Aims

1- General objectives of the program

1.1. Provide student with an appropriate background covering rheumatic diseases and musculoskeletal disorders as regard causes, pathogenesis, diagnosis, and management,

1.2. Increase the students ability to list differential diagnoses of rheumatic and musculoskeletal disorders and apply basics of scientific research,

1.3. Build-up the students' skill to organize treatment plans for rheumatic diseases as well as to design rehabilitation programs for musculoskeletal disorders (acute and chronic),

1.4. Provide students with experience of problem solving and decision-making in atypical clinical situations of specialty,

1.5. Provide students with the trend for evidence-based medicine practice to support up profession and use of various and recent tools in Rheumatology, Rehabilitation and Physical Medicine,

1.6. Increase the students' professional ethical values essential to demonstrate appropriate attitude towards patients and colleagues and lead a team effectively.

1.7. Use of the available resources for establishment of specialized professional skills and continuous self-learning, find new resources.

2-Intended Learning Outcomes (ILOS):

2.a. Knowledge and Understanding

On successful completion of the program, the graduate will be able to:

2.a.1. Understand the normal structure and function of the musculoskeletal and neuromuscular systems of the human body,

2.a.2. Discuss basic data on the mechanisms of action in the immune system,

2.a.3. Recognize basics of pathogenesis and management of different rheumatic diseases and musculoskeletal disorders,

2.a.4. Recognize causes of morbidity and mortality in musculoskeletal disorders as well as appropriate physiotherapeutic approaches to recover disability consistent with legal and ethical principles of professional practice.

2.a.5. Classify essential investigational plans of the immune system, rheumatic and musculoskeletal disorders as integrated with values of proper medical ethics,

2.a.6. Recognize common physical and rheumatic emergencies and illustrate the clinical outcome in the intensive care unit,

2.a.7. Identify objectives for clinical trials, scientific research and emerging challenges in the field Rheumatology, Rehabilitation and Physical Medicine,

2.a.8. Discuss an enhanced patients' health outcome through the development and maintenance of a humanized rehabilitation service in the community.

On successful completion of the program, the graduate will be able to:

2.b.1. Analyze symptoms and signs of patients and construct differential diagnoses for the different rheumatic diseases or musculoskeletal disorders,

2.b.2. Assess the function of the motor system regarding different disease presentations and interpret the results of used procedures to solve professional problems,

2.b.3. Take part in designing researches for the pathogenesis, diagnosis and treatment of different rheumatic diseases or musculoskeletal disorders,

2.b.4. Present scientific subjects of recent information related to Rheumatology, Rehabilitation and Physical Medicine,

2.b.5. Identify the indications and rationale of referring patients to other related specialties according to risks and severity,

2.b.6. Analyze indications, prescriptions and evaluation of different orthoses and prostheses and estimate their cost benefits in rehabilitation programs,

2.b.7. Evaluate advances in rehabilitation measures and management of rheumatic diseases based on recent data, evidence-based medicine and professional vision for future developmental plans.

2.c. Practical and professional Skills:

On successful completion of the program, the graduate will be able to:

2.c.1. Demonstrate skills to perform intra-articular, soft tissue and botulinum injections,

2.c.2. Prescribe manipulation techniques and therapeutic exercises within the rehabilitation program,

2.c.3. Attain the ability to order, write and interpret specialized reports of kinesiologic and electromyographic studies,

2.c.4. Practice up-coming challenges in Rheumatology, Rehabilitation and Physical medicine,

2.c.5. ***Demonstrate*** better awareness of current practice and technological means for rehabilitation in emergency cases and critical situations of stroke, acute pain, brain injury, joint infections, spinal injury and sports injury,

2.c.6. Use and contribute prospects for future developments within Rheumatology, Rehabilitation and Physical Medicine,

2.c.7. Use and master specific skills and technologies of Rheumatology, Rehabilitation and Physical Medicine practice to contribute to other specialties and improve joint communication.

2.d. General and transferable skills:-

By the end of the program the candidate should be able to:

2.d.1. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.d.2. Establish life-long self-learning required for continuous professional development.

2.d.3. Work effectively as a member or leader of a health care team or other professional group.

2.d.4. Communicate effectively with physicians, other health professionals, and health related agencies.

2.d.5. Manage time effectively.

2.d.6. Work effectively with an interdisciplinary team within time-planned shared programs.

3- Academic Standards

-Academic Reference Standards (ARS) of MD Degree of Rheumatology, Rehabilitation& Physical Medicine, approved by department council, dated June 2013 and in faculty council September 2013.

Academic Reference Standards (ARS) for MD Degree in Rheumatology, Rehabilitation and Physical Medicine

1. Graduate Attributes:

1-1 Mastering the basics and methodologies of scientific research.
1-2 Continued work to add knowledge in the field of Rheumatology, Rehabilitation and Physical Medicine.
1-3 Application of the analytical approach and critic of knowledge in the field of Rheumatology, rehabilitation and physical medicine and related fields such as neurological diseases.
1-4 Merge specialized knowledge with knowledge related to Rheumatology, Rehabilitation and Physical Medicine to derive and develop their interfaces.
1-5 Show a deep awareness of the current problems and recent theories in the field of Rheumatology, rehabilitation, and physical medicine.
1-6 Identifying professional problems in the field of Rheumatology, Rehabilitation and Physical Medicine and finding innovative solutions.
1-7 Mastering a wide range of professional skills in the field of Rheumatology, Rehabilitation and Physical Medicine.
1-8 Oriented with development of recent methods and tools for practicing Rheumatology, Rehabilitation and Physical Medicine.
1-9 The use of appropriate technological means to serve the professional practice in the field of Rheumatology, Rehabilitation and Physical Medicine such as using musculoskeletal ultrasound, electromyography, and nerve conduction studies.
1-10 Communicate effectively and lead a team in different professional contexts.
1-11 Decision making in the light of available information.
1-12 Employ available resources efficiently and its development and work to find new resources.
1-13 Be aware with his role in community development and provide patients with disability and communication disorders solutions to modify their life.
1-14 Disposition reflecting the commitment to integrity, credibility, and commitment to the rules of the profession.
1-15 Commitment to continuous self-learning and transfer of knowledge and experience to others.

2. Academic Standards:

2.1. Knowledge and understanding:

2.1.1 Theories, basics, and modern knowledge in the field of Rheumatology, Rehabilitation and Physical Medicine and related fields such as neurological diseases.
2.1.2 Basics, methodologies and ethics of scientific research and its various methods.
2-1-3 Moral and legal principles of professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.

2.1.4. Principles and the basics of quality in professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.

2.1.5 knowledge related to the effects of practicing Rheumatology, Rehabilitation and Physical Medicine on the environment and ways of development and maintenance of the environment.

2.2. Intellectual skills:

By the end of MD program, graduate should be able to recognize the followings:

2.2.1 Analysis and evaluation of information on the area of Rheumatology, Rehabilitation and Physical Medicine, measurement, and inference from it.

2-2-2 Solution of specialized problems based on the available data.

2-2-3 Research studies which add to the knowledge.

2.2.4 Formulation of scientific papers.

2.2.5 Risk Assessment in professional practices in the area of Rheumatology, Rehabilitation and Physical Medicine.

2.2.6 Planning for the improvement of performance in the field of Rheumatology, Rehabilitation and Physical Medicine.

2.2.7 Professional decision-making in a variety of professional contexts.

2.2.8 Innovation /creativity.

2.2.9 Dialogue and debate which is based on evidence.

2.3. Practical/Professional skills

By the end of MD program, graduate should accept the followings skills:

2.3.1 Master the basic and modern skills in the field of Rheumatology, Rehabilitation and Physical Medicine.

2.3.2 Writing and evaluation of professional reports such as reports of musculoskeletal ultrasound, reports of electromyography, and nerve conduction studies.

2.3.3 Evaluate and develop methods and existing tools in the area of Rheumatology, Rehabilitation and Physical Medicine.

2.4.4 Using technical methods that help professional practice, such as joint aspiration and injection under imaging techniques.

2.3.4. Planning for improvement of professional practice and developing performance of others.

2.4. Communication and transferable skills:

By the end of MD program, graduate should accept the following skills:

2.4.1 Effective communication with its different types.

2.4.2 Use of information technology to serve improvement of the professional practice.

2.2.3 Teach others and evaluate their performance.

2.2.4 Self-assessment and continuous learning.

2.2.5 Use different sources to obtain information and knowledge.

2.2.6 Work in a team and leading the team of work.

2.2.7 Management scientific meetings and the ability to manage time.

اعتماد مجلس القسم بتاريخ 6- 2013
رئيس مجلس القسم
ا.د. منير سراج الدين

اعتماد مجلس الكلية بتاريخ 9- 2013

Reference standards:

Graduate Profile and General Academic Standards

1. Graduate Attributes:

A PhD graduate in any discipline should be able to:

1.1 Master the fundamentals and methodologies of scientific research.
1.2 Continuously contribute to the advancement of knowledge in their field.
1.3 Apply analytical and critical thinking to knowledge in their specialization and related fields.
1.4 Integrate specialized knowledge with related disciplines, deriving and developing interdisciplinary relationships.
1.5 Demonstrate deep awareness of current issues and frontier theories in their field.
1.6 Identify professional problems and develop innovative solutions.
1.7 Master a wide range of professional skills in their area of specialization.
1.8 Strive to develop new tools, methods, and approaches for professional practice.
1.9 Utilize appropriate technological tools to enhance their professional practice.
1.10 Communicate effectively and lead teams in diverse professional contexts.
1.11 Make informed decisions based on available data.
1.12 Efficiently utilize and develop available resources and work toward identifying new ones.
1.13 Be aware of their role in community development and environmental preservation.
1.14 Act with integrity, credibility, and adherence to professional ethics.
1.15 Commit to continuous self-development and share their knowledge and expertise with others.

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2. General Academic Standards

2.1 Knowledge and Understanding

By the end of the PhD program, the graduate should have a sound understanding of:

2.1.1 Theories, fundamentals, and contemporary knowledge in the field and related disciplines.
2.1.2 Fundamentals, methodologies, ethics, and tools of scientific research.
2.1.3 Ethical and legal principles of professional practice in the field.
2.1.4 Principles and fundamentals of quality in professional practice.
2.1.5 Knowledge of the environmental impacts of professional practice and methods for environmental sustainability and conservation.

