COLLEGE OF PROFESSIONAL STUDIES - INTERNATIONAL CENTER OF PROFESSIONAL STUDIES

(hereinafter: **ICEPS**)

Study program:

Undergraduate professional studies

PHYSIOTHERAPY

~ COURSE BOOK ~

Courses by semesters and years of study program Nursing, undergraduate professional studies

- **Marks for Form of Teaching**: **theor lect** = theoretical lectures; **exer** = theoretical exercises; **other** = other forms of teaching (individual work with students, project work...); **st-res pap** = study-research paper (Degree Paper...); **prof pract** = professional (clinical) practice (in the School's Teaching Bases)
- **Marks for Mandatory/Elective courses**: **m** = mandatory course; **e** = elective course
- **Marks for Type of Courses**: **ag** = academic-general education; p = professional; pa = professional-applicative

No	Course Code	Course Name	Sem.	Active Lessons				Prof pract	ECTS	Course m/e	Course Type
				theor lect	theor exer	other forms	st-res pap				
THE FIRST YEAR											
1	ft-01	Anatomy and Physiology	1	45	15	0	0	0	7	m	p
2	ft-04	Basics of Nursing	1	30	15	0	0	300	8	m	p
3	ft-06	Basics of Information and Communication Technologies	1	30	30	0	0	0	5	m	p
4	ft-07	Ethics in Health Care	1	30	30	0	0	0	5	m	ag
5	ft-izb-01	Elective Course 1	1	30	30	0	0	0	5	e	
5a	ft-izb-01-d	Business Communication Skills	1	30	30	0	0	0	5	e	pa
5b	ft-izb-01-b	Basics of Biochemistry	1	30	30	0	0	0	5	e	pa
5c	ft-izb-01-a	Geriatrics with Nursing in Geriatrics	1	30	30	0	0	0	5	e	p
5d	ft-izb-01-đ	Radiology Physics and Basics of Radiology Work Methods	1	30	30	0	0	0	5	e	pa
5e	ft-izb-01-v	Specialized English for Medicine 1	1	30	30	0	0	0	5	e	ag
5f	ft-izb-01-g	Specialized German for Medicine 1	1	30	30	0	0	0	5	e	ag
6	ft-05	Hygiene with the Basics of Microbiology	2	30	30	0	0	330	5	m	p
7	ft-02	Biophysics with Biomechanics	2	15	45	0	0	0	3	m	pa
8	ft-08	Physical Factors in Therapy	2	15	15	0	0	150	6	m	p
9	ft-03	Physiotherapy Assessment	2	30	15	0	0	30	6	m	p
10	ft-09	Skills in Physiotherapy	2	30	45	0	0	30	5	m	pa
11	ft-izb-02	Elective Course 2	2	30	30	0	0	0	5	e	
11a	ft-izb-02-b	Marketing of Health Care Institutions	2	30	30	0	0	0	5	e	p
11b	ft-izb-02-a	Public Health	2	30	30	0	0	0	5	e	ag
11c	ft-izb-02-v	Health Care Education Methodology and Health Promotion	2	30	30	0	0	0	5	e	p
11d	ft-izb-02-g	Organization of Health Care Systems	2	30	30	0	0	0	5	e	ag
Total number of classes and ECTS per year:				**345**	**300**	**0**		**810**	**60**		
THE SECOND YEAR											
12	ft-12	Functional Anatomy	3	15	15	0	0	0	3	m	p
13	ft-13	Pathophysiology	3	45	30	0	0	0	6	m	p
14	ft-14	Basics of Internal medicine	3	45	15	0	0	0	5	m	p
15	ft-15	Basics of Pediatrics	3	30	15	0	0	0	5	m	pa
16	ft-17	Clinical Kinesiology	3	15	45	0	0	0	5	m	p
17	ft-21	First Aid	3	30	30	0	0	0	5	m	p
18	ft-izb-03	Elective Course 3	3	30	30	0	0	0	5	e	
18a	ft-izb-03-a	Dietary Issues and Nutrition of Inpatients	3	30	30	0	0	0	5	e	p
18b	ft-izb-03-v	Specialized English for Medicine 2	3	30	30	0	0	0	5	e	ag
18c	ft-izb-03-g	Specialized German for Medicine 2	3	30	30	0	0	0	5	e	ag
19	ft-18	Clinical Kinesitherapy	4	30	30	0	0	300	6	m	pa
20	ft-20	Physiotherapy in Internal Medicine	4	15	15	0	0	150	4	m	pa
21	ft-19	Physiotherapy in Pediatrics	4	30	15	0	0	150	4	m	pa

22	ft-16	Manual Therapy	4	30	30	0	0	300	4	m	pa
23	ft-11	Psychology in Nursing and Health Care	4	15	30	0	0	0	3	m	p
24	ft-izb-04	Elective Course 4	4	30	30	0	0	0	5	e	
24a	ft-izb-04-a	Diagnostically-Therapeutic Program	4	30	30	0	0	0	5	e	pa
24b	ft-izb-04-d	Pharmacology and Drug Dosing	4	30	30	0	0	0	5	e	p
24c	ft-izb-04-v	Allergology	4	30	30	0	0	0	5	e	p
24d	ft-izb-04-đ	Rare Diseases	4	30	30	0	0	0	5	e	p
Total number of classes and ECTS per year:				**360**	**360**	**0**		**1.095**	**60**		
THE THIRD YEAR											
25	ft-22	Basics of Surgery with Orthopedics	5	30	15	0	0	0	5	m	pa
26	ft-23	Basics of Neurology	5	15	15	0	0	0	4	m	p
27	ft-27	Basics of Rheumatology	5	15	15	0	0	0	4	m	pa
28	ft-25	Physiotherapy in Surgery with Orthopaedics	5	30	45	0	0	300	3	m	pa
29	ft-24	Medical Rehabilitation	5	30	30	0	0	150	5	m	pa
30	ft-22	Elective Course 5	5	30	15	0	0	0	5	e	
30a	ft-izb-05-b	Mental Hygiene	5	30	30	0	0	0	5	e	pa
30b	ft-izb-05-g	Business English	5	30	30	0	0	0	5	e	ag
30c	ft-izb-05-v	Business German	5	30	30	0	0	0	5	e	ag
31	ft-30	Sports Medicine	6	30	30	0	0	0	5	m	pa
32	ft-26	Physiotherapy in Neurology	6	30	30	0	0	300	3	m	p
33	ft-28	Physiotherapy in Rheumatology	6	15	15	0	0	300	3	m	p
34	ft-31	Balneotherapy	6	15	15	0	0	0	3	m	p
35	ft-29	Health Care and Social-Security Legislation	6	30	30	0	0	0	5	m	ag
36	ft-izb-06	Elective Course 6	6	30	30	0	0	0	5	e	
36a	ft-izb-06-g	Research Methodology	6	30	30	0	0	120	5	e	p
36b	ft-izb-06-v	Quality Control	6	30	30	0	0	0	5	e	p
36c	ft-izb-06-d	Basics of Integrative Medicine	6	30	30	0	0	0	5	e	p
36d	ft-izb-06-b	Sports Activities of Persons with Disabilities	6	30	30	0	0	0	5	e	ag
37	ft-33	Degree Paper	6	0	0	0	300	0	10	m	p
Total number of classes and ECTS per year:				**300**	**300**	**300**		**1.050**	**60**		

Total number of classes and ECTS per all three years of studies:				**2.205**				**2.790**	**180**		

ALLERGOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Allergology**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, fourth semester
ECTS:	5
Requirement:	no

Course objective:
The objective of the course is to familiarize students with and their understanding of the basic principles of allergology, their capability to use specialist literature relating to this field and to state their opinion in the field of allergology.

Course outcome:
The outcome of the course is the acquisition of fundamental knowlede in allergology, familiarizaiton with the basics of diagnostics in allergology and capability of students of taking measures in the prevention of allergic reactions or their elimination. The outcome of the course is also familiarization of students with basic pathological cases in the field of allergology and their capability to use specialist literature relating to this field.

Course content:
Lectures
Objects, definition and tasks of allergology; respiratory allergy (rhinitis, rhinoconjuctivitis, asthma); drug allergy; poison allergy (wasps, bees); allergic contact dermatitis; food allergy; latex allergy; hives (urticaria); plant allergy; pollen allergy; anaphylaxis; application of allergy elimination techniques; skin testing for allergy; provocation test; desensitization; allergen specific immunotherapy.
Exercises
Types of allergies – case studies; applications of allergy elimination techniques – case studies; analysis of most frequent allergic reactions in Serbia; first aid measures, nursing in case of allergic reactions; searching e-literature and presentation of certain less known allergic reactions; renowned health-care andscientific institutions in Serbia in the field of allergology.

Literature:
Literature in Serbian:
1. Ljajević J., Ljajević M., Dimčić Radovanović Z. (ur.): Alergologija i klinička imunologija u Srbiji, Evropski centar za mir i razvoj, Beograd, 2005.
2. Ramić Z., Pravica V., Popadić D.: Priručnik za nastavu iz imunologije, Medicinski fakultet, Beograd, 2020.
3. Dadarno P. Dž., Vitni K.: Alergije, Sezam book, Beograd, 2020.
Literature in English:
4. Wesley Burks A., Holgate S. T., O'Hehir R. E., Broide D. H., Bacharier L. B.: Middleton's allergy: principles and practice, Elsevier, Amserdam, 2020.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures and practical exercises with anatomical and hystological devices, use of atlas, video projections, computer animations and simulations of physiological processes

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums	30		

ANATOMY AND PHYSIOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Anatomy and Physiology**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	first year, first semester
ECTS:	7
Requirement:	segment Anatomy is a condition for segment Physiology

Course objective:

Acquisition of knowledge on organ and human body system morphology; familiarity with and understanding normal anatomical and histological structures and notions; acquisition of knowledge in area of cell, tissue, organ system and human organism physiology aimed at understanding the changed, pathological functioning and treatment possibilities; knowledge of and understanding the role of organ control mechanisms, as well as understanding connection between regulatory systems in human organism; provision of theoretical basis required for learning other courses.

Course outcome:

Capability of defining, describing, integrating and reproducing notions relating to normal anatomical and histological structures; upon the completion of the course and passing the exam students will have a command of the corresponding part of medical nomenclature, be able to explain functioning of individual organs and organ systems, will be familiar with and will understand integrated functions of individual organs and the role of organism control mechanisms and they will know and understand the connection of the regulatory system of human organism enabling its adaptation to changes in internal and external environment under everyday conditions.

Course content:

Lectures

Basic anatomical terminology; body areas and parts; upper extremities; bones, joints, muscles, blood vessels and nerves; lower extremities; bones, ankles, muscles, blood vessels and nerves; rib cage; walls, division and content of the thoracic cavity; lungs and pulmonary pleurae; heart; mediastinum organs; abdomen; walls, division and content of abdominal cavity; peritoneum, peritoneal cavity (liver, stomach, spleen, pancreas, small intestine and large intestine); retroperitoneal space (kidney, adrenal gland, aorta, inferior vena cava, celiac plexus); pelvis; wall and content; urinary bladder, rectum, male and female reproductive system, pelvic diaphragm; head and neck; head and facial bones; head and neck muscles; head and neck large blood vessels and nerves; central nervous system.

Human physiology study; transport through cell membrane; intercellular communication; explicitation physiology; membrane potential of inactivity; action potential; nervous impulse transmission; skeletal muscle physiology; neuro muscular sinapse; morphophysiological characteristics of skeletal muscles; smooth muscle physiology; characteristics of smooth muscle tissue structure, types, innervation, electrical activity of smooth muscles, specific features of contraction; central nervous system organization, nerve cell; hematoencephalic barrier, cerebrospinal fluid, composition and function; spinal cord; medulla oblongata; midbrain; functional characteristics; reticulo-cortical relations, decerebration rigidity and skeletal muscle tone; cerebellum, structure and function; diencephalon, hypothalamus, vegetative nervous system; basal ganglia; cerebral cortex; senses; definition, importance and general principles of sensory systems; sense of hearing and balance; sense of taste and smell; eyesight; pain perception; introductory notes in pathophysiology.

Exercises

Demonstration of all teaching units on anatomical dummies. Use of atlas; video presentations. Membrane potentials and synaptic transmission. Patellar reflex and pupillary reflex. Impact of different factors on muscular contraction. Haemoglobin, erythrocyte and leukocyte concentration in human blood. Plasm buffer solution capacity. Coagulation. Discussion and analysis of selected physiological systems.

Literature:

Literature in Serbian:

1. Stojšić-Džunja Lj.: Anatomija za studente zdravstvene nege, udžbenik, Medicinski fakultet, Novi Sad, 2017.
2. Veličković D.: Fiziologija za studente farmacije, udžbenik, Medicinski fakultet, Niš, 2013.
3. Despopoulos A., Silbernagl S.: Fiziološki atlas u boji za studente medicine, Medicinski fakultet, Niš, 2007.
4. Mačvanin Đorđe: Anatomija, udžbenik, Fakultet za menadžment u sportu, Alfa univerzitet, Beograd, Matica srpska, Novi Sad, 2005.
5. Milisavljević M. i sar.: Klinička anatomija, udžbenik, Nauka, Beograd, 2004.
6. Guyton A.C., Hall J. E.: Medicinska fiziologija, 11. izdanje, Savremena administracija, Beograd, 2006.
7. Mujović i sar.: Medicinska fiziologija, udžbenik, Medicinski fakultet, Kosovska Mitrovica (Priština), 2008.
8. Netter F. H., Machado C. A. G.: Atlas of Human Anatomy & CD, ILS, Mala velika knjiga, Novi Sad, 2005.

Literature in English:

9. Scanlon V., Sanders T.: Essentials of Anatomy and Physiology, Kindle Edition, London, 2018
10. Drake L. R., Wayne Vogl A., Mitchell A. W. M., et al.: Gray's Anatomy for Students, textbook, Elsevier, New York, 2014.

<table>
<tr><td colspan="5">11. Arroyo J. P.: Back to Basics in Physiology, textbook, Academic Press, London, 2013.</td></tr>
<tr><td colspan="5">Number of classes:</td></tr>
<tr><td>Lectures</td><td>Exercises</td><td>Other classes
(professional practice...)</td><td>Study research work
(Degree Paper...)</td><td>Other forms of teaching
(individual work with student, projects…)</td></tr>
<tr><td>45</td><td>15</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="5">Methods of teaching:
lectures and practical exercises with anatomical and hystological devices, use of atlas, video projections, computer animations and simulations of physiological processes</td></tr>
<tr><td colspan="5">Grading (maximum 100 points)</td></tr>
<tr><td colspan="2">Pre-Exam commitments</td><td>Points</td><td>Final Exam</td><td>Points</td></tr>
<tr><td colspan="2">Lecture attendance</td><td>3</td><td>Exam</td><td>20 (Anatomy) +20 (Physiology)</td></tr>
<tr><td colspan="2">Activity</td><td>7</td><td></td><td></td></tr>
<tr><td colspan="2">Projects/Seminars</td><td>0</td><td></td><td></td></tr>
<tr><td colspan="2">Exercises/professional practice</td><td>10 (Anatomy)
10 (Physiology)</td><td></td><td></td></tr>
<tr><td colspan="2">Colloquiums</td><td>15 (Anatomy)
15 (Physiology)</td><td></td><td></td></tr>
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BALNEOTHERAPY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Balneotherapy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	3
Requirement:	no

Course objective:
Familiarization of student with basics of balneology (mineral water, peloids, medicinal gases) and human bioclimatology (medical meteorology, medical climatology, biological rhythms), as well as with elementary regimes and therapeutic measures in balneo-climatotherapy).

Course outcome:
Acquisition of medical conscience and humane principles in the applications of natural bath resources, adoption of knowledge in bioclimatology from the aspect of impact on human health for preventive and therapeutic purposes, possession of knowledge how to apply mineral waters, peloids, medicinal gases in prevention and treatment; being trained to know how to make assessments and selection of patients for the application of balneological and climate resources.

Course content:
Lectures
Basics of balneology (mineral water, peloids, medicinal gases): regimes and therapeutic measures in belneoclimatology treatment. Basic of human bioclimatology (medical meteorology – weather-pathology, measures of prevention of meteorotropism, medical climatology, climate factors, climatoprophylaxis, climatotherapy; biological rhythms – daily and annual).
Exercises
Preparation of mineral water, peloids, medicinal gases, familiarization with modern forms of treatment in baths. Use of questionnaires for evaluation of chronobiological types.

Literature:
Literature in Serbian:
1. Jovanović T., Janjić M., Popović G., Conić S.: Balneoklimatologija, udžbenik, Cibif, Beograd, 2005.
Literature in English:
2. Russell J., Cohn R.: Balneotherapy, Book on Demand, New Jercy, 2012.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	0	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF BIOCHEMISTRY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Biochemistry**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Student will acquire basic knowledge in biochemistry and understand the impact of biochemistry on other sciences, understand interrelationship between molecule structure and biological function, acquire knowledge on structure and function of cell membranes, understand enzyme action mechanism, acquire knowledge in basic metabolic pathways, acquire knowledge in intercellular signalling, understand reactions of biotransformations of exogenous and endogenous substances and acquire knowledge on nucleic acids and protein biosynthesis.

Course outcome:
Upon the successful completion of the course students are expected to be able to describe and analyse the course of principal catabolic, anabolic and common metabolic pathways, apply knowledge on enzyme kinetics and intercellular signalling in interpreting regulation of metabolic pathways in human organism, explain biochemical basis of protein synthesis, regulation and posttranslational modifications of proteins, as well as to successfully apply the acquired knowledge when attending classes and acquiring knowledge in medical biochemistry.

Course content:
Lectures
Introduction; structure and mechanism of enzyme and coenzyme action, enzyme kinetics and inhibition; chemical composition of biological membranes and transport through membranes; basic principles of bioenergetics; carbohydrate catabolism; glycolysis; glycogenolysis; phosphogluconate pathway, catabolism of other hexoses; lipid catabolism: fatty acid oxidation, triglyceride, phospholipid, sphingolipid, cholesterol; nitrogen compound catabolic process, amino acids, urea, protein, nucleotide cycle; common metabolic pathways; citric acid cycle, respiratory chain and oxidative prohporylation; carbohydrate anabolism: gluconeogenesis, glycogenesis; lipid anabolism; nitrogen compound anabolism; intercellular signalling: by G-protein-linked receptors, enzyme-linked receptors, ion channel receptors and nicotinic acetylcholine receptors; biotransformations: cytochrome P450, FM-monooxygenase systems; glucuronic acid conjugation; biotransformation of some exogeneous and endogenous substances; biosynthesis of proteins and nucleic acids, replication, transcription, translation and posttranslational modifications of proteins in human organism.
Exercises
Repetition of the acquired knowledge on biomolecule, structure and function of fibrillar (keratin and collagen) and globular (hemoglobin and myoglobin) proteins. Solving problems relating to enzyme reaction kinetics and enzyme inhibition. Examples of disorders of some transport systems through cell membranes. Solving problems relating to certain metabolic pathway, linking theoretical knowledge in metabolism with practical examples. Familiarization with work of medical-biochemical. Laboratory.

