

## Course Description for Faculty Requirements

**0501107 Physiology 1 (2 credit hours)**

**Prerequisite : (0304101)**

This course is designed to introduce the students to the basic concepts of cardiovascular, respiratory and nervous systems physiology. The course begins with the basic concepts of physiological control and homeostasis. It focuses on the contribution of the above systems on the general functions of the human body. Special senses will be covered.

**0502107 Anatomy of Head, Neck, and Thorax (3 credit hours)**  
**Prerequisite : (0304101)**

This course will cover head, neck and brain, and thorax. It concentrates on parts of the above subjects and their functions and relations. It focuses on brain centres and the tracts which transmit orders to extremities, with special emphasis on functional anatomy and its relation to disabilities which require rehabilitation.

**1804140 Introduction to Speech-Language and Hearing Disorders (3 credit hours)**

The nature of speech and language pathology, deviations from normal speech and language patterns, e.g., disorders of language, articulation, voice, and stuttering, aphasia and neuromotor speech disorders. Types, degrees, causes, signs and symptoms of hearing loss; mechanisms of hearing; simple clinical tests and brief anatomy and physiology of the ear.

**1804240 Research Methods in Rehabilitation Sciences (3 credit hours)**

This course focuses on evaluation of research designs and Biostatistics. Application of research on clinical practice and methodological considerations in rehabilitation sciences with emphasis on hypothesis statement, data collection, results and conclusions and students involvement in critique of published articles.

**1802447 Management and Leadership (3 credit hours)**

This course includes management and leadership principles and concepts necessary to promote the student's ability to manage care and make appropriate decisions related to clients. It also covers concepts and principles necessary to facilitate student's growth to prepare them as future rehabilitation leaders able to affect quality of care and introduce change when necessary. The use of computers in rehabilitation programs is illustrated.

## Course Description for Orthotics and Prosthetics

**0501108 Physiology 11**

**Credit hours: 2h**

### **Prerequisite (0501107)**

This course is designed to introduce the students to concepts of nerve and muscle , blood , endocrine , reproductive and renal systems . the course elaborates on the contribution of the above systems on the general well being of the human body .

**0501109 Physiology laboratory**  
**hours : 1h**

**Credit**

### **Prerequisite or concurrent (0501107)**

The following laboratory sessions will be performed by or demonstrated to the students during this course: Nerve and muscle demonstrations : instruments and dissection, demonstration: simple muscle twich, summation. tetanization and fatigue, effect of temperature on simple muscle twich, red blood cells count, white blood cells count, differential leucocytic count, Hb, PVC, E.S.R., fragility and reticulocyte countn, blood group, bleeding time, clotting time, ECG. introduction and limb leads, ECG. chest lead calculations, ECG. vector analysis, pulse, blood pressure heart sounds, and spirometry .

**0502108 Anatomy of extremities**  
**hours : 3h**  
**Prerequisite : (0304101)**

**Credit**

This course will cover upper limbs, lower limbs, abdomen , pelvis and perineum . The lectures and practicum will emphasize on structures , blood supply , nerve supply of all structures , with special concentrations on functions of all parts . It will also cover the spinal cord structure and roots .

**0503101 Therapeutics :** **Credit**  
**hours : 1h**  
**pre-requisite or concurrent : (0501108)**

This course introduces the student to the application of pharmacological principles in the treatment of common medical and surgical problems including the indications , side effects and contraindications of medications . Emphasis will be on medications used in rehabilitation medicine such as diseases of muscles , joints and nervous system .

**504207 Pathalogy:** **Credit**  
**hours : 1h**

This course will cover cellular pathology accute and chronic inflamation, tissue repair, hemodynamic disorder, neoplasia, and infectious diseases. It will also give an overview of some of the pathological conditions of the system which are related to the students of the Rehabilitaion Sciences.

**0507103 Surgery for Rehabilitaion Students:** **Credit**  
**hours : 2h**  
**pre-requisite : (0502108)**

This course will cover the surgical principles as a treatment modality for some conditions . The concentration will be on surgical intervention for diseases commonly met in the field of rehabilitation medicine . This will include surgeries for brain and spine , orthopedics and trauma , burns and plastic surgeries , urology , and pediatric surgery .

**0508102 Internal Medicine For Rehabilitation Students** **Credit hours : 2h**  
**pre-requisite : (0501107)**

This course focuses on the underlying concepts and principles common to major health problems , alterations in cell function and growth , alterations in integrated body function and defenses , fluids and electrolytes . It covers different medical conditions with emphasis on the diseases which lead to disabilities such as neuromuscular , rheumatology , pulmonary and cardiac diseases

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**0508103 Diagnostics :** **Credit hours : 2**  
**Prerequisite or concurrent : (0508102)**

The student is introduced to the principles of radiology including different modalities and reading x-ray films . It also includes other diagnostic tests such as laboratory test , ultrasound , MRI and CT scans used in the diagnosis and follow-up of treatment of cases

that require rehabilitation .