2.2 Intellectual Skills

By the end of the PhD program, the graduate should be able to:

2.2.1 Analyze and evaluate information in the field and derive conclusions.
2.2.2 Solve complex problems using available data.
2.2.3 Conduct original research that adds to the body of knowledge.
2.2.4 Write scientific papers.
2.2.5 Assess risks in professional practices.
2.2.6 Plan to improve performance in their field.
2.2.7 Make professional decisions in various contexts.
2.2.8 Demonstrate innovation and creativity.
2.2.9 Engage in evidence-based discussion and argumentation.

2.3 Professional Skills

By the end of the PhD program, the graduate should be able to:

2.3.1 Master essential and modern professional skills in their field.
2.3.2 Write and evaluate professional reports.
2.3.3 Evaluate and develop current methods and tools in their field.
2.3.4 Utilize technological tools to enhance professional practice.
2.3.5 Plan for the development of professional practice and enhance others' performance.

2.4 General and Transferable Skills

By the end of the PhD program, the graduate should be able to:

2.4.1 Communicate effectively through various means.
2.4.2 Use information technology to support professional development.
2.4.3 Teach and assess others.
2.4.4 Conduct self-assessment and pursue continuous learning.
2.4.5 Use various resources to obtain information and knowledge.
2.4.6 Work effectively in teams and lead team efforts.
2.4.7 Manage academic meetings and demonstrate effective time management.

Comparative Matrix Between the General Academic Standards for Postgraduate Programs (PhD Level) issued by the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) and The Academic Reference Standards (ARS) of the Program

A. Graduate Attributes:

Program ARS Graduate Attributes	Graduate attributes according to the academic reference standards for postgraduate (PhD degree)
1-1 Mastering the basics and methodologies of scientific research.	1-1 Mastering the basics and methodologies of scientific research.
1-2 Continued work to add knowledge in the field of Rheumatology, Rehabilitation and Physical Medicine.	1-2 Continuous contribution to the body of knowledge in the field of specialization.
1-3 Application of the analytical approach and critic of knowledge in the field of Rheumatology, rehabilitation and physical medicine and related fields such as neurological diseases.	1-3 Applying analytical and critical approaches to knowledge in the field of specialization and related fields.
1-4 Merge specialized knowledge with knowledge related to Rheumatology, Rehabilitation and Physical Medicine to derive and develop their interfaces.	1-4 Integrating specialized knowledge with related disciplines to derive and develop interrelations.
1-5 Show a deep awareness of the current problems and recent theories in the field of Rheumatology, rehabilitation, and physical medicine.	1-5 Demonstrating deep awareness of current problems and cutting-edge theories in the field.
1-6 Identifying professional problems in the field of Rheumatology, Rehabilitation and Physical Medicine and finding innovative solutions.	1-6 Identifying professional problems and finding innovative solutions to solve them.
1-7 Mastering a wide range of professional skills in the field of Rheumatology, Rehabilitation and Physical Medicine.	1-7 Mastering a wide range of professional skills in the field.

1-8 Oriented with development of recent methods and tools for practicing Rheumatology, Rehabilitation and Physical Medicine.	1-8 Aiming to develop new methods, tools, and techniques for professional practice.
1-9 The use of appropriate technological means to serve the professional practice in the field of Rheumatology, Rehabilitation and Physical Medicine such as using musculoskeletal ultrasound, electromyography, and nerve conduction studies.	1-9 Using appropriate technological tools to support professional practice.
1-10 Communicate effectively and lead a team in different professional contexts.	1-10 Communicating effectively and leading work teams in various professional contexts.
1-11 Decision making in the light of available information.	1-11 Making decisions in light of available information.
1-12 Employ available resources efficiently and its development and work to find new resources.	1-12 Efficient use and development of available resources and seeking new ones.
1-13 Be aware with his role in community development and provide patients with disability and communication disorders solutions to modify their life.	1-13 Awareness of one's role in community development and environmental conservation.
1-14 Disposition reflecting the commitment to integrity, credibility, and commitment to the rules of the profession.	1-14 Acting with integrity, credibility, and adherence to professional ethics.
1-15 Commitment to continuous self-learning and transfer of knowledge and experience to others.	1-15 Commitment to continuous self-development and sharing of knowledge and experience with others.

B. Knowledge and Understanding:

Program ARS	NAQAAE Generic Standards (PhD Level)
2.1.1 Theories , basics, and modern knowledge in the field of Rheumatology, Rehabilitation and Physical Medicine and related fields such as neurological diseases.	2-1-1 Theories, fundamentals, and up-to-date knowledge in the field and related disciplines.
2.1.2 Basics, methodologies and ethics of scientific research and its various methods.	2-1-2 Basics, methodologies, and ethics of scientific research and its various tools.
2-1-3 Moral and legal principles of professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.	2-1-3 Ethical and legal principles of professional practice in the field.
2.1.4. Principles and the basics of quality in professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.	2-1-4 Principles and fundamentals of quality in professional practice.
2.1.5 knowledge related to the effects of practicing Rheumatology, Rehabilitation and Physical Medicine on the environment and ways of development and maintenance of the environment.	2-1-5 Knowledge related to the environmental impact of professional practice and ways to promote and protect the environment.

C. Intellectual Abilities:

Program ARS	NAQAAE Generic Standards (PhD Level)
2.2.1 Analysis and evaluation of information on the area of Rheumatology, Rehabilitation and Physical Medicine, measurement, and inference from it.	2-2-1 Analyzing and evaluating information in the field, measurement, and inference.
2-2-2 Solution of specialized problems based on the available data.	2-2-2 Solving specialized problems based on available data.
2-2-3 Research studies which add to the knowledge.	2-2-3 Conducting research studies that contribute to the body of knowledge.
2.2.4 Formulation of scientific papers.	2-2-4 Scientific paper writing.
2.2.5 Risk Assessment in professional practices in the area of Rheumatology, Rehabilitation and Physical Medicine.	2-2-5 Risk assessment in professional practices.
2.2.6 Planning for the improvement of performance in the field of Rheumatology, Rehabilitation and Physical Medicine.	2-2-6 Planning to improve performance in the field.
2.2.7 Professional decision-making in a variety of professional contexts.	2-2-7 Professional decision-making in various professional contexts.
2.2.8 Innovation /creativity.	2-2-8 Innovation / creativity.
2.2.9 Dialogue and debate which is based on evidence.	2-2-9 Evidence-based dialogue and debate.

D. Professional and Practical Skills:

Program ARS	NAQAAE Generic Standards (PhD Level)
2.3.1 Master the basic and modern skills in the field of Rheumatology, Rehabilitation and Physical Medicine.	2-3-1 Mastering essential and modern skills in the field of specialization.
2.3.2 Writing and evaluation of professional reports such as reports of musculoskeletal ultrasound, reports of electromyography, and nerve conduction studies.	2-3-2 Writing and evaluating professional reports.
2.3.3 Evaluate and develop methods and existing tools in the area of Rheumatology, Rehabilitation and Physical Medicine.	2-3-3 Evaluating and developing existing methods and tools in the field.
2.4.4 Using technical methods that help professional practice, such as joint aspiration and injection under imaging techniques.	2-3-4 Using technological tools that serve professional practice.
2.3.4. Planning for improvement of professional practice and developing performance of others.	2-3-5 Planning to develop professional practice and enhance others' performance.

E. General and Transferable Skills:

Program ARS	NAQAAE Generic Standards (PhD Level)
2.4.1 Effective communication with its different types.	2-4-1 Effective communication of various types.
2.4.2 Use of information technology to serve improvement of the professional practice.	2-4-2 Using information technology to support professional practice.
2.2.3 Teach others and evaluate their performance.	2-4-3 Teaching others and evaluating their performance.
2.2.4 Self-assessment and continuous learning.	2-4-4 Self-assessment and continuous learning.
2.2.5 Use different sources to obtain information and knowledge.	2-4-5 Using various resources to obtain information and knowledge.
2.2.6 Work in a team and leading the team of work.	2-4-6 Working in a team and leading work teams.
2.2.7 Management scientific meetings and the ability to manage time.	2-4-7 Managing scientific meetings and time management skills.

4- Matrix of Academic Standards (Program Outcomes POs) with Courses

Matrix for Matching Academic Standards with Program Learning Objectives and Outcomes

Program Objectives	Academic Standards for the Doctoral Program (Graduate Attributes)
1-2	1.1. Mastering the basics and methodologies of scientific research.
1-1	1-2 Continued work to add knowledge in the field of Rheumatology, Rehabilitation and ical Medicine.
1-2	1-3 Application of the analytical approach and critic of knowledge in the field of Rheumatology, rehabilitation and physical medicine and related fields such as neurological diseases.
1-3	1-4 Merge specialized knowledge with knowledge related to Rheumatology, Rehabilitation and Physical Medicine to derive and develop their interfaces.
1-4	1.5. Showa deep awareness of the current problems and recent theories in the field of Rheumatology, rehabilitation and physical medicine.
1-4	1.6. Identifying professional problems in the field of Rheumatology, Rehabilitation and Physical Medicine and finding innovative solutions.
1-3	1.7. Mastering a wide range of professional skills in the field of Rheumatology, Rehabilitation and Physical Medicine.
1-5	1.8. Oriented with development of recent methods and tools for practicing Rheumatology, Rehabilitation and Physical Medicine.
1-5	1.9. The use of appropriate technological means to serve the professional practice in the field of Rheumatology, Rehabilitation and Physical Medicine such as using musculoskeletal ultrasound, electromyography and nerve conduction studies.
1-6	1.10. Communicate effectively and lead a team in different professional contexts
1-4	1.11 Decision making in the light of available information.
1-7	1.12. Employ available resources efficiently and its development and work to find new resources.
1-6	1.13. Be aware with his role in community development and provide patients with disability and communication disorders solutions to modify their life.
1-6	1.14. Disposition reflecting the commitment to integrity, credibility, and commitment to the rules of the profession.
1-7	1.15. Commitment to continuous self-learning and transfer of knowledge and experience to others.

