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
Credit hours: 1h
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
Credit hours: 3h
Prerequisite: (0304101)

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:

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 Pathology:

hours: 1h

This course will cover cellular pathology acute and chronic inflammation, 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 Rehabilitation Sciences.

0507103 Surgery for Rehabilitation Students:

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

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.

0508103 Diagnostics:

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 Rehabilitation 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 patterns, 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,
principle of accident preventing, workshop health care, and fire accident.

1803302 Function of the Locomotor System Credit
hours: 2h
Prerequisite: (1803201 & 0502108)

This course includes the anatomy and physiology of the locomotor system and its nervous, muscular, bone and joint components. It also provides the student with knowledge about the different lines and planes of the body. It describes the types of joint movement, looking at the diseases and injuries that influence joint and body movement.

1803313 Upper Extremity Orthotics Credit
hours: 2h
Prerequisite (1803241)

This course covers diseases and injuries which affect the normal function of upper limbs. Theories will be applied in practice to derive the appropriate solutions for those conditions specially using orthosis. The focus will be on orthoses that are made for cases of neurological, muscular and joints conditions. In addition the students gain the skills necessary to design and manufacture those orthoses.

1803325 Lower Extremity Prosthetics I Credit
hours: 3h Prerequisite: (1803241)

This course covers the different types and levels of lower limb amputations and their causes. The student will gain knowledge of the methods in rehabilitating these conditions and communicating with amputees. It also discusses the role of the rehabilitation team in the treatment of those conditions. The student learns through this course the biomechanics of the lower limbs and gait analysis to enable him to compare and understand the handicap and its prosthetic solution. Emphasis will be made on the design and manufacture of lower limb temporary prosthesis and patient training on the use of this prosthesis.
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 transtibial 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.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>1803344</td>
<td>Material Science</td>
<td>Credit</td>
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<td>hours : 2h</td>
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<td>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.</td>
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<tr>
<td>1803346</td>
<td>Applied Prosthetics and Orthotics I</td>
<td>Credit</td>
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<td>hours : 3h</td>
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<td>Prerequisite or concurrent : (1803322)</td>
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<td>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.</td>
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<tr>
<td>1803348</td>
<td>Technical Drawings</td>
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<td>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.</td>
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<tr>
<td>1803351</td>
<td>Orthopaedics</td>
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<td>Prerequisite : (0502108)</td>
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<td>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.</td>
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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.

Prerequisite or concurrent: (1803344)

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.

Prerequisite: (1803414)

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.

Prerequisite: (1803329)

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 an orthoses of professional standard who can play a full part in the clinical team.

1803371 Electro 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 principles of electricity applicable to the practice of prosthetics and orthotics. These principles are applied to a programme of laboratory experiments, which enable the student to become familiar with current electronic measurement practices.

1803372 Computer Studies in OP Credit
hours: 2h

This course aim is to introduce students to computer application to designing the orthoses and prostheses 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**

**Credit**

**hours**: 2h

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**

**Credit**

**hours**: 3h

**Prerequisite**: (1803201)

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.