**1801201 Principles of Rehabilitaion Medicine** **Credit**  
**hours : 3h**  
**Prerequisite : (0507102)**

This course introduces students to the basic principles of rehabilitation and team work. It focuses on the role of each member of the team and their relation to each other. The 1 credit hour laboratory will focus on the application of these basic principles

**1803201 Biomechanics :** **Credit**  
**hours : 3h**  
**pre-requisite : (0302103)**

This subject will cover the theory of dynamics with particular application to human bodies . It also covers the active and passive mechanical behavior of the body tissues with specific applications of biomechanics of topics of interest to rehabilitation science specialties . The practicum will concentrate on development of observational skills and objective measurements of human movements .

**1803241 Orthotics & Prosthetics Techniques** **Credit hours :**  
**2h**

Through this course the student learns about working with the different types of metals (such as : drilling , filing , welding , riveting ) . Familiarity with machinery and how to work with them. Preparing pattern , moulding , modification , lamination and working with plastic sheets .

**1803242 Safety & Accidents prevention in workshops** **Credit**  
**hours : 1h**

This course covers the measures of protection from machinery accident, electrical shock, poisoning of chemical materials.  
The student learns through this course self protective equipment,



**1803328 Lower Extremity Orthotics I** **Credit hours**  
**: 3h**  
**Prerequisite : (1803302)**

This course will focus on the knowledge of the diseases and injuries, which lead to handicaps and deform the normal function of the lower limbs. It includes the ways and approaches used to rehabilitate these disorders. It also covers the normal and pathological gait of the lower limbs. The student will gain the skills of making the appropriate orthosis designed to treat and rehabilitate such handicaps and deformities. Special emphasis in this course will be made on shank and ankle problems and solutions.

**1803329 Lower Extremity Prosthetics II** **Credit**  
**hours : 3h**  
**Prerequisite or concurrent : (1803325)**

In this course the student learns the basic and specialized knowledge about lower limb prosthesis used to rehabilitate trans-tibial and foot amputation prosthesis. It also enables the student to categorize amputations and prostheses.

**1803332 Spinal Orthotics** **Credit**  
**hours : 3h**  
**Prerequisite : (1803351)**

This course covers diseases, injuries and deformities of the vertebral column and spinal cord. The student will also learn the methods and techniques employed in the treatment of the different diseases, injuries and deformities of the vertebral column. The focus will be on spinal orthoses which is designed to fix, correct and support the vertebral column. It provides the student with the skills for making those orthosis. Emphasis will be made on the role of the rehabilitation team in the treatment of those conditions.

**1803344 Material Science Credit**  
**hours : 2h**

This course covers the properties of the materials used in the manufacturing of prosthetics and orthotics . This will include knowing the materials' physical, and working properties and how to work with them. This includes polymers, metal and wooden materials.

**1803346 Applied Prosthetics and Orthotics I Credit**  
**hours : 3h**

**Prerequisite or concurrent : (1803322)**

The student will learn through this course about the manufacture of assistive orthotic devices for upper and lower extremities including medical shoes , soles Ankle – Foot Orthosis , Hand Orthosis , Wrist – Hand Orthosis, Elbow and Arm orthosis .

**1803348 Technical Drawings Credit**  
**hours : 2h**

This course gives the student the necessary knowledge of the principles of mapping and designing of orthotics and prosthetics . It also provides the student information about drawings equipment , related standards ,perspective view .

**1803351 Orthopaedics Credit**  
**hours : 2h**

**Prerequisite : (0502108)**

This course give the student basic knowledge of deformities , diseases of upper extremity ,.lower extremity and trunk. Methods of their treatment, specially conservative therapy. Fractures, dislocations , tumors , neuromuscular diseases and sport injuries. Amputations and principles of prescription of orthotics and prosthetics will be covered.

**1803414 Upper Extremity prosthetics I** **Credit**  
**hours : 3h**

**Prerequisite or concurrent : (1803344)**

This course includes the necessary knowledge and extensive coverage of the upper limb amputation. Topics to be covered will include the level of amputation, causes of amputation and in addition to the modern and contemporary methods the world has reached in the rehabilitation of those amputees taking into account the patient's social, professional and cosmetic needs . Special emphasis will be put on the training of students on the design and manufacturing of upper limb prosthesis for trans-radial amputations and its different types such as mechanical, myoelectrical, and cosmetic prosthesis.