Literature:
Literature in Serbian:

1. Spasić S., Jelić-Ivanović Z., Spasojević-Kalimanovska V.: Opšta biohemija, udžbenik, Farmaceutski fakultet, Beograd, 2003.
2. Topić A., Stanojević-Bogavac N., Kotur-Stevuljević J.: Laboratorijske vežbe iz opšte biohemije, Farmaceutski fakultet, Beograd, 2009.
3. Stojanović S.: Zbirka zadataka iz hemije, Omega MS Pharmacy, Novi Sad, 2017.
4. Kovačević D.: Biohemija, udžbenik, Savremena administracija, Beograd, 2003.
5. Petrović J., Velimirović S.: Biohemija, udžbenik, Novi Sad, 2002.
6. Mihajlović M.: Biohemija, udžbenik, Naučna knjiga, Beograd, 2000.

Literature in English:
7. Rodwell V., Bender D., Botham K., Kennelly P., Anthony P. W.: Harper's Illustrated Biochemistry, textbook, McGraw-Hill Education, New York, 2018.
8. Nelson D. L., Cox M. M.: Lehninger Principles of Biochemistry, Worth Publishers, New York, 2000.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, case study, demo laboratory exercises, e-learning

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Attendance at lectures	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF INFORMATION AND COMMUNICATION TECHNOLOGIES

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Information and Communication Technologies**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Course objective is to enable students to acquire basic knowledge in the area of application of information-communication technologies in health-care institutions, familiarizing with text processing software tools and with tabular calculations computer programs.

Course outcome:
Upon passing the exam students will be able to apply the acquired knowledge on computer hardware, peripheral units, software tools, multimedia and the internet in real-life situations in health-care institutions, or to use the acquired knowledge to improve the current work in health-care institutions. In addition to that, application of calculation or text processing program is important for everyday work of health-care professionals.

Course content:
Lectures
Organization of information technology service in health-care institution; types of information systems; information systems within health-care system; acquisition and acceptance of new information systems in health-care, need for continuous updating; work of health-care worker within IT system; professional equipment; basics of system analysis; system functioning testing; standards of information technologies system in health care; patient recording; importance of permanent and timely entry of data into system; connection of the system with other national systems, unique system of patient tracking; trends of connecting health-care institutions system with pharmaceutical systems; patient data protection; the Internet, internet address, internet access, internet protocols, HTML, World Wide Web, internet services; Windows; specific program used in pharmacy practice; basic program languages used by health-care professionals (Word, Excell, Power Point); security systems in health-care institutions, panic keys.
Exercises
Types of information systems. Work of health-care worker within IT system. Need for continuous updating. Basics of telecommunications and forms of telecommunication systems. Patient recording. Importance of permanent and timely entry of data into system. Work in patient recording program. Use of internet. Basic program languages in the work of health-care professional (Word, Excel, Power Point), work in programs. Data processing, surveys. Graphic presentation and tabulating. Types of errors at data processing. Use of security system in health-care institution.

Literature:
Literature in Serbian:

1. Marčićević Ž., Marošan Z.: Primena informacionih tehnologija, udžbenik, Visoka poslovna škola strukovnih studija, Novi Sad, 2010.
2. Marošan Z., Vesin B.: Primena informacionih tehnologija, praktikum, Visoka poslovna škola strukovnih studija, Novi Sad, 2009.
3. Gerlič I.: Savremene informacione tehnologije u obrazovanju, udžbenik, Nacionalna izdavačka kuća Slovenija, Ljubljana, 2000.
4. Softver HELIANT za rad u zdravstvenoj ustanovi, demo verzija.
5. Bunzel T.: Microsoft Office 2010 Kao od šale, CET, Beograd, 2010.
6. Tasić M., Ćirić M.: Osnovi informatike, udžbenik, Prirodno-matematički fakultet, Niš, 2002.
7. Milošević Z., Bogdanović D.: Statistika i informatika u oblasti medicinskih istraživanja, udžbenik, Medicinski fakultet Univerziteta u Nišu, Niš, 2012.

Literature in English:
8. Biheller B. R., Evans J., Pinard T. K., Romer M. R.: Microsoft Office 2007: Introductory Course, textbook, Course Technology, Boston, 2007.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, parctical classes, work with software, exercises.

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums	30		

BASICS OF INTEGRATIVE MEDICINE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Integrative Medicine**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Course objective:
Purpose of health promotion in pre-schools and schools is an adequate development of children and young persons resulting in them becoming healthy, satisfied, successful, self-conscious and responsible persons.

Course outcome:
Developed value system of young persons, their ability to point out the importance of taking care of health, encourage empathy and sensitivity to the needs of others, and awareness of unacceptable behavior and behavioral deviations which must not be tolerated or ignored.

Course content:
Lectures
Appropriate nutrition, physical activity; mental health promotion; encouraging and developing self-confidence, various skills – from communication to decision-making; characteristic of modern (fast) living; behavioral changes; prevention (smoking, alcohol, drugs); prevention of new forms of addiction: information-communication technologies, gambling, betting; safe sex; peer violence, domestic violence, violence against women; prevention of violence by means of modern technologies; migrations and integrations of migrants; tolerance.
Exercises
Work in pairs and in small groups. Organization of lectures with discussions and panel discussions. Pedagogical workshop. Role playing. Brain storm. Forming views in discussions and debates. Case studies. Use of available and appropriate contents on websites. Visits to representatives of preschools and schools – joint work on health promotion projects. Workshops. Project (city, provincial, republic) analysis dealing with health promotion and improvement. Joint activities with the Institute for Youth Protection, visitors from safe houses. Joint activities and visits of representatives of student organizations (higher-year students) from related higher-education institutions.

Литература:
Literature in Serbian:

1. Grupa autora: Tajne alternativne medicine, Medicinska knjiga, Beograd, 2016.
2. Шкокљев А.: Акупунктурологија, Научна књига, Београд, 1989.
3. Јовановић-Игњатић Злата: Квантно холограмска медицина кроз призму акупунктурних и микроталасно резонантних (само) регулаторних механизама, Quanttes, Београд, 2010.

Literature in English:

4. Omura Yoshiaki: Practice of the Bi-Digital O-Ring Test, Ido No Nippon, Tokyo 1986.
5. Robson Terry: An introduction to Complementary Medicine, Allen &Unwin, Sydney, 2003.
6. Micozzi S. Marc: Fundamentals of Complementary and Alternative Medicine, Saunders, Philadelphia, 2010.
7. Kotsirilos Vicki, Vitetta Luis, Sali Avni: A Guide to Evidence-based Integrative and Complementary Medicine, Churchill Livingstone, Edinburg, 2011.
8. Hecker Hans-Ulrich, Steveling Angelika, Peuker Elmar, Kastner Joerg: Color Atlas of Acupuncture: Body Points - Ear Points - Trigger Points (Complementary Medicine), Thieme, 2008.
9. Sutton Amy L: Complementary and Alternative Medicine Sourcebook, Omnigraphics, Detroit, 2010.
10. Zhanwen Liu, Liang Liu: Essentials of Chinese Medicine, Springer, London, New York, 2009.
11. Kligler Benjamin, Lee Roberta: Integrative Medicine principles for practice, Program in Integrative Medicine, University of Arizona. McGraw-Hill Companies, New York, Chicago, London, Madrid, Milan, Sydney, Toronto, Singapur, New Delhi, 2004.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures against use of different video materia, exercises on dummy, exercises

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40

Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF INTERNAL MEDICINE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Internal Medicine**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	second year, third semester
ECTS:	5
Requirement:	Basics of Nursing

Course objective:
Adoption of current theoretical and practical specialist knowledge in internal medicine, nursing of internal-medicine patients and training in application of acquired knowledge in health-care professional work.

Course outcome:
Upon the completion of the course students are trained to recognize in individual and team work cardiovascular, pulmonary, nephrology, endocrinology, gastroenterology, hematology and oncology conditions.

Course content:
Lectures
Cardiology; specific features of nursing in heart rhythm, pacemaker implantation and electrophysiology ward; diagnostics, therapy and prevention of artery hypertension; specific features of nursing in cardiology wards; prevention, diagnostics and treatment coronary disease risk factors; diagnostics and treatment of acute coronary syndrome; most frequent and most important pulmonary diseases, diagnostics, prevention and treatment; specific features of nursing in pulmonary wards; most frequent and most important internal oncology diseases, diagnostics, prevention and treatment; specific features of administration of cytostatic therapy and chemotherapy in internal patients; most frequent and most important hematologic diseases, diagnostics, prevention and treatment; specific features of nursing in hematology wards; nursing and care of patients with hemorrhagic syndrome; nursing and care of immunocompromised patients; most frequent and most important gastrointestinal and biliopancreatic diseases, diagnostics, prevention and treatment; most frequent and most important liver diseases; endocrinology; most frequent and most important endocrinology diseases, diagnostics, prevention and treatment; specific features of nursing in endocrinology wards; insulin therapy regimes; diabetic foot nursing; most frequent and most important nephrology diseases, diagnostics, prevention and treatment; most frequent and most important immunology diseases, diagnostics, prevention and treatment; specific features of nursing in nephrology and immunology wards; specific features of nursing in dialysis wards; conducting peritoneal dialysis.
Exercisess
Etiology and pathogenesis of cardiovascular diseases. Specific features of nursing in cardiology wards. Prevention, diagnostics and treatment of coronary disease risk factors. Diagnostics and treatment of acute coronary syndrome. Etiology and pathogenesis of pulmonary diseases. Function and general symptomatology of respiratory system diseases. Diagnostics of respiratory system diseases. Anamnesis, physical examination, abdomen inspection, additional examinations of digestive organs. Etiology and pathogenesis of digestive system organs diseases. Functional and general symptoms of digestive system organs. Functional and general symptoms of liver, gallbladder and biliary tract and pancreas diseases. Specific features of nursing in gastrointestinal wards. Preparation of patient for endoscopy diagnostic procedures. Examination and clinical testing of renal disease patient. Specific features of nursing in nephrology and immunology wards. Specific features of nursing in dialysis wards. Conducting hemodialysis and peritoneal dialysis. Propaedeutics of blood and blood forming organs. Specific features of nursing in hematology wards. Nursing and care of patients with hemorrhagic syndrome. Nursing and care of immunocompromised patients. Most frequent and most important endocrinology diseases, diagnostics, prevention and treatment. Specific features of nursing in endocrinology wards. Insulin therapy regimes. Specific features of nursing of patients with locomotor system diseases.

Literature:
Literature in Serbian:

1. Kopitović I.: Interna medicina za studente zdravstvene nege, udžbenik, Medicinski fakultet, Novi Sad, 2015.
2. Manojlović D. i dr.: Interna medicina I, II udžbenik, Zavod za udžbenike i nastavna sredstva, Beograd, 2003.
3. Antić S., Ilić S., Interna medicina, udžbenik, Medicinski fakultet, Niš, 2009.
4. Đurica S.: Interna medicina, udžbenik, Viša medicinska škola, Beograd, 2000.
5. Manojlović S.: Hitna stanja u internoj medicini, udžbenik, Zavod za udžbenike, Beograd, 2011.

Literature in English:

6. Farr C. B.: Internal Medicine for Nurses: Outlines of Internal Medicine for the Use of Nurses, Scholar's Choice, London, 2015.
7. Kasper D., Fauci A., Hauser S., Longo D.: Harrison's Principles of Internal Medicine, textbook, McGraw-Hill Professional, New York, 2015

Number of classes:

Lectures	Exercises	Other classes	Study research work	Other forms of teaching

		(professional practice...)	(Degree Paper...)	(individual work with student, projects…)
45	15	0	0	0

Methods of teaching:
lectures against use of different video materia, exercises on dummy, exercises

Grading (maximum 100 points)			
Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums	30		

BASICS OF NEUROLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Neurology**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, fifth semester
ECTS:	4
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy

Course objective:
At the end of the course, the student acquires knowledge about the symptoms and signs of diseases of certain nervous system deceases, about adequate treatment of patients with neurological symptoms, when to suspect a certain neurological entity, when to conduct an adequate diagnostic procedure and possibly start treatment.

Course objective:
Upon the completion of the course and passing the exam, students are able to recognize neurological symptoms in injuries and diseases of the nervous system, make a functional assessment, recognize needs of the patient, determine goals and tasks of the treatment, guide the course of treatments, monitor and control the results and keep appropriate medical documentation of the patient with neurological diseases, disorders and damage in all stages of the process of rehabilitation.

Course content:
Lectures
Episodic consciousness disorders, coma, delirium. Sleep disorders. Epilepsies and epileptic syndromes. Headaches, neuralgiae, vertigo. Cerebrovascular diseases (ischemic) and cerebral edema. CNS infectious diseases and neurological complications of systemic diseases. Dementias. Neurological aspects of the nervous system trauma. CNS tumors. CNS demyelinating diseases. Movement disorders and cerebellar diseases. Development period neurology. Motor neuron diseases and polyneuropathies. Spinal cord diseases. Neuromuscular junction and muscular diseases.
Exercises
Neurological history. Examination of cranial nerves. Examination of the neck, upper and lower extremities (trophic, tonus, mobility, muscular reflexes, muscular strength, stretch tests). Extrapyramidal symptoms and signs. Cerebral signs testing. Testing higher cortical functions (speech, praxia, gnosia, lexia, calculia). Familiarization with diagnostic methods in neurology (EEG, video EEG, EMNG, EP, LP, isoelectric focusing of liquor). Doppler ultrasound, CT, MRI, PET, SPECT). Examination of patients in coma. Examination of myasthenia gravis patients. Neurological examination of a child. Walk disorder (differential diagnosis). Headaches. Overall neurological treatment of different neurological patients, differential diagnostic analysis.

Literature:
Literature in Serbian:
1. Kostić V.: Neurologija za studente medicine, udžbenik, Medicinski fakultet, Univerzitet u Beogradu, 2007.
2. Radojčić B.: Neurološki pregled i osnovi kliničke neurologije, Elit Medica, Beograd, 2006.

Literature in English:
3. Adams R. D., Victor M., Ropper A. H.: Principles of Neurology, McGraw-Hill, New York, 2005.
4. Kearney P., McGowan T., Anderson J., Strosahl D.: The Role of the Occupational Therapist on the Neuro-Rehabilitation Team, Springer Publishing Company, New York, 2007.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	0	0	0

Methods of teaching:
Lectures, exercises, exercises on dummy, demonstrations, video presentations, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF NURSING

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Nursing**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	first year, first semester
ECTS:	8
Requirement:	no

Course objective:
Adoption of basic notions in nursing and basic theoretical and practical (resourcefulness) specialist knowledge in nursing, and training in application of the acquired knowledge in professional and research work. Self-education aimed at own protection, protection of patients and other team members, development of critical thinking, independence in nursing and team work abilities.

Course outcome:
Adoption of a holistic approach in nursing; skills, development of professional awareness, responsibility, humanity, sense of deontology, aesthetics and communication with patients and professional team; student independence in nursing, mastered nurse intervention and interdependent nurse intervention in the field of diagnostics and therapy.

Course content:
Lectures
Theoretical consideration of basic and general notions in medicine; development of nursing; nursing and society; requirements for quality nursing in hospital and out-of-hospital circumstances; nurse interventions at patient hospitalization; nursing process; data gathering and assessment of needs of patients for nursing; general (universal) problems in nursing; nursing of specific groups; nursing documentation; models (methods) of organization of provision of nursing; progressive nursing and patient categorization; improvement of nursing through research work of nurses.
Exercises
Analysis of basic values of nursing and necessary requirements for quality nursing in hospital and out-of-hospital conditions. Basics of good practice and infection control. Nurse interventions at patient hospitalization. Determining needs in nursing. Application of aids to data collecting. Recording vital signs and other health indicators as a form of observing in nursing. Nurse diagnosis and collaboration issue in nursing process. Nursing planning. Nursing plan realization. Practicing certain nurse interventions. Evaluation in nursing process and nurse documentation keeping.

Literature:
Literature in Serbian:

1. Rajak S., Imbronjev V.: Osnovi zdravstvene nege, udžbenik, Omega MS Pharmacy, Novi Sad, 2018.
2. Kekuš D.: Zdravstvena nega u primarnoj zdravstvenoj zaštiti, Visoka zdravstvena škola, Beograd, 2015.
3. Rudić R., Kocev N., Munćan B.: Proces zdravstvne nege, Praktikum, Knjiga-komerc, Beograd, 2005.
4. Tijanić M., Đuranović D., Rudić R., Milović Lj.: Zdravstvena nega i savremeno sestrinstvo, udžbenik, Naučna KMD, Beograd, 2010.
5. Munćan B.: Zdravstvena nega, udžbenik, Beograd, 2014.
6. Babić L.: Zdravstvena nega u radiologiji, udžbenik, Licej, Beograd, 2011.
7. Springhouse: Nursing procedures, prevod, Data Status, Beograd, 2010.

Literature in English:

8. Gulanick M., Myers J. L.: Nursing Care Plans-Nursing Diagnoses and Intervention, Elsevier, Mosby, New York, 2007.
9. Potter P. A., Perry A. G., Stockert P. A., Hall A.: Fundamentals of Nursing, textbook, Elsevier, New York, 2020.
10. Lynn P. B.: Taylor's Clinical Nursing Skills, A Nursing Process Approach, textbook, LWW, Liverpool, 2018.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	15	300	0	0

Methods of teaching:
lectures against use of different video materials, exercises on dummy, simulation, exercises, case study, discussion, workshop.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

BASICS OF PEDIATRICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Pediatrics**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	second year, third semester
ECTS:	5
Requirement:	Basics of Nursing

Course objective:
Familiarizing students with medically healthy and sick children, pediatric treatment process and the role of health-care professional dealing with nursing in pediatrics. Study analysis and planning needs in pediatric nursing of patients for individuals and groups. Understanding the importance of inclusion of parents in nursing of children. Improvement of possibilities of successful communication of treated children, parents and medical team.

Course outcome:
Upon the completion of the course students will improve therapy communication with children and their relatives, develop knowledge and understanding of nursing intervention in the area of pediatrics. Students are trained to recognize emergency situations and possible complications in children in circumstances posing threat to life.

Course content:
Lectures
Inclusion of parents in nursing of children and the young; evidence based on nursing in pediatrics; application of nursing process on individual basic activities – conceptual model by V. Henderson; care of all age children; nursing of prematurely born children; nursing of sick children; nursing of children with special needs; nursing of children suffering from pain; newborn nutrition; neonatology; genetics; growth and development of children; nutrition of children; nephrology and endocrinology; cardiology, pulmonology and dermatology; emergency medicine; psychiatry and neurology; social pediatrics; poisoning and injuries; disproportion of physical and psychical maturity; adolescent medicine.
Exercises
Pediatric nursing and application of theoretic model. Preparation of students for clinical training within seminars. Practical application of pediatric nursing, intervention in laboratory within V. Henderson conceptual model.

Literature:
Literature in Serbian:

1. Jovanović Privrodski J.: Pedijatrija, udžbenik, Medicinski fakultet, Novi Sad, 2012.
2. Mardešić D.: Pedatrija, udžbenik, Školska knjiga, Zagreb, 2003.
3. Marinković Lj.: Zdravstvena nega u pedijatriji, udžbenik, G.A.D., Beograd, 2007.
4. Janković B. Vodič osnovno i specijalizovano zbrinjavanje novorođenčeta. Beograd:Institut za zdravstvenu zaštitu majke i deteta Srbije“Dr Vukan Čupić“, 2011.
5. Berman R., Kligman R., Dženson H., Nelson N.: Udžbenik pedijatrije, Bard-Fin, Beograd, 2009.
6. Felc Z.: Osnove neonatologije, udžbenik, Fakulteta za zdravstvene vede, Univerzitet u Mariboru, 2008.

