



THE UNIVERSITY OF JORDAN
COURSE DESCRIPTION
Faculty of Rehabilitation Sciences

Requirements
Course Description

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.

1804340 Research Methods in Rehabilitation Sciences (3 credit hours)

Pre request : None

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.



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1802447 Management and Leadership

(3 credit hours)

Pre request : 1804340

This course discusses the general principles of management and leadership with emphasis on those needed by rehabilitation professionals in healthcare management. Examples of such skills include communication skills with the medical team, crisis management, delegating responsibilities, time management and improving service quality. Also important skills for resume preparation, job interviews and presentation skills are discussed.

1802131 Psychology in Rehabilitation Sciences

(2 credit hours)

Pre request : None

This course discusses the psychosocial aspects of disability commonly encountered in rehabilitation settings. The course will help students communicate with patients in a therapeutic manner while consider important factors that may affect intervention planning and implementation in all rehabilitation fields for children and adults. Common conditions include congenital, physical, mental, and long term disabilities.

1801381 Bio-Statistics for rehabilitation sciences

(3 credit hours)

Prerequisite : (1804340)

This course provides the students with the basic theoretical principles of statistical analysis. The course includes a practical part that will be held in computer laboratories where the students will be using the SPSS software to run some of the statistical tests and practice presenting the data using different charts and diagrams.



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1801101 Principles & Ethics of Rehabilitation Medicine Credit hours : 3h
Pre request : None

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.



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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.

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.

0504207 Pathalogy:

Credit hours : 1h

Pre Requests : 0501107 + 0502108

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.

1803209 Diagnostics for Orthotics & Prosthetics students:

Credit hours : 1h

Prerequisite: (0502107+0504207)

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.



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1811202 Tests & Measures

Credit hours: 2h

Prerequisite : (1801101) + (0502108)

This course provides basic skills measuring the following: muscle strength using manual muscle testing, range of motion using goniometry, and gait analysis. Moreover, this course enables the student to assess posture and describe and measure some equipments used in rehabilitation such as wheelchairs

1801162 Biomechanics

Credit hours : 3h

pre-requisite : (0342103 + 0502108)

This course covers the theory of motion and their application to the human body as well as the mechanical behavior of active and static body tissues with a focus on biomechanical topics to the specialty of medical rehabilitation. The practical part of this course will develop the student's skill of observation and will teach the students how to do the objective measurement of human body movements.

1803100 Orthotics & Prosthetics Techniques

Credit hours : 1h

Concurrent with: 1803142

Through this course, the student learns different metal works (such as: drilling, filing, welding, riveting), familiarity with machinery and how to work with them. Also the students learn how to prepare patterns, mould, modify, laminate, and work with plastic sheets.

1803142 Safety & Accidents Prevention in Workshops

Credit hours : 1h

Pre request : None

This course covers the measures of protection from machinery accident, electrical shocks, and poisoning of chemical materials. The student through this course becomes familiar with and use self protective



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equipments, principles of accident preventing, workshop health care, and fire accident.

- 0301101 Calculus I Credit hours : 3h**
Pre request : None
- Functions: domain, operations on functions, graphs of functions; trigonometric functions; limits: meaning of a limit, computational techniques, limits at infinity, infinite limits ;continuity; limits and continuity of trigonometric functions; the derivative: techniques of differentiation, derivatives of trigonometric functions; the chain rule; implicit differentiation; differentials; Roll's Theorem; the mean value theorem; the extended mean value theorem; L'Hopital's rule; increasing and decreasing functions; concavity; maximum and minimum values of a function; graphs of functions including rational functions (asymptotes) and functions with vertical tangents (cusps); antiderivatives; the indefinite integral; the definite integral; the fundamental theorem of calculus ; the area under a curve; the area between two curves; transcendental functions: inverse functions, logarithmic and exponential functions; derivatives and integrals; limits (the indeterminate forms); hyperbolic functions and their inverses; inverse trigonometric functions; some techniques of integration.
- 1803101 Basic Skills of Casting Credit hours : 1h**
Prerequisite : (1803100+1803142)
- This course provides basic skills in tanking casts for amputees at the level of below the knee using different techniques and understanding the theoretical concepts beyond these designs. The course will also cover how to shape and modify molds based on biomechanical principles.
- 1803211 Upper Extremity Orthotics Credit hours : 1h**
Prerequisite (0502107+0501108)
- This course covers diseases and injuries which affect the normal function of upper limbs.



