

## Physiotherapy

<b>Program name</b>	Physiotherapy
Degree of program (BA, B.Sc., Diploma)	Bachelor Degree
Department	Physiotherapy
<b>Faculty</b>	Medical Allied Sciences
Head of the department (name, email, phone)	Mr. Azzam Alarab e-mail: azzam@paluiv.edu.ps

### 1. About the Program

Physiotherapy specialization is one of the most promising specializations that provides the health sector with skilled physiotherapists who are concerned with the promotion, maintenance and restoration of health and the prevention of disability, in people of all ages. Physiotherapists optimize potential ability, physical function, independence and quality of life through rehabilitation practices. To achieve this, physiotherapists require an extensive understanding of physical, structural and physiological aspects of human form and movement, as well as factors relating to human functioning and the acquisition of skill. The program teaches students how to care for people experiencing pain or loss of function caused by a physical injury or disorder and for people with physical disabilities. Such disabilities and disorders can arise from a variety of causes including injury, disease, congenital abnormalities, ageing and degenerative processes. The four-year bachelor degree in physiotherapy is a well-structured program requiring the completion of 143 credit hours combining theoretical and practical courses along with a full set of trainings in hospitals and health units.

### 2. The required hours of the bachelor degree program

143 credit hours are needed to satisfy the Degree Requirements as follows:

University Requirements		Faculty Requirements		Major Requirements		Free course	Total
Compulsory	Elective	Compulsory	Elective	Compulsory	Elective		
24	3	30	0	80	0	6	143

### 3. Admission and Continuity Requirements :

- Students in the Scientific stream who achieved a minimum of 65% are eligible for the program
- To maintain eligible status in the program a student is required to pass all of the following courses with a minimum grade of 70%:
  - 540111: Introduction and principles of Physiotherapy
  - 540131: Musculoskeletal Anatomy I
  - 540132: Musculoskeletal Anatomy II

#### 4. ILOs (Indented Learning Outcomes):

**o Upon graduation, the student is expected to be able to:**

1. Assess, plan and implement therapeutic programs for patients with a variety of pathological conditions including cardiopulmonary, orthopedic, neurology, surgical and pediatric issues.
2. Reevaluate and monitor patient's condition and progression
3. Do Manual techniques - including massage, patient's handling ,transfer and lifting
4. Run Therapeutic exercise programs - such as posture and gait analysis and training, muscle strengthening, cardiovascular training, weight loss training, stretching, balance, coordination and functional training.
5. Master Electrotherapy and similar procedures - including the use of thermal agents, traction, compression, ultrasound, hydrotherapy, transcutaneous electrical nerve stimulation (TENS), laser therapy and diathermy...etc
6. Apply prostheses and orthotics, by providing information on equipment aids such as crutches, wheelchairs, parallel bars, stairs, and walking frames.
7. Manage patients' medical files (clinical interviews & history taking)
8. Master Clinical documentation and presentation skills
9. Communicate with patient and caregivers concerning the therapeutic instructions and home treatment plans.

#### 5. Jobs Opportunities :

Potential Places of Employment	Potential Jobs
<ol style="list-style-type: none"> <li>1. Hospitals</li> <li>2. Outpatient clinics</li> <li>3. Rehabilitation centers</li> <li>4. Pediatric centers</li> <li>5. Geriatric centers</li> <li>6. Private clinics</li> <li>7. Schools</li> <li>8. Home care</li> <li>9. Community based rehabilitation programs.</li> <li>10. Research centers</li> <li>11. Fitness and athletic facilities</li> <li>12. Academic centers, colleges and universities as educators</li> </ol>	<ul style="list-style-type: none"> <li>• Physiotherapist</li> </ul>

6. The Bachelor Degree in physiotherapy is awarded upon the successful completion of 142 credit hours, in accordance with the conditions specified in regulations for awarding of the Bachelor's Degree at the College of Allied Medical Science, as follows:

First: University Requirements (27 credit hours) which include:

a- Compulsory requirements (24 credit hours) :