Literature in English:
7. Ball J. W.: Pediatric Nursing, Pearson education, Prentice Hall, New Jersey, 2008.
8. Kliegman R. M., Jenson H. B., Behrman R. E.: Nelson Textbook of Pediatrics, textbook, Sounders, New York, 2000.
9. Aruchamy L.: Practical Pediatrics Paperback, textbook, Jaypee, New Jersy, 2020.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	15	0	0	0

Methods of teaching:
lectures against use of different video material, exercises on dummy; exercises.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Attendance at lectures	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF RHEAUMATOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Rheumatology**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, fifth semester
ECTS:	4
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy

Course objective:
The objective of the course is to prepare students to apply the acquired knowledge and skills and recognize the symptoms, types, phases and stages of a disease, assess the conditions, planning physiotherapy, maintaining recovery process, control the results and keep medical records of patients suffering from rheumatism. Acquisition of knowledge on etiology, pathoanatomical changes, clinical features, course, prognosis, treatment and recovery of patients suffering from rheumatologic diseases from the aspect of kinesitherapy.

Course outcome:
Upon the completion of the course and passing the exam students will be trained to assess the patient from the aspect of work therapy, determine physiotherapeutic goals depending on the psychic function disorder, motivate individuals and/or groups, organize individual and group work, sports and recreational activities, select, apply and quantify physiotherapeutic procedures and methods and evaluate the effects of their work.

Course content:
Lectures
Basics of functional anatomy of the nervous system. Correlative neuroanatomy and functional neurology. Syndromes of neurological damage. Diagnostic methods in rheumatology. Damage of cranial nerves. Consciousness and consciousness disorders. Epilepsies. Sleep and sleep disorders. Cranial-cerebral injuries. Spinal system. Vertebral column injuries. Intracranial tumors. Spinal canal tumors. Cerebrovascular diseases. Diseases of extrapyramidal system. Nerve root diseases. Diseases of plexus and individual nerves. Polyneuropathies and polyneuritises. Inflammatory diseases of the nervous system. Muscle diseases. Degenerative diseases of the nervous system. Dementias. Neurological diseases of development period.
Exercises
Basics of functional anatomy of the nervous system – recapitulation. Analysis of the most frequent diseases – examples from practice, possibility of physiotherapeutic treatment.

Literature:
Literature in Serbian:

1. Pilipović H., Reumatologija, udžbenik, autorsko izdanje, Beograd; 2000.
2. Pavlović M.: Kineziterapija u reumatologiji, udžbenik, Visoka medicinska škola, Beograd; 2003.
3. Jovanović-Sretenović T.: Praktikum-radna terapija u reumatologiji, Viša zdravstvena škola strukovnih studija, Beograd, 2012.
4. Nedvidek B.: Osnovi fizikalne medicine i medicinske rehabilitacije, udžbenik, Medicinski fakultet, Novi Sad, 2003.

Literature in English:

5. Goodacre L., McArthur M.: Rheumatology Practice in Occupational Therapy, Wiley-Blackwell, New Jersey, 2013.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	0	0	0

Methods of teaching:
Lectures, exercises, case analyses, video presentations, e-learning, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BASICS OF SURGERY WITH ORTHOPEDICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Basics of Surgery with Orthopedics**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	third year, fifth semester
ECTS:	5
Requirement:	Basics of Nursing

Course objective:
Acquisition of theoretical knowledge and skills in nursing patients in all surgery branches.

Course outcome:
Students are tranined to practically apply the acquired knowledge in all surgical disciplines necessary for acquisition of skills in taking care of surgical patients from an aspect of nursing.

Course content:
Lectures
Principles of asepsis and antisepsis; therapy of digestive and endocrine system diseases; therapy of locomotor and endocrine system organ diseases and injuries; therapy of blood and lymph vessel diseases and injuries; therapy of central and peripheral nervous system diseases and injuries; therapy of skin diseases and injuries, principles of reconstructive and aesthetic surgery; therapy of genitourinary tract diseases and injuries; therapy of thoracic cage and lung diseases and injuries; therapy of cardiovascular diseases and injuries, cardiopulmonary bypass; etiopathogenesis, classification and determination of malignant disease stage; specific features of development age surgery, symptomatology and diagnostics of diseases and injuries in childhood period; definition, types and way of organ and tissue transplantations, living donor transplant; organization and medicolegal aspects of organ transplantation; notion of anesthesia and resuscitation, preparation of patients for surgical treatment, types of anesthesia and surgical patient monitoring, post-surgical period patient procedures.
Exercises
Seeing connection between theoretical basics in surgery and specific features of nursing of patients with digestive and endocrine system injuries. Nursing of patients with locomotor system conditions. Nursing of patients with surgical conditions and injuries of blood and lymph vessels. Nursing of patients with surgical conditions and central and peripheral nervous system injuries. Nursing of patients with burns. Nursing of patients with surgical conditions and genitourinary tract injuries. Nursing of patients with surgical conditions and thoracic cage and lung conditions. Nursing of patients with surgical conditions and heart injuries. Nursing of patients after organ transplantation.

Literature:
Literature in Serbian:
1. Maksimović Ž.: Hirurgija, udžbenik za studente, CIBID, Beograd, 2008.
2. Stevović D. i sar.: Hirurgija, udžbenik, Savremena administracija, 2001.
3. Domazet N.: udžbenik, Hirurgija sa ortopedijom i traumatologijom, Beograd, 2006.
4. Terzić N.: Zdravstvena nega u hirurgiji, udžbenik, Lazarevac, 2006.
Literature in English:
5. Pudner R.: Nursing the Surgical Patient, Elsevier, 2005.
6. Norton J., Barie P.S., Bollinger R.R., Chang A.E., Lowry S., Mulvihill S.J., Pass H.I., Thompson R.W.: Surgery: Basic Science and Clinical Evidence, Springer Publishing Company, New York, 2008.
7. Lewis L.S., Dirksen S.R., Heitkemper M.M., Bucher L.: Medical Surgical Nursing: Assessment and Management of Clinical Problems, Toronto, 2011.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	15	0	0	0

Methods of teaching:
Lecturea agains use of different viedo material, exercises, case studies, exercises on dummy, e-learning

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BIOPHYSICS WITH BIOMECHANICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Biophysics with Biomechanics**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	first year, second semester
ECTS:	3
Requirement:	no

Course objective:
Acquisition of fundamental theoretic and practical knowledge in biophysics required for subsequent easier understanding of biomechanical system of human organism and application of the knowledge on physiotherapy and medical rehabilitation of various disorders and conditions; familiarization with laws of physics of importance for physiotherapy, biomechanical system dynamics and its basics in biomechanics. Determining and acquisition of fundamental theoretic and practical knowledge in biomechanics required for subsequent better understanding of biomechanical mechanisms of human organism and application of newly acquired knowledge within physiotherapy and rehabilitation of various disorders and conditions.

Course outcome:
Familiarization with biophysical basics of mechanics of certain organisms by applying computing methods in biomechanics and understanding laws of biomechanics and their application to complex systems of organisms.

Course content:
Lectures
Biotransport. Membrane potential. Biophysics of sensory functions. Basics laws of biomechanics and dynamics. Principal rules of biomechanics. Elements of human locomotor system, levers. Biomechanical aspects of osteogenesis and mechanical model of bone form adaptation. Intermolecular forces. Elasticity at stretching and bending, bone fracture toughness. Impulse force. Characteristics of ultra sound, sources of ultra sound. X-ray techniques. Electrophysiology, examples of modelling in electrophysiology, alternate current passage through organism. Physical basics of diametry. Laser, laser in medicine. Biomechanics as a branch of biophysics. Bone biomechanics. Muscle biomechanics. Biomechanics of tendons and ligaments. Biomechanics of complex systems and environmental interactions. Nervous system biomechanics. Biomechanics of blood vessels, heart and breathing. Movement coordination. Computer methods in biomechanics. Elements of human locomotor system, levers, biomechanical aspects of osteogenesis and the mechanical model of bone form adaptation.
Exercises
Computer simulations and demonstration of membrane potential; demonstration of electrophysical process; laser operation demonstration; visit to physiology laboratory; basic application of computing methods in biomechanics; familiarization with principles of biomechanics of breathing, muscles, bones, blood vessels, heart and nervous system.

Literature:
Literature in Serbian:

1. Simonović J., Vuković J., Ristanović D., Radovanov R., Popov D.: Biofizika u medicini, II izd., udžbenik, Medicinska knjiga, 2003.
2. Vasiljev R.: Biomehanika: dinamička morfologija, položaj tela u prostoru, uslovi ravnoteže, Novi Sad, 2005.
3. Jevtić J.: Biohenika lokomotornog sistema, Kragujevac, 2004.
4. Vasiljev R.: Biomehanika, praktikum, Novi Sad, 2001.

Literature in English:
5. William Bialek: Biophysics: Searching for Principles, Villey, New York, 2014.
6. Duane Knudson: Fundamentals of Biomechanics, Springer, Munchen, 2012.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	45	0	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

BUSINESS COMMUNICATION SKILLS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Business Communication Skills**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
With his/her active participation in the learning process, student should acquire knowledge in the area of communications in order to acquire communication competency and skills required for professional work in nursing and treatment of senior citizens, organizational and team communication and in communication with social partners.

Course outcome:
At the end of the course student should be capable to apply the acquired knowledge in communication skills and to practically implement the acquired knowledge and skills within nursing.

Course content:
Lectures
General notions, aspects, types, parts of communication; communication competency in professional work; barriers in communication; specific characteristics of communication with elderly persons; importance of verbal and non-verbal communication with elderly persons; specific features of application of communication health-care education methods with elderly persons; communication and health-care educational counselling – supporting methods; first contact establishing and talking with patients; specific features and communication with persons with sensory perception disorders; ethics in communication; political and social correctness in communication; professional identity and communication; communication styles; emotional communication, empathy; communication as social support; communication and pathological distress in nursing elderly persons and in palliative care; therapy and informational communication; psychological-social aspect of communication; communication with persons under stress and in crisis; communication with persons of diminished sensory and verbal abilities; communication with families of elderly persons; communication in grievance; interpersonal communication; team work and social partners; public relations of organization with an aim of reaching mutual understanding and attaining common interests; communication in crisis situations; managing conflicts and their understanding.
Exercises
Aspects of communication. Verbal and non-verbal communication with the old. Empathy. Ethical principles. Creative workshops of exercising methods of verbal communication: speaking, listening, reading, writing. Non-verbal communicatio. Specific aspects of communication with patients with sensory perception disorders. Team work. Therapy and informational communication.Implementation of health-care educational methods with old persons. Managing conflicts and their solution. Application of SOLER technique. Communication and psychological distress in palliative care. Procedures in grievance period.

Literature:
Literature in Serbian:
1. Kekuš D.: Komunikacije u profesionalnoj praksi zdravstvenih radnika, II izd., udžbenik, Beograd, 2010.
2. Kekuš D.: Modeli integrisanih komunikacija u zdravstvu, udžbenik, Fakultet organizacionih nauka, Beogradu, 2009.

Literature in English:
3. Hugman B.: Healthcare Communication, textbook, Pharmaceutical Press, London, 2009.
4. Lloyd M., Bor R., Noble L.: Clinical Communication Skills for Medicine, textbook, Elsevier, New York, 2018.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, work in small groups, exercises in methodic, seminar papers, presentation to the group, method of practical activities of students.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

BUSINESS ENGLISH

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Business English**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, fifth semester
ECTS:	5
Requirement:	no

Course objective:
Course objective is familiarization with characteristics of the English language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Broadening of knowledge on past tenses, dependent and relative clauses; temporal conjunctions and temporal clause structure; historical and biographical texts; topics: health, connections and common life in English-speaking countries; extension of knowledge on future tenses, use of subjunctive, conjunctions, and relative clause structure; topics: sport, environment protections and business life in English-speaking countries; medical terminology relevant for student´s profession.
Exercises
Students are taught to communicate in different situations (at doctor´s, with service providers etc.), to seek and give information on the phone, to make bookings, to communicate in conflict situations, to express their views and feelings, to give accounts orally and in writing of past events through adequate use of past tenses and temporal conjunctions; students are taught to express their opinion orally and in writing on current topics, to participate in discussions, to independently present certain topics, to give reports on personal experience and to ask others on their experience.

Literature:
Literature in Serbian:
1. Dragović R.: Engleski za zdravstvene radnike, udžbenik, Naučna knjiga, Beograd, 2004.

Literature in English:
2. Murphy R.: English Grammar in Use, Cambridge University Press, Cambridge, 2014.
3. MacLean J.: English in Basic Medical Science, textbook, Oxford University Press, Oxford, 2000.
4. Evans V., Dooley J., Tran T. M.: Career Paths, Medical Book 1, udžbenik, Express Publishing, Berkshire, 2018.
5. McCarthy M., O'Dell F.: English Vocabulary in Use, Cambridge University Press, Cambridge, 2006.
6. Hornby A. S.: Oxford Advanced Learner's Dictionary of Current English, Oxford University Pres, Oxford, 2008.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercieses/professional practice	40		
Colloquiums	20		

BUSINESS GERMAN

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Business German**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, fifth semester
ECTS:	5
Requirement:	no

Course objective:
Course objective is familiarization with characteristics of the German language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Broadening of knowledge on past tenses, dependent and relative clauses; temporal conjunctions and temporal clause structure; historical and biographical texts; topics: health, connections and common life in German-speaking countries; extension of knowledge on future tenses, use of subjunctive, conjunctions, and relative clause structure; topics: sport, environment protections and business life in German-speaking countries; medical terminology relevant for student´s profession.
Ecercises
Students are taught to communicate in different situations (at doctor´s, with service providers etc.), to seek and give information on the phone, to make bookings, to communicate in conflict situations, to express their views and feelings, to give accounts orally and in writing of past events through adequate use of past tenses and temporal conjunctions; students are taught to express their opinion orally and in writing on current topics, to participate in discussions, to independently present certain topics, to give reports on personal experience and to ask others on their experience.

Literature:
Literature in Serbian:
1. Menschen A1 KB und Menschen A1 AB, udžbenik (video materijal: http://matifmarin.blogspot.rs/p/menschen-film-stationen-clips.html), Klett Verlag, Stuttgart, 2018.
2. Pude E. A., Specht F.: Menschen, Deutsch als Fremdsprache Kursbuch mit DVD-ROM, udžbenik, Hueber Verlag, Munchen, 2012.
3. Вучковић-Стојановић М.: Uvod u nemački poslovni jezik, udžbenik, Savremena administracija, Beograd, 2005.
4. Loibl B. et all.: Schritte Plus im Beruf, Kommunikation am Arbeitsplatz, Max Hueber Verlag, Ismaning, 2015.
5. Becker N., Braunert J.: Alltag, Beruf, Kursbuch+Arbeitsbuch, Max Hueber Verlag, Ismaning, 2009.
6. Becker N., Braunert J., Schlenker W.: Unternehmen Deutsch Grundkurs. Kursbuch, Klett Verlag, Stuttgart, 2005.

Literature in English:
7. Grammatik - Ganz klar Übungsgrammatik A1-B1, uz audio materijal, Hueber Verlag, kratak pregled gramatike sa vežbanjima „Hallo aber Deutsch“.
8. Николовски В.: Граматичка вежбања „Eine kleine Übungsgrammatik“, Завод за уџбенике и наставна средства, Schritte international 1, Grammatikspiele.
9. https://www.hueber.de/seite/pg_lernen_lerner_dvd_mns, knjiga i link.
10. https://www.hueber.de/seite/pg_lernen_uebungen_mns, dodatne on line vežbe.
11. Becker N., Braunert J.: Unternehmen Deutsch Grundkurs, Arbeitsbuch, KlettVerlag, Stuttgart, 2004.
12. www.hueber
13. www.schubert

Number of classes:

Lectures	Exercises	Other classes (professional practice...)	Study research work (Degree Paper...)	Other forms of teaching (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		

Exercises/professional practice	40		
Colloquiums	20		

CLINICAL KINESIOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Clinical Kinesiology**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, third semester
ECTS:	5
Requirement:	no

Course objective:
Familiarization with the importance and role of kinesiology in diagnostics and therapy in the process of medical rehabilitation, acquisition, consolidation and application of knowledge on making movements in physiological conditions, familiarizaiton with theoretical knowledge on biomechanics of locomotor functions and movement mechanisms.

Course outcome:
Independence of assessment and application of movements in therapeutic purposes, application of the acquired knowledge and skills in the assessment of functional capabilities of joints. Consolidated knowledge on the importance of making movements in developing psychophysical characteristics and connecting biological values of organism applied in laboratory conditions are a basis for assessment and application of movements in joints and manual-muscular test, acquisition of basics of human body kinesiology.

Course content:
Lectures
The role of kinesiology as a discipline and its position in relation to medicine and other branches of science. The importance of human body construction in morphological, functional and biomechanical terms. The importance of physics, biophysics and mechanics, as well as other related sciences narrowly linked to the study of movements and body movement. The importance of neurophysiology in studying willing movements and formation of motor habits. Measurement of movement range and manual-muscular test – vertebral column, shoulder girdle, elbow, wrist, fist, hip, knee, ankle, foot, facial muscles.
Exercises
Acquisition and adoption of therapeutic skills in the assessment of functional capacities of the locomotor system. Measurement of movement range and manual-muscular test – vertebral column, shoulder girdle, elbow, wrist, fist, hip, knee, ankle, foot, facial muscles. Measurement of the size and length of extremities, posture analysis, walk analysis.

Literature:
Literature in Serbian:
1. Zec Ž.: Osnovi kineziologije, udžbenik, Visoka medicinska škola, Zemun, 2000.
2. Nikolić S., Vučurević S.: Praktikum iz kineziologije, Visoka medicinska škola, Zemun, 2000.
Literature in English:
3. Frost R.: Applied Kinesiology, Revised Edition: A Training Manual and Reference Book of Basic Principles and Practices, Academic Press, London, 2013.
4. Norkin C. C., White J. D.: Measurement of Joint Motion-A Guide to Goniometry, F. A. Davis Company, Philadelphia, 2009.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	45	0	0	0

Methods of teaching:
Lectures, lectures against use of didactic methods, video presentations, demonstrations, exercises, field work, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

CLINICAL KINESITHERAPY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Clinical Kinesitherapy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, fourth semester
ECTS:	5
Requirement:	Clinical Kinesiology

Course objective:
Acquisition of theoretical knowledge on the basics, methods of application and effects of movement therapy, pedagogical and methodological principles of application of kinesitherapy of importance for a therapist, acquisition of knowledge on the principles of kinesitherapy of musculoskeletal dysfunctions, establishing links between pathoanatomical substrate and treatment by movement, acquisition of knowledge on the assessment of functional condition, drawing up of programme implying specific methods.

Course outcome:
Capability of correlating knowledge acquired in previous courses aimed at critical selection of kinesitherapy methods depending on the targeted pathoanatomical substrate and effects expected, acquisition of basic skills of passive and active kinesitherapy as a basis for examining the methods applied in specific functional deficits in the kinesitherapy of musculoskeletal and neuromuscular dysfunctions and their application in clinical conditions, acquisition of knowledge and skills of assessment and selection of the adopted techniques in the process of treating typical musculoskeletal dysfunctions.

Course content:
Lectures
Consequences of inactivity, biological value of the movement. Kinesitherapy tools, scientific base, objectives, taks, form and methods of conducting. Pedagogical and methodological principles of kinesitherapy, dosing methodology, initial positions in kinesitherapy. Types, elements, effects and application of passive therapeutic movements. Movement development, motoric learning as a basis of active kinesitherapy. Types, elements, effects and use of active therapeutic movements. Principles of hydrokinesitherapy, sports and recreational activities and games as kinesitherapy forms. Kinesitherapy indications and contraindications. Specific features of kinesitherapy in elderly persons. Model of musculoskeletal dysfunctions. Function and response of the connective tissue to physical forces action. Components important for musculoskeletal issues: inflammation, immobilization, muscle weakness, tonus, pain. Therapeutic assessment of tissue condition and selection of kinesitherapy techniques: use of movements in differential assessment of soft tissues, methods of tissue burdening, tissue reactivity. Damage of muscular function: strength, speed, endurance, agility. Factors affecting muscular function: type and size of muscle fibre, force-speed ratio, length-tension ratio, specific elements of training. Precautionary measures and contraindications in muscle function damage: pain, the Valsalva manoeuvre, muscle fatigue, physiological adaptation to training. Mobility damage. Normal joint mobility, range of joint movement and functional range of muscle contraction. Kinesitherapy approach to hypomobility and hypermobility. Pain: etiology and pathophysiology, organic and inorganic pains, pain dimensions and types. Posture and coordination dysfunction caused by muscular imbalance and other dysfunctions. Walk and walk deviations as a consequence of musculoskeletal dysfunctions. Most important physiological responses to physical activity and exercises of cardiovascular system. Adaptation of respiratory system to efforts in physiological conditions. Functional tests and kinesitherapy programme depending on respiratory system dysfunction. Aerobic conditioning exercises. Aerobic treatment programmes. Assessment of tolerance to exercises in cardiac dysfunctions. Functional regulation of peripheral circulation. Assessment tests of artery, venous and lymphatic circulation.
Exercises
Workplace and kinesitherapy equipment. Kth initial positions. Principles of functional testing. Exercises – elements of passive therapeutic movements aimed at multiple effects. Relaxation, soft tissue elongation, mobilization of joints, soft tissue, blood, lymph, maintenance of the range of motion in joints, neuromuscular activity stimulation. Exercises – elements of free active, active with additional resistance and active supported movement. Exercises – elements of neuromuscular facilitation (stimulation and inhibition of neuromuscular activity). Development of movements: early reflex activity, postural automatism. Different procedures stimulating development of movements, postures and activity through early reflex activity, postural automatisms (standing up, defence, balance), proprioceptive activity, tactile, sound, visual, manual and spatial orientation. Assessment/evaluation of damage: muscular strength, speed and endurability; mobility of contractile and noncontractile tissue; balance; posture; walk. Assessment/evaluation of pain. Selection of methods, application and dosing of kinesitherapy procedures aimed at improvement of strength, speed and endurability, hypomobility of soft-tissue structures aimed at preservation and increasing of mobility of soft-tissue structures. Selection of methods aimed at preserving and improving balance, posture and walk. Walking aids. Assessment, adoption of techniques and drawing up programme for maintenance and improvement of respiratory functions. Training, correction and control of breathing. Training and exercises in following physical exertion. Training and exercises in diaphragmatic breathing aimed at reduction of breathing effort, improvement of exchange of gases, appropriate breathing under any physical stress. Drawing up and selection of adequate exercise programmes depending on

cardiovascular dysfunctions. Therapeutic assessment, objectives and drawing up exercise programmes depending on the peripheral circulation disorder (artery, venous and lymph).

Literature:

Literature in Serbian:

1. Pavlović M.: Odabrana poglavlja iz opšte kineziterapije, udžbenik, Data status, Beograd, 2009.
2. Jevtić M.: Klinička kineziterapija, udžbenik, Medicinski fakultet, Univerzitet u Kragujevcu, 2001.
3. Jovanović L., Ereš S.: Osnovi kineziterapije, autorsko izdanje, Beograd, 2013.
4. Pavlović M.: Kineziterapija u procesu rehabilitacije obolelih od kardiovaskularnih bolesti, autorsko izdanje, Beograd, 2002.
5. Milojević M.: Kineziterapija mišićnoskeletnih disfunkcija, autorsko izdanje, Beograd, 2009.

Literature in English:

6. Pivetta S., Pivetta M.: Techniques of medical gymnastics Kinesitherapy, Academic Press, London, 2013.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	300	0	0

Methods of teaching:

Lectures, exercises, case analyses, exercises on dummy, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

DEGREE PAPER

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Degree Paper**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	10
Requirement:	passed all exams in 1st-3rd year

Course objective:

The objective is to train students to apply basic, academic general-education, specialist and specialist-applicative knowledge and methods in solving specific issues within Degree Paper topic. Within the Degree Paper, students, examining the available literature or through work in a health-care institution or laboratory, or by statistical data analysis, deal with an issue, its structure and complexity and on the basis of the analyses made draw conclusions on possible ways of its solving. Students are also trained in writing the Degree Paper, presenting it within the set deadline and discuss the Paper with specialists in the relevant area.

Course outcome:

On the basis of knowledge and skills acquired in the course of their studies, students are able to do the paper in a health-care institution or laboratory or to bibliographically collect specialist literature, write the paper and present it before the relevant board.

Course content:

Degree paper presents a specialist or research work of a student in which he/she familiarizes with the research methodology in all areas of importance for health care. The paper topic may be experimental or bibliographical. Upon the conducted research, student prepares his/her degree paper in the form containing the following chapters: introduction, theoretical part, paper methodology, results and discussion, conclusion, abbreviations (optional), enclosures (optional), literature, candidate CV, key documentation information. Paper defense consists of oral presentation of the paper by the student, asking questions by defense board members and student´s answer to those questions.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
0	0	0	300	0

Methods of teaching: In the course of degree paper writing, mentor gives necessary instructions to the student, directs him/her to relevant literature, assists student in the selection of research methods, in the analysis and processing of the obtained results, in drawing appropriate conclusions etc. Within this part of work on degree paper student has additional consultations with the mentor and, if necessary, with other theachers dealing with matters in the area of degree paper topic as well. If the paper relates to a health-care institution, it is necessary to obtain approval of the institution.

Grade (maximum number of points is 100):

Degree Paper grade is a total of points obtained for:

- writing the paper, 20 points;
- paper subject matter, 30 points;
- paper presentation at its defense, 20 points;
- answers to questions of Defense Board members within Degree Paper defense, 30 points (3 x 10, three Board members).

DIAGNOSTICALLY-THERAPEUTIC PROGRAM

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Diagnostically-Therapeutic Program**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, fourth semester
ECTS:	5
Requirement:	Pathophysiology

Course objective:
Familiarizing students with laboratory tasks in clinical diagnostics, various biological materials, their extraction, correct transport and storage, methods of their testing in clinical practice, as well as with basic notions relating to result interpretation.

Course outcome:
Upon the completion of the course student will be trained in the basics of work in medical-biochemical laboratory, its possibilities and, most importantly, with the types of biological materials, ways of patient preparation for sample taking/giving, correct sampling (preanalytical variables), manner of sample storage, transport and processing, impact of drugs on sampling correctness, as well as with basics of interpretation of results of medical-biochemical analysis.

Course content:
Lectures
Notion of medical-biochemical laboratory, clinical chemistry, clinical biochemistry, laboratory medicine, preanalytics, laboratory diagnostics; organization of laboratory service at primary, secondary and tertiary level; biological materials, their importance and appropriate measures for sample taking, storing and transport; capillary puncture and phlebotomy under standard conditions; venipuncture procedure; anticoagulants – different coagulants and other additives for sample preparation; preanalytical variables, importance of appropriate preparation of patient and impact of preanalytical variables on the quality of biological material; impact of climate on test results; impact of drugs on analysis; types of patient preparation; sample control; result control; basics of interpretation of medical-biochemical analysis; basics of laboratory procedure; good laboratory practice; GMP standard; specific features of sampling certain categories of patients; specific features of sampling certain types of biological materials; work with potentially infectious patients; ethics and data protection.
Exercises
Introduction into laboratory diagnostics. Organization of laboratory work. Types of biological materials. Medical waste management; Standard ISO 15189. Biological material taking and processing. Venous and capillary blood taking. Preanalytical, analytical and postanalytical phase. Biochemical analyses. Immunochemical analyses. Microbiological sample taking and processing. Urinalysis.

Literature:
Literature in Serbian:
1. Ubavić M.: Interpretacija najčešćih laboratorijskih analiza i uticaj lekova na njih, udžbenik, Novi Sad, 2017.
2. Kladnik J. B.: Farmakologija, udžbenik, Visoka zdravstvena škola univerziteta u Mariboru, Maribor, 2006

Literature in English:
3. Guder Samples W. G.: From the patients to the laboratory-the impact of preanalytical variables on the quality of laboratory results, textbook, GIT Verlag, Darmschtate, 2001.
4. Marshall W. J., Bangert S.K.: Clinical Chemistry, Edinburgh Mosby, Edinburgh, 2004.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures against use of different video material, exercises, case study, discussion, clinical practice

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

DIETARY ISSUES AND NUTRITION OF INPATIENTS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Dietary Issues and Nutrition of Inpatients**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, third semester
ECTS:	5
Requirement:	no

Course objective:
The course should enable student to acquire knowledge on specific forms of nutrition of certain groups of patients, familiarization with biological valued of certain nutritional components and planning nutrition in line with physiological needs.

Course outcome:
Upon the completion of the course student should be able to assess the status of nourishment of individuals and population groups and to determine diets depending on the specific features of consuming groups.

Course content:
Lectures
Familiarization with appropriate diet. Preventive clinical approach to appropriate nutrition, familiarization with method of evaluation of nutritional status. Measures in nutrition evaluation and improvement. Health aspects of nutritional disorders, nutritional deficits and diseases caused by excessive food intake. Nutrition in specific circumstances. Nutrition and health, importance of appropriate nutrition on certain stages of organism development, principles of appropriate nutrition, standards. Metabolism, need for and biochemical function of nutritional and protective components (proteins, lipids, carbohydrates, minerals, oligoelements, vitamins). Diseases caused by inadequate nutrition. Principles of adequate nutrition and population education. Nutrition as a cause of disease and pathological factor. Principles of control of food safety and quality. Basics of medical nutritional therapy and education of patients. Sanitary control of facilities, employees, food staples and prepared food.
Exercises
Principles of nutrition in public places (nurseries, pre-school and school cafeterias, student dormitories, senior citizen institutions, public institution restaurants). Nutrition in hospitals, rehabilitation institutions, recreational centres, tourist and sports facilities. Principles of adequate nutrition and population education. Nutrition as a cause of a disease and pathological factors. Principles of food safety and quality control. Basics of medical nutritional therapy and education of patients. Nutrition of patients in hospital and non-hospital institutions and types of diet. Parenteral nutrition. Nutrition of children and the youth, pregnant and breastfeeding women and elderly persons. Obesity and undernutrition. Exercises, among other things, include drawing up nutrition plans for designated groups of patients practical classes.

Literature:
Literature in Serbian:
1. Novaković B., Mirosavljev M., Jevtić M.: Higijena ishrane, udžbenik, Medicinski fakultet, Univerzitet u Novom Sadu, 2005.
2. Grujić R.: Nauka o ishrani čovjeka, TEMPUS, Banja Luka, 2006.
3. Ministarstvo zdravlja Republike Srbije: Vodič dobre prakseu oblasti sanitarnog nadzora, Beograd, 2005.
Literature in English:
4. Nelms M., Long Roth S.: Medical Nutrition Therapy: A Case Study Approach, Cengage Learning, Boston, 2013.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures against use of different video material, exercises, workshops, simulation, discussions, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums/exam	30		

ETHICS IN HEALTH CARE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Ethics in Health Care**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Acquisition of basics of applied medicine ethics, understanding practical importance of ethics and recognizing differences between ethical and legal issues, development of critical thinking in the process of ethical analysis, understanding national, European and international legal regulations, knowing rights and responsibilities in health protection, health insurance, as well as knowing rights and responsibilities of providers of medical services, their beneficiaries and of the third party.

Course outcome:
After passing the exam, students will be able to critically think on normative and ethical principles, they will know the difference between legal and ethical issues, be able to make critical judgements at provision of health-care services if they include moral duties and will be able to understand laws regulating aspects of health-care activities, rights and responsibilities of health-care professionals, patients and the third party.

Course content:
Lectures
Normative ethics in medicine; ethical principles of importance for health-care professionals; theories of medical ethics; ethical norms in medical practice; ethical case studies in health-care practice, moral values, misjudgment; mistakes in practice, moral and criminal liability of health-care professionals; ethical judgement in observance of moral values and rights of patients; non-observance of codified principles; ethics in preclinical and clinical studies (basics); ethics committee; European and international regulations; national health-care policy; Serbian Medical Chamber; medical license; court of honor.
Exercises
Analysis and discussion on case studies (information and data generation and critical assessment). Problem-based learning (problem-solving with appropriate explanation of ethical concept and legal framework). Panel discussions, application of ethics and laws in current issues (drug testing, suicide, placebo, euthanasia, keeping confidential information on patient and medicine).

Literature:
Literature in Serbian:
1. Marić J.: Medicinska etika, autorsko izdanje, Beograd, 2008.
2. Lazarević A.: Socijalna medicina, autorsko izdanje, 2005.
3. Zakoni i podzakonska akta Republike Srbije iz oblasti zdravstva.

Literature in English:
4. Fregmen B. F.: Medical Law and Ethics, textbook, Prentice Hall, New Jersey, 2011

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, workshops, case study, problem-based learning, exercises

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

FIRST AID

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**First Aid**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	second year, third semester
ECTS:	5
Requirement:	no

Course objective:
Principal goals of first aid education is familiarization of students with principles of initial care of suddenly injured or fallen ill persons, acquisition of skills for practical application of the acquired knowledge in practice, immediate life-saving care of a casualty, other persons, to preserve the environment and to improve protection from further injuries and hazards.

Course outcome:
Familiarization of students with the forms of sudden ailments and injuries and methods of prompt and immediate care; skills in examination and prompt recognition of signs and symptoms in sick or injured persons requiring immediate and urgent care.

Course content:
Lectures
Examination and triage of the injured; evacuation of the injured (taking out, carrying out and transport); assessment of vital functions and state of consciousness; airway opening and keeping; bolus obstruction – partial, total, procedure algorithm in adults and children; artificial respiration – expiratory airflow; recovery positions of abruptly injured or sick person (side – relaxing, semi-side, stomach, semi-laying, semi-sitting, sitting, knee-elbow, kneeling, autotransfusion); cardiac arrest – identification and resuscitation measures in adults and children; application of semiautomated external defibrillators (AED); procedure algorithm – basic resuscitation measures in adults and children; bleeding – identification and procedures in external and internal bleeding; traumatic amputation care procedure; open injuries (wounds) – care; bone and joint system injuries (notion, types); temporary immobilization; head and vertebral column injuries; thoracic rib and stomach injuries; care procedures; complications and their prevention; injuries caused by heat and electricity, care; injuries caused by the cold, care; specific injuries, diseases and conditions, care.
Exercises
Examination and triage of the injured. Evacuation of the injured (taking out, carrying out and transport). Assessment of vital functions and state of consciousness. Airway opening and keeping. Bolus obstruction – partial, total, procedure algorithm in adults and children. Artificial respiration – expiratory airflow. Recovery positions of abruptly injured or sick person (side – relaxing, semi-side, stomach, semi-laying, semi-sitting, sitting, knee-elbow, kneeling, autotransfusion). Cardiac arrest – identification and resuscitation measures in adults and children. Application of semiautomated external defibrillators (AED). Procedure algorithm – basic resuscitation measures in adults and children. Bleeding – identification and procedures in external and internal bleeding. Traumatic amputation care procedure. Open injuries (wounds) – care. Bone and joint system injuries (notion, types). Temporary immobilization. Bone and joint system injuries (notion, types). Bone and joint system injuries (notion, types). Care procedures. Complications and their prevention. Injuries caused by heat and electricity, care. Injuries caused by the cold, care. Specific injuries, diseases and conditions, care.

Literature:
Literature in Serbian:
1. Pavlović A.: Prva pomoć, udžbenik, Obeležja, Beograd, 2007.
2. Pavlović A.: Kardiopulmonalna reanimacija, Obeležja, Beograd, 2007.
3. Newton C. R. H., Khare R. K.: Urgentna medicina, prevod, Besjeda, Banja Luka, 2007.
Literature in English:
4. Cydulka R., Cline D., Ma O. J., Fitch M., Joing S., Wang V.: Tintinalli's Emergency Medicine Manual, McGraw-Hill Education, New York, 2017.
5. Hammond B. B., Zimmermann P. G.: Sheehy's Manual of Emergency Care: Sheehy's Manual of Emergency Care, Mosby, London, 2012.
6. Carsten Lott i sar.: Advaced life support course manual, European resuscitation council, textbook, ERC guidelines 2015.
7. Advanced First Aid, CPR, and AED, American Academy of Orthopaedic Surgeons (AAOS), Jones & Bartlett Learning, 2017.

Number of classes

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, case studies; e-learning, exercies on dummy; visits of accredited specialists;

Grading (maximum 100 points)			
Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

FUNCTIONAL ANATOMY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Functional Anatomy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, third semester
ECTS:	3
Requirement:	Anatomy and Physiology

Course objective:
Adoption of theoretic and practical knowledge on construction and function of human body with an emphasis on the musculoskeletal system.

Course outcome:
Familiarization with the area of functional anatomy and application of the acquired knowledge in the area of physiotherapist sills and medical rehabilitation.

Course content:
Lectures:
Introduction into human anatomy; osteology: bone construction, external form and interior architecture of bones relating to the function, torso skeleton, pelvis, thorax, shoulder girdle and upper limbs; lower limb skeleton; head bones; syndesomology: immovable and movable bone joints; functional division of joints; articulations within organism; Rib movement mechanics; construction and action of articulations and joints; myology: muscular structure, biological reaction of muscles, movement analysis; nervous system; senses; cardiovascular system; bloodstream; lymphatic system, digestive system; respiratory system; urogenital system; endocrine system.
Exercises:
Cell injury and death; etiopathogenesis of inflammation; cell malignant transformation and its growth; water, sodium and potassium transport disorders; disorders of calcium, magnesium and phosphate metabolism; etiopathogenesis of mellitus diabetes, artherosclerosis, acid-base balance; balance disorders of cardiovascular system, respiratory system, renal function, nervous function, endocrine gland function and neuroendocrine regulation, digestive tract and liver function, blood composition and function.

Literature:
Literature in Serbian:
1. Mihalj M.: Anatomija čoveka, udžbenik, Zmajeva biblioteka izdanja, Novi Sad, 2005.
2. Bošković M.: Anatomija čoveka, deskriptivna i funkcionalna, udžbenik, Medicinska knjiga, Beograd, 1973.
3. Keros P., Ivančić-Košuta M.: Funkcionalna anatomija lokomotornog sustava, Kineziološki fakultet, Univerzitet u Zagrebu, 2009.
4. Kahle W., Leonhard H., Platzer W.: Priručni anatomski atlas, Jumena, Zagreb, 1989.
Literature in English:
5. McMinn R. M.: Lat s Anatomy, Churchil-Livingstone, Edinburg, 2006.
6. Netter F. H., Machado C. A. G.: Atlas of Human Anatomy & CD, ILS, Mala velika knjiga, Novi Sad, 2005.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	0	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

GERIATRICS WITH NURSING IN GERIATRICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Geriatrics with Nursing in Geriatrics**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Students will acquire knowledge and skills in nursing of senior citizens, understand their bodily, social and psychological needs and problems, be familiar with the possibilities of taking care of them in institution or at their home.

Course outcome:
Upon the course completion student should be able to recognize specific problems of the old, evaluate their functional abilities and possibilities of self-care, train them in self-care and treatment in senior citizens institutions and geriatric hospitals.

Course content:
Lectures
The notion of gerontology and geriatrics; physical, psychological and social aspect of getting old; recognition of problems of the old; theories of getting old, specific way of defining getting old, health issues, old-age illnesses, prevention of complications, treatment, nursing and rehabilitation; care categorization, therapeutic procedure, specific features of communication; most frequent health issues of the old, their prevention and treatment; the role of nurse in health protection and nursing of the old; specific features of nursing in senior citizen institutions and geriatric centers; specific features of medical rehabilitation of old persons; institutions taking care of the old; direction of geriatrics development in the EU; importance of psychical rehabilitation of the old; everyday life activities; psychophysical activity, elimination of the feeling of being deserted; team activities, past time activity organization, artistic and sports activities; care of local community for improvement of life of senior citizens (associations, day centers); gerontology centers, work organization, activities within centers; work in gerontology centers in Serbia and EU countries; importance of prevention; palliative care and work with families; education of population in volunteering; familiarization with social protection of old persons.
Exercises
Changes in certain body systems and organs due to getting old, basic human needs and getting old, evaluation of functional abilities and possibilities of self-care, most frequent health issues of the old, education in self-care and treatment. Specific features of the old patient population. Nursing of old persons, work in gerontology center. Organization of old person workshop. Importance of prevention. Assessment of conditions for home care. Cooperation with social work centers. Visiting senior citizens´ clubs. Demonstration of nursing procedures at home; education of families in taking care. Preparation of old persons and their accommodation in an institution. Training family in visiting and preparation for return home. Practical application of tests (fall prevention Katz index, Norton and Branden Scale – patient risk for pressure ulcer development etc.).

Literature:
Literature in Serbian:

1. Vukadinov J.: Gerijatrija i nega starih osoba, udžbenik, Medicinski fakultet, Novi Sad, 2006.
2. Šarenac D.: Zdravstvena nega starih, udžbenik, Licej, Beograd, 2009.
3. Stavljenić – Rukavina A., Renato Mitermayer R., Tomek Roksandić S., Mustajbegović J.: Kvaliteta dugotrajne skrbi starijih osoba, Centar za gerontolgiju, Referentni centar Ministarstva zdravlja RH za zaštitu zdravlja starijih osoba, priručnik, Zagreb, 2012.
4. Dujaković Z. i sar.: Gerijatrija - medicina starije dobi, udžbenik, Medicinska naklada, Zagreb, 2008.

Literature in English:
5. Boltz. M.: Evidence-Based Geriatric Nursing Protocols for Best Practice, Springer Publishing Company, New York, 2012.
6. Halter J. B., Ouslander J. G., Tinetti M., Studenski S., High K. P., Asthana S.: Hazzard's Geriatric Medicine and Gerontology (Principles of Geriatric Medicine & Gerontology), textbook, McGraw-Hill Education, New York, 2009.
7. Warshaw G., Potter J., Flaherty E., McNabney M. K., Heflin M. T., Ham R.: Ham's Primary Care Geriatrics, textbook, Elsevier, New York, 2021.
8. Taylor R.: Oxford Handbook of Palliative Care, Oxford Press, Oxford, 2009.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures against use of various video materials, exercises, workshops, clinical practice, visits of teaching base employees

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

HEALTH CARE AND SOCIAL-SECURITY LEGISLATION

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Health Care and Social-Security Legislation**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Course objective:
Acquiring basic knowledge in health-care and social-security legislation, knowing the difference between ethical and legal requirements, developing critical thinking in solving ethical or legal dilemmas, understanding national, European and international legal regulations, knowing rights and obligations relating to medical protection, health insurance, as well as knowing rights and obligations of medical service providers, their beneficiaries and third party.

Courses outcome:
Students who passed the exam are capable of critical thinking on standards and legal issues, they are aware of the difference between legal and ethical issues, and they acquired knowledge that would help them to critically judge ethical and legal aspects in providing medical services; they are able to apply laws regulating health-care sectors, and know rights and obligations of medical care provider, patient and third party.

Course content:
Lectures
National health-care policy, regulations on health-care system; Act on Medical Protection, legal and sublegal regulations; Serbian Medical Chamber; medical license, court of honor; European and international regulations in health-care system; noncompliance of prescribed principles; legal regulations on specific cases (drug testing, suicide, placebo, euthanasia, physician-patient privilege); ethics in pre-clinical and clinical tests (fundamentals); ethical board.
Exercises
Analysis and discussion on case studies (generation and critical assessment of information and data). Problem-based learning (problem-solving with an appropriate explanation of the ethical concept and legal framework). Panel discussions on application of legal principles on current issues (drug testing, suicide, placebo, euthanasia, physician-patient privilege).

Literature:
Literature in Serbian:
1. Lazarević A. i sar.: Javno zdravlje, socijalna politika i zdravstvena zaštita, udžbenik, Beograd, Visoka zdravstvena škola strukovnih studija, Beograd, 2016.
2. Aktuelni zakoni i podzakonska akta Republike Srbije iz oblasti zdravstva.
3. Lazarević A.: Socijalna medicina, autorsko izdanje, Beograd, 2015.
4. Simić S. i sar.: Socijalna medicina, udžbenik, Medicinski fakultet, Beograd, 2012.
5. Šolak Z.: Ekomnomika zdravstvene zaštite, Zavod za udžbenike i nastavna sredstva, Beograd 2003.

Literature in English:
6. Mossialos E., Permanand G., Baeten R., Hervey T.: Health systems governance in Europe: the role of European Union law and policy, Cambridge University Press, 2010.
7. De Gooijer R.: Trends in EU Health Care Systems, Winfried, 2007.
8. Morrisey M. A.: Health Insurance, textbook, Health Administration Press, London, 2007.
9. Beik Janet I.: Health Insurance Today: A Practical Approach, textbook, Saunders, Philadelphia, 2010.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, workshops, case studies, problem-based learning, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

HEALTH CARE EDUCATION METHODOLOGY AND HEALTH PROMOTION

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Health Care Education Methodology and Health Promotion**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:
Purpose of health promotion in pre-schools and schools is an adequate development of children and young persons resulting in them becoming healthy, satisfied, successful, self-conscious and responsible persons.

Course outcome:
Developed value system of young persons, their ability to point out the importance of taking care of health, encourage empathy and sensitivity to the needs of others, and awareness of unacceptable behavior and behavioral deviations which must not be tolerated or ignored.

Course content:
Lectures
Appropriate nutrition, physical activity; mental health promotion; encouraging and developing self-confidence, various skills – from communication to decision-making; characteristic of modern (fast) living; behavioral changes; prevention (smoking, alcohol, drugs); prevention of new forms of addiction: information-communication technologies, gambling, betting; safe sex; peer violence, domestic violence, violence against women; prevention of violence by means of modern technologies; migrations and integrations of migrants; tolerance.
Exercises
Work in pairs and in small groups. Organization of lectures with discussions and panel discussions. Pedagogical workshop. Role playing. Brain storm. Forming views in discussions and debates. Case studies. Use of available and appropriate contents on websites. Visits to representatives of preschools and schools – joint work on health promotion projects. Workshops. Project (city, provincial, republic) analysis dealing with health promotion and improvement. Joint activities with the Institute for Youth Protection, visitors from safe houses. Joint activities and visits of representatives of student organizations (higher-year students) from related higher-education institutions.

Literature:
Literature in Serbian:

1. Kekuš D.: Zdravstveno vaspitanje, udžbenik, Digital art, Beograd, 2009.
2. Hojer S.: Pristupi i metode u zdravstvenom odgoju, udžbenik, Koledž zdravlja, Ljubljana, 2005.
3. Gerlič I.: Savremene informacione tehnologije u obrazovanju, Nacionalna izdavačka kuća Slovenija, Ljubljana, 2000.
4. Kekuš D.: Komunikacije u profesionalnoj praksi zdravstvenih radnika, Digital Art, Beograd, 2010.
5. Jović S., Bašić S.: Promocija zdravlja i zdravstveno vaspitanje; u: Socijalna medicina sa epidemiologijom i higijenom. Medicinski fakultet Niš, Galaksija, Lukovo, 2011.
6. Pokorn D.: Ishrana u različitim fazama života: dodatak ishrani u ishrani, Maribor/Ljubljana, 2003.

Literature in English:

7. Maville J. A., Huerta C. G.: Health Promotion in Nursing, textbook, Cengage Learning, London, 2012.
8. Glanz K., Rimer B. K., Viswanath K.: Health Behavior and Health Education: Theory, Research, and Practice, textbook, Jossey-Bass, New Jersy, 2008.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures against use of didactic methods, exercises, workshops, field work, seminar papers.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums	30		

HYGIENE WITH THE BASICS OF MICROBIOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Hygiene with the Basics of Microbiology**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:

Acquisition of knowledge on health-care training process as a measure of health protection at all levels, familiarization with principles, objectives and methods of application of health-care educational measures and impact on change of risky behavior of individual, family and community. Development of interest of student in his/her permanent professional and general education, that its, training of health-care professional in risk management in health-care institutions. Familiarization with cell organization and main characteristics of bacteria, viruses and parasites.

Course outcome:

Students acquire practical knowledge on professional competencies within their profession, on the analysis and management of risk in health-care institutions regarding hygiene and protection of health of medical professionals and beneficiaries of health-care services at all levels of health protection.

Course content:

Lectures

Hygiene and health; hygiene requirements in planning and construction of health-care institutions; illumination, ventilation and heating in health-care institutions; air quality in health-care institutions; water and health; health safety of drinking water; water supply of health-care institutions; disinfection of drinking water; disposal of solid and liquid waste; disposal of medical waste; personal hygiene of health-care professionals: hand hygiene and personal protection substances; hygiene procedures in maintaining hygiene of sick persons; hygienic-epidemiologically adequate solutions of sanitary area; hygienically adequate treatment of hospital laundry; hygienic requirements for kitchens and food distribution; application of HACCP system in food and drinking water handling; international and Serbian legislation in the area of food and general use objects safety; risk management in health-care institutions; determining critical spots in health-care institutions; epidemiological importance of defining critical spots and critical spot control plan in health-care institutions; health-care education in the system of scientific disciplines; health: modern concept; health education of the young; factors affecting health; lifestyle; life, health and environment; health promotion and improvement; behavior and changes in behavior; disease prevention; education, counseling and informing; planning, carrying out and evaluation of health-care educational interventions in institutions of primary, secondary and tertiary protection; communication, educational and organizational methods and strategies; WHO seven educational principles; carrying out health-care educational intervention – professional nurse in the health-care system; general bacteriology; microorganism classification, anatomy and physiology of bacterial cell, bacteria metabolism, action of physical and chemical agents on microorganisms; pathogenecity and virulence factors, antibiotics, antimycotics and chemotherapeutics, physiological importance of microflora, rapid diagnostic tests and molecular methods in microbiology; general and special virusology: general features of viruses, action of physical and chemical agents on viruses; pathogenesis and control of virus infections, interferons and antiviral drugs, laboratory diagnostics, DNA and RNA and viruses of importance for human pathology; parasitology.

Exercises

Planning hygienic requirements for health-care institutions. Presentation of test results and air quality evaluation. Air sampling methods in health-care institutions. Presentation of test results and evaluation of health safety of water. Disinfection of drinking water. Drinking water sampling methods. Environmentally adequate disposal of medical waste. Preparation for seminar paper: monitoring personal hygiene of health-care professionals. Presentation of seminar paper in the area of monitoring personal hygiene of health-care professionals. Drawing up HACCP system for kitchens in health-care institutions. Determining critical spots in health-care institutions. Demonstration of health-care institution functioning in terms of hygienic requirements – field visit. Demonstration of functioning of microbiology institution and involvement in microbiological analysis.

Literature:

Literature in Serbian:

1. Novaković B., Grujić V.: Higijena i zdravstveno vaspitanje, udžbenik, Medicinski fakultet, Novi Sad, 2005.
2. Kekuš D.: Zdravstveno vaspitanje, udžbenik, Digital art, Beograd, 2009.
3. Kristoforović-Ilić M.: Higijena sa medicinskom ekologijom, udžbenik, Ortomedics, 2003.
4. Baračkov N., Bujak J., Ilić D., Jović S., Panić M. i sar.: Vaspitanje za zdravlje kroz životne veštine, Ministarstvo prosvete i sporta Republike Srbije, 2007.

Literature in English:

5. Weston D.: Infection Prevention and Control: Theory and Practice for Healthcare Professionals, John Wiley & Sons, New Qork, 2008.
6. Andersen B. M.: Prevention and Control of Infections in Hospitals, textbook, Practice and Theory, Springer, Berlin, 2016.

7. Tortora Gerard J., Funke Berdell R., Case Christine L.: Microbiology: An Introduction, textbook, Books a la Carte Edition, Benjamin Cummings, New York, 2009.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	330	0	0

Methods of teaching:
lectures, practical classes, discussion, problem-solving, clinical practice.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

MANUAL THERAPY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Manual Therapy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, fourth semester
ECTS:	4
Requirement:	no

Course objective:
Application of appropriate manual techniques to different pathological conditions.

Course outcome:
Students will be able to apply an adequate manual technique for the purpose of functional training in treatment of various conditions of the musculoskeletal system. Acquisition of manual techniques and therapeutic procedures of pain elimination, increase of mobility, movement limitation and self-help, as well as techniques of manual mobilization of locomotor system.

Course content:
Lectures
The area of application of manual therapy in the entire physiotherapy treatment. General principles of manual therapy. Joint classification. Position of joints and extremities. Anatomical planes and axes. Joint treatment planes and movements. Assessment of joint mobility. Assessment of surrounding soft tissue. Specific procedures of assessment in manual therapy. Fundamental rules of manual therapy treatment. Content of manual therapy. Biomechanical and functional assessment. Therapeutic procedures of pain elimination. Therapeutic procedures aimed at boosting mobility. Therapeutic procedures aimed at movement limitation. Therapeutic procedures of self-help. History of massage. Massage and its connection with the anatomy. Types of massages: whole body massage (general massage), partial massage, preventive and therapeutic massage, traditional massage, relax-massage, therapeutic massage, lymph massage, anti-cellulite massage, sports massage, massage of pregnant women, hydro massage. Massage space and work areas. Massage substances: powder, crèmes, oils, mixtures and solutions, essential oils, instructions on use indications. Preparation of the therapist-massageur to perform a massage: breathing exercises, modified Jacobson progressive muscle relaxation. Massage strokes. Massage effects: (local and general) on the muscular, circulatory, nervous and skeletal system, respiratory organs, digestive system, heart, skin, blood vessels, lymph. Indications and contraindications for performing a massage: classification of indications for performing massage depending on the pathology, possibility of application, advice not to perform in specific cases.
Exercises
Presentation of tests and techniques. Practising soft tissue mobilization. Presentation of tests and techniques and practising manual mobilisation of the cervical spine. Presentation of tests and techniques and practising manual mobilisation of the thoracic spine. Presentation of tests and techniques and practising manual mobilisation of the lumbar spine. Presentation of tests and techniques and practising manual mobilisation of the shoulder girdle. Presentation of tests and techniques and practising manual mobilisation of the sacroiliac joint. Presentation of tests and techniques and practising manual mobilisation of the upper extremities. Presentation of tests and techniques and practising manual mobilisation of the temporomandibular joint. Presentation of tests and techniques of specific joint manipulations. Principles, procedures and practising manual therapy aimed at pain reduction. Principles, procedures and practising manual therapy aimed at increasing range of movements. Reduction or elimination of soft tissue swelling. Principles, procedures and practising manual therapy of inflammations. Principles, procedures and practising manual therapy aimed at relaxation. Principles, procedures and practising manual therapy aimed at improved elasticity of the contractile and non-contractile tissue. Principles, procedures and practising manual therapy aimed at improvement of pulmonary system function.

Literature:
Literature in Serbian:
1. Popović Ž.: Knjiga o masaži, udžbenik, New Look Entertainment, New York, 2016.
2. Lidel L.: Nova knjiga o masaži, Panonija, Novi Sad, 2006.
Literature in Serbian:
3. Lucy Lidell: The Book of Massage: The Complete Step-by-Step Guide to Eastern and Western Technique, Atria Books, Boston, 2001.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	300	0	0

Methods of teaching:
Lectures, exercises, video presentations, field visit, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	Points	Final Exam	Points
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

MARKETING OF HEALTH-CARE INSTITUTIONS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Marketing of Health Care Institutions**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:
Students acquire basic knowledge in the area of marketing in health care, get familiar with modern methods of marketing strategies and manner of communication in health-care marketing. Accordingly, the primary course objective is to familiarize students with the genesis and goal of various areas of strategic marketing, including its dominant theories, which is necessary for successful development of activities. Students will also acquire knowledge on notions of marketing campaign, marketing plan designing and principal methods used in marketing.

Course outcome:
Upon the completion of the course, students will be able to understand strategic marketing and be capable to independently conduct research of marketing methods convenient for solution of a specific project task. Students will also be competent to evaluate relevant theories of strategic marketing in different empirical contexts and to understand interconnection between marketing strategy, operative-organizational parts of enterprises and market results. Students will understand how to manage marketing campaign, notion of marketing plan designing and primary methods used in marketing.

Course content:
Lectures
Nature and character of marketing; evolution of marketing and approaches in studying it; marketing management process; changes of marketing in enterprises; presentation and analysis of marketing environment; marketing information system and market research; market analysis; market segmentation and selection of targeted markets; notion of public perception; importance of marketing in health care in strategic marketing; market research; SWOT analysis, benchmarking and portfolio; BCG matrix; integrated marketing communications; promotional health campaigns; prevention, promotion of public health and marketing; value chain and cost efficiency; general principles of marketing (marketing mix, models, methods and marketing techniques); designing promotional campaign plan; targeting; following post-marketing campaign; medical marketing practice code; general marketing and targeted marketing campaigns; marketing outsourcing, marketing agencies; printed material, printed media, billboards, electronic media, social networks; direct marketing; fairs, conferences, meetings; sponsorships; website; promotional material; presentation; marketing and PR; public appearances of employees; dress code; appearance of employees, institution.
Exercises
Analysis and discussion on practical examples of marketing campaigns – workshops. Market segmentation and research; SWOT analysis, benchmarking and portfolio. Designing promotional campaign plans – workshop on a given topic in health care. Analysis of examples of marketing campaigns in Serbia and globally, workshops, e-learning, internet searching. Marketing in health care in Serbia – workshop. Designing promotional campaign plan on a given topic in health care, targeting, marketing mix, marketing models, methods and techniques – workshop. Printed material, printed media, billboards, electronic media, social networks – conceiving material on given topic in health care. Direct marketing – simulation. Fairs, conferences, meetings – workshop. Sponsorships. Website – workshop. Promotional material – workshop. Presentation; marketing and PR. Public appearance of employees. Dress code – visit. Appearance of employees, institution. Visits from business community (marketing or PR manager of health-care institution, marketing or PR manager of a business organization).

Literature:
Literature in Serbian:
1. Kotler P.: Upravljanje marketingom, udžbenik, Mate, Zagreb, 2017.
2. Macura P.: Marketing – mikro, mala i srednja preduzeća, udžbenik, Ekonomski fakultet, Banja Luka, 2009.
3. Tasić Lj.: Farmaceutski menadžment i marketing, Nauka, Beograd, 2002.
Literature in English:
4. Berkowitz N. E.: Essentials of Health Care Marketing, textbook, Jones & Bartlett Learning, Boston, 2010.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, discussions, case study, workshop, visiting lectures of repesentatives of business community (marketing or PR manager of a health-care institution, marketing or PR manager of business organization), exercises, e-learning

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/Professional practice	20		
Colloquiums	30		

MEDICAL REHABILITATION

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Medical Rehabilitation**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	third year, fifth semester
ECTS:	5
Requirement:	no

Course objective:
Adoption of principles, ideas and philosophy of modern rehabilitation of sick and injured persons by applying all necessary measures and procedures aimed at a maximum possible recovery, return to living and working environment, resocialization and inclusion into family and society through holistic and individualized approach and interdisciplinary collaboration within rehabilitation team.

Course outcome:
By applying the adopted principles and philosophy of modern rehabilitation, through holistic considering of psychophysical-social integrity and individualization in the approach to sick or injured persons and by identifying their specific needs, students will be able to determine application of all required measures and procedures for successful accomplishment of the goal in the process of their recovery, resocialization and reintegration through inclusion into family and society by applying a possible primary, secondary and tertiary prevention of disability.

Subjects content:
Lectures
Impacts of the living and working environment on psychophysical-social integrity of person; notion, importance and essence of rehabilitation of sick and injured persons; disability; idea, philosophy and development of rehabilitation; modern concept of rehabilitation; medicine-rehabilitation relationship; rehabilitation division; ethics and deontology; principles of rehabilitation; side effects and indication; holistic approach; individualization in approach; multidisciplinary approach, team work; specific features of disability by age – childhood and adolescence, productive age, retirement age; physical, psychical and social aspects of disability; disability and society; classifications and models: medical, social, inclusive; physical and social barriers; discrimination in family and society; accessibility; handicap; medical rehabilitation; methodology – physical medicine in rehabilitation; aids; adaptations and modifications of living, working and public environment; education; working ability evaluation; professional rehabilitation.
Exercises
Ethical and deontological principles. Attitude to profession, patient, disabled person. Familiarization with the organization of work of rehabilitation institution. Preparation for contact with patient. Introduction into medical documentation. Principles of rehabilitation. Holistic approach. Individualization in approach; professional attitude; team work; tasks of team therapist. Team therapist documentation. Familiarization with work of other team members. Coordination. Rehabilitation plan and program. Handicap condition evaluation. Architectural-technical and social barriers. Accessibility. Continuous motion chain. Everyday activities. Adaptation of living, working and public environment. Aids. Evaluation of ability to work. Pre-professional rehabilitation. Familiarization with disabled persons association. Direct contact with persons with disabilities, members of associations.

Literature:
Literature in Serbian:
1. Nedvidek B.: Osnovi fizikalne medicine i rehabilitacije, udžbenik, Medicinski fkultet, 2003.
2. Konjikušić V., Kocev N.: Zdravstvena nega u procesu rehabilitacije, autorsko izdanje, Beograd, 2005.
3. Jovanović Sretenović T.: Praktikum iz Osnovi rehabilitacije, Visoka zdravstvena škola strukovnih studija, Beograd, 2012.
4. Savić K., Mikov A.: Rehabilitacija dece i omladine, Orto Medics, Novi Sad, 2007.
5. Delin A.: U susret osobama sa invaliditetom, Britanski savet, Beograd, 2008.
6. Howard R.: Rehabilitacija, Savez društva defektologa Jugoslavije, Beograd, 2001.
7. Playforth S.: Upoznavanje osoba sa invaliditetom, Britanski savet, Beograd, 2008.
Literature in English:
8. Gonzales E.: Physiological Basis of Rehabilitation Medicine, Butterworth Heinemann, Boston, 2001.
9. Shatzer M.: Physical Medicine and Rehabilitation, textbook, LWW, Liverpool, 2012
10. Weiss L., Lenaburg H., Weiss J.: Physical Medicine and Rehabilitation, textbook, Demos Medical, London, 2017

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	150	0	0

Methods of teaching:

Lecutres against presentation of different video material, exercises, workshop, exercises on dummy, clinical practice			
Grading (maximum 100 points)			
Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

MENTAL HYGIENE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Mental Hygiene**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, fifth semester
ECTS:	5
Requirement:	no

Course objective:
Students are trained to perceive phenomena of mental health and mental illness from a wider, multidisciplinary and multidimensional aspect, to assume responsible tasks in protection and improvement of mental health in their work within community, as well as to take care of sick persons against use of high technology and preserve human relationships in institutions and patients´ homes.

Course outcome:
Adoption of knowledge and skills in evaluation, monitoring, creating and carrying out therapy communication with health protection beneficiaries: persons with mental health issues, members of their families and healthy members of the community.

Subjects content:
Lectures
Subject and theoretical fundamentals of mental health; prevention of mental disorders; mental health of the entire human life cycle: birth and childhood; adolescence; adulthood; old age; modern life problems: alienation; living in urban environment; living in rural environment; nutrition issues; physical activities; life crises; sickness and disablement in family; stress and burn-out syndrome; emergencies; refugees, armed conflicts; natural disasters; posttraumatic conditions; social pathology and maladaptive behavior; extramarital status; LGBT population; domestic violence; violence against women; violence against old people; alcoholism; drug-addiction; prostitution; religious sects; pathological gambling; suicidality; new forms of addiction; approach to person from mental-hygiene aspect: health and sickness; dying and death; dehumanization and humanization of relations; communication in health-care profession; comprehensive protection of mental health.
Ecercises
Following theoretical classes. Case studies. Visits of representatives from relevant associations. Drawing up seminar papers. Devising conceptual project plans relating to current issues. Visit of a genuine representative of a marginalized group. Analysis of projects (city, provincial, republic) dealing with marginalized groups of people in the country. Visits of members of aid providing associations (victims of armed conflicts, natural disasters, etc.).

Literature:
Literature in Serbian:

1. Simić M., Kovačević K.: Mentalna higijena, udžbenik, autorsko izdanje, Beograd, 2004.
2. Kaličanin P. i sar.: Stres, zdravlje, bolest, udžbenik, Obeležja, Beograd, 2007.
3. Berger D.: Zdravstvena psihologija, Društvo psihologa Srbije, Centar za primarnu psihologiju, Beograd, 2002.
4. Havelka M. i sar..: Zdravstvena psihologija, Naklada Slap, Jastrebarsko, 2002.
5. Nikolić D.: Bolesti zavisnosti, Narodna knjiga-Alfa, Beograd, 2007.
6. Stanković Z., Begović D.: Alkoholizam od prve do poslednje čaše, Kreativni centar, Beograd, 2005.

Literature in English:

7. Bell G. E.: The Good Book of Mental Hygiene, Resource Publications, Borston, 2020.
8. Glen A.: Mental Hygiene: How To Change Your Mind, CreateSpace Independent Publishing Platform, London, 2018.
9. Tria G. E., Gaerlan J. E., Limpingco D. A.: Principles of Mental Hygiene, Pantas Publishing & Printing, Roterdam, 2010.

Number of classes (per semester):

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, workshop, discussion, seminar paper.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/seminar papers	0		
Exercise/professional practice	20		
Colloquiums	30		

ORGANIZATION OF HEALTH CARE SYSTEMS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Organization of Health Care Systems**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:

Course objective is to familiarize students with basics in organization of health-care institutions and health-care sector, manner of institution management, specific features of decision-making process in health-care, motivation and medical team building, characteristics of internal communication in health-care institutions, personnel and human resources building up, characteristics of business policy and planning strategy, administrative procedures and change management in health-care institutions, mandatory and other forms of health insurance.

Subjects outcome:

Upon completing the course, student will be able to organize medical teams, ensure solid communication within health-care institution, efficiently make decisions and manage changes under time pressure and understand systems of mandatory and other forms of health insurance.

Subjects content:

Lectures

Health-care system; the role of good communication; health-care system and health-care institution management; the role of manager, difference between commanding and leadership; employment policy and schedule; introduction process, interview and integration of new employees; training; health-care institution organization; primary, secondary and tertiary health protection; types of health-care institutions; Law on Health-Care Protection; principles of health protection; protection of population from infectious diseases; chamber of medical practitioners; administration bodies in charge of health-care; inspection supervision.

Exercises

Discussion on organization of health care processes, health-care institutions and health insurance. Analysis of practice in Serbia and abroad. Analysis of practical examples in the sphere of environment protection. Analysis and practical examples in the sphere of smoking and alcohol ban. Analysis and discussion; living environment, air protection. Analysis and discussion; process of waste removal from health-care institutions.

Literature:

Literature in Serbian:

1. Ranković-Vasiljević R., Stojanović-Jovanović B., Terzić-Marković D.: Metodika i organizacija zdravstvene nege, Visoka zdravstvena škola strukovnih studija, Beograd, 2015.
2. Milović Lj.: Organizacija zdravstvene nege sa menadžmentom, udžbenik, Naučna knjiga, Beograd, 2004.
3. Tijanić M. i sar.: Zdravstvena nega i savremeno sestrinstvo, Naučna knjiga, Beograd, 2010.

Literature in English:

4. Mossialos E., Permanand G., Baeten R., Hervey T.: Health Systems Governance in Europe: The Role of European Union Law and Policy, textbook, Cambridge University Press, 2010

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:

lectures, workshop, case study, discussion, e-learning

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

PATHOPHYSIOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Pathophysiology**
Language of instruction:	English, Serbian
Subjects status:	mandatory
Semester:	second year, third semester
ECTS:	6
Requirement:	Anatomy and Physiology Segment 1 (General Pathophysiology: theoretical + practical exam) is a condition for Segmet 2 (Special Pathophysiology: theoretical + practical exam)

Course objective:

Acquisition of knowledge on cell tissue and organ damaging mechanisms and familiarization of students with morphological alterations underlying diseases, ability to recognize morphological alterations on cells, tissues and organs, enabling students to get to know etiology, pathogenesis and clinical manifestations of most important metabolic disorders and functional disorders of organs and organ systems, causes and mechanisms of cell malignant transformation, as well as characteristic of tumor growth and changes it causes in organism.

Course outcome:

Upon the completion of the course students have a command of basic medical terminology and are able to adequately present medically relevant facts, understand etiology and pathogenesis of principal metabolic and functional disorders of human organs and organ systems. They are able to connect their clinical manifestations with causes and mechanisms of their appearance and have a basic pathobiological knowledge enabling them to understand mechanisms of chemical agents and drug action, as well as a diagnostic strategy in case of pathological occurrences at a level required for competent carrying out of their duties.

Course content:

Lectures

Adaptation, growing old, death of cell; morphological changes in cell; acute and chronic inflammation etiopathogenesis; malignant cell transformation and its growth; water and electrolyte transport disorder; acid-base disorders; etiopathogenesis; undernutrition, obesity, diabetes mellitus, artherosclerosis, cardiovascular system function disorder, respiratory system function disorder, renal function disorder, nervous system function disorder, endocrine gland and neuroendocrine regulation function disorder, digestive system disorder, blood composition and function disorder, skin function disorder.

Exercises

Cell injury and cell death. Inflammation etiopathogenesis. Malignant transformation of cell and its growth. Water, sodium and potassium transport disorder. Calcium, magnesium and phosphate metabolism disorders. Etiopathogenesis of diabetes mellitus, artherosclerosis, acid-base. Disorders of cardiovascular, respiratory system, renal function, nervous function, endocrine gland and neuroendocrine regulation function, digestive tract and liver, blood composition and function.

Literature:

Literature in Serbian:

1. Radić S.: Opšta patofiziologija, udžbenik, Medicinski fakultet, Niš, 2012.
2. Beleslin B.: Specijalna patološka fiziologija, Beograd, 2008.
3. Babić Lj., Borota R., Lučić A.: Priručnik praktičnih i seminarskih vežbi iz patološke fiziologije, Medicinski fakultet, Novi Sad, 2007.
4. Ubavić M.: Patološka fiziologija, interne skripte, ICEPS, 2017.
5. Gamulin M., Marušić M., Kovač Z.: Patofiziologija, udžbenik, Medicinska naklada, Zagreb, 2005.
6. Maličević Ž. i sar.: Osnovi patološke fiziologije, udžbenik, Panevropski univerzitet Apeiron, Banja Luka, 2009.
7. Kovač Z., Gamulin S. i sar.: Patofiziologija, Zadaci za problemske seminare, Medicinska naklada, Zagreb, 2006.

Literature in English:

8. Huether S. E.: Understanding Pathophysiology, Elsevier, London, 2011.
9. Nolan A.: Pathophysiology: Step By Step Guide for Nursing, textbook, Kindle Edition, London, 2020.
10. Banasik J. L.: Pathophysiology, textbook, Saunders, New York, 2018.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
45	30	0	0	0

Methods of teaching:

lectures, practical classes, problem-oriented tasks, case studies, discussion, visits of medical-biochemical laboratory employees.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30

Activity	7		
Projects/Seminars	0		
Exercises/professional practice	30		
Colloquiums	30		

PHARMACOLOGY AND DRUG DOSING

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Pharmacology and Drug Dosing**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, fourth semester
ECTS:	5
Requirement:	no

Course objective:
Acquisition of knowledge on drug effect mechanisms on the basis of which information necessary for understanding different effects of drugs is obtained, therapy and side effects of groups of drugs are understood, as well as acquisition of principles of use of drugs in therapy.

Course outcome:
Upon the completion of the course, students are expected to be able to identify mechanisms of different effects of certain groups of drugs, to connect therapy and side effects of certain groups of drugs with their different pharmacologic effects, and to have own critical attitude to drugs.

Course content:
Lectures
Introduction; history of pharmacology; pharmacology division; drug division; general principles and drug development; manner of drug administration; dosing; LADMER (liberation, absorption, distribution, metabolism, elimination and response of organism to administered drug); effects of drugs on organism; type and character of drug effects; drug effect mechanisms; factors affecting drug effects; change of drug effects at second administration; mutual effects of drugs; detrimental drug effects; drug addiction; basics of clinical pharmacology; nonsteroidal anti-inflammatory drugs; antirheumatic drugs modifying the course of rheumatic condition; blood pharmacology: anticoagulant and coagulant drugs; antiaggregation drugs; local and system hemostatics; antianemic drugs; water and electrolytes: fluid compensation agents; parenteral nutrition drugs; respiratory tract pharmacology; cardiovascular system pharmacology, drugs and therapy of peripheral vascular conditions; antilipemic agents; digestive tract pharmacology, immunosuppresives and immunostimulants; vitamin pharmacology; obesity treatment drugs; antimicrobe drug pharmacology; hormone pharmacology, antifungal drugs; antiviral drugs; amebecides; antimalarial drugs; antiparasitic drugs; antiseptics and disinfectants; chemotherapy of malignant diseases.
Exercises:
General principles and drug development. Work with pharmacologic databases on the internet. Drug division. Drug prescribing. Prescription.

Literature:
Literature in Serbian:
1. Đaković Švajcer K.: Osnovi farmakologije, udžbenik, Ortomedics, Novi Sad, 2010.
2. Varagić V., Milošević M.: Farmakologija, udžbenik, Elit Medica, Beograd, 2005.
3. Stanimirović V.: Lek-doza-vreme i pacijent u bolnici, Medicinski fakultet, Kragujevac, 2008.
4. Stanimirović V. (ur.) i sar.: Farmakoterapijski vodič 4, Agencija za lekove i medicinska sredstva Srbije, Beograd, 2008.
5. Bukarica-Gojković Lj. i sar.: Praktikum iz farmakologije, Medicinski fakultet, Univerzitet u Beogradu, 2009.
6. Rang H. P., Dale M. M., Ritter J. M., Moore P. K.: Farmakologija, udžbenik, Data Status, Beograd, 2004.
Literature in English:
7. Rang H. P., Dale M. M., Ritter J. M., Moore P. K.: Pharmacology, textbook, Churchill Livingston, London, 2004.
8. Nurse Academy: Dosage Calculations for Nursing Students: A Complete Step-by-Step Guide for Quick Drug Dosage Calculation, Dosing Math Tips & Tricks for Students, Nurses, and Paramedics, Kindle Edition, London, 2021.
9. Whalen K.: Lippincott Illustrated Reviews: Pharmacology, Wolters Kluwer Health, London, 2018.
10. Adams M. P., Holland N.: Pharmacology for Nurses: A Pathophysiologic Approach, textbook, Pearson, New York, 2016.

Number of classes (per semester):

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, video presentations, demonstrations, workshop, case studies.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Seminar paper	0		

Exercises/professional practice	40		
Colloquiums	20		

PSYCHOLOGY IN NURSING AND HEALTH CARE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Psychology in Nursing and Health Care**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	second year, fourth semester
ECTS:	3
Requirement:	no

Course objective:
Acquisition of knowledge in psychology relating to the patient and his/her relatives at the moment of becoming aware of a health issue, the period of its solving, as well as in case of coping with severe or incurable diseases, their lasting consequences and similar situations. In addition to that, the course objective is to educate students in emotional and psychological states through which a medical professional may go through in the course of his/her work with patients.

Course outcome:
Acquisition of knowledge in psychology relating to the patient and his/her relatives at the moment of becoming aware of a health issue, the period of its solving, as well as in case of uncertain oucomes, their lasting consequences and similar situations. In addition to that, students are trained in self-control in case of emotional and psychological states through which a medical professional may go through in the course of his/her work with patients.

Course content:
Lectures
Psychology of health and disease; accepting disease as a reality; determination in solving a health issue; psychology of a patient at the moment of becoming aware of his/her health issue and during treatment; psychological states in case of uncertainty, expectations, unexpected treatment, unsuccessful treatment, deterioration in diagnosis; work with patient´s relatives, the role of relatives; support, openness in converation, panic versus rationality; work with patient´s relatives in case of poor prospects diagnosis, in case of a loss; work with medical professional in case of severe emotional states, patient being nervous, state of shock; social institutions, support of competent services; importance of communication; basics of occupational therapy.
Exercises
Accepting disease as a reality – workshop. Determination in solving a health issue – workshop. Psychology of a patient at the moment of becoming aware of his/her health issue and during treatment – workshop. Psychological states in case of uncertainty, expectations, unexpected treatment, unsuccessful treatment, deterioration in diagnosis – workshop. Work with patient´s relatives – workshop. Work with medical professional in case of severe emotional states – workshop. Visits of professionals.

Literature:
Literature in Serbian:
1. Havelka M.: Zdravstvena psihologija. udžbenik, Jastrebarsko-Naklada Slap, 2008.
2. Kekuš D.: Komunikacije u profesionalnoj praksi zdravstvenih radnika, Digital Art, Beograd, 2010.
3. Payne S. H., Walker J.: Psihologija u zdravstveni negi, Educy, Ljubljana, 2002.
4. Berger D.: Zdravstvena psihologija, Društvo psihologa Srbije, Centar za primarnu psihologiju, Beograd, 2002.
5. Simić M., Kovačević K.: Mentalna higijena, udžbenik, autorsko izdanje, Beograd, 2004.
Literature in English:
6. Kubler Ross E.: On Death and Dying, Prentice Hall, 2001.
7. Friedman H. S.: Health psychology, textbook, Prentice Hall, 2003.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	30	0	0	0

Methods of teaching:
lectures, exercises, case studies, discussions, e-learning

Grading (maximum 100 points)

Pre-Exam commitment	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

PHYSICAL FACTORS IN THERAPY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physical Factors in Therapy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	first year, second semester
ECTS:	6
Requirement:	no

Course objective:
The objective of the course is to familiarize students with factors affecting physiotherapy assessment, i. e. the course of physiotherapy and rehabilitation process.

Course outcome:
Upon the completion of the course and passing the exam, students understand and possess knowledge on factors affecting physiotherapy assessment, i. e. the course of physiotherapy and rehabilitation process, and they are trained to examine physiotherapy and rehabilitation techniques.

Course content:
Lectures
Types of factors affecting the course of physical therapy, ways of their impact. Explanations of reasons of such actions. External and internal impact on growth or reduction in the effect of a certain factor. Minimum and maximum values of certain factors that might affect the commencement of physical therapy or rehabilitation. Ways of diminishing factor intensity impeding the course of physical therapy or rehabilitation. Impact of age and sex on factor effects. Impact of physiological condition of organism and diet in the period preceding the need for physical therapy or rehabilitation. Impact of climate. Markers impacting the intensity of effects of some of factors. Specifics of effects in small children. Specifics of effects in geriatrics. Specific of effects in postoperative recovery.
Exercises
Types of factors affecting the course of physical therapy, ways of their action – examples. External and internal impacts on increase or reduction in the effect of a certain factor – examples. Ways of diminishing factor intensity impeding the course of physical therapy or rehabilitation – examples. Ways of boosting factor intensity impeding the course of physical therapy or rehabilitation – examples. Length of factor effects – examples. Markers impacting the intensity of effects of some of factors - examples. Specifics of effects in small children, geriatrics and in postoperative recovery – case study analysis.

Literature:
Literature in Serbian:
1. Mihailović V.: Fizikalna terapija, udžbenik, Obodsko slovo, Rijeka Crnojevića, 2002.
2. Veljković M.: Opšta fizikalna terapija, udžbenik, Visoka medicinska škola Ćuprija, 2004.
Literature in English:
3. Goodman C. C., Snyder T. K.: Differential Diagnosis for Physical Therapists: Screening for Referral, Saunders, Otawa, 2012.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	150	0	0

Methods of teaching:
Lectures, exercises, case analyses, discussion, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY ASSESSMENT

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy Assessment**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	first year, second semester
ECTS:	6
Requirement::	no

Course objective:
Familiarization with possibilities of assessment of functional condition and quality of life prior to physiotherapy or medical rehabilitation in cases conditions or injuries most frequently resulting in personal or social dysfunction, aimed at assessment making and improvement in effects of treatment.

Course outcome:
Understanding basic notions of all aspects of quality of life and multidisciplinary approach to evaluation and treatment of patients, understanding the importance of application of such approach preventively, aimed at physiotherapy treatments or rehabilitation, as well as acquisition of techniques of assessment of life quality and factors affecting the possibility of carrying out physiotherapy or medical rehabilitation.

Course content:
Lectures
The notion of quality of life. General and specific quality of life and organism condition factors. Criteria of devising and applying functional tests. Importance of interdisciplinary approach to functional status testing. Assessment of functional condition and quality of life of patients with rheumatoid arthritis, seronegative spondyloarthritis, fibromyalgia, after sustaining locomotor apparatus injuries, in patients with peripheral nerve lesions, with degenerative conditions of the backbone, degenerative conditions of peripheral joints, with amputations, quadriplegia and paraplegia, following cerebrovascular accident, as well as specific features in condition assessment in pediatrics, geriatrics and pregnant women.
Exercises
Familiarization with pain assessment questionnaires – practical application. Functional status and quality of life of patients with rheumatoid arthritis. Functional status and quality of life of patients with seronegative spondyoarthritis. Assessment of functional status and quality of life of patients with fibromyalgia. Assessment of functional status and quality of life of patients after sustaining locomotor apparatus injuries. Assessment of functional status and quality of life of patients with peripheral nerve lesions. Assessment of functional status and quality of life of patients with degenerative conditions of the backbone. Assessment of functional status and quality of life of patients with degenerative conditions of peripheral joints. Assessment of functional status and quality of life of patients with amputations. Assessment of functional status and quality of life of patients with quadriplegia and paraplegia. Assessment of functional status and quality of life of patients following cerebrovascular accident. Assessment of functional status and quality of life of patients with juvenile idiopathic arthritis. Analysis of specific features and assessment of factors affecting the condition of elderly persons, children and pregnant women.

Literature:
Literature in Serbian:
1. Veljković M.: Opšta fizikalna terapija, udžbenik, Visoka medicinska škola Ćuprija, 2004.
2. Mihailović V.: Fizikalna terapija, udžbenik, Obodsko slovo, Rijeka Crnojevića, 2002.
3. Sulović V., Jakovljević Đ.: Medicina i kvalitet života, Beograd, SANU, 1997.
Literature in English:
4. Goodman C., Snyder K.: Differential Diagnosis for Physical Therapists: Screening for Referral, Saunders, London, 2012.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	15	30	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY IN INTERNAL MEDICINE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy in Internal Medicine**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, fourth semester
ECTS:	4
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy, Basics of Internal Medicine

Course objective:
Adoption of current professional theoretical and practical knowledge in internal medicine aimed at application of physiotherapy methods and medical rehabilitation of internal medicine patients.

Course outcome:
Students are trained to apply methods of physiotherapy and medical rehabilitation of internal medicine patients (cardiology, pulmonary, gastroenterology, nephrology, endocrinology, immunology, oncology).

Course content:
Lectures
Recapitulation of teaching units in the field of internal medicine. Kinesitherapy diagnostics, assessment, plan and programme of kinesitherapy within treatment and rehabilitation in internal medicine. Kinesitherapy – myocardial infraction, hypertension, coronary bypass post-surgical period. Diseases of peripheral circulation, non-coronary artery bypass grafting surgery. Kinesiteraphy – obstructive pulmonary diseases and asthma. Specific features of kinesitherapy in children with pulmonary diseases. Kinesitherapy – inflammatory, degenerative and non-articular rheumatism.
Exercises
Recapitulation of teaching units in the field of internal medicine. Practical application of kinesitherapy: prevention, therapeutic diagnostics and assessment, application of general and authorized methods of kinesitherapy, correction of selected methods, evaluation of effects, treatment adjustment and progression, entering relevant data in medical documentation in the treatment of pathological conditions: myocardial infraction, angina pectoris, artery hypertension, arterosclerosis, valvular heart disease. Postoperative conditions: revascularisation – surgical procedure, valvular insufficiency interventions. Acute and chronic diseases of the peripheral vascular system. Recurrent and chronic obstructive bronchitis, asthma, bronchiectasis, emphysema, cystic fibrosis, pleural effusion, thoracic surgery, occupational respiratory system diseases. Specific features of kinesitherapy of respiratory diseases in children. Kinesitherapy of idiopathic inflammatory rheumatism, inflammatory rheumatism in children, systemic inflammatory rheumatism, degenerative rheumatism, postoperative discus hernia, non-articular soft tissue rheumatism, compressive non-articular syndrome, metabolic rheumatism.

Literature:
Literature in Serbian:
1. Pavlović M.: Kineziterapija u procesu rehabilitacije obolelih od kardiovaskularnih bolesti, udžbenik, Beograd, 2002.
2. Pavlović M.: Kineziterapija u reumatologiji, udžbenik, Beograd, 2003.
3. Popović M.: Kineziterapija respiratornih poremećaja, udžbenik, autorsko izdanje, Beograd, 2003.
4. Manojlović D. i sar.: Interna medicina I, II udžbenik, Zavod za udžbenike i nastavna sredstva, Beograd, 2003.
5. Đurica S.: Interna medicina, udžbenik, Viša medicinska škola, Beograd, 2000.
Literature in English:
6. Kasper D., Fauci A., Hauser S., Longo D.: Harrison's Principles of Internal Medicine, McGraw-Hill Prof., New York, 2015.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	150	0	0

Methods of teaching:
Lectures, exercises, e-learning, exercises on dummy, simulation, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY IN NEUROLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy in Neurology**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	3
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy, Basics of Neurology

Course objective:
Acquisition of knowledge to recognize neurological symptoms and acquisition of skills in rehabilitation of patients with diseases and injuries of the central and/or peripheral nervous system using physiotherapy methods.

Course outcome:
Upon the completion of the course and passing the exam students are able to recognizes neurological symptoms in injuries and diseases of the nervous central system, to make a functional assessment, recognize patient needs, define goals and tasks of rehabilitation by applying physiotherapeutic methods, keep the rehabilitation course and monitor and controls the results, as well as to keep medical file of patients with neurological diseases, disorders and damages in all stages of rehabilitation.

Course content:
Lectures
Clinical features, etiology, pathoanatomy, pathophysiology, course, prognosis and treatment of pathological conditions: injuries and inflammatory and degenerative brain and spinal cord diseases, diseases of peripheral cranial and spinal nerves, muscle diseases aimed at finding the most efficient method of kinesitherapy in combination with physical agents that would optimize patient conditions. Physiotherapy in rehabilitation of neurological patients. Principles, aims and tasks of physiotherapy in the rehabilitation process of patients with diseases and injuries of the peripheral motor neuron, extrapyramydal system. Possibilities of primary, secondary and tertiary prevention of disability. Team works. Contraindications. Functional assessment through a holistic approach. Individualized approach. Plan and programme. Selection of activities. Selection of aids, modifications, education. Assessment of the living, working and public environment. Adaptation and modification advice. Training of a disabled person, family members and society. Assessment of work ability. Collaboration with team members. Terminology. Keeping therapy documentation.
Exercises
Familiarization of students with the space, tools, equipment, work organization, documentation, place of physiotherapist in neurological patient rehabilitation ward. Spotting different neurological symptoms in patients with injuries of peripheral nerves of extremities, diseases of peripheral nerves (polyneuropathy, polyradiculoneuritses, polymyelitis), hemiplegia, spinal lesion, CNS diseases (multiple sclerosis, Parkinson's disease). Exercises in assessment of functional condition and determining needs of patients depending of the phase and stage of disease, determining objectives and tasks, rehabilitation monitoring, keeping and using medical documentation, making necesary provisional and/or functional aids or adaptations to standards aids. Training how to keep and use medical documentation, giving functional assessment of patients of all clinical conditions mentioned in lectures, drawing jp kinesitherapy programmes, application of the selected bais and special methods, adaptation to patient responses, evaluation of the effects of the applied methods, logical combination with physical agents. Instructing patients and family members as to further steps aimed at maximum rehabilitation effects. Training in team work and use of information technology in the teaching base.

Literature:
Literature in Serbian:
1. Radojičić B.: Bolesti nervnog sistema, II izd., udžbenik, Elit-Medica, Beograd, 2000.
2. Senić N., Kaluđerović D., Radosavljević S.: Kineziterapija u rehabilitaciji bolesnika sa lezijama kičmene moždine, udžbenik, Viša medicinska škola u Beogradu, Beograd, 2001.
3. Jovanović L.: Kineziterapija kod povreda i oboljenja perifernog nervnog sistema, udžbenik, Visoka zdravstvena škola strukovnih studija, Beograd, 2002.
4. Jovanović-Sretenović T.: Praktikum-radna terapija u neurologiji, Visoka zdravstvena škola strukovnih studija, Beograd, 2012.
Literature in English:
5. Kearney P., McGowan T., Anderson J., Strosahl D.: The Role of the Occupational Therapist on the Neuro-Rehabilitation Team, Springer Publishing Company, New York, 2007.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	300	0	0

Methods of teaching:

Lectures, exercises, demonstration, exercises on dummy, case analyses, clinical practice.			
Grading (maximum 100 points)			
Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY IN PEDIATRICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy in Pediatrics**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	second year, fourth semester
ECTS:	4
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy, Basics of Pediatrics

Course objective:
Acquisition of knowledge on most important diseases and injuries in children and adolescents, on deformities and congenital anomalies, acquisition of knowledge on possibilities of application of rehabilitation methods in sick or injured children and adolescents, acquisition of knowledge on specific features of physiotherapy and medical rehabilitation in pediatrics.

Course outcome:
Students are trained for individual and team work by applying physiotherapy and medical rehabilitation methods in pediatrics.

Course content:
Lectures
Introductory part, psychomotor development of children, specific characteristics of a sick child. The role of physiotherapist in pediatrics. Child-parent-physiotherapist relationship. Assessment of psychophysical condition of a sick child, rehabilitation of children suffering from neurological diseases, rehabilitation in treatment of development disorders of children, rehabilitation of children with children cerebral paralysis, rehabilitation of children with rheumatic diseases, rehabilitation of children with respiratory and cardiovascular diseases, rehabilitation of children with orthopedic diseases, rehabilitation of children with vertebral column deformities, rehabilitation of children with deformities of extremities, rehabilitation of children after locomotor system injuries, postoperative rehabilitation of children, team collaboration in physiotherapy of children, special training of parents in rehabilitation of sick children. Development period neurobiology. Psychomotor development, motor control training. Physiotherapy of clinical conditions: neurological diseases of the central and peripheral nervous system, mental retardation, birth traumas, congenital abnormalities, injuries and diseases of bones, muscles and skin, respiratory and cardiovascular diseases of children. Medical documentation use and keeping. Development of examination skill and the skills of communication with children. Correlating knowledge in basic clinical courses, pathoanatomic substrate and effects of physiotherapy methods. During practical classes students are taught in independent programming, application, adaptation to child's reactions and to assess kinesitherapy methods in combination with recommended physical agents based on the treatment plan defined by a doctor for any pathological conditions presented in lectures.
Exercises
Application of physical agents in treating diseases in, assessment of their condition, training students in treatments.

Literature:
Literature in Serbian:

1. Savić K., Mikov A.: Rehabilitacija dece i omladine, udžbenik, Ortomediks, Novi Sad, 2007.
2. Savić K.: Rehabilitacija u pedijatriji, udžbenik, II izd., autorsko izdanje, Novi Sad, 2003.
3. Shepherd R.: Fizioterapija u pedijatriji, udžbenik, Ravena Pres, 2004.
4. Jovanović L.: Kineziterapija u pedijatriji, udžbenik, autorsko izdanje, Beograd 2000.
5. Veljković M.: Klinička fizikalna terapija, udžbenik, Visoka medicinska škola, Ćuprija, 2004.
6. Jovanović Privrodski J.: Pedijatrija, udžbenik, Medicinski fakultet, Novi Sad, 2012.
7. Mardešić D.: Pedatrija, udžbenik, Školska knjiga, Zagreb, 2003.

Literature in English:

8. Jan S. Tecklin: Pediatric Physical Therapy, LWW, New York, 2014.
9. Toby M. Long: Handbook of Pediatric Physical Therapy, Villey, London, 2012.
10. Kliegman R. M., Jenson H. B., Behrman R. E.: Nelson Textbook of Pediatrics, textbook, Sounders, New York, 2000.
11. Aruchamy L.: Practical Pediatrics Paperback, textbook, Jaypee, New Jersy, 2020.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	15	150	0	0

Methods of teaching:
Lectures, exercises, case analysis, exercises on dummy, e-learning, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		

Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY IN RHEUMATOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy in Rheumatology**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	3
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy, Basics of Rheumatology

Course objective:
Students are trained to apply the acquired knowledge and skills and to recognize symptoms, types, phases and stages of diseases, assess the situation, plan work therapy steps, guide the rehabilitation process, control the results and keep medical documents of patients with rheumatism, as well as in work with geriatric patients.

Course outcome:
Students are able to assess the patient from the aspect of physiotherapy in rheumatology, define therapeutic goals relating to psychic function disorder, motivate an individual and/or group, organize individual and group work, select, apply and quantify physiotherapeutic procedures and re-evaluate the effects of their work.

Course content:
Lectures
Physiotherapy in the rehabilitation process of productive age and third age persons with inflammatory, degenerative, non-articular and metabolic rheumatic conditions. Principles and goals of physiotherapy in rheumatology. Objectives and tasks. Team work. Possibilities of work therapy in primary, secondary and tertiary prevention of disability. Physiotherapy assessment. Kinesitherapy diagnostics, assessment, plan and programme of kinesitherapy within rehabilitation of patients suffering from inflammatory, degenerative, non-articular and metabolic rheumatism. Practical application of kinesitherapy, prevention, education, therapeutic diagnostic and assessment, general and authorized methods of kinesitherapy, manual techniques, techniques implying use of devices within thermo-, photo-, magneto-, sono-, mechanic and electric therapy within team work in the rehabilitation process of patients suffering from rheumatic diseases. Individualized approach. Contraindications. Plan and programme. Selection of activities. Aids – assessment, selection, making and modifications of aids, training. Training. Assessment of the living, working and public environment. Advice as to adaptation. Collaboration with team members. Therapeutic documentation.
Exercises
Exercises in the application of physiotherapy methods in patients with inflammatory rheumatism (rheumatoid arthritis, juvenile chronic arthritis, polyarthritis, ankylosing spondilitis) degenerative (arthrosis – wear of extremity joints and vertebral column), non-articulate (PASH, epicondylitis), metabolic (gout) rheumatism and osteoporosis. Specific features of organization and carrying out physiotherapy in rehabilitation of patients with pulmonary and cardiovascular diseases. Specific features of functional assessment, therapeutic goals, selection of activities and quantification in work with elderly persons. Making and/or adjustment of necessary functional aids.

Literature:
Literature in Serbian:
1. Pavlović M.: Kineziterapija u reumatologiji, udžbenik, Viša medicinska škola, Beograd, 2003.
2. Pilipović H.: Reumatologija, udžbenik, autorsko izdanje, Beograd, 2000.
3. Jovanović-Sretenović T.: Praktikum, Viša zdravstvena škola strukovnih studija, Beograd, 2012.
4. Nedvidek B.: Osnovi fizikalne medicine i medicinske rehabilitacije, udžbenik, Medicinski fakultet Novi Sad, 2003.
Literature in English:
5. Goodacre L., McArthur M.: Rheumatology Practice in Occupational Therapy, Wiley-Blackwell, New Jersey, 2013.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
15	15	300	0	0

Methods of teaching:
Lectures, exercises, exercises on dummy, case analyses, e-learning, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PHYSIOTHERAPY IN SURGERY WITH ORTHOPAEDICS

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Physiotherapy in Surgery with Orthopaedics**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	third year, fifth semester
ECTS:	3
Requirement:	Physical Factors in Therapy, Physiotherapy Assessment, Skills in Physiotherapy, Basics of Surgery with Orthopedics

Course objective:
Acquisition of theoretical knowledge and skills in taking care of patients in all surgical branches.

Course outcome:
Students will be trained to practically apply the acquired knowledge in all surgical disciplines necessary for acquisition of skill in taking care of all surgical patients in terms of nursing.

Course content:
Lectures
Recapitulation of all teaching units in the area of surgery and orthopaedics. Application of asepsis and antisepsis principles in daily surgical practice. Possible methods of physiotherapy and medical rehabilitation of patients with injuries of digestive and endocrine system. Possible methods of physiotherapy and medical rehabilitation of patients with locomotor system diseases. Possible methods of physiotherapy and medical rehabilitation of patients with surgical conditions and injuries of blood and lymphatic vessels. Possible methods of physiotherapy and medical rehabilitation of patients with surgical conditions and injuries of the central and peripheral nervous system. Possible methods of physiotherapy and medical rehabilitation of patients with burns. Possible methods of physiotherapy and medical rehabilitation of patients with surgical conditions and urogenital tract injuries. Possible methods of physiotherapy and medical rehabilitation of patients with thoracic and lung injuries. Possible methods of physiotherapy and medical rehabilitation of patients with surgical conditions and cardiac injuries. Possible methods of physiotherapy and medical rehabilitation of children as oncology patients – specific pediatric features. Possible methods of physiotherapy and medical rehabilitation of oncology patients. Possible methods of physiotherapy and medical rehabilitation of post-transplant patients. Possible methods of physiotherapy and medical rehabilitation after semi-intensive and intensive care of surgical patients.
Practice
Recapitulation of all teaching units in the area of surgery and orthopaedics. Causes, pathological changes, clinical manifestations, course, prognosis, complications, conservative and surgical treatment, general plan of rehabilitation, indications and contraindications for kinesitherapy of the following surgical-orthopaedic conditions: dislocations, subluxation, injuries of meniscus, muscles, tendons, ligaments, nerves and blood vessels. Fractures of bones of the shoulder girdle and upper extremities, pelvic and lower extremities, vertebral column injuries without neurological disorders, thoracic fracture, injuries of head bones. Aseptic bone necrosis. Tumors. Burns. Polytraumas. General skeletal affections. Arthroplasty. Posture dysfunction. Sports injuries. Kinesitherapy planning by phases of recovers of soft tissues and bones structures, phases of early mobility, chronic phase. Medical documentation: use and keeping. Examination and assessment of functional condition. Demonstration of application of planned kinesitherapy methods.

Literature:
Literature in Serbian:
1. Stanić V., Maličević Ž. i sar.: Grudna hirurgija (ur.: Jaković R. M.), udžbenik, Medicinski fakultet, Beograd, 2004.
2. Banović D.: Povrede u sportu, udžbenik, Draslar partner, Beograd, 2006.
3. Nikolić Ž.: Povrede ekstremiteta, lečenje i medicinska rehabilitacija, Draslar partner, Beograd, 2009.
4. Pajić D., Mačvanin Đ. i sar.: Hirurgija, odabrana poglavlja, udžbenik, Medicinski fakultet, Novi Sad, 2009.
Literature in English:
5. Norton J., Barie P. S., Bollinger R. R., Chang A. E., Lowry S., Mulvihill S. J., Pass H. I., Thompson R. W.: Surgery: Basic Science and Clinical Evidence, Springer Publishing Company, New York, 2008.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	45	300	0	0

Methods of teaching:
Lectures, exercises, exercises on dummy, simulations, video presentations, e-learning, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30

Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

PUBLIC HEALTH

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Public Health**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:

The objective of the course is to train students to recognize values and determinants, duties of individuals, family, local community and society aimed at health protection, to recognize the role of nurses in health promotion, to familiarize them with the national project of health promotion and prevention of chronic diseases and strategies of European health-care policies. The objective of the course is to familiarize students with the principles of healthy, safe and balanced nutrition of healthy and sick persons, with organization and activities in health-care education in Serbia and to teach them to implement applicative theory in practice.

Course outcome:

Upon the completion of the course students will be able to recognize health-related factors, to recognize the role of therapist in health promotion, to make difference between health-care education and health promotion, to practically apply the acquired knowledge.

Course content:

Lectures

Societal aspects of health. Promotion of health and its characteristic. Health promotion activities. Impact on the health of individual. Impact of nutrition on health, National project of promotion of health and chronic diseases, Role of therapist in health improvement. Objectives and purpose of health-care education. Levels and approaches to health-care education. Health care education in the process of nursing of the old. Forms and methods of work in health care education. Devices and equipment; areas of work in health care education. Motivation and communication in health care education. Teaching methods and its tasks. Content of education. Organization of lessons and preparation of health care educator for classes. Principles of healthy nutrition, guidelines for healthy nutrition. Development and definition of social medicine. Social care of health. Communication in health care. Health care policy. Social inequalities in health care system and obtaining health protection, levels of health protection. Health protection systems globally. Criteria for evaluation of socio-medical importance of health issues. Marginalized population categories. Role of health care institutions and medical professionals in health care system.

Exercises

Societal aspects of health. Promotion of health and its characteristics. Health promotion activities. Impact of health on individual. Impact of nutrition on health. Nutrition characteristic for healthy and sick individual. National project of health promotion and prevention of chronic diseases. Role of therapist in health improvement. 21st Century Health for All Strategy. Objectives and purpose of health-care education. Levels and approaches in health-care education. Health-care education in the process of nursing of the old. Forms and methods of work in health-care education. Devices and equipment. Areas of work in health-care education. Motivation and communication in health-care education. Teaching methods and its tasks. Content of education. Organization of lessons and preparation of health-care educator for classes. Principles of healthy nutrition; food pyramid; guidelines for healthy nutrition. Development and definition of social medicine. Social care of health. Communication in health care. Health-care policy. Social inequalities in health-care system and obtaining health protection, levels of health protection. Health protection systems globally. Criteria for evaluation of socio-medical importance of health issues. Marginalized population categories. Role of health-care institutions and medical professionals in health-care system.

Literature:

Literature in Serbian:

1. Lazarević A. i sar.: Javno zdravlje, socijalna politika i zdravstvena zaštita, udžbenik, Beograd, Visoka zdravstvena škola strukovnih studija, Beograd, 2016.
2. Hojer S.: Pristupi i metode u zdravstvenom odgoju, udžbenik, Koledž zdravlja, Ljubljana, 2005.
3. Lazarević A.: Socijalna medicina, autorsko izdanje, Beograd, 2015.
4. Simić S. i sar.: Socijalna medicina, udžbenik, Medicinski fakultet, Beograd, 2012.

Literature in English:

5. Mossialos E., Permanand G., Baeten R., Hervey T.: Health systems governance in Europe: the role of European Union law and policy, Cambridge University Press, 2010.
6. Morrisey M. A.: Health Insurance, Health Administration Press, London, 2007.
7. Schneider M. J.: Introduction to Public Health, textbook, Jones-Barlett learning, New York, 2021.
8. Murphy F.: Community Engagement, Organization, and Development for Public Health Practice, Springer Publishing Company, New York, 2004.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0
Methods of teaching: lectures, exercises, discussions, problem solving				
Grading (maximum 100 points)				
Pre-Exam obligations		**Points**	**Final Exam**	**Points**
Lecture attendance		3	Exam	40
Activity		7		
Projects/Seminars		0		
Exercises/professional practice		20		
Colloquiums		30		

QUALITY CONTROL

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Quality Control**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Courses objective:
The objective of the course is to familiarize students with basic principles of organization of health-care institutions and health-care sector, manner of institution management, specific characteristics of decision-making process in health-care sector, motivation and team building, features of intra-sectoral communication in health-care institutions, human-resource matters and human-resources building, specific features of operating policy and planning strategy, administrative procedures and change management in health-care institutions, mandatory and other forms of health insurance.

Course outcome:
Students who complete the course are trained to organize medical teams, ensure good communication within a health-care institution, efficiently make decisions in situations when there is not enough time and efficiently manage changes; students understand systems of mandatory and other forms of health protection.

Course content:
Lectures
The role of good communication; the role of managers, difference between commanding and leading; policy and schedule of employment, introduction process, interview and integration of new employee; training; health-care institution organization; primary, secondary and tertiary health protection; quality control procedures, importance of the notion of procedure; population protection from infectious diseases; production and trade in drugs – control; production and trade in narcotics – control; ban on the sale of alcoholic beverages, smoking ban, ban on advertising sale of tobacco products – control; chambers of health-care practitioners; republic administration bodies in the sphere of environment protection; environmental legislature – control; protection of nature, environment protection, republic administration bodies in the sphere of health-care; trade in explosive materials, inflammable substances and gases; medical waste and biological material management – control; inspection supervision; experiences of the EU countries; modern trends; current challenges in health-care institutions; safety of medical practitioners, terrorism – control mechanisms.
Exercises
Discussion on organization of health care processes, health-care institutions and health-care insurance. Analysis of practical experience in Serbia and abroad. Analysis of practical examples in the domain of environment protection. Analysis and practical examples in the sphere of ban on smoking and alcohol. Analysis and discussion: environment protection. Analysis and discussion; medical waste and biological material disposal process in the area of health care. Safety of health-care professionals, terrorism – discussion.

Literature:
Literature in Serbian:
1. Legetić B.: Principi menadžmenta, udžbenik, Ekonomski fakultet, Subotica, 2007.
2. Marinković Lj: Menadžment u zdravstvenim organizacijama, G.A.D. Beograd, 2001.
3. Mićović P.: Zdravstveni menadžment, Obeležja, Beograd, 2008.
4. Milović Lj.: Organizacija zdravstvene nege sa menadžmentom, udžbenik, Naučna knjiga, Beograd, 2004.
5. Probbins S., Judge T.: Organizaciono ponašanje, Mate, Zagreb, 2009.
6. Official Gazettes of the Republic of Serbia
Literature in English:
7. Spath P.: Applying Quality Management in Healthcare: A Systems Approach, textbook, Health Administration Press, Boston, 2017.
8. Swanwick T., Vaux E.: ABC of Quality Improvement in Healthcare, Villey, New York, 2020.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, case study, discussion, workshop, e-learning

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40

Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

RADIOLOGY PHYSICS AND BASICS OF RADIOLOGY WORK METHODS

Study program:	Physiotherapy
Type and level of study:	undergraduate proffesional studies
Course:	**Radiology Physics and Basics of Radiology Work Methods**
Language of instruction:	Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
The objective of the course is that students understand basics of the methods of work in radiology and consequently to understand principles of operation of devices and techniques in radiology, methods of nursing in radiology and methods of radiation protection of patients and medical professionals.

Course outcome:
Upon the completion of the course student will: to acquire basic knowledge and skills in radiology physics required for quality application of radiation in medicine; to understand basics of methods of work in radiology; to understand principles of operation of devices and techniques in radiology; to understand methods and principles of patient nursing in radiology; to understand methods of radiation protection.

Course content:
Lectures:
Elementary physical quantities. International unit system; measurement, measurement instruments, standards, types of errors. Measurement errors. Electrostatics (electrostatic measurements and laws). Electric power, elements of circuits. Basics of magnetism (nature and quantities). Basic measurement instruments in electric engineering. Wave mechanics: mechanical and and electromagnetic waves. Electromagnetic radiation: properties, elementary physical quantities. Planck's law, matter and energy equivalence. Atomic structure of matter: elementary particles and their properties, Bohr-Rutheford atomic model, Bohr's postulates, atomic excitation, spectres and atomic spectroscopy. Molecular properties: chemical bonds, excitation forms. Crystals: properties. Luminiscence, fluorescence, phosphoroscence, ionization. Atomic nucleus: properties, nuclear forces. Elementary physical quantities in radiology. Radioactivity, radioactive elements in nature, artificial radioactivity. Radioactive disintegration law. Nature, characteristics and origin of Röntgen radiation. Basic characteristics of ionizing radiation, effects on matter, absorption of x-ray and gamma-ray radiation. Interaction of ionizing radiation and matter. Radiation doses and dosimeters. X-ray tube: structure, properties, classification, application. Filters. Radiation output. X-ray devices. Principle of application of X-ray radiation in radiation therapy. Principle of X-ray radiation switch in radiation therapy. Basics of nuclear medicine, therapy, Basic of radiation protection. Basic principles of application of ultrasound in medicine. Radiology as a science. History of radiology worldwide and in Serbia. Radiology wards. Patient monitoring in radiology. Anaphylactic reaction.
Exercises:
Division of electromagnetic radiation by energies. Assignments: matter defect, bond energy, alpha, beta and gamma radioactive disintegration law, radiation doses. Practical familiarizing with dosimeter functioning. Familiarizing with diagnostic X-ray devices: image receives, image quality, computerized tomography, mammography. Application of X-rays in radiation therapy. Brachytherapy. Ultrasound diagnostic. Communication and first contact with patient in radiology. Radiology ward planning. Elementary physical quantities in radiology. Radioactivity, radioactive elements in nature, artificial/induced radioactivity. Radioactive disintegration law. Nature, characteristics and origin of X-ray radiation. Basic characteristics of ionizing radiation on matter, absorption of X-ray and gamma-ray radiation.

Literature:
Literature in Serbian:
1. Simonović J., Vuković J., Ristanović D., Radovanov R., Popov D.: Biofizika u medicini, II izd., udžbenik, Medicinska knjiga, 2003.
Literature in English:
2. Walter Huda: Review of Radiologic Physics, LWW, New York, 2016.
3. Andrea S. Doria, George Tomlinson, Joseph Beyene, Rahim Moineddin: Research Methods in Radiology: A Practical Guide, Thieme, Amsterdam, 2014.

Number of classes (in semester):

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, exercises, video presentation, e-learning, demonstration.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**

Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

RARE DISEASES

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Rare Diseases**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, fourth semester
ECTS:	5
Requirement:	no

Course objective:
The objestive of the course is to acquaint students with the concept and types of rare diseases, the ways in which the health system helps patients with rare diseases, as well as the challenges in this area, in Serbia as well as in the other countries.

Course outcome:
After the course, the student should be acquainted with the concept and types of rare diseases, ways in which the health system can help patients with rare diseases, as well as the challenges that arise in this area, both in Serbia and in other countries.

Course content:
Lectures
The notion of a rare disease; characteristics of rare diseases in Serbia and worldwide; the list of rare diseases and genes affecting their occurrence; the methodology with data on rare diseases in Serbia; burden born by stationary health-care institutions in Serbia, distribution of rare diseases globally; malignant tumors in children; challenges in fighting rare diseases in Serbia and globally, propositions of measures in Serbia; Zoja's Law; NORBS; the list of orphan drugs in all phases of their development, from Europen Medicines Agency labeling relating to medicines for treatment of rare diseases to obtaining permit for the European market; "assistance in diagnosis" option as na option of conducting tests according to disease signs and symptoms; recommendations and guidelines in case of urgent medical intervention and anaesthesia; overview of sites specialized in rare diseases in every country through Orphanet; directions of present research in rare diseases.
Exercises
The notion of a rare disease; characteristics of rare diseases in Serbia and worldwide; Zoja's Law; NORBS – discussion; discussion on rare diseases and challenges faced by patients in Serbia and worldwide.

Literature:
Literature in Serbian:
1. interni material predavača
2. Ministarstvo zdravlja Republike Srbije: Program za retke bolesti u Republici Srbiji za period 2020-2022. godine: https://www.zdravlje.gov.rs/tekst/343045/program-za-retke-bolesti-i-akcioni-plan.php
3. Ministarstvo zdravlja Republike Srbije: Lista retkih bolesti i gena uključenih u njihov nastanak, kao i enciklopedija retkih bolesti i njihova klasifikacija izvedena iz objavljenih stručnih klasifikacija: https://www.orpha.net/consor/cgi-bin/Disease.php?lng=EN
4. Ministarstvo zdravlja Republike Srbije: Popis „orphan" lekova (lekova siročića), u toku svih faza njihovog razvoja, od oznake Evropske Medinske Agencije koja se odnosi na lekove namenjene lečenju retkih bolesti do dobijanja dozvole za evropsko tržište https://www.orpha.net/consor/cgi-bin/Drugs.php?lng=EN
5. Ministarstvo zdravlja Republike Srbije: Opcija "pomoć pri dijagnozi" omogućava korisnicima pretragu prema znacima i simptomima bolesti https://www.orpha.net/consor/cgi-bin/Disease_HPOTerms.php?lng=EN
6. Ministarstvo zdravlja Republike Srbije: Preporuke i smernice u slučaju hitne medicinske intervencije i anestezije https://www.orpha.net/consor/cgi-bin/Disease_Emergency.php?lng=EN

Literature in English:
7. Claudia Gonzaga-Jauregui, James R. Lupski: Genomics of Rare Diseases: Understanding Disease Genetics Using Genomic Approaches, Academic Press, London, 2022.
8. Robert M. Kliegman, Brett J. Bordini: Undiagnosed and Rare Diseases in Critical Care, An Issue of Critical Care Clinics, E-book, 2021.

Number of classes:

Theoretical lectures	**Theoretical exercises**	**Professional practice**	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures and practical exercises with anatomical and hystological devices, use of atlas, video projections, computer animations and simulations of physiological processes

Grading (maximum 100 points)

Pre-Exam commitments	Points	Final Exam	Points
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums	30		

RESEARCH METHODOLOGY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Research Methodology**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Course objective:
Training in research work.

Course outcome:
Possession of knowledge necessary for research work.

Course content:
Lectures
Importance of scientific work. Difference between scientific and professional work. Stages of research work. Selection of topic. Bibliography. Ways of literature citation. Experiment. Survey and survey results processing, protection of data. Statistical data processing. Quality of the sample. Objectivity and subjectivity. Result and conclusion. Scientific paper structure and writing. Types of scientific paper. Valuation of scientific paper. Ways of scientific paper publishing. Citation. Plagiarism. Protection of data.
Exercises
Techniques of collecting, organizing and studying literature. Searching selected databases. Processing of research results. Graphic presentation of data. Writing scientific paper. Literature citation. Drawing up seminar paper.

Literature:
Literature in Serbian:
1. Milankov V., Jakšić P.: Metodologija naučno-istraživačkog rada u biološkim disciplinama, udžbenik, Prirodno-matematički fakultet, Novi Sad, 2006.
2. Šomođi Š., Novković N., Kraljević-Balalić M., Kajari K.: Uvod u naučni rad, udžbenik, Poljoprivredni fakultet, Novi Sad, 2004.

Literature in English:
3. Ebel H. F., Bliefert C., Russey W. E.: The art of scientific writing, Wiley-VCH, Verlag GmbH & Co. KgaA, Weinheim, 2004.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
Lectures, exercises, discussions, e-learning, workshop, seminar paper, public presentation.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums/exam	30		

SKILLS IN PHYSIOTHERAPY

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Skills in Physiotherapy**
Language of instruction:	Serbian
Course status:	mandatory
Semester:	first year, second semester
ECTS:	5
Requirement:	no

Course objective:
Acquisition and adoption of knowledge in methods and techniques within manual therapy and physical forms of energy from natural and artificial sources in the area of thermotherapy, phototherapy, laser therapy, hydrotherapy, sonotherapy, magnetoherapy, balneo-climatotherapy and electrotherapy, acquisition of knowledge and skills in the application of methods within modern technology in electrictherapy and electrical diagnostic techniques, interpretation of obtained results.

Course outcome:
Practical application of the acquired knowledge and acquisition of skills in individual assessment in selection parameters in dosing, application methods and techniques corresponding to the expected therapy effects on the basis of the set goals and tasks in the application of physical forms of energy, individually adjusted to each patient in a team-based and active process of recovery, in observance of the rule primarily not to do any damage to a patient; practical application and acquisition of skills in individual work using modern techniques, in the professional selection of dosing parameters, methods and techniques of application aimed at obtaining the envisaged therapy results.

Course content:
Lectures
Introductory part, definition and subject of physical therapy, history, classification of physical therapy, physical therapy with and without the use of devices; thermotherapy, paraffin therapy, peloidotherapy, parafango, clay etc., warm steam, suna, hydrotherapy, baths, showers, cryotherapy and cryomassage, inhalation therapy, magnetotherapy, importance of application in patient therapy, sonotherapy, infrasound and ