

**TR**  
**USKUDAR UNIVERSITY**  
**FACULTY OF HEALTH SCIENCES**  
**ORTHOSIS-PROSTHESIS DEPARTMENT**  
**COURSE CONTENTS**  
**YEAR I (FALL)**



Orijinal metin

T.C.

[Daha iyi bir çeviri ile](#)

**SBF150 Mathematics (2+0)Credits:2 ECTS:3**

In this course, equations and inequalities, functions of one variable, permutation and combination, finance mathematics, limit, derivative, multivariate functions, vectors and matrices, and linear programming will be covered .

**SBF143 Applied Basic Anatomy (2+2)Credits:3 ECTS:5**

Anatomy is the science that describes body structures. In this course, body structures, order and functions are taught to a health personnel at a sufficient level. In practice classes, students will have the opportunity to work on human body models.

**SBF129 Human Physiology I (3+0)Credits:3 ECTS:5**

Concepts related to human physiology, cell physiology, blood, musculoskeletal system, nervous, cardiovascular, respiratory, excretory, endocrine system, gastrointestinal system, physiological structures and functions of sensory organs will be examined.

**SBF129 Human Physiology I (3+0)Credits:3 ECTS:5**

Concepts related to human physiology, cell physiology, blood, musculoskeletal system, nervous, cardiovascular, respiratory, excretory, endocrine system, gastrointestinal system, physiological structures and functions of sensory organs will be examined.

**ING101 English-I (3+0)Credits:3 ECTS:3**

This course includes markers; prepositions: place, time, movement; singular and plural nouns: countable and uncountable nouns; tenses: present tense, past tense structures; modals: will, should, should not, must, must not, can; comparative structures; pronouns: personal pronouns, possessive pronouns; adjectives; affirmative, negative and interrogative sentences; Conjunctions include: and, but, because.

**TURK101 Turkish Language-I (2+0)Credits:2 ECTS:3**

This course covers morphology of Turkish language, sentence elements and sentence types, expression disorders, spelling and punctuation; presentation, poetry, essay, composition, story, newspaper, magazine studies and applications.

**ATA101 Ataturk's Principles and History of Revolution - I (2+0)Credits:2 ECTS:3**

This course, revolution and similar concepts. Atatürk's understanding of revolution, reform movements in the Ottoman Empire during periods of stagnation-recession and the state of the Ottoman Empire, Tripoli-Balkan wars, World War I and the Armistice of Mudros, implementation of the Armistice of Mudros, occupations, Mustafa Kemal 's departure to Samsun, congresses and organization, the opening of the National Pact and the Grand National Assembly of Turkey, national fronts, Mudanya and Lausanne Treaties.

**OPR103 Professional Orientation (1+0)Credits:1 ECTS:1**

To give information about prostheses applied following lower and upper extremity amputations, to teach prosthesis and orthosis terminology, to introduce prosthesis and orthotic parts, to explain basic procedures related to prosthesis and orthosis construction.

**RPSI109 Positive Psychology and Communication Skills (HSE) (3 +0)Credits: 3 ECTS: 5**

This course includes the theoretical foundations of positive psychology, which is defined in accordance with the principles of empathy with others, problem solving skills, motivation and planning, anger management, relationship management and social behavior, self-awareness, habituation, healthy decision making and conflict management, and cognitive neuroscience-brain. The course includes topics such as the basic concepts that form the general framework of communication sciences, solutions and suggestions for strengthening communication skills, interpersonal communication, group communication, organizational communication, mass communication, public communication, international communication and intercultural communication.

**RKUL101 University Culture I (ÜSEÇ) (0+2)Credits:1 ECTS:1**

This course aims to enable university students to have intellectual knowledge about social, cultural and political events and to be open to multidisciplinary knowledge processes apart from their general curriculum. At the same time, the student will have the ability to comment by participating in the seminars of experts in the field of science, culture, social and political issues that are discussed in public outside their field. Students will have attended approximately 10-12 seminars/programs during their university life.

**I. YEAR ( SPRING )**

**OPR108 Physics (2+0)Credits:2 ECTS:3**

To enable the student to learn about the basic laws of physics and the structures of matter, and to make preliminary preparations for the materials and methods they will use in the department. Adopting the concepts that enable students to learn about the basic laws of physics and the structures of matter.

**Special Anatomy for OPR106 Orthotic Prosthesis** (2+2)Credits:3 ECTS:5

By explaining the basic anatomy terms, the anatomical structure of all body systems, mainly musculoskeletal, nervous system and movement system, is examined.

**SBF130 Human Physiology II** (3+0)Credits:3 ECTS:5

Concepts related to human physiology, cell physiology, blood, musculoskeletal system, nervous, cardiovascular, respiratory, excretory, endocrine system, gastrointestinal system, physiological structures and functions of sensory organs will be examined.

**ING102 English-II** (3+0)Credits:3 ECTS:3

This course covers tenses: present tense, present perfect, past tense, future tense structures; modals: might, could, can, must, may; adverbs: adverbs of place, direction, purpose, state; adjectives: order of adjectives, comparison, superlative structures; passive structure. passive structure in present, large, past, future tense; conditional clauses; adjective clauses; transfer sentences; verb structures: to, ing; noun clauses; adverbial clauses; Includes comparative structures.

**TURK102 Turkish Language-II** (2+0)Credits:2 ECTS:3

This course covers the preparation of a circular, an official article, an opinion piece, summarizing and writing such articles, introducing a workplace, putting forward an idea or opinion, expressing and criticizing the theme of an article, compiling information, types of oral and written expression (open session, discussion, panel, symposium, forum), features and preparation, spelling, punctuation, spelling rules and their features in official writings, sentence and sentence types, structure, meaning, arrangement of items according to predicate, sentence types.

**ATA102 Ataturk's Principles and History of Revolution - II** (2+0)Credits:2 ECTS:3

This course covers the political, social, legal, economic and educational reforms, uprisings against the Republic of Turkey, the domestic and foreign policy of the Atatürk period, the death of Atatürk, its echoes in Turkey and the world, Atatürk's principles, the world war, the transition to the multi-party system It includes the subjects of the 1960 and 1982 constitutions.

**OPR114 Introduction to Orthotic Prosthesis Science** (1+2)Credits:2 ECTS:3

Workshop equipment, workshop use equipment, orthotic materials, insoles, lower extremity orthosis, upper extremity orthosis body orthosis, dental materials, lower limb prosthesis, upper extremity orthosis, silicone prosthesis, myoelektronik prostheses, knee joints.

**RKUL102 University Culture II (ÜSEÇ)** (0+2)Credits:1 ECTS:1

This course aims to enable university students to have intellectual knowledge about social, cultural and political events and to be open to multidisciplinary knowledge processes apart from their general curriculum. At the same time, the student will have the ability to comment by participating in the seminars of experts in the field of science, culture, social and political issues that are discussed in public outside their field. Students will have attended approximately 10-12 seminars/programs during their university life.

**OPR112 Ergonomics and Human Factor** (2+0)Credits:2 ECTS:3

Gain knowledge of the causes, prevention and treatment of work-related musculoskeletal injuries Analyzes an individual's anthropometric characteristics to identify risk factors that cause musculoskeletal problems Analyzes job requirements to identify risk factors causing musculoskeletal problems Evaluates the work environment in terms of ergonomic suitability Defines ergonomic approaches to be applied around

**II . YEAR ( FALL )**

**OPR201 Prosthetics I** (2+2)Credits:3 ECTS:5

Description and history of the prosthesis The course amp tasyon level and causes amputation terminology, the prosthesis terminology-lower extremity prote z terminology, upper extremity prosthesis , forming the connection parts and the lower limb prostheses that link parts classification, amputated members evaluation methods will be covered.

**OPR203 Orthotics I** (2+2)Credits:3 ECTS:5

This course covers the definition, history, classification and purposes of use of orthoses, orthotics, orthoprosthesis terminology, orthotic materials, correction principles, static, serial static, static progressive application principles, dynamic application principles, application principles for immobilization, evaluation of foot/ankle biomechanics . orthoses ready-yl st limb areas of use of the orthosis, features and types of issues include.

**OPR215 Biomechanics and Kinesiology I** (3+0)Credits:3 ECTS: 4

Introduction to biomechanics, basic skills and order of mathematical operations, force and force components, center of gravity and body center of gravity, movement (gait) analysis, soft tissue biomechanics, hard tissue biomechanics, sports biomechanics, orthotics and prosthesis designs, modeling-simulation studies, fluids includes mechanics.

**OPR217 Three-Dimensional Design and Computer Drawing I** (3+0)Credits:3 ECTS:4

In this course, acquiring the ability to use computer aided drawing programs, drawing tools, paper sizes, line types, filing processes to start dimensional drawing, drawing aids drawing geometric shapes, arrangement of objects, projections, changing the properties of objects , working with layers

**OPR209 Information Technologies and Software I** (1+2)Credits:2 ECTS:3

This course includes learning the basic computational concepts underlying programming languages, learning a range of problem solving techniques using computers, understanding the role of programming in the overall software development process, understanding problem solving using a programming language , control

structures.

**OPR211 Materials Science I**

**(2+0)Credits:2 ECTS:3**

To examine the structure and properties of materials in the micro dimension and their effects in the macro dimension, their advantages and disadvantages. It is to show the effects of the processes that the material goes through during production on the material structure and what changes it in practice. To give general information about the structure and bonds of atoms, crystal structures, defects of solid materials, mechanical properties of metals, metal fatigue and fracture, strengthening methods, electrical and other properties of materials; to introduce metals, ceramics, polymers and composite materials and biomaterials. The student learns the basic properties of materials to be used in the future. Understands the importance of material selection. Gains preliminary knowledge in terms of detecting and solving material problems.

**OPR213 Internal and Neurological Diseases**

**(2+0)Credits:2 ECTS:3**

Internal medicine: metabolism, endocrinology, infection, gastrointestinal system and kidney diseases, hematology, cardiology, geriatrics, chest diseases neurology: basic neurological diseases, basic information about diagnostic methods, their distinction with 1st and 2nd motor neuron diseases, neurological symptoms in systemic diseases. It is the transfer of basic information about environmental neuropathology.

**SBF121 Occupational Health and Safety**

**(2+0)Credits:2 ECTS:3**

Definition, importance and purpose of work safety, basic principles of work safety, danger and danger, psychology of work safety, organization of work safety, work accidents and occupational diseases.

**II . YEAR ( SPRING )**

**OPR202 Prosthetics II**

**(2+2)Credits:3 ECTS:5**

Transfemoral (TF) amputations and prostheses, amputation levels and relationship with socket, post-operative period, stump differences and relationship with socket, osteoperiosteal bridge, removal of fibula, socket types and selection in TF prostheses; PTB; Features of PTS, KBM, TSB and thigh-supported PTB, suspension methods in TF prostheses, foot types and connection components are included.

**OPR204 Orthotics II**

**(2+2)Credits:3 ECTS:5**

Foot Orthoses; The definition, purposes and correction principles of foot orthoses are covered. Appropriate shoes and their features, orthoses in toe deformities, orthoses in foot deformities, orthoses in ankle-foot deformities are discussed theoretically and practically.

**OPR216 Biomechanics and Kinesiology II**

**(3+0)Credits:3 ECTS:4**

To assimilate columnar vertebral pathologies, anatomical and mechanical features; describe the anatomical and mechanical features for all joints and pelvis in the human body; gain the competence to associate the theoretical knowledge learned in this course with the pathological conditions of the lower and upper extremities and the spine.

**OPR216 Biomechanics and Kinesiology II**

**(3+0)Credits:3 ECTS:4**

To assimilate columnar vertebral pathologies, anatomical and mechanical features; describe the anatomical and mechanical features for all joints and pelvis in the human body; gain the competence to associate the theoretical knowledge learned in this course with the pathological conditions of the lower and upper extremities and the spine. Mechanics and pathomechanics of the vertebral column and the mechanics and pathomechanics of the pelvis and whole body joints.