Course Number	Course Title	Number of Credits			Prerequisite
		Cr. Hours	Theoretical	Practical	
110101	Arabic Language Skills 1	3	3	0	
120101	English Language Skills 1	3	3	0	
110102	Arabic Language Skills 2	3	3	0	110101
120102	English Language Skills 2	3	3	0	120101
130300	Community Service	1	1	0	
112101	Physical Education	1	1	0	
113200	Palestinian Cause	3	3	0	
151102	Islamic Culture	3	3	0	
410131	Basics of Computer & Programming	3	3	0	
410211	Critical Thinking Skills	1	1	0	

B- Elective requirements (3 credit hours) to be chosen from courses offered by university colleges other than college of Allied Medical Science.

Course No.	Course Title	Credit Hours		Prerequisite
		Theoretical	Practical	
142211	The Arab World & Contemporary Challenges	3		
132101	Introduction To Psychology	3		
130101	Introduction To Sociology	3		
120106	Spanish	3		
120105	Italian	3		
120104	French	3		
120208	Hebrew (1)	3		
110104	Library Science	3		
651202	Family Systems in Islam	3		
651101	Biography of the Prophet	3		
540102	Nutrition Science	3		
510121	Introduction to Health Care	3		
310111	First Aid	3		
420102	Ethics in the Information Age			
310302	Democracy, Human Rights & International Humanitarian Law	3		
210260	Law In Our Life	3		

**Second :Faculty requirements (30 credit hours) :**

Course No.	Course Title	Credit Hours		Prerequisite
		Theoretical	Practical	
510102	Medical Terminology	2	-	
510111	First Aid	3		
530201	Introduction to Medical Imaging	3		540132
510171	Physics for Medical Sciences	3		
510174	Physics for Medical Sciences - Lab		1	
510175	Biology for Medical Sciences	3		
510176	Biology for Medical Sciences- Lab		1	
510162	Chemistry for Medical Sciences	3		
510163	Chemistry for Medical Sciences -Lab		1	
540224	Statistics & Research Methods	3	-	
540400	Management for Health Sciences	2	-	
540101	Medical Ethics	1	-	
510120	Human Physiology I	2	-	510175
510220	Human Physiology II	2	-	510120

**Third: Major requirements (80 credit hours) as follows:**

**a. Compulsory courses(80 credit hours) :**

Course No.	Course Title	Credit Hours		Prerequisite
		Theoretical	Practical	
540131	Musculoskeletal Anatomy I	1	1	
540132	Musculoskeletal Anatomy II	1	1	540131
540215	Human Anatomy	1	1	510175
540214	Neuro anatomy	1	1	510220+540132
540211	Cardiopulmonary Diseases	2	-	510220
540213	Skills for Cardiopulmonary Rehabilitation	-	2	510220
540212	Physical Aspects in Thermo-Therapy	1	-	510171+510220
540216	Therapeutic Exercises	-	2	540132+510220
540111	Introduction to Physiotherapy	3	-	
540136	Therapeutic Massage	-	1	540131+510120
540317	Adaptive Equipment	1	-	540222
540312	Gait Analysis	2		540132+540222
540217	Orthopedics and Rheumatology I	2	-	540132

540219	Skills in Orthopedics and Rheumatology I	-	3	540132
540218	Orthopedics and rheumatology II	2	-	540217
540226	Skills in Orthopedics and Rheumatology II	-	3	540217+540219
540222	Kinesiology	2	-	540132+510171
540320	Human Growth & Pediatrics	3	-	540214
540311	Skills for Pediatrics	-	2	540214
540330	General Pathology	2	-	510220+540132
540350	General Medicine and Surgery	4	-	540132
540360	Skills in General Medicine and Surgery	-	4	540132
540370	Community Based Rehabilitation	2	-	
540412	Pharmacology	2	-	510162
540313	Neurology	2	-	540214
540315	Skills in Neurology	-	3	540214
540490	Graduation Project	2	-	540224
540121	Clinical Field Work I	-	5	540226,540218
540221	Clinical Field Work II	-	5	540360,540350
540321	Clinical Field Work III	-	5	540311,540320
540421	Clinical Field Work IV	-	5	540315,540313

**b. Elective requirements (0 credit hours).**

**c. Free courses :** All students are required to successfully complete (6) credit hours from any program

All students must submit an examination in Arabic and English. A student who fails to succeed in one or both tests must take a remedial course in Arabic or English or both outside the study plan. The remedial courses will not be included in the overall GPA.