**1803417 Upper Extremity Prosthetics II** **Credit**  
**hours : 3h**

**Prerequisite : (1803414)**

This course includes the basic and specialized knowledge of upper extremity prosthetics including upper extremity biomechanics. This course will concentrate on the design and manufacture of trans-humeral prosthetics and its different types such as myoelectrical, mechanical, and cosmetic prosthesis

**1803421 Lower Extremity Prosthetics III** **Credit**  
**hours : 3h**

**Prerequisite : (1803329)**

This course focuses on the basic and specialized knowledge of prosthetic rehabilitation of through knee, trans-femoral and hip disarticulation amputations. The student will learn about the different contemporary prostheses and their components that are used in the rehabilitation of those amputations. The student will be trained in the design and manufacture of these prostheses.

**1803424 Lower Extremity Orthotics II** **Credit**  
**hours : 3h**

**Prerequisite : (1803328)**

This course focuses on the knowledge of the Knee-Ankle-Foot Orthosis (KAFO) with its varieties and uses. The student will practice the manufacture of the different kinds of knee-ankle-foot



orthoses. It also demonstrates to the student how the theories are applied in the design of these orthoses. The course will focus on theoretical and practical teaching of foot deformities and methods of their treatment.

**1803426 Lower Extremity Prosthetics IV** **Credit**  
**hours : 2h**

**Prerequisite: (1803421)**

This course includes the basic knowledge about patients with special activities like sports and other special skills. The student will learn methods of manufacturing these special prostheses and their uses to fit patients' needs (such as sports and occupational prostheses). The student also learns about the use of computer aided design and computer aided manufacture of prosthetics (CAD CAM system).

**1803442 Applied Prosthetics and Orthotics II** **Credit**  
**hours : 3h**

**Prerequisite or concurrent : (1803346)**

The student will learn through this course the manufacturing techniques of , transtibial prosthesis , knee – ankle – foot orthoses , hip – knee – ankle – foot orthoses , hip orthoses , knee orthoses & spinal orthoses .

**1803445 Applied Prosthetics and Orthotics III** **Credit**  
**hours : 3h**

**Prerequisite or concurrent : (1803442)**

The student will learn through this course the manufacturing techniques of lower limb and upper limb prosthetics and contemporary types of orthotics and prosthetics such as intelligent prosthetics and reciprocating gait orthosis (RGO) .

**1803461 Prosthetics clinical practice Credit**  
**hours : 6h Prerequisite : (1803442)**

Through this course , the student will have experience in the clinical environment of supplying prostheses to patients undergoing treatment . The aim is to develop student's skills in : Assessment and prescription , Clinical provision of prostheses , Manufacture of different types of lower and upper extremity prostheses , Professional activity . The aim of the clinical practice is to provide the student with experience of clinical management and to produce a prosthetist of professional standard who can play a full part in the clinical team .

**1803462 Orthotics clinical practice Credit**  
**hours : 4h**  
**Prerequisite : (1803442)**

Through this course , the student will have experience in the clinical environment of supplying orthoses to patients undergoing treatment . The aim is to develop student's skills in : Assessment and prescription , Clinical provision of orthoses , Manufacture of different types of lower and upper extremity and spinal orthoses , Professional activity . The aim of the clinical practice is to provide the student with experience of clinical management and to produce a orthoses of professional standard who can play a full part in the clinical team .

**1803371 Elctro technology Credit**  
**hours : 3h**  
**Prerequisite : (1801365)**

The student will have knowledge of the following principles of electricity with particular reference to applications in prosthetics , orthotics and workshop practice : Basic concepts , DC circuits , Inductance and capacitance , AC circuits , Power supplies , Amplifiers , Feedback , Interference rejection techniques , Measurement , Myoelectrodes . This course is an introduction to the priciples of elctritcy applicable to the practice of prosthetics and orthotics . These priciples are applied to a programme of laboratory experiments , which enable the student to become familiar with current electronic measurement pracitce .

**1803372 Computer Studies in OP Credit**  
**hours : 2h**

This course aim is to introduce students to computer application to designing the orthoses and prothoses by means of Auto-Cad and some related software .

**1803335** Information technology is increasingly being used in the design

and manufacture of prosthetic and orthotic devices .  
Techniques of computer-aided patient measurement and device design and manufacture are emerging from research and development efforts and increasingly being applied in clinical practice .

**1801365**

**Advanced spinal orthotics**  
**hours : 2h**

**Credit**

This course covers in details disease , injuries and deformities of the vertebral column and spinal cord . The focus will be on new spinal orthoses that are designed to fix , correct and support the vertebral column . It provides the students with the skills for making the orthoses such as Milwaukee brace , Boston brace and Charleston brace .

**Kinesiology**  
**hours : 3h**  
**Prerequisite : (1803201)**

**Credit**

This course includes forces and their effects (mechanics) and the application of mechanical principles to the human body in movement and at rest (biomechanics). It covers also the roles of muscle action (agonist, antagonist, stabilizer, and neutralizer), the relationship between the muscle's line of pull and the joint axis which affects the produced movement .