Program Learning Outcomes								Program Academic Standards
Knowledge and Understanding								
2.a.8	2.a.7	2.a.6	2.a.5	2.a.4	2.a.3	2.a.2.	2.a.1.	
								By the end of MD program, the candidate should recognize and understand the followings:
			√		√	√	√	2.1.1 Theories, basics, and modern knowledge in the field of Rheumatology, Rehabilitation and Physical Medicine and related fields such as neurological diseases.
	√			√				2.1.2 Basics, methodologies and ethics of scientific research and its various methods.
				√				2-1-3 Moral and legal principles of professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.
√		√				√	√	2.1.4. Principles and the basics of quality in professional practice in the area of Rheumatology, Rehabilitation and Physical Medicine.
√	√							2.1.5 knowledge related to the effects of practicing Rheumatology, Rehabilitation and Physical Medicine on the environment and ways of development and maintenance of the environment.

Program Learning Outcomes							Program Academic Standards
Intellectual skills							
2.b.7	2.b.6	2.b.5	2.b.4	2.b.3	2.b.2.	2.b.1.	
							By the end of MD program, candidate should be able to recognize the following:
	√					√	2.2.1 Analysis and evaluation of information on the area of Rheumatology, Rehabilitation and Physical Medicine, measurement and inference from it.
					√		2-2-2 Solution of specialized problems based on the available data.
			√	√			2-2-3-Research studies which add to the knowledge.
			√				2.2.4 Formulation of scientific papers.
	√	√					2.2.5 Risk Assessment in professional practices in the area of Rheumatology, Rehabilitation and Physical Medicine.
√							2.2.6 Planning for the improvement of performance in the field of Rheumatology, Rehabilitation and Physical Medicine.

√		√					2.2.7 Professional decision-making in a variety of professional contexts.
√				√			2.2.8 Innovation /creativity.
√			√				2.2.9 Dialogue and debate which is based on evidence.

Program Learning Outcomes							Program Academic Standards Professional Skills
Practical/Professional skills							
2.c.7	2.c.6	2.c.5	2.c.4	2.c.3	2.c.2.	2.c.1.	
√	√				√	√	***By the end of MD program, candidate should accept the followings skills:*** 2.3.1Master the basic and moderns kills in the field of Rheumatology, Rehabilitation and Physical Medicine.
				√			2.3.2Writing and evaluation of professional reports such as reports of musculoskeletal ultrasound, reports of electromyography, and nerve conduction studies.
		√	√				2.3.3 Evaluate and develop methods and existing tools in the area of Rheumatology, Rehabilitation and Physical Medicine and use of technological means to serve the professional practice, such as joint aspiration and injection while using an imaging technique.
			√		√	√	2.3.4 Using technical methods that help professional practice, such joint aspiration and injection under imaging techniques.
√							2.3.5. Planning for improvement of professional practice and development of performance of others.

Program Learning Outcomes						Program Academic Standards General and Transferable Skills
General and transferable skills						
2.d.6	2.d.5	2.d.4	2.d.3	2.d.2.	2.d.1.	
		√				**By the end of MD program, candidate should accept the following skills:** 2.4.1 Effective communication with its different types.

					√	2.4.2 Use of information technology to serve improvement of the professional practice.
			√			2.4.3 Teach others and evaluate their performance.
				√		2.4.4 Self-assessment and continuous learning.
					√	2.4.5 Use different sources to obtain information and knowledge.
√	√		√			2.4.6 Work in a team and leading the team of work.
			√			2.4.7 Management scientific meetings and the ability to manage time.

(Program courses and ILOs matrix)

Courses& Codes		Knowledge & Understanding 2.a.							
		1	2	3	4	5	6	7	8
1- Applied Anatomy	RHUM 701	■							
2- Applied Physiology	RHUM 702	■							
3- Rheumatology	RHUM 703		■	■	■	■	■	■	
4- Rehabilitation Medicine	RHUM 704		■	■	■	■		■	■

Courses& Codes		Intellectual Skills 2.b.						
		1	2	3	4	5	6	7
1- Applied Anatomy	RHUM 701		■	■				
2- Applied Physiology	RHUM 702		■	■				
3- Rheumatology	RHUM 703	■	■	■	■	■	■	■
4-Rehabilitation Medicine	RHUM 704	■	■	■	■	■	■	■

Courses& Courses		Practical & Clinical Skills 2.c.						
1- Applied Anatomy	RHUM 701	1	2	3	4	5	6	7
		■		■			■	
2- Applied Physiology	RHUM 702			■			■	
3- Rheumatology	RHUM 703	■		■	■		■	■
4- Rehabilitation Medicine	RHUM 704	■	■	■	■	■	■	■

Courses& Codes		General & transferable 2.d.					
1- Applied Anatomy	RHUM 701	1	2	3	4	5	6
		■	■				
2- Applied Physiology	RHUM 702	■					
3- Rheumatology	RHUM 703	■	■	■	■	■	■
4- Rehabilitation Medicine	RHUM 704	■	■	■	■	■	■

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5- Program Structure (Curriculum)

a) Program Duration

Three years to pass Doctoral (MD) degree:

- **1st part:** One Semester. (6 months)
- **2nd part:** Four Semesters. (Two years)
- **Thesis**: Four Semesters.

- Registration takes place after passing the 1st part, starting from the 2nd semester for a period of not less than 2 years (4 semesters). The thesis is discussed 6 months after the date of passing the 2nd part which the student has successfully completed.

b) Program structure

- **Total hours of program:** 65 credit hours
- **Theoretical:** 35 credit hours
- **Practical:** 15 credit hours
- **Thesis:** 15 hours

Number of Credit Hours/Points	Code	Courses	البند
10 hours		Includes the following:	**First part**
5 hours	**RHUM 701**	Anatomy	
5 hours	**RHUM 702**	Physiology	
40 hours		Includes the following:	**second part**
20 hours	**RHUM 703**	A theoretical, clinical and practical course in rheumatology and immunology including medical and surgical treatment in addition to clinical training.	
20 hours	**RHUM 704**	A theoretical, clinical and practical course in diseases in musculoskeletal system, rehabilitation, prosthetics, and orthotic devices.	
15 hours			**PhD Thesis**
65 hours			**Total**

c- Teaching plan

First part (one semester)

a- Compulsory courses:

Course Title	Course Code	Credit hours		No. of teaching hours/week	Total teaching hours (one semester)
		Total	Lectures (theoretical)	Lectures	
Applied Anatomy	RHUM 701	5	5	5	75
Applied Physiology	RHUM 702	5	5	5	75
Total					150

b- Elective courses: none

c- Selective courses: none

Second part (four semesters)

a- Compulsory courses:

Course Title	Course Code	Credit hours			No. of teaching hours/week			Total teaching hours (4 semesters)
		Theoretical	Clinical/Practical	Total	Theoretical	Clinical/Practical	Total	
Rheumatology (Rheumatic Diseases /Immunology)	RHUM 703	14	6	20	14	12	26	1560

Rehabilitation Medicine (Musculoskeletal Disorders/ Physical Medicine/ Rehabilitation Medicine)	**RHUM 704**	**11**	**9**	**20**	**11**	**18**	**29**	**1740**
Total								**3300**

b- Elective courses: none.

c- Selective courses: none.

6-Course Contents (Specifications)

First part
1- Applied Anatomy
2- Applied Physiology
Second part
3- Rheumatology
4- Rehabilitation medicine

Benha University
Faculty of Medicine
Department of Human Anatomy and Embryology

Applied Anatomy Course Description for the Doctorate in Rheumatology, Rehabilitation, and Physical Medicine

1. Course data

Band/Level: PhD Part 1	**Course Name: Applied Anatomy**	**Code:** RHUM 701
	Number of academic units: Theoretical 5 credit hours	**Specialization : PhD in Rheumatoloy, Rehabilitation and Physical Medicine**
a. ***Get*** knowledge of the anatomy and surface landmarks of major joints and soft tissue structures, b. ***Apply*** knowledge of the appropriate system structures relevant to rheumatology and musculoskeletal medicine, c. ***Be qualified*** to make a proper diagnosis of different musculoskeletal disorders of nerves, muscles, joints and central nervous system. d. ***Maintain*** and improve his standards of knowledge by self-education as a researcher and specialist in the field of Rheumatology, Rehabilitation and Physical Medicine.		Course objective: .1
The objective of teaching the course .2 *By the end of the course, the student should be able to:*		
By the end of the course, students should be able to: ***2.a.1.List*** different joint types in human body (upper limb, lower limb and vertebral column). ***2.a.2.Describe*** the anatomical structure and biomechanics of different joint types (stability and movements). ***2.a.3.Outline*** nerves and plexuses of the upper and lower limb. ***2.a.4.Define*** the origin and insertion of the muscles of upper, lower limbs and back. ***2.a.5.Illustrate*** cranial nerves. ***2.a.6. Discuss*** different areas of the brain and their function		**A- Knowledge and understanding:**

2.b.1. Correlate basic science of anatomy to different skeletal deformities ***2.b.2.Interpret*** basic science of anatomy to connective tissue, bone, joint, and muscle diseases, ***2.b.3.Analyze*** sites of the nerve compression, ***2.b.4.Interpret*** physical tests to evaluate musculoskeletal disorders, ***2.b.5.Assess*** biomechanical principles of joint function in the prescription of orthoses and prostheses, ***2.b.6***. ***Solve*** problems of neurological injuries.	**B- Mental skills:**
2.c.1.Show the dermatomal and myotomal supply of the body segments, ***2.c.2.Identify*** accurate surface marking and anatomical landmarks needed for injecting joints and soft tissue rheumatic disorders, ***2.c.3.Make*** suggestions in calculating the patient age, ***2.c.4.Perform*** correction of different alignment, ***2.c.5.Assess*** the progress of different deformities, ***2.c.6.Create*** physical examination protocols for evaluating musculoskeletal disorders.	**C- Course-specific professional skills:**
2.d.1. Use information and communication technology effectively in the field of anatomy	**D- General skills:**

3. Course content:

Subject	Lectures (hrs)	Small group (hrs)	Total (hrs)	% of Total	ILOs
1) GENERAL ANATOMY - Bones, - Joints (classification, structure& movements), Muscles (types, features & characters of skeletal muscles),Nerves (spinal & motor cranial),Autonomic nervous system (centers, nerves & ganglia),Ligaments & fasciae.	**7**	**3**	**10**	**13%**	**2.a.1, 2.a.2,, 2.a.3,, 2.a.4,, 2.a.5, 2.b.2, 2.b.3,2.c.1,2.c.2, 2.c.3**
2) NECK AND TRUNK - Vertebral canal & vertebral foramina, - Posture, - Body weight transmission, - Ligaments & fasciae,Muscles,Joints, - Movements, - Intervertebral disc, - Diaphragm,Heart & pericardium, Respiratory system,Respiratory muscles movements.	**11**	**8**	**19**	27%	**2.a.3,2.a.6** **2.b.1. , 2.c.4, , ,2.c.6., 2.d.1 2.b.3**
3) UPPER AND LOWER LIMBS - Muscles,Nerves,Joints, - Ligaments & fasciae, - Stability, - Nerve plexuses, - Development, - Hand, Foot,Arches of the foot, - Grip-force transmission, - Mechanisms of walking, running & standing.	**12**	**8**	**20**	**29%**	**2.b.1,,2.b.3,2.b.4, 2.b.5,2.b.6, 2.c.5, 2.a.4, 2.d.1**

4) NEUROANATOMY - Brain & spinal cord: (blood supply & meninges), - Internal capsule: (afferent & efferent pathways), Nerve plexuses: (formation, relations & branches).	**17**	**9**	**26**	**31%**	**2.a.3, a.b.3, 2.b.6**	
Total	**47**	**28**	**75**	**100%**		

1. Lectures
2. Tutorials
3. Seminars
4. On line lectures : BU-LMS benha university learning management system

Teaching and learning methods .4

Teaching Methods Matrix with Learning Outcomes for the Applied Anatomy Course

Teaching methods			Course learning outcomes	
Seminars	**Tutorial**	**Modified Lectures**		
■		■	2.a.1	**Knowledge and Understanding**
■		■	2.a.2	
■		■	2.a.3	
■	■	■	2.a.4	
■		■	2.a.5	
■		■	2.a.6	
■		■	2.b.1	**Cognitive Skills**
■	■	■	2.b.2	
■		■	2.b.3	
■		■	2.b.4	
■		■	2.b.5	
■	■	■	2.b.6	
■		■	2.c.1	**Professional Skills**
■		■	2.c.2	
■		■	2.c.3	
■		■	2.c.4	
■		■	2.c.5	
■	■	■	2.c.6	
■		■	2.d.1	**General Skills**

Student evaluation:6

A- Methods used

1. **Written exams:** Assess knowledge & understanding and intellectual skills.
2. **Structured oral exams:** to assess knowledge and understanding, intellectual , professional and general and transferable skills.

Assessment Methods Matrix with Learning Outcomes for the Applied Anatomy Course

Learning methods		Course learning outcomes	
Structured Oral Exam	**Written exam**		
■	■	2.a.1	**Knowledge and Understanding**
■	■	2.a.2	
■	■	2.a.3	
■	■	2.a.4	
■	■	2.a.5	
■	■	2.a.6	
■	■	2.b.1	
■		2.b.2	**Cognitive Skills**
	■	2.b.3	
	■	2.b.4	
	■	2.b.5	
■		2.b.6	
■		2.c.1	
■		2.c.2	**Professional Skills**
■		2.c.3	
■		2.c.4	
■		2.c.5	
■		2.c.6	
■		2.d.1	**General Skills**

B- Timing

- Final exam at May or November

• Examination Marks allocated a- Written: 150 b- Oral: 100 Total :250	**C- Distribution of grades**
7- List of textbooks and references:	
• Lectures notes	notes
Gray's Anatomy42nd **Edition The Anatomical Basis of Clinical Practice)** Standring, S. (Ed.). (2020). *Gray's anatomy e-book: the anatomical basis of clinical practice*. Elsevier Health Sciences.	Compulsory books
Hole's Human Anatomy & Physiology 15th Edition by David Shier (Author), Jackie Butler (Author), Ricki Lewis (Author) Hole, J. W., Shier, D., Butler, J., & Lewis, R. (2019). Hole's essentials of human anatomy & physiology. Boston.	Suggested books
https://www.coursera.org/specializations/anatomy	scientific journals or newsletters

Course Contents/ILOs Matrix

ILOs / Course Con	2.a. Knowledge and understanding						2.b. . Intellectual Skills						2.c.3. Practical & Clinical skills						2d.Gene and transfera
	2.a.1	2.a.2	2.a.3	2.a.4	2.a.5	2.a.6	2.b.1	2.b.2	2.b.3	2.b.4	2.b.5	2.b.6	2.c.1	2.c.2	2.c.3	2.c.4	2.c.5	2.c.6	2.d.1
1) General anatomy	×	×	×	×	**x**			×	×				**x**	×	×				
2)Head and neck Disease			×			**X**	×		×							×		×	×
3) upper and lower limbs				×			×		×	×	×	×					×		×
4) neuroanatomy			x						**x**			**X**							

رئيس مجلس القسم العلمي
ا.د أسامة فؤاد

جامعة بنها
كلية الطب البشرى
قسم الفسيولوجيا الطبية

Applied Physiology Course Description
Doctorate in Rheumatology, Rehabilitation, and Physical Medicine - Updated Regulations

Course data .5		
Band/Level: PhD Part 1	Course Name: Applied Physiology	: code RHUM 702
	Number of academic units: Theoretical credit hours 5	Speciality: Rheumatology , Rehabilitation and Physical Medicine
The overall goals of the course are to: • ***Respond*** to the educational and research training needs of doctors with a special interest in Rheumatology, Rehabilitation and Physical Medicine. • ***Prepare*** a Rheumatology, Rehabilitation and Physical Medicine physician oriented with the physiology of muscle and nerve, CNS and endocrine. ***Provide*** graduates with enough knowledge about the regulation of body temperature, body fluids and homeostasis. • ***Maintain*** and improve students' standards of knowledge by self-education as a researcher and specialist in the field of Rheumatology, Rehabilitation and Physical Medicine.		Course .6 :objective
The objective of teaching the course .6 *By the end of the course, the student should be able to:*		

By the end of the course, students should be able to: ***2.a.1.Describe*** the physiology of the muscle contraction and relaxation. ***2.a.2.List*** the normal physiological changes in exercise. ***2.a.3.Define*** action potentials and motor end plate. ***2.b.4.Mention*** the different types of receptors. ***2.a.5.Classify*** the nature of pain and pain control systems. ***2.a.6.Name*** types of nerve and muscle fibers. ***2.a.6.List*** central control of movement and sensations. ***2.a.7.Define*** electrodiagnostic tests of nerves and muscles.	A. Knowledge and Understanding :
b- Intellectual skills: ***By the end of the course, students should be able to:*** ***2.b.1.Interpret*** the balance of body fluids and electrolyte homeostasis. ***2.b.2.Analyze*** the difference between the types and nature of pain perceived by the patient. . ***2.b.3.Evaluate*** the patient response to exercise. ***2.b.4.Interpret*** methods of chronic pain control in different musculoskeletal disorders. .	B. Cognitive Skills:
2.c.1.Write the pathway for each type of sensation. ***2.c.2.Use*** model for gate theory in management plan of patients with musculoskeletal disorders. ***2.c.3.Manage*** body response to temperature changes. ***2.c.4.Write an*** algorithm for investigational and therapeutic programs in the management of musculoskeletal disorders.	C. Course-Specific Professional Skills:
2.d.1. **Use** the available information and communication technology effectively in the field of Physiology to conduct researches in Rheumatology, Rehabilitation and Physical Medicine.	D. General Skills:

1. Course Content:

Topic	Lectures (hrs)	Small group (hrs)	Total (hrs)	% of total	ILOs
1) MUSCLES AND NERVES - Nerve, - Skeletal Muscle.	**6**	**4**	**10**	**13%**	**2.a.1 2.a.6, 2.b.3**
2) CENTRAL NERVOUS SYSTEM - Neurotransmitters, - Receptors, - Synapses, - Somatic sensations, - Sensory areas of cerebral cortex, - Pain & pain control system, - Spinal cord lesions, - Motor areas of cerebral cortex, - Descending pyramidal & extra-pyramidal tracts,. - Stretch reflex & muscle tone, - Basal ganglia, - Cerebellum.	**12**	**8**	**20**	**27%**	**2.a.2, 2.a.3, 2.a.4 2.b.1, 2.b.2 2.b.4 2.c.1, 2.c.2, 2.c.4, 2.d.1**
3) CIRCULATION - Arterial blood pressure & its regulation, - Capillary circulation, - Edema.	**8**	**5**	**13**	**18%**	**2.a.3, 2.a.5,**
4) RESPIRATION - Hypoxia.	**4**	**1**	**5**	**7%**	**2.a.3, 2.a.5, , 3.c.3, 2.d.1**
5) BLOOD - Anemia.	**4**	**1**	**5**	**7%**	**2.a.5, 2.b.3**
5) METABOLISM - Obesity, - Fever	**5**	**3**	**8**	**9%**	**2.a.2, 2.c.3**

- Sports physiology.					
6) ENDOCRINE - Thyroid hormones, - Parathyroid hormones, - Calcium homeostasis.	**7**	**3**	**10**	**13%**	**2.a.4, 2.a.7, 2.b.3**
7) KIDNEY - Water & electrolytes balance.	**2**	**2**	**4**	**6%**	**2.b.1**
Total	**48**	**27**	**75**	**100%**	

.7 Teaching and Learning Methods

1. Lectures
2. Tutorials
3. On line lectures : BU-LMS benha university learning management system

Teaching Methods Matrix with Learning Outcomes for the Applied Physiology Course

Learning methods			Course learning outcomes	
Seminars	**Tutorial**	**Modified Lectures**		
■	■	■	2.a.1	Knowledge and Understanding
■		■	2.a.2	
■		■	2.a.3	
■		■	2.a.4	
■		■	2.a.5	
■	■	■	2.a.6	
■		■	2.a.7	
■		■	2.b.1	Cognitive Skills
■		■	2.b.2	
■		■	2.b.3	
■		■	2.b.4	
■	■	■	2.c.1	Professional Skills
■		■	2.c.2	
		■	2.c.3	
		■	2.c.4	
		■	2.d.1	**General Skills**

Student evaluation.6

3. **Written exams:** Assess knowledge & understanding and intellectual skills.
4. **Structured oral exams:** to assess knowledge and understanding, intellectual , professional and general and transferable skills.

A- Methods used

Assessment Methods Matrix with Learning Outcomes for the Applied Physiology Course

Evaluation methods		Course learning outcomes	
Structured Oral Exam	**Written exam**		
■	■	2.a.1	Knowledge and Understanding
■	■	2.a.2	
■	■	2.a.3	
■	■	2.a.4	
■	■	2.a.5	
■	■	2.a.6	
■	■	2.a.7	
■	■	2.b.1	Cognitive Skills
■	■	2.b.2	
■	■	2.b.3	
■	■	2.b.4	
■		2.c.1	Professional Skills
■		2.c.2	
■		2.c.3	
■		2.c.4	
■		2.d.1	**General Skills**

- Final exam at May or November

B- Timing

- Examination Marks allocated
- a- Written: 150
- b- Oral: 100

Total :250

C- Grade Distribution

List of textbooks and references.7 :

- Lectures notes

A- Memoirs

-Guyton & Hall Physiology Review 13th Edition Hall, J. E., & Hall, M. E. (2016). Guyton and Hall textbook of medical physiology e-Book. 13th Edition. Elsevier Health Sciences -Ganong's Review of Medical Physiology, Twenty sixth Edition 26th Edition Barrett K., BarmanS , Yuan J,et al (2019): Ganong's Review of Medical Physiology, Twenty sixth Edition 26th Edition, McGraw-Hill education.	B- Required books
-Vander's Human Physiology (2019) ;The mechanisms of body functions, 15th Edition Strang, and Arthur J. Vander.(2019): Vander's Human Physiology: The Mechanisms of Body Function. 15th Edition. New York: McGraw-Hill.	C- Suggested books
• https://join.shawacademy.com/physiology-20-amp?utm_source=google&utm_medium=cpc&utm_campaign=me_search_generic_physiology_courses_bmm&gclid=EAIaIQobChMI6pD8icG07QIVjMLtCh0OfgKEEAAYAyAAEgJlQ_D_BwE	D- Scientific journals or bulletins

Course Contents/ILOs Matrix

ILOs / Course Contents	2.a. Knowledge and understanding							2.b. . Intellectual Skills				2d.General transferable S
	2.a.1	2.a.2	2.a.3	2.a.4	2.a.5	2.a.6	2.a.7	2.b.1	2.b.2	2.b.3	2.b.4	2.d.1
1-Muscles And Nerves 1-										X		
2-Central Nervous System			X					X				X
3-Circulation			X		X							
4-Respiration			X		X					X		X
5-Blood					X					X		
6-Metabolism			X									
7-Endocrine					X							
8-Kidney	X											

رئيس مجلس القسم العلمي

ا.د/ عبير شومان

Benha University
Faculty of Medicine
Department of Rheumatology, Rehabilitation, and Physical Medicine

Course Description in Rheumatic Diseases, Pharmacological and Surgical Treatment
For PhD Students in the Department of Rheumatology, Rehabilitation and Physical Medicine. Updated Regulations

Course data		
Class/Level: PhD, Part II.	Course Name: Rheumatic Diseases, Drug and Surgical Treatment.	: **code** RHUM 703
Number of academic units: 20 credit hours 14 theoretical - 6 practical	Specialization: Rheumatology, Rehabilitation, and Physical Medicine.	

Course objective -1

- ***Provide*** students with an appropriate background covering rheumatic diseases as regard causes, pathogenesis, diagnosis and management.
- ***Provide*** students the ability to list differential diagnoses of rheumatic diseases.
- ***Build up*** the students' skill to organize treatment plans for rheumatic diseases.
- ***Allow*** them to have the experience for problem solving and decision-making in atypical clinical situations.
- ***Increase*** the students' trend for evidence-based medicine practice to support up profession in Rheumatology, Rehabilitation and Physical Medicine.
- ***Give*** students lifelong learning talent necessary for continuous professional development and research establishment.
- ***Provide*** the students with the professional ethical values essential to demonstrate appropriate attitude towards patients and colleagues.
- ***Allow*** students to show skills necessary for proper patients' interrogation and evaluation.
- ***Support*** appropriate professional education necessary for the management and organization of health problems within the community.

The objective of teaching the course -2

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

2.a.1. List the common causes of arthritis and musculoskeletal disorders (acute and chronic) as well as symptoms and signs of different rheumatic diseases. ***2.a.2. Discuss*** current and emerging data on the pathogenesis and management of different rheumatic diseases and musculoskeletal disorders,	A- Information and concepts:

2.a.3. list common physical and rheumatic emergencies. ***2.a.4. Discuss*** essential investigational plans of the immune system, rheumatic and musculoskeletal disorders as integrated with values of proper medical ethics ***2.a.5. Discuss*** basic data on the mechanisms of action in the immune system	
2.b. Intellectual Skills: ***By the end of the course, students should be able to:*** ***2.b.1. Analyze*** symptoms and signs of patients and construct differential diagnoses for the different rheumatic diseases. ***2.b.2. Interpret*** an investigational plan for patients regarding disease presentations and interpret the results of used diagnostic procedures to solve professional problems. ***2.b.3. Evaluate*** pathogenesis, diagnosis and treatment of different rheumatic diseases. ***2.b.4. Write*** and ***present*** scientific subjects of recent information related to Rheumatology, Rehabilitation and Physical Medicine. ***2.b.5. Classify*** the indications and rationale of referring patients to other related specialties according to risks and severity. ***2.b.6. Evaluate*** advance in rehabilitation approaches and management of rheumatic diseases based on recent data, evidence-based medicine and professional vision for future developmental plans	B- Mental skills:
2.c.1.use skills to perform intra-articular, soft tissue and botulinum injections. ***2.c.2. Perform*** and practice up-and-coming challenges in Rheumatology, Rehabilitation and Physical medicine. ***2.c.3. Apply*** better awareness of current practice and technological means for management of rheumatological emergencies. ***2.c.4. Manage*** prospects for future developments within Rheumatology, Rehabilitation and Physical Medicine. ***2.c.5. Use*** specific knowledge and skills of Rheumatology, Rehabilitation and Physical Medicine to other specialties to improve joint communication.	C- Course-specific professional skills:
2.d. General and Transferable Skills: ***By the end of the course, students should be able to:*** ***2.d.1. Communicate*** effectively with other health care professionals to discuss and exchange ideas and arguments. ***2.d.2. Use*** sources of biomedical information and communication technology to remain up- to-date with advances in knowledge and practice. ***2.d.3. Use*** scientific information clearly to others in written, electronic and oral forms to improve performance. ***2.d.4. Show self-assess*** of personal learning needs required for continuous professional development.	D- General skills:

2.d.5. Use the sources of biomedical information and communication technology to teach others and evaluate their clinical practice. ***2.d.6. Communicate*** effectively with an interdisciplinary team within time-planned shared programs.	

Course content -2

Subject	Lectures (hrs)	Clinical & Practical (hrs)	Total (hrs)	% of total	Ilos
1) Structure and Function of Bone, Joints, and Connective Tissue	**40**	**7**	**47**	**3%**	**2.a.2, 2.b.3,2.b.6, 2.c.1**
2) Molecular and Cellular Basis of Immunology and Effector Mechanisms in Autoimmunity and Inflammation Introduction to immune system Innate & adaptive immunity HLA antigen Autoimmunity Immunotolerance APCs and antigen presentation	**50**	**43**	**93**	**6%**	**2.a.5, 2.b.6, 2.c.2, 2.c.4, 2.c.5, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
3) **Approach to the Patient with Rheumatic Disease** ▪ Physical Examination of the Musculoskeletal System ▪ Approach to regional musculoskeletal pain ▪ Differential diagnosis of diffuse musculoskeletal pain ▪ Evaluation of Monoarticular and Polyarticular Arthritis ▪ Pregnancy and Rheumatic Diseases ▪ The Eye and Rheumatic Diseases ▪ Skin and Rheumatic Diseases ▪ Evaluation and Management of Early Undifferentiated Arthritis ▪ Nutrition and Rheumatic Diseases	**65**	**91**	**156**	**10%**	**2.a.1, 2.a.2, 2.a.4, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
4) Rheumatoid Arthritis.	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3,**

					2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.
5) <u>Spondyloarthropathies</u>	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
6) <u>Systemic Lupus Erythematosus</u>	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
7) <u>Scleroderma, Inflammatory Myopathies, And Overlap Syndromes</u>	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
<u>8) Vasculitides</u>	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
<u>9) Crystal-Induced Arthritis</u> ▪ Gout.	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3,**

▪ Calcium Pyrophosphate Deposition Disease					**2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
10) <u>Miscellaneous Rheumatic disorders</u> ▪ Familial Autoinflammatory Syndromes ▪ Sjögren's Syndrome ▪ Adult-Onset Still Disease ▪ Anti-phospholipid Syndrome ▪ Mixed connective tissue diseases	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
<u>11) Osteoarthritis</u>	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
<u>12) Cartilage, Bone, And Heritable Connective Tissue Disorders</u> ▪ Metabolic Bone Diseases ▪ Proliferative bone diseases ▪ Osteonecrosis ▪ Relapsing Polychondritis ▪ Heritable Diseases of Connective Tissue	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.2, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
<u>13) Infectious Arthritis</u> ▪ Bacterial Arthritis ▪ Lyme Disease ▪ Mycobacterial Infections of Bones and Joints ▪ Fungal Infections of Bones and Joints ▪ Rheumatic Manifestations of HIV Infection ▪ Viral Arthritis ▪ Rheumatic Fever and Post-streptococcal Arthritis	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.2, 2.c.3, 2.c.4, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**

▪ Rheumatological manifestation of COVID infection					
14) Systemic Diseases Associated with Arthritis ▪ Rheumatic manifestation of blood disease ▪ Arthritis Accompanying Endocrine and Metabolic Disorders ▪ Amyloidosis ▪ Sarcoidosis ▪ Hemochromatosis ▪ Igg4-Related Disease ▪ Tumors and Tumor-like Lesions of Joints and Related Structures ▪ Rheumatic manifestation of malignancy ▪ Autoimmune Complications of Immune Checkpoint Inhibitors for Cancer	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
15) Pediatric Rheumatology ▪ Juvenile Idiopathic Arthritis ▪ Pediatric Systemic Lupus Erythematosus ▪ Juvenile Dermatomyositis, Scleroderma, ▪ And Vasculitis ▪ Rheumatological manifestation of COVID infection	**50**	**75**	**125**	**8%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.1, 2.b.2, 2.b.3, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
16) Diagnostic Tests And Procedures In Rheumatic Diseases ▪ Acute Phase Reactants and the Concept of Inflammation ▪ Complement testing ▪ Anti-nuclear Antibodies ▪ Extractable Nuclear Antigens. ▪ Characteristic autoantibodies associated with SLE	**45**	**33**	**78**	**5%**	**2.a.1, 2.a.2, 2.a.4, 2.b.2, 2.b.4, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.4, 2.c.5, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**

▪ Antiphospholipid antibodies ▪ Autoantibodies in Rheumatoid Arthritis ▪ Autoantibodies in systemic sclerosis ▪ Autoantibodies in myositis & necrotizing myopathy ▪ ANCA ▪ HLA Typing ▪ Synovial Fluid Analyses, Synovial Biopsy, and Synovial Pathology ▪ Arthrocentesis and Injection of Joints and Soft Tissue					
17) Imaging in Rheumatological Diseases. ▪ Conventional radiography ▪ Computed tomography ▪ Magnetic resonance imaging ▪ Ultrasonography ▪ Other imaging modalities	**45**	**33**	**78**	**5%**	**2.a.4, 2.b.2, 2.b.4, 2.b.5, 2.b.6, 2.c.2, 2.c.4, 2.c.5, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
18) Pharmacology of Anti-rheumatic Drugs ▪ Non steroidal anti-inflammatory drugs. ▪ Corticosteroids. ▪ Urate-Lowering Therapy ▪ Immunosuppressive Drugs ▪ Bisphosphonates ▪ Conventional Disease modifying antirheumatic drugs, ▪ Biological therapies.	**50**	**75**	**125**	**8%**	**2.a.1, 2.a.2, 2.a.3, 2.a.4, 2.a.5, 2.b.3, 2.b.5, 2.b.6, 2.c.1, 2.c.2, 2.c.3, 2.c.4, 2.c.5, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6.**
Total	**840**	**720**	**1560**	**100%**	

Teaching and learning methods -3

1. Lectures
2. Tutorials
3. Practical classes
4. On line lectures : BU-LMS benha university learning management system
5.. interactiveZoom meeting, online lectures on Whatsapp group and telegram app
6.. Youtube channel containing recorded lectures

Teaching Methods Matrix with Learning Outcomes for the Rheumatic Diseases, Pharmacological and Surgical Treatment Course

Learning methods			Course Learning Outcomes	
Seminars	**Tutorial**	**Modified Lectures**		
■		■	2.a.1	Knowledge and
	■	■	2.a.2	
■		■	2.a.3	
	■		2.a.4	
		■	2.a.5	
		■	2.b.1	
	■		2.b.2	
■		■	2.b.3	
		■	2.b.4	
		■	2.b.5	
		■	2.b.6	
■	■	■	2.c.1	Professional Skills
		■	2.c.2	
	■		2.c.3	
		■	2.c.4	
		■	2.c.5	
	■	■	2.d.1	**General Skills**
■			2.d.2	
		■	2.d.3	
■	■	■	2.d.4	

		■	2.d.5	
		■	2.d.6	

-4

Office hours system	**Teaching and learning methods for students with limited abilities -5**

Student evaluation -6

Assessment methods matrix with learning outcomes for the course on rheumatic diseases, drug and surgical treatment

Evaluation methods			Course Learning	
Clinical exam	**Structured Oral Exam**	**Written exam**		
■	■	■	2.a.1	Knowledge and
■	■	■	2.a.2	
■	■	■	2.a.3	
■	■	■	2.a.4	
■	■	■	2.a.5	
■	■	■	2.b.1	
■		■	2.b.2	
■	■	■	2.b.3	
■		■	2.b.4	
■	■	■	2.b.5	
■	■	■	2.b.6	
■			2.c.1	
■			2.c.2	
■			2.c.3	
■			2.c.4	

	■			2.c.5	
	■	■		2.d.1	
	■	■		2.d.2	**General Skills**
	■	■		2.d.3	
	■	■		2.d.4	
	■	■		2.d.5	
	■	■		2.d.6	

7-

• **Written examination**: to assess knowledge & intellectual skills. • **Oral examination**: to assess knowledge, intellectual skills& general& transferable skills. • **Clinical exam**: assess knowledge, intellectual skills &practical and professional & general& transferable skills. • **Practical, plain x-rays to write a report and discuss**	A- Methods used
Final exam in May or November	B- Timing
Written Exam 400, commentary 200 **Oral Exam 100** **Clinical Exam 200** **Practical 100** **Total: 1000**	C- Grade distribution
List of textbooks and references: -8	
Lectures notes.	A- Memoirs
.1- Essential Books (Text Books): – Petros Ephthimiou (2020): absolute rheumatology review. First edition. Springer Science & Business Media – Gary Firestein, Ralph Budd, Sherine E Gabriel et al (2021): Kelley and Firestein's Textbook of Rheumatology, 2-Volume Set. 11th Edition. Elsevier – John A. Stone (2021): Current Diagnosis & Treatment in Rheumatology, Fourth Edition. McGraw-Hill Education	B- Required books

– Hochberg MC, Gravallese EM, Smolen JS, van der Heijde D, Weinblatt ME, Weisman MH (2022): Rheumatology, 2-Volume Set, 8th Edition. Elsevier Health Sciences. **6.2- Recommended Books:** – (2020): Wshington manual of rheumatology third edition . Stephen A. P., Allan G., John F. B. (2010): Manual of rheumatic disease and outpatient orthopedic disorders. 4th edition Little Brown & Co. – Hani Almoallim, Mohamed Cheikh (2021): Skills in Rheumatology. Springer Nature Singapore. – Gustav K. von Schulthess, Juerg Hodler, Rahel A. Kubik-Huch (2021): Musculoskeletal Diseases 2021-2024 Diagnostic Imaging. Springer International Publishing.	
• **Periodicals**: - Annals of Rheumatic Diseases. - Arthritis and Rheumatism. - British Journal of Rheumatology. -	C- Suggested books
• **Web Sites:** - www.medscape.com, - www.emedicine.com, - www.gigapedia.com.	**D - Scientific periodicals or bulletins**

Rheumatotolgy, Rehabilitation and Physical medicine Depertment

Course name: Rheumatic diseases and drug and surgical treatment **code:** RHUM 703

Course Contents/ILOs Matrix

ILOs / Course Contents	2.a. Knowledge and understanding					2.b. Intellectual Skill						2.c. Practical & Clinical skills					*2.d. General and Transferable Skills:*					
	2.a.1	*2.a.2*	*2.a.3*	*2.a.4*	*2.a.5*	2.b.1	2.b.2	2.b.3	2.b4	2.b.5	2.b.6	2.c.1	2.c.2	2.c.3	2.c.4	2.c.5	*2.d.1*	*2.d.2*	*2.d.3*	*2.d.4*	*2.d.5*	*2.d.6*
1) Approach to the Patient with Rheumatic Disease	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2) Molecular and Cellular Basis of Immunology and Effector Mechanisms in Autoimmunity and Inflammation					x						x		x		x	x		x	x	x	x	x
3) Rheumatoid Arthritis.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4) Spondyloarthropathies	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5) Systemic Lupus Erythematosus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6) Scleroderma, Inflammatory Myopathies,	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

And Overlap Syndromes																						
7) Vasculitides	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8) Crystal-Induced Arthritis	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9) Miscellaneous Rheumatic disorders	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10) Osteoarthritis	x	x		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
11) Cartilage, Bone, And Heritable Connective Tissue Disorders	x	x		x	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x	x
12) Infectious Arthritis	x	x	x	x		x	x	x	x		x		x	x	x	x	x	x	x	x	x	x
13) Systemic Diseases Associated with Arthritis	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14) Pediatric rheumatology	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15) Diagnostic Tests And Procedures In Rheumatic Diseases	x	x		x			x		x	x	x	x	x		x	x		x	x	x	x	x
16) Imaging in Rheumatological Diseases.				x			x		x	x	x		x		x	x		x	x	x	x	x

17) Pharmacology of Anti-rheumatic Drugs	x	x	x	x	x			x		x	x	x	x	x	x	x	x	x	x	x	x	x

رئيس مجلس القسم **أستاذ المادة**

ا.د. وليد أحمد صلاح الدين **ا.د. جمال حماد**

Benha University
Faculty of Medicine
Department of Rheumatology, Rehabilitation, and Physical Medicine

Course Description: Musculoskeletal Diseases, Rehabilitation, Prosthetics, and Orthotics

For a PhD in Rheumatology, Rehabilitation, and Physical Medicine (Updated List)

Course Information		
Year/Level: PhD, Part II	**Course Title: Diseases of the Locomotor System, Rehabilitation, Prosthetics, and Orthotics**	**code** : RHUM 704
Number of academic units: 20 credit hours, 11 theoretical and 9 practical	Specialization: PhD in Rheumatology, Rehabilitation and Physical Medicine	
Objective of the course -1		
• ***Provide an appropriate background covering musculoskeletal disorders as regard causes, pathogenesis, diagnosis and management,*** • ***Give students the ability to list differential diagnoses of musculoskeletal disorders,*** • ***Create the skill to design rehabilitation programs for musculoskeletal disorders (acute and chronic),*** • ***Realize expertise for problem solving and decision-making in atypical clinical situations,*** • ***Develop the trend for evidence-based medicine practice to support up profession in Rheumatology, Rehabilitation and Physical Medicine,*** • ***Support lifelong learning talent necessary for continuous professional development and research establishment,*** • ***Present professional ethical values essential to demonstrate appropriate attitude towards patients and colleagues,***		

- ***Prop up communication skills necessary for proper patients' interrogation and evaluation,***
- ***Sustain appropriate professional education necessary to manage and organize health problems within the community.***