**7. Training**

Physiotherapy plan has 4 clinical field work , every clinical is 5 credit a hour. After the student has completed at least 69 credit hours of program courses, they can register in the clinical field work and student must finish 250 contact a hours every clinical field work. Practicum placements will be monitored to ensure the student benefits from their placement and to mitigate any potential issues/challenges.

**8. Seminars**

The graduate student may enroll in the course "graduation project" after successfully completing 100 hours. The student then chooses a research topic in coordination with their supervisor.

**9. Educational support facilities**

1. Multi-purpose computer lab (virtual anatomy)
2. Physical Therapy Lab
3. Therapeutic exercises Lab
4. Water treatment Lab
5. Electrical therapy Lab
6. Physics Lab
7. Chemistry Lab
8. Biology Lab

### Study Plan

#### First Year

First Semester			Second Semester		
Code	Course Title	Credit Hours	Code	Course Title	Credit Hours
540131	Musculoskeletal anatomy I	2	540132	Musculoskeletal anatomy II	2
510175	Biology for Medical Sciences	3	510120	Physiology I	2
510176	Biology for Medical Sciences - Lab	1	540240	Human anatomy	2
510102	Medical Terminology	2	510181	Medical ethics	1
540111	Introduction and principle of PT	3	110101	Arabic Language Skills (I)	3
510171	Physics for Medical Sciences	3	510162	Chemistry for Medical Sciences	3
510174	Physics for Medical Sciences -Lab	1	510163	Chemistry for Medical Sciences- lab	1
120101	English Language Skills 1	3	120102	English Language Skills (II)	3
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>17</b>

#### Second Year

First Semester			Second Semester		
Code	Course Title	Credit Hours		Course Title	Credit Hours
540350	General Medicine and surgery	4	510111	First aid	3
540360	skills of general medicine and surgery	4	540212	Physical aspects in thermo therapy	1
540136	Therapeutic massage	1	540214	Neuroanatomy	2
510220	Human physiology II	2	540218	Orthopedic and rheumatology II	2
540217	Orthopedic and rheumatology I	2	540226	Skills of Orthopedic and rheumatology II	3
540219	Skills of Orthopedic and rheumatology I	3	540222	Kinesiology	2
410211	Critical Thinking Skills	1	530201	Introduction to medical imaging	3
			540216	Therapeutic exercises	2
<b>Total</b>		<b>17</b>	<b>Total</b>		<b>18</b>

### Summer Course

Code	Course Title	Credit Hours
540121	Clinical Field Work I: Orthopedic rehabilitation	5
<b>Total</b>		<b>5</b>

### Third Year

First Semester			Second Semester		
Code	Course Title	Credit Hours		Course Title	Credit Hours
540320	Human Growth & Pediatrics	3	540317	Adaptive equipment	1
540311	Skills for Pediatrics	2	540330	General pathology	2
540211	Cardio-pulmonary diseases	2	540312	Gait Analysis	2
540213	skills - Cardio-pulmonary rehabilitation	2	540313	Neurology	2
110102	Arabic Language Skills (2)	3	540315	skills of Neurology	3
113200	Palestinian Issue	3		Free Course	3
410131	Introduction to computer sciences	3		Elective requirements	3
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>16</b>

### Summer Course

Code	Course Title	Credit Hours
540221	Clinical Field Work II: surgery and medicine	5
<b>Total</b>		<b>5</b>

### Fourth Year

First Semester			Second Semester		
Code	Course Title	Credit Hours		Course Title	Credit Hours
112101	Physical Education	1	540321	Clinical field work III	5
540412	Pharmacology	2	540421	Clinical Field work IV	5
540224	Statistics and research methods	3	540490	Graduation project	2
	Free course	3	130300	Community services	1
651102	Islamic Culture	3			
540370	Community Based Rehabilitation	2			
540400	Management for health sciences	2			
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>13</b>