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1803212 Clinical practicum in Upper Extremity Orthotics Credit hours: 1h

Prerequisite: 1811202 + Prerequisite or Concurrent with 1803211

The aim of this course is to apply theories in practice to derive the appropriate solutions for those conditions that require upper extremity orthoses. 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.

1803203 Lower Extremity Prosthetics I Credit hours : 3h

Prerequisite : (1803210+1803211)

This course covers transtibial (below the knee) prostheses types, components (especially prosthetic foot-ankle mechanism), fabrication, and the biomechanical principles related to them. This course also generally covers lower limb amputation levels, causes, and problems.

1803204 Clinical practicum in Lower Extremity Orthotics Credit hours: 1h

Prerequisite: 1803101 + Prerequisite or Concurrent with 1803203

Students will be trained on how to accurately measurement, cast, and modify the PTB socket. Students will be then trained on how to assemble the prosthesis and aligning it correctly on actual patients.

1803206 Lower Extremity Orthotics I Credit hours : 3h

Prerequisite : (0504207+1803205)

This course covers the disorders that can be treated (totally or partially) by orthoses, and orthoses used below the knee level (including foot orthoses), and their components and bio-mechanical principles.

1803207 Clinical practicum in Lower Extremity Orthotics I
Credit hours: 1h



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Prerequisite: 1811202 + Prerequisite or Concurrent with 1803206

This course aims to provide students with a clinical training on fabricating different types of below knee orthoses which are most frequently used.

1803329 Lower Extremity Prosthetics II Credit hours : 3h

Prerequisite: (1803203+ Prerequisite or Concurrent with 1801206)

This course covers trans-femoral (above the knee) prostheses, types, components, (especially prosthetic knees), and biomechanical principles related to them. This course covers also hip orthosis and orthosis reaching up to hip joint, and their components and biomechanical principles.

**1803330 Clinical practicum in Lower Extremity Prosthetics II
Credit hours: 1h**

Prerequisite: 1803204 + Prerequisite or Concurrent with 1803329

This course aims to provide students with a clinical training on how to fabricate different types of above knee prostheses which are most frequently used. This would include how to accurately measurement, cast, and modify the quadrilateral socket. Students will be then trained on how to assemble the prosthesis and aligning it correctly on actual patients.

1803311 Spinal Orthotics Credit hours : 2h

Prerequisite : (1803209+1803210)

This course covers diseases, injuries, and deformities of the vertebral column and spinal cord. The focus will be on spinal orthoses which is designed to fix, correct and support the vertebral column. Emphasis will be made on the role of the rehabilitation team in the treatment of those conditions.



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1803312 Clinical practicum in Spinal Orthotics Credit hours: 1h

Prerequisite or Concurrent with: (1803311)

The student will also learn the methods and techniques employed in the treatment of the different diseases, injuries and deformities of the vertebral column using orthotic devices that tend fix, correct and support the vertebral column. It provides the student with the skills for making those orthosis.

1803344 Material Science Credit hours : 2h

Pre Requests: 0304101+0303101

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, metals, and wooden materials.

1803210 Orthopaedics Credit hours : 3h

Pre Requests: 0502107 + Prerequisite or Concurrent with: (0504207)

This course gives the student basic knowledge of deformities, diseases of upper extremity, lower extremity, trunk, and methods of their treatment, specially conservative therapy. The course also emphasises on fractures, dislocations, tumors, neuromuscular diseases, and sport injuries. Amputations and principles of prescription of orthotics and prosthetics will be covered.

1803314 Upper Extremity Prosthetics I Credit hours : 3h

Prerequisite : (1803210+1803211)

This course covers the pathologies leading to upper extremity amputations, amputation levels, and the prostheses used for wrist disarticulation, trans-radial, elbow disarticulation, trans-humeral (above the elbow), shoulder disarticulation prostheses and their components, control systems, and the biomechanical principles related to them.



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**1803315 Clinical practicum in Upper Extremity Prosthetics I
Credit hours: 1h**

Prerequisite or concurrent with 1803314

The course will focus on the fabrication techniques of subracondoylar socket for below elbow amputation that is commonly used for cosmetic and myoelectric prostheses. Then students will be then training on the processes of finalising the cosmetic prostheses. The course will also introduce students to Utah dynamic socket and training in the prosthesis of its fabrication. Students will be then trained on manufacturing cosmetic prostheses for actual patients and evaluating their fit.

**1803317 Upper Extremity Prosthetics II Credit hours : 2h
Prerequisite : (1803314)**

This course covers the theoretical principles of myoelectric control that is used commonly to control electrically powered terminal devices. Students will be introduced to the electromyography and the methods of its processing and the different control strategies that can be used. The course will focus on pre and post prosthetic training and prosthetic evaluation methods.

**1803318 Clinical practicum in Upper Extremity Prosthetics II
Credit hours: 1h
Prerequisite: 1803315 + Prerequisite or concurrent with 1803317**

The course will focus on the fabrication techniques of myoelectric prostheses for below elbow amputation. Students will be provided the basic knowladge and skills on how to train amputees on prosthetic use.

**1803320 Clinical practicum in Lower Extremity Prosthetics III
Credit hours : 1h
Prerequisite : (1803330+1803308)**

This course covers partial foot amputations, syme's (ankle) disarticulation, knee disarticulation, hip disarticulation, their prostheses and the special components and the biomechanical principles related to



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them.

1803306 Lower Extremity Orthotics II Credit hours : 3h

Prerequisite : (1803206+1801261)

This course covers trans-femoral (above the knee) orthoses, types, components, (especially orthotic knees), and biomechanical principles related to them. The course also covers the disorders that can be treated (totally or partially) by orthoses, and orthoses used above the knee level with special focus on their components and bio-mechanical principles.

**1803307 Clinical practicum in Lower Extremity Orthotics II
Credit hours: 1h**

Prerequisite: 1803306 + Prerequisite or Concurrent with 1803207

This course aims to provide students with a clinical training on how to fabricate different types of above knee orthoses which are most frequently used.

1803405 Lower Extremity Orthotics III Credit hours : 2h

Prerequisite: (1803306)

This course covers in depth the different types of orthotic shoe inserts, medical shoes, shoe modifications and the materials used in fabricating them. The course also covers wheel chairs, mobility aids, and assistive devices and their characteristics and uses.

1803205 Gait Analysis I Credit hours : 3h

Prerequisite: 0502108 + Prerequisite or Concurrent with 1801261

This course covers the gait cycle, kinematics, kinetics, and dynamics of lower limbs, and muscular control on lower limbs and lower back during the gait cycle. The general functions and tasks of the lower limb during walking will also be covered.



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1803308 Gait Analysis II Credit hours : 3h

Prerequisite : (1803205+1803210)

This course covers the pathological gait patterns and their biomechanics. Computerised gait analysis and the errors resulting from this analysis are also covered.

1803309 Prosthetics Clinical Practice I Credit hours : 2h

Pre Request: 1803330+1803315

The aim of the clinical practice is to provide the student with experience of clinical management and to produce a prosthetist of professional. Through this course, the student will have experience in the clinical environment of supplying below knee and below elbow prostheses to patients undergoing treatment. The aim is to develop student's skills in: Assessment and prescription, clinical provision of prostheses, manufacture of prostheses, and professionalism.

1803409 Prosthetics Clinical Practice II Credit hours: 2h

Pre Request : 1813309+1803318

Through this course, the student will have experience in the clinical environment of supplying above knee and above elbow prostheses to patients undergoing treatment. The aim is to develop student's skills in: Assessment and prescription, clinical provision of prostheses, manufacture of prostheses.



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1803410 Prosthetics Clinical Practice III

Credit hours: 2h

Pre Request: 1803409+1803320

Through this course, the student will have experience in the clinical environment of supplying prostheses for special cases. The aim is to develop student's skills in: Assessment and prescription, clinical provision of prostheses, manufacture of prostheses. The aim of the clinical practice is to provide the student with experience of clinical management and to produce a prosthetist of professional.

1803310 Orthotics Clinical Practice I

Credit hours: 2h

Pre Request: 1803212+1803307

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. Through this course, the student will have experience in the clinical environment of supplying below the knee and upper limb 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 orthoses, and Professionalism.

1803410 Orthotics Clinical Practice II

Credit hours: 2h

Pre Request : 1803310+1813312

Through this course, the student will have experience in the clinical environment of supplying ablow the knee and trnadtional spinal 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 extremity and spinal orthoses.

1803411 Orthotics Clinical Practice III

Credit hours: 2h

Pre Request : 1813410+ 1803409

Through this course, the student will have experience in the clinical



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environment of supplying high tech lower limb and advanced spinal 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 and spinal orthoses, and Professional activity.

0904131 Engineering Graphics Credit hours: 1h

Pre Request : None

Drawing equipment and use of instruments. Lettering, Geometric construction, Sketching and shape description. Basic descriptive geometry, Developments and intersections. Axonometric, oblique and perspective drawings, Multiview projection, Principal views, Conventional practice, and sectional views. Auxiliary views. Dimensioning techniques. Parallel: Introduction to computer drawing, Drawing aids, Geometrical construction, and the appropriate commands of text, editing, plotting, sections, layers, pictorial views, and dimensioning. Auxiliary views.

1803407 Advanced Spinal Orthotics Credit hours : 3h
Pre Request : (1803311)

This course covers in details diseases, 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.

1813409 Clinical practicum in Advanced Spinal Orthotics
Credit hours : 1h
Prerequisite: 1813312 + Prerequisite or Concurrent (1803407)

The focus in this course will be on manufacturing spinal orthoses that are designed to treat single major curve scoliosis (C shape) as well as double curves (minor and major). It provides the students with the skills for making orthoses such as Milwaukee brace, Boston overlap brace,



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and Charleston brace.

1803415 Elctrotechnology Credit hours : 3h
Pre Request : (1803317+1803329)

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 practice.

1813418 Computer Applications in Orthotics & Prosthetics
Credit hours : 2h
Pre Request : (1803317+1803329)

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. This course therefore, aims to introduce students to computer application in designing the orthoses and protheses by means of CAD-CAM and some related softwares. Information technology is increasingly being used in the design and manufacture of prosthetic and orthotic devices.

1813419 Clinical practicum in Computer Applications in Orthotics & Prosthetics
Credit hours : 1h
Pre Request : (1803317+1803329)

This course aim to train students on using the CAD-CAM that is increasingly being used in the design and manufacture of prosthetic and orthotic devices.

1803413 Mechanics and Movement Science for Orthotics and Prosthetics Students
Credit hours : 3h



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Pre Request : (0342103+1801261)

This course provides an introduction to Newton's laws of motion and their applications on linear and angular moving objects. Additionally, it illustrates the principles relating to the mechanical force acting on static and moving objects, and concepts of torques and angular moments imposed on bodies and their applications in the field of prosthetics and orthotics

1803420 Applied in Prosthetics Credit hours: 3h
Pre Request : (1803330 + 1803315)

This course develops students' ability to manufacture lower and upper limbs prostheses and to refine the skills they learned in previous courses students under the direct supervision.

1803422 Applied in Orthotics Credit hours: 3h
Pre Request : (1803307)

This course develops students' ability to manufacture lower and upper limbs orthoses and to refine the skills they learned in previous courses students under the direct supervision.