	The objective of teaching the course-2
By the end of the course, students should be able to	
2.a.1.List current and emerging data on the pathogenesis and management of different musculoskeletal disorders, ***2.a.2.Describe*** the morbidity and mortality of musculoskeletal disorders and discuss an investigational plan for causes and effective modern physiotherapeutic approaches to recover disability, ***2.a.3. Enumerate*** most recent modalities used in pain control. ***2.a.4.List*** common physical emergencies and illustrate the clinical outcome in the intensive care unit, ***2.a.5. Enumerate*** recent physical modalities and therapeutic exercises used in rehabilitation programs**.** ***2.a.6. Discuss*** rehabilitation program and patients' health outcome through the development and maintenance of a humanized rehabilitation service in the community.	Knowledge and Understanding
2.b. Intellectual Skills: ***By the end of the course, students should be able to:*** ***2.b.1.Analyze*** symptoms and signs of patients and construct differential diagnoses for the different musculoskeletal disorders, ***2.b.2.select*** an investigational plan for patients regarding disease presentations and interpret the results of used diagnostic procedures to solve professional problems, ***2.b.3.analyze*** pathogenesis, diagnosis and treatment of different musculoskeletal disorders, ***2.b.4***. ***Write*** and present scientific subjects of recent information related to Rheumatology, Rehabilitation and Physical Medicine, ***2.b.5.Identify*** and classify the indications and rationale of referring patients to other related specialties according to risks and severity,	Cognitive Skills

2.b.6.write indications, prescriptions and evaluation of different orthoses and prostheses and estimate their cost benefits in rehabilitation programs, ***2.b.7. Evaluate*** rehabilitation approaches and management of rheumatic diseases based on recent data, evidence-based medicine and professional vision for future developmental plans.	
2.c.1.Demonstrate skills to perform intra-articular, soft tissue and botulinum injections, ***2.c.2.Prescribe*** manipulation techniques and therapeutic exercises within the rehabilitation program, ***2.c.3.Categorize***, ***interpret***, and ***write*** reports of kinesiologic and electromyographic studies, ***2.c.4.write*** coming challenges in Rheumatology, Rehabilitation and Physical medicine, ***2.c.5.Demonstrate*** better awareness of current practice and technological means for rehabilitation in emergency cases and critical situations of stroke, acute pain, brain injury, joint infections, spinal injury and sports injury, ***2.c.6.Identify*** prospects for future developments within Rheumatology, Rehabilitation and Physical Medicine, ***2.c.7.Apply*** specific knowledge and skills of Rheumatology, Rehabilitation and Physical Medicine to other specialties to improve joint communication,	Professional Skills
2.d. General and Transferable Skills: ***By the end of the course, students should be able to:*** ***2.d.1.Communicate*** effectively with other health care professionals to discuss and exchange ideas and arguments, ***2.d.2.Use*** sources of biomedical information and communication technology to remain up- to-date with advances in knowledge and practice,	General Skills

2.d.3.Retrieve, ***manipulate*** and ***present*** scientific information clearly to others in written, electronic and oral forms to improve performance, ***2.d.4.Determine*** and ***self-assess*** personal learning needs required for continuous professional development, ***2.d.5.Use*** the sources of biomedical information and communication technology to teach others and evaluate their clinical practice, ***2.d.6.Work*** effectively with an interdisciplinary team within time-planned shared programs.	

3-course content

Subject	Lectures (hrs)	Clinical & Practical (hrs)	Total (hrs)	% of total	ILOs
1) Patient Evaluation & Diagnosis ▪ Neurological history and examination ▪ Diagnosis and management of disability ▪ Rehabilitation program design ▪ Functional Evaluation and Management of Activities of Daily Living	**25**	**45**	**70**	**4%**	**2.a.1, 2.d.3**
2) Diagnostic Procedures ▪ Laboratory tests and Imaging studies ▪ Musculoskeletal and work-related tests ▪ Cardiopulmonary assessment /Stress test. ▪ Functional assessment instruments ▪ Neuropsychological evaluations	**25**	**45**	**70**	**4%**	**2.b.2, 2.d.2, 2.d.5**
3) Therapeutic tools ▪ Therapeutic Exercise ▪ Manipulation, massage and Traction ▪ Therapeutic Physical Agents ▪ Behavioral/ Psychological Modalities (relaxation therapy, Biofeed back)	**25**	**45**	**70**	**4%**	**2.a.1, 2.a.5, 2.b.4, 2.c.2**

4) Electrodiagnosis ▪ General Electrodiagnosis. ▪ Nerve conduction studies. ▪ Late responses ▪ Electromyography. ▪ Evoked potentials. ▪ Applied electrodiagnosis.	**74**	**100**	**174**	**10%**	**2.a.1, 2.b.4, 2.c.3, 2.d.2, 2.d.6**
5) Orthotics and Prosthetics ▪ Gait analysis. ▪ Assistive devices ▪ Amputation Rehabilitation ▪ Upper limb orthoses. ▪ Upper limb prostheses. ▪ Lower limb orthoses. ▪ Lower limb prostheses. ▪ Spinal orthoses. ▪ Wheelchairs and Seating Systems	**80**	**129**	**209**	**12%**	**2.a.1, 2.b.3, 2.c.4, 2.c.5, 2.d.2, 2.d.6**
6) Management of chronic pain.	**13**	**21**	**34**	**2%**	**2.a.3, 2.a.4, 2.b.4, 2.c.5, 2.d.2, 2.d.3**
7) Pharmacologic intervention ▪ Analgesics. ▪ Anti-seizure. ▪ Skeletal muscle relaxants.	**14**	**20**	**34**	**2%**	**2.a.1, 2.a.3,2.a.5, 2.b.4, 2.c.5, 2.c.6, 2.d.2, 2.d.3**
8) Procedural/ Interventional ▪ Nerve Blocks. ▪ Anesthetic Injections. ▪ Other Procedural/Interventional.	**24**	**45**	**69**	**4%**	**2.a.2, 2.a.3, 2.a.5, 2.b.1, 2.b.4, 2.c.1, 2.c.5, 2.c.6, 2.d.2, 2.d.3**
9) Neuro-rehabilitation ▪ Stroke ▪ Spinal cord injury ▪ Traumatic brain Injury ▪ Neuropathies o Mononeuropathies. o Polyneuropathies. o Entrapment Neuropathies. ▪ Neurologic disorders o Multiple sclerosis. o Parkinson's disease. o Ataxias o Motor neuron disease. o Poliomyelitis.	**80**	**129**	**209**	**12%**	**2.a.2, 2.a.5, 2.b.2, 2.b.4, 2.c.4, 2.c.5, 2.c.6 , 2.d.1, 2.d.2, 2.d.3, 2.d.6**

○ Cerebral palsy. ○ Muscular dystrophies. ▪ Therapeutic Electrical Stimulation in Neurorehabilitation/Functional Neuromuscular Electrical Stimulation					
10) Musculoskeletal Diseases ▪ Rehabilitation of rheumatological diseases ▪ Regional Upper Extremities disorders ▪ Regional lower Extremities disorders ▪ Spinal disorders ▪ Cumulative Trauma Disorders ▪ Rehabilitation of osteoporosis ▪ Acute trauma and post-care of fracture.	**80**	**129**	**209**	**12%**	**2.a.1, 2.a.2, 2.a.5, 2.b.1, 2.b.2, 2.b.4, 2.c.1, 2.c.4, 2.c.5, 2.c.6, 2.c.7, 2.d.1, 2.d.2, 2.d.3, 2.d.6**
11) Rehabilitation Problems ▪ Spasticity. ▪ Deconditioning ▪ Pressure Ulcer. ▪ Posture/Balance Disorders. ▪ Scoliosis. ▪ Burns ▪ Geriatric rehab ▪ Rehabilitation of Patients with Communication Disorders (Aphasia/ Cognitive Communication Disorders/ Motor Speech Disorders (Dysarthria/apraxia) ▪ Rehabilitation of Patients with Swallowing Disorders ▪ Obesity ▪ Voiding Dysfunction ▪ Neurogenic bladder. ▪ Bowel dysfunction ▪ Problems in human sexuality	**80**	**129**	**209**	**12%**	**2.a.1, 2.a.2, 2.a.5, 2.b.2, 2.b.4, 2.c.1, 2.c.2, 2.c.4, 2.c.5, 2.c.6, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6**
12) Organ-System rehabilitation ▪ Cardiovascular rehabilitation ▪ Peripheral vascular Diseases, ▪ Lymphedema, ▪ Pulmonary Rehabilitation.	**80**	**129**	**209**	**12%**	**2.a.1, 2.a.2, 2.a.4, 2.a.5, 2.b.2, 2.b.4, 2.c.1, 2.c.2, 2.c.4, 2.c.5, 2.c.6, 2.d.1,**

▪ rehabilitation of Post COVID infection ▪ ICU. ▪ Cancer rehabilitation ▪ Auditory, vestibular, and visual impairments					**2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6**
13) Pediatric Rehabilitation ▪ Neurological diseases: ▪ Assessment of gait and motor function ▪ Orthopedic and assistive devices ▪ Communication disorders ▪ Muscular Disorders ▪ Genetic Disorder ▪ Neonatal care and related problems ▪ Systemic diseases: - Juvenile rheumatoid arthritis - Juvenile systemic lupus - Juvenile dermatomyositis - Hemophilia related musculoskeletal complications	**30**	**57**	**87**	**5%**	**2.a.1, 2.a.2, 2.a.5, 2.b.1, 2.b.2, 2.b.4, 2.c.1, 2.c.4, 2.c.5, 2.c.6, 2.c.7, 2.d.1, 2.d.2, 2.d.3, 2.d.4, 2.d.5, 2.d.6**
14) Sport medicine ▪ Sport physiology ▪ Tissue injury and healing, ▪ Stretching and injury prevention, ▪ Different types of sport injuries ▪ Rehabilitation of sport injuries	**30**	**57**	**87**	**5%**	**2.a.1, 2.a.2, 2.a.5, 2.b.1, 2.b.2, 2.b.4, 2.c.1, 2.c.4, 2.c.5, 2.c.6, 2.c.7, 2.d.1, 2.d.2, 2.d.3, 2.d.6**
Total	**660**	**1080**	**1740**	**100%**	