**Physiotherapy Program Course Description**

.1	<p><b>Biology: 510175 - 3 Credit Hours</b> Study of cell biochemistry, structure and functions, cell divisions, and principles of genetics and molecular genetics, Plant structure, reproduction and other biological process.</p>
.2	<p><b>Biology lab : 510176 – 1 credit Hours</b> Practical study of microscope , chemical , biochemical , and physical properties of cells , cell division , plant tissues and organs, and animal tissues .</p>
.3	<p><b>Chemistry: 510162 - 3 Credit Hours</b> Basic principles of modern chemistry for non-chemistry majors and includes: atomic and molecular weights , mole concept , chemical bonding , bases and acids gas reactions , states of matter , properties of solutions and colloids , and chemical equilibrium .</p>
.4	<p><b>Chemistry lab : 510163- 1 credit Hour</b> Practical study of laboratory safety, chemical notes, Avogadro's number chemical calculations , volumetric analysis , redox reaction , thermodynamics and kinetic chemistry , equilibrium, solubility constant ,electrochemistry , and detection of actions .</p>
.5	<p><b>Physics : 510171 -3 Credit Hours</b> The course deals with basic concepts of physics, physical, mechanical and electro-physical principles related to issues of physiotherapy. Students will be introduced to scientific method and thinking, matter, energy and nature of electromagnetic waves, Newtonian kinematics and their application to Human body movement - biomechanics, electricity and magnetism and principles of laser and ultrasound physics.</p>
.6	<p><b>Physics lab : 510174 – 1 credit Hour</b> This course covers 3-4 experiments in each of mechanics (force table ,motion in one dimension , Newton second law , friction and projectiles ), thermal physics (calorimetry ) and electricity and magnetism ( mapping of electrical fields, capacitors , ohms law , magnetic induction).</p>
.7	<p><b>Statistics &amp; Research methods: 540224-3 Credit Hours</b> Experiment, event, compound events, relationship between events , probability of compound event, rules of probability , conditional probability, probability tree, data representation , measures of central tendency, measures of dispersion, random variables, expectations , probability distribution , binomial and normal distribution , normal approximation, sampling distributions , confidence intervals hypothesis testing , linear regression, Chi- square test.</p>



.8	<p><b>Medical Terminology: 510302 - 2 Credit Hours</b></p> <p>This course is designed to give an introduction and over view , with emphasis on basic and practical medical term . some illustration and ample appendices and glossaries are given to serve as important references after short course is completed. The glossary of word parts combining forms , suffixes and prefixes with their English meanings and then in a separate list reserve the process giving English words and their medical terminology counterparts . we hope that this course excites your interest and enthusiasm for medical language , making a difference in your work experience , as well as your personal involvement with health issues.</p>
.9	<p><b>Medical Ethics : 510101– 1 Credit Hours</b></p> <p>The course focuses the applications of ethics , religion , jurisprudence , and the social sciences to the analysis of health care issues , clinical decision making , and research procedures for each case.</p>
.10	<p><b>First Aid :510111- 3 credit Hours</b></p> <p>This course is designed to learn the students the temporary and immediate care given to a person who is injured or suddenly becomes ill . first aid also involves home care if medical assistance is delayed or not available . first aid includes recognizing life- threatening conditions and taking effective action to keep the injured or ill person alive and in the best possible condition until medical treatment can be obtained. Finally , the students become an important part of the emergency care team as they properly prepare with the right knowledge and practical skills to render appropriate life- saving care .</p>
.11	<p><b>Introduction to medical imaging : 530201- 3 Credit hours</b></p> <p>Basic concepts of radiology techniques with emphasis on radiographs are necessary to physical therapy. Students expected to analyse radiographs of the musculoskeletal and nervous systems.</p>
.12	<p><b>Musculoskeletal Anatomy I : 540131- 2 Credit hours</b></p> <p>This course introduces the student to the structure &amp; function of the musculoskeletal system and the nervous system. Central, peripheral &amp; autonomic systems will be studied and the material integrated with introduction to (Anatomy and Physiology).</p>
.13	<p><b>Musculoskeletal Anatomy II : 540132- 2 Credit hours</b></p> <p>This course introduces the student to the structure &amp; function of the musculoskeletal system and the nervous system. Central, peripheral &amp; autonomic systems will be studied and the material integrated with introduction to (Anatomy and Physiology).</p>
.14	<p><b>Human Anatomy : 540215- 2 Credit hours</b></p> <p>The purpose of this course is to develop an understanding of normal movement and function. The student will be introduced to the study of the neurological, circulatory studies and respiratory systems. These topics will be studies in greater depth in subsequent courses. This course will introduce the students to the concept of living anatomy.</p>
.15	<p><b>Human Physiology I: 510120 - 2 Credit hours</b></p> <p>In this course the student will study the musculoskeletal and nervous system deeply.</p>
.16	<p><b>Human Physiology II: 510220 - 2 Credit hours</b></p> <p>In this course the student will study the physiology of the various systems in the human body. He will get knowledge about normal function of all organs in the human being.</p>

<b>.17</b>	<b>Introduction and principles of Physiotherapy:540111- 3 Credit hours</b> This course is designed to introduce students to the fundamentals of patient care with practice of some of the caring skills, provided to complement the theory. The students will go deeply on patient's assessment and treatment plans. The basic principles and definitions of biomechanics and kinesiology will be discussed in this course. The course also aims to provide a theoretical basis for therapeutic use of manipulation, mobilization, movement, thermal and electrical techniques.
<b>.18</b>	<b>Orthopedic &amp; Rheumatology I : 540217- 2 credit hours</b> This course involves the study of traumatic and pathological conditions of Orthopaedic and Rheumatology affecting of musculoskeletal system of the human body. Further study of anatomy and physiology needed to understand the disease process would be included. The students will be able to assess, differentiate diagnoses and put a physiotherapy plan.
<b>.19</b>	<b>Orthopedic &amp; Rheumatology II :540218- 2 credit hours</b> This course involves the study of traumatic and pathological conditions of Orthopaedic and Rheumatology affecting of musculoskeletal system of the human body. Further study of anatomy and physiology needed to understand the disease process would be included. The students will be able to assess, differentiate diagnoses and put a physiotherapy plan.
<b>.20</b>	<b>Skills for Orthopedic &amp; Rheumatology I : 540219– 3 credit hours</b> This course is related to the Clinical Orthopedic and Rheumatology course. The students will learn about applying the necessary measurements, tests and different therapeutic modalities in orthopedic and rheumatology. The following will be discussed in details measurement of range of motion, muscle testing, therapeutic exercises, massage techniques, Gait analysis, and thermal effects hot/cold packs, Infrared/ultraviolet rays, Ultrasound, micro/short wave diathermy and other specific modalities. Included in the course will be an orientation to clinical Fieldwork.
<b>.21</b>	<b>Skills for Orthopedic &amp; Rheumatology II:540226 3 credit hours</b> This course is related to the Clinical Orthopedic and Rheumatology course. The students will learn about applying the necessary measurements, tests and different therapeutic modalities in orthopedic and rheumatology. The following will be discussed in details measurement of range of motion, muscle testing, therapeutic exercises, massage techniques, Gait analysis, and thermal effects hot/cold packs, Infrared/ultraviolet rays, Ultrasound, micro/short wave diathermy and other specific modalities. Included in the course will be an orientation to clinical Fieldwork.
<b>.22</b>	<b>Clinical Fieldwork I: 540121 - 5 Credit hours</b> In the summer of the first year of the program, and under a direct supervision, the student will complete approximately 200 contact hours within a five days weekly for 8 weeks of the course duration. General pathological conditions observation, vital signs record and analysis, documentation, clinical case studies presentation and discussion will be the major focus of this course.
<b>.23</b>	<b>Clinical Field Work II: 540221 - 5 Credit hours</b> In the summer semester of the second year, and under a direct supervision, the student will complete a second period of clinical internship which includes approximately 200 contact hours within a weekly five days internship for 8 weeks of the course duration.

	Orthopedic conditions physiotherapy will be the major focus of this course.
<b>.24</b>	<b>Clinical Field Work III: 540321 - 5 Credit hours</b> In the summer semester of the third year , and under a direct supervision, the student will complete a third period of clinical internship which include approximately 200 contact hours within a weekly five days internship for 8 weeks of the course duration, neurological conditions physiotherapy will be the major focus of this course.
<b>.25</b>	<b>Clinical Field Work IV: 540421 - 5 Credit hours</b> In the summer semester of the fourth year, and under a direct supervision, the student will complete the fourth period of clinical internship which includes approximately 400 contact hours within a weekly four days internship for 16 weeks of the course duration, rehabilitative process for patients who present with neurological, developmental another disorders commonly seen in physical therapy. Students receive further instruction in psychosocial support, documentation, ethical behavior, patient/family education, and communication.
<b>.26</b>	<b>General Medicine &amp;Surgery: 540350- 4 Credit hours</b> This course involves the study of principles of surgery and conditions affecting more than one area of the body. Further study of anatomy and physiology needed to understand the disease processes would also be included. The following topics will be studied general medicine and surgery, obstetrics and gynecology, Conditions, dermatology and burns in addition to internal medicine
<b>.27</b>	<b>Skills of General Medicine &amp; Surgery: 540360 – 4 credit hours</b> This course is related to physiotherapy medicine and surgery. Topics covered will include physical agent (cold pack, hot packs and wax) and thermal agent (ultrasound, laser , short waves and infra red) and explain how we traction therapy for neck and back . Student will develop these practical laboratory sessions.
<b>.28</b>	<b>Neurology : 540313- 2 Credit hours</b> This course involves the study of Neurological pathological conditions resulting in multiple disabilities and progressive conditions. Further study anatomy and physiology needed to understand the disease processes would also be included. The following Topics will be studied: pathological conditions of neurology, pediatrics, peripheral nerve injuries, mental and physical disabilities.
<b>.29</b>	<b>Skills of Neurology: 540315- 3 Credit hours</b> This course is related to the physiotherapy neurology for physiotherapy course. The Students will develop physiotherapy skills appropriate to studied topics. Emphasis will be placed upon rehabilitation for none recoverable conditions and uses of various modalities for recoverable conditions. The following topics to be discussed deeply (electrotherapy, manual techniques like Bobath, P.N.F.... .
<b>.30</b>	<b>skills for pediatric 540311- 2 credit hours</b> Students will learn the rehabilitative process for patients who present with, pediatric. Students receive further instruction in psychosocial support, documentation, ethical behavior, patient/family education, and communication
<b>.31</b>	<b>Kinesiology: 540222- 2 Credit Hours</b> The analysis and synthesis of normal human motion are addressed, students are introduced to abnormalities of movement Lectures correlate with laboratory experience

	that emphasize the evaluation and measurement of normal human motion and muscle strength.
<b>.32</b>	<p><b>Pharmacology : 540412 - 2 Credit hours</b></p> <p>A program that focuses on the scientific study of drug interactions on biological systems and organisms and the sources, chemical properties, biological effects, and therapeutic uses of drugs. Includes instruction in pharmacodynamics, pharmacokinetics, toxicology, drug therapeutics, drug action, bodily responses to drug events, biochemical proliferation and differentiation, apoptosis, cell biology, medicinal chemistry, and studies of specific drugs and drug interactions.</p>
<b>.33</b>	<p><b>Human Growth and paediatrics : 540320- 3 Credit hours</b></p> <p>This course aims to introduce the student to a board concept of physical, psychological and social dimensions of human growth and development from conception to death. It considers the normal milestone of development, and the combination of influences that aid or hinder individuals in achieving these goals. And This course will focus on the health management of the major pediatric disorders and relevant theoretical approaches and considerations, applicable to treating these disorders from a family-focused perspective. The student will gain knowledge about the etiology, classification, diagnosis; clinical observations (symptoms, signs, laboratory , and medical imaging abnormalities) of the most common conditions in pediatrics, clinical physical examinations which will indicate the normal and abnormal physical and motor development of children.</p>
<b>.34</b>	<p><b>General Pathology : 540330 - 2 credit hours</b></p> <p>This course aims to provide an understanding of basic pathological processes in order to appreciate the changes produced by specific disease and clinical conditions treated by physiotherapy which includes (infection, inflammation, degeneration, immunity, and cancer).</p>
<b>.35</b>	<p><b>Community Based Rehabilitation :540370 – 2 credit hours</b></p> <p>The aim of this course is to emphasize that rehabilitation can best take place in the work and home environment. Students will become aware of community needs and multi-disciplinary care for the whole person.</p>
<b>.36</b>	<p><b>Management for Health Sciences : 510400 - 2 Credit hours</b></p> <p>This course aims to give the student an appreciation of the principles of management related to planning and organization of health services. Topics to be covered will include: (management of personal and resources, setting objectives, and policy making</p>
<b>.37</b>	<p><b>Research Project : 540490 - 2 Credit hours</b></p> <p>Faculty directed research in one of the physical therapy problems. Experiments, Analysis and writing must be finished by the end of the last semester.</p>
<b>.38</b>	<p><b>Gait analysis: 540312 -2 Credit hours</b></p> <p>At the end of this course the PT student will be able to analyze the normal range of the human walking, to discuss the external and internal forces and torques acting on the body in walking and standing, will be familiar with energy expenditure in normal and pathological gait and will identify basic pathological gait pattern and their causes.</p>
<b>.39</b>	<p><b>Neuro-anatomy : 540214- 2 Credit hours</b></p> <p>Following this course the PT student will be familiar with the structure of the nervous system and get familiar with the function of different sub-systems within the nervous</p>

	system. The student will also understand the relations between structure and function and understand the mechanism of various injuries and pathological conditions in the nervous system and their major clinical implications.
<b>.40</b>	<b>Physical aspects in Thermotherapy : 540212- 1 Credit hours</b> Following this course the PT student will develop a clear understanding of basic concept and principles of Electro-physics and will recognize and completely update with all forms of treatments with thermal agents. The student will understand the physics in the context of processes at the tissue level and get familiar with the Knowledge of the basic concept in Electro-physics and ramification of these concepts on phenomenon in the nature and human body. The students will deepen the knowledge of the influence of the thermal agents on promote tissue healing, reduce pain and musculoskeletal dysfunction in order to assist the student in clinical decision making and rationale the treatment and explain hydrotherapy.
<b>.41</b>	<b>Cardio-pulmonary diseases : 540211- 2 Credit hours</b> The course is designed to provide the PT student a basic understanding of the physiological responses of the body system to chronic and acute exercise. Additionally, the PT student will gain knowledge of the effect of exercise in special population like cardiovascular, diabetic, asthma and hypertension disease.
<b>.42</b>	<b>skills – Cardio-pulmonary rehabilitation : 540213- 2 Credit hours</b> Following this course the PT student will gain knowledge and skills required for the care of pulmonary patients including but not limited to: assessment techniques, clinical reasoning, relating patient problems to appropriate intervention, building treatment programs for the acute and chronic patient, performing manual skills and treatment techniques, and using professional language relating to chest physiotherapy
<b>.43</b>	<b>Therapeutic Massage : 540136-1 Credit hours</b> Following this course The PT student will know the effects, indications and contra-indications of the various massage techniques and will be able to perform Classic Massage to different body parts, as part of the general physiotherapy treatment policy
<b>.44</b>	<b>Therapeutic Exercises : 540216-2 Credit hours</b> This course includes the theory and practice of the application of exercise in the context of physical rehabilitation. Following this course the student will be able to Analyze muscle action in active movements, and Explain, demonstrate and administer exercises for maintenance and enhancement of muscle strength and power and joint stability, for maintenance and enhancement of joint range of motion, and for maintenance and enhancement of body balance.
<b>.45</b>	<b>Adaptive equipment: 540317 - 1 Credit hours</b> By the end of the course, the student will be able to properly assess the needs for the aforementioned devices/changes in environment and adequately counsel the patient and his family on the subject.