**OPR210 Information Technologies and Software II**

**(1+2)Credits:2 ECTS:3**

The aim of this course is to be able to design a good hardware, to analyze performance software for large systems, to evaluate options such as processor speed, structure, memory capacity and to have the knowledge to choose suitable computer systems for them .

**OPR212 Materials Science II**

**(2+0)Credits:2 ECTS:3**

Intermetallic and composite materials, materials used in medical fields such as silicon, chromium, nickel, titanium, zirconium, physical and chemical metallurgy, heat treatments, casting technology, welding metallurgy, coatings, hydrometallurgy, plastic shaping of metals, corrosion, material selection according to design and To give information about nanomaterials. The student obtains detailed information about the materials. Learns how materials are processed. Understands the concept of corrosion. Develops the ability to make conscious material selection.

**OPR214 Orthopedics and Amputation Surgery**

**(2+0)Credits:2 ECTS:3**

Course content, definitions, basic classifications, case examples, pediatric orthopedics (congenital diseases), pediatric orthopedics (neurological diseases), pediatric orthopedics (vertebra deformities and traumatic diseases), infections, tumors, nontraumatic soft tissue diseases, sports injuries, fractures and dislocations , peripheral nerve injuries and hand, vertebral diseases, foot-ankle, diabetic foot, amputation techniques (basic principles and foot amputations), amputation techniques (lower extremity, hip and pelvis), amputation techniques (upper extremity and hand).

**III . YEAR ( FALL )**

**OPR301 Prosthetics III**

**(2+ 4)Credits: 4 ECTS:5**

Transfemoral (TF) amputations and prostheses, amputation levels, post-operative period, stump differences, socket types in TF prostheses, characteristics and selection criteria; Round, Quadrilateral, Open-ended, Ischial Containment, CAT-CAM sockets, suspension in TF prostheses and knee joints in TF prostheses, connection components, adjustments are processed.

**OPR302 Orthotics III**

**(2+ 4)Credits: 4 ECTS:5**

Knee Orthoses; Definition of orthoses suitable for the anatomical and mechanical joint properties of the knee, their intended use and principles of action, patellar instability orthoses, genu recurvatum orthoses, knee flexion deformity orthoses, genu valgum orthoses, genu varum orthoses, orthoses in cases where weight should not be placed on the foot/knee/hip joint; lower extremity fracture orthoses and orthoses in knee extensor weakness are covered theoretically and practically at a basic level.

**OPR305 Electrotechnology and Microcontrollers****(2+2)Credits:3 ECTS: 4**

To convey general information about electronics. To develop the student's ability to analyze basic electronic circuits correctly, to recognize electronic circuit elements, to comprehend the difference between alternating current and direct current circuits, and to make circuit applications. To give information about the structure of microcontrollers, their difference from microprocessor, usage areas, programming methods, types available in the market. The student recognizes the basic elements of electronics. Learns the difference between electrical circuits. Can create electrical units. Gain knowledge of electrodes, electronic measurement and safety. Have an idea about the features of microcontrollers.

**OPR321 Model Design I****(2+0)Credits:2 ECTS:3**

Developing two-dimensional drawing skills with Autocad program, interpreting technical drawings, interpreting the drawings and transferring them to another person, creating 2-dimensional drawings for the profession in accordance with the renewed technology, creating drawings in the necessary formats for cutting on CNC machines . Working with dimension commands. Transferring the drawn drawing to the paper medium by working with different line types and line thicknesses.

**OPR311 Gait Science and Podology****(2+0)Credits:2 ECTS:3**

It is aimed to familiarize the student with gait biomechanics and its properties. By learning the characteristics of pathological gait types, it aims to connect the device with gait problems in patients with orthoses and prostheses, and to eliminate gait disturbances that may occur with the device. In addition, to give basic information about Podology, to introduce foot pathologies and to provide an idea about the areas that he can solve as an orthotic prosthesis specialist or offer solutions to other specialists.

**RPRE104 Entrepreneurship and Project Culture (ÜSEÇ)****(2+0)Credits:2 ECTS:3**

This course provides students with comprehensive information on how to implement the graduation product rather than the graduation project. It includes student-centered, bringing together all academics involved in setting real-life goals, discovering new things, problem solving, time management skills, and community service.

**OPR315 Statistics for Orthotics and Prosthetics****(2+0)Credits:2 ECTS:3**

This course covers the selection of research problems, collection of data, preparation for statistical evaluation, data analysis methods, selection and interpretation of appropriate parametric and non-parametric descriptive tests, evaluation of research on nursing problems, characteristics of different research methods, qualitative and quantitative research methods, research ethical issues and research design, critical evaluation of research.

**OPR312 TR prey on Psychology and Psychosocial Rehabilitation****(2+0)Credits:2 ECTS:3**

It is important for students to recognize the traumatic event, its effects on the person, and the mental health problems that can be seen in people with prosthesis or orthotics, and to be informed about what to do when approaching such individuals. What is trauma, traumatic life events and experience in the content of the course ? (definition, classification, stages, trauma model and psychosocial effects), reactions to traumatic experiences: Acute Stress Disorder, Post Traumatic Stress Disorder, Depression, Secondary (indirect) traumatization, Loss and mourning, Psychological problems seen in people using prosthetic orthotics and Topics such as approaches, terms of disability, disability and disability, causes of disability, stages of adaptation to disability, personality development in disabled children, psychosocial approaches in neuromuscular and traumatic disorders are covered.

**III. YEAR (SPRING )****OPR303 Analysis and Evaluation in Prosthetic Science****(2+4)Credits:4 ECTS:5**

The course covers general medical terminology related to prosthetics , upper extremity pathologies, upper extremity orthoses , amputations, rehabilitation and terminology , upper extremity prostheses , trunk pathologies and spinal orthoses .

**OPR304 Analysis and Evaluation in Orthotics Science****(2+4)Credits:4 ECTS:5**

The scope of the course includes hip orthoses; definition, purposes and correction principles of hip orthoses are given. The waist belt used in hip orthoses, indications and features, HCAFs and their features, legg-calve perthes orthoses, meningomyeloccele orthoses, mink orthoses, orthoses in rotational deformities of the hip are covered theoretically and practically at a basic level.

**OPR306 Bioelectric****(2+2)Credits:3 ECTS:4**

To explain the basic concepts in medical electronics. Biological electromagnetism, sensors, biosensors and devices that record and convert the electric current in the human body, amplifiers used in medical electronics, designs of systems that process bioelectric signals, and microprocessor supported biomedical layout designs. To teach the basic theories of measurement, electrodes, sensors, transducers, their coupling to bioelectric amplifiers, microprocessor assisted biomedical layout designs; It is to introduce EMG, EEG, EKG devices.

**OPR322 Model Design II****(2+0)Credits:2 ECTS:3**

To gain the ability to apply professional prosthetic drawings on Solidworks, an exemplary 3d CAD computer-aided modeling program. The scope of the course ü development for the profession Solidworks program of three-dimensional modeling capabilities, ability to delegate to interpret made drawings, the design of 3-D products for the profession compatible with the new technology be carried out in a computer environment

**SBF145 Research Methods in Health Sciences****(3+0)Credits:3 ECTS:4**

At the end of this course, it is aimed for the student to have knowledge about the stages of the scientific research process, research models, sampling methods, data collection methods, to be able to plan research, to use appropriate measurement tools in the research they plan, to interpret and report the data collected in their research. Within the scope of the course, the basics of scientific research, stages of the research process, classification/models of research, problem definition, sampling methods, data collection methods, measurement definition, qualifications sought in measurement tools, measurement process, data processing, solution and interpretation, reporting.

**SBF131 First Aid****(1+2 ) Credits:2 ECTS:3**

This course covers the basic concepts of first aid and emergency care, emergency care management, homeostasis. includes maintenance issues . In an accident or life-threatening situation, it includes learning the drug-free first aid practices with the available tools and equipment, without seeking medical equipment, in order to save life or prevent the situation from getting worse, until the help of health officials is provided .

**OPR318 Efficiency****(2+0 ) Credits:2 ECTS:3**

Efficiency concept, types, internal and external factors that increase productivity in enterprises, to give an idea about the relationship between business efficiency and economic growth. To teach productivity analysis methods. To convey information on productivity management and sustainability, business performance and productivity relationship, and details of productivity improvement techniques.

Students gain the ability to conceptually understand, measure and evaluate productivity. Learns to apply productivity analysis and increasing techniques.

**OPR320 Quality and Calibration Methods****(2+0 ) Credits:2 ECTS:3**

Within the scope of the course, students teach the concepts of quality and calibration; to give information about measurement standards and systems, comparison of reference values and measurement values, measurement error, measurement uncertainty and uncertainty tolerances; calibrators, calibration laboratories and their working principles. To convey information about biomedical products, devices and calibration methods of neurosensory implants. The student will have information about both general material and product control methods and the calibration of devices and implants in his field . Recognizes measuring devices. Learns to calculate measurement uncertainty.

**OPR330 Reverse Engineering****(2+2 ) Credits: 3 ECTS:4**

It is to teach to explain and/or develop the working principles of a device by disassembling it. To show the errors and deficiencies on the prototype by reducing the number of parts in the product, to find ways to solve the problems that may arise during the production phase with the changes to be made in the product, to provide the student with a three-dimensional software perspective in terms of reaching the new product from the old design. To teach the use of CAT/CAM and CAE technologies. The student learns to transfer data between the digital and physical worlds using modern computer technologies. Gains the ability to discover new ways to improve the performance and features of a product. Develops problem solving skills.

**IV. YEAR ( FALL )****OPR409 Professional Practice I****(0+20 ) Credits: 10 ECTS: 20**

Within the scope of this course, laboratory training is given within the scope of internship in the form of learning the measurement methods required in the production of orthoses and prosthesis and patient evaluation and repeating them practically .

**OPR415 Model Design III****(2+0 ) Credits:2 ECTS:3**

Within the scope of the course, students are trained on 3D drawing and 3D printing of orthotic drawings for the profession.

**OPR413 Graduation Project I****(2+0 ) Credits:2 ECTS:3**

To gain the ability to analyze, compile and synthesize the knowledge gained in the theoretical or applied fields of orthotics and prosthesis within the scope of the course within the framework of an academic discipline; to give practice of presenting the acquired knowledge in the form of a thesis file within a plan; It is aimed to gain experience on how to present the thesis work .

**SBF111 Public Health****(2+0 ) Credits:2 ECTS:3**

He covered the course alkane concepts related to health, water ağı k Oruma and development stages, b İrey, families and community health promotion, preventive, curative and rehab the lite annoying to provide care, water and istematik approach to community health problems to identify and provide solutions threads processed.

**IV. YEAR (SPRING )****OPR404 Graduation Project II****(2+0 ) Credits:2 ECTS:4**

Courses covered t crush or mA Investigation of the castle example, ö different respective sphere with Defoamer to identify research topics, b elirlen that in doing research research plan l do, y T AS do with research Discussing s application, y T AS A raştır malaria reporting the issues are handled.

**OPR410 Model Design IV**

**(2+0 ) Credits:2 ECTS:3**

G scope of the course for the profession compatible with handmade technology orthotic and per Otez products in 3D design and advanced training are associated with the production.

**OPR408 Professional Practice I I**

**(0+20 ) Credits: 10 ECTS: 20**

Within the scope of the course, the applications of the professional and technical knowledge learned by the students in the previous periods and the measurement and evaluation of the patients are made.

**OPR407 Health Law and Professional Legislation**

**(2+0 ) Credits:2 ECTS:3**

The scope of the course is the characteristics of legal rules and their distinction from other social order rules; contemporary legal systems; compilation movement in law and compilation of Turkish Law; sanctions and their types; public law, private law, mixed law branches and their subdivisions; Turkish positive law and its problems; the application of the law in various aspects; right; the concepts of entitlement and license; It consists of certain issues such as responsibility and the operation of responsibility.