Teaching and learning methods -4

1. Lectures
2. Tutorials
3. Practical classes
5. On line lectures : BU-LMS benha university learning management system
6. interactiveZoom meeting, online lectures on Whatsapp group and telegram app
7. Youtube channel containing recorded lectures

Teaching Methods Matrix with Learning Outcomes for the Musculoskeletal Diseases, Rehabilitation, Prosthetics and Orthotics Course

Course Learning Outcomes			Course Learning Outcomes	
Seminars	**Tutorial**			
■		■		
	■	■	Knowledge and Understanding	
■		■		
	■			
	■	■		
■		■		
■	■	■		
	■			
■	■	■	Cognitive Skills	
		■		
	■	■		
	■	■		
		■		
■	■	■		
	■	■		
	■	■		
	■	■	Professional Skills	
		■		

■		■		
	■			
		■		**General skills**
		■	2.d.2	
		■	2.d.3	
		■	2.d.4	
		■	2.d.5	
	■		2.d.6	

Office hours system	**Teaching and learning 5 methods for students with limited abilities**

Students evaluation -6

Assessment methods matrix with learning outcomes for the course on musculoskeletal disorders, rehabilitation, prosthetics and orthotics

Evaluation methods			Course Learning Outcomes	
Clinical exam	**Structured Oral Exam**	**Written exam**		
■	■	■	2.a.1	
■	■	■	2.a.2	
■	■	■	2.a.3	
■	■	■	2.a.4	
■	■	■	2.a.5	
■	■	■	2.a.6	
■	■		2.b.1	
■		■	2.b.2	
■	■	■	2.b.3	
■		■	2.b.4	

■	■	■	2.b.5	
■	■	■	2.b.6	
■		■	2.b.7	
■			2.c.1	
■			2.c.2	
■			2.c.3	
■			2.c.4	
■			2.c.5	
■			2.c.6	
■			2.c.7	
■	■		2.d.1	
■			2.d.2	
■	■		2.d.3	
■			2.d.4	
■	■		2.d.5	
■			2.d.6	

• Written examination: to assess knowledge & intellectual skills. • Oral examination: to assess knowledge, intellectual skills& general& transferable skills. • Clinical exam: assess knowledge, intellectual skills&practical and professional & general& transferable skills. • **Practical,** plain x-rays to write a report and discuss	A- Methods used
Final exam in May or November	B- Timing
Written Exam 400 **Oral Exam 150** **Clinical Exam 300** **Practical 150**	C- Grade distribution

Total: 1000	
List of textbooks and references:7	
Lectures notes.	A- Memoirs
– Frontera, W. R., Silver, J. K., & Rizzo, T. D. (2015). Essentials of physical medicine and rehabilitation: Musculoskeletal disorders, pain, and rehabilitation.3rd edition. Philadelphia, PA: Saunders/Elsevier. – J. C. Tan (2006): Practical manual of physical medicine and rehabilitation. Elsevier Health Sciences. – Frank H. Krusen, Frederic J. Kottke, Justus F. Lehmann (2010):Krusen's textbook of Physical medicine& Rehabilitation. Saunders – Ian B. Maitin, Ernesto Cruz (2015): Current Diagnosis & Treatment: Physical medicine & rehabilitation. McGraw-Hill Education – Secrets of Rehabilitation and Physical medicine foruth edition (2023) Braddon Physical medicine and rehabilitation six th Edition (2020)	B- Required books
- - Frontera, W. R., & DeLisa, J. A. (2019). DeLisa's Physical medicine & rehabilitation: Principles and practice. Sixth edition. Philadelphia: Lippincott Williams & Wilkins Health.	C- Suggested books
- Archives of Physical Medicine and Rehabilitation Journal. • Journal of the Egyptian society of rheumatology and Rehabilitation. • **Web Sites:** - www.medscape.com, - www.emedicine.com, - www.gigapedia.com.	**D - Scientific periodicals or bulletins**

Course Contents/ILOs Matrix

ILOs / Course Conte	2.a. Knowledge understandi					2.b. Intellect skills				2.c.. Practical & Clinical skills							2d.General and transferable Skills					
	2.a.1	2.a.2	2.a.3	2.a.4	2.a.5	2.b.1	2.b.2	2.b.3	2.b.4	2.c.1	2.c.2	2.c.3	2.c.4	2.c.5	2.c.6	2.c.7	2.d.1	2.d.2	2.d.3	2.d.4	2.d.5	2.d.6

1- Patient Evaluation	×																		×			
2- Diagnostic Procedures							×												×			
3- Therapeutic tools	x				x				x		x											
4- Electro-diagnosis	x								x			×							×				x
5-Orthotics and Prosthetics	x							×					x	x					x				x
6-Management of chronic pain			×	x					x					x					x	x			
7- Pharmacologic intervention	x		x						×					x	x				x	x			
8) Procedural/ Interventional		x	x		x	x			x	×				×	x				x	x			
9) Neuro-rehabilitation		x			x		x		x					x	x		x		x	x			x
10) Musculoskeletal Diseases	x	x			x	x	x		x	x			x	x	x	x	x		x	x			x
11) Rehabilitation Problems	x	x			x		x		x	x	x		x	x	x		x		x	x	x		x
12) Organ-System rehabilitation	x	x		x	x		x		x	x	x		x	x	x		x		x	x	x		x
13 Pediatric Rehabilitation	x	x			x	x	x		x	x			x	x	x	x	x		x	x	x		x
14) Sport medicine	x	x			x	x	x		x	x			x	x	x	x	x		x	x			x

أستاذ المادة

ا.د. جمال حماد

رئيس مجلس القسم

ا.د. وليد أحمد صلاح الدين

7- Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

Targeted learning outcomes	The method	م
To assess knowledge & intellectual skills. **2.a.1.→ 2.a.8, 2.b.1. → 2.b.7.**	**Written examination**	**1**
To assess knowledge, intellectual skills & General & transferable skills. **2.a.1.→ 2.a.8, 2.b.1. → 2.b.7,** **2.d.1. → 2.d.6.**	**Oral examination**	**2**
To assess knowledge, intellectual skills, professional General & transferable skills. **2.a.1.→ 2.a.8, 2.b.1. → 2.b.7, 2.c.1. → 2.c.7, 2.d.1. → 2.d.6.**	**Practical examination**	**3**
To assess knowledge & understanding, intellectual skills, practical &clinical skills and general & transferable skills. **2.a.1.→ 2.a.8, 2.b.1. → 2.b.7, 2.c.1. → 2.c.7, 2.d.1. → 2.d.6.**	**Thesis discussion**	**4**

First part

Total	**Score**		**Test**	**The course**
	oral	**written**		
250	**100**	**150**	3-hour written exam + oral exam.	**Anatomy**
250	**100**	**150**	3-hour written exam + oral exam.	**Physiology**
500				**Total**

Second part

total	**Score**				**Test**	**Course**
	practical	**clinical**	**oral**	**written**		
1000	**100**	**200**	**100**	**200+400**	3-hour written exam + clinical exam + practical exam + oral exam + 1.5-hour written case exam	**Rheumatology**
1000	**150**	**300**	**150**	**400**	3-hour written exam in other musculoskeletal diseases, physical medicine and rehabilitation,	**musculoskeletal diseases, physical medicine and rehabilitation,**

					prosthetics and orthotics + practical + oral + clinical exam	**prosthetics and orthotics**
2000						**Total**

Third part: Thesis: Pass or fail according to the committee decision and approved by department council, Faculty council and University council.

8- Evaluation of Program:

Evaluator	Tools	sample
Internal evaluators	**Report**	**1-2 Report**
External Evaluators	**Report**	**1-2 Report**
Senior students	**Interview, questionnaires**	**all**
Alumni	**Interview, questionnaires**	**Not less than 50% from the last 3 years**
Stakeholders	**Interview, questionnaires**	**Representative samples from all sectors**

9- Teaching and Learning strategies/methods to achieve Program Outcomes:

1-Interactive learning
2-Outcome based learning
3-Case based learning
4-E-learning

10- Admission Requirements for the Program:

Article (18): Requirements for Student Enrollment in the PhD Program:

- a. The student must hold a Master's degree in the field of specialization or in one of the core related subjects with a grade of at least "Good" from one of the universities in the Arab Republic of Egypt, or an equivalent degree from another recognized academic institution, approved by the Supreme Council of Universities.
- b. Approval from the employer (place of work).
- c. The student must commit to full-time study for at least one year during the second part of the program (two academic semesters), in accordance with the training requirements set by the relevant department and approved by the Faculty Council.
- d. Payment of tuition fees, training expenses, and equipment usage costs.

Article (19): Enrollment and Start Dates:

- Applications for enrollment in the PhD program are accepted twice a year, during the months of **March** and **October** of each year.

11- Regulations for Completing the Program:

Article (36):
To be awarded the **Doctorate Degree in Medicine, Surgery, or Basic Medical Sciences**, the student must fulfill the following requirements:

1. **Attendance:**
   Satisfactory attendance of courses, clinical, practical, and laboratory training according to the credit hours system, provided that attendance is not less than **75%**.
2. **Research:**
   The student must conduct a research study on a topic approved by the university after obtaining the approval of the Faculty Council and the relevant department. The research duration must be **at least two years**.
3. **Thesis Submission and Publication:**
   The student must submit the research findings in a **thesis** accepted by the examination committee after a **public defense**. Additionally, a paper derived from the thesis must be **published in a recognized scientific journal** that has a website and is listed in the faculty's approved publishing list.
4. **Mandatory Courses (from Benha University):**
   Before the thesis defense, the student must pass the following courses:
   - Legal and Ethical Principles of Medical Practice
   - International Publication of Scientific Research
   - Marketing of Scientific Research
5. **TOEFL Requirement:**
   The student must pass the **TOEFL test** with a score of **not less than 500** from an approved body,

according to university requirements.
(Exemption: Students who already hold a valid TOEFL certificate with a score of 500 or higher are exempt, provided it is still valid.)

6. **Examinations:**
   The student must successfully pass the required **written, clinical, and oral examinations**, as outlined in the program regulations.

Program Coordinator:

Name: Prof. Dr. Gamal Hamad **Signature:**

Date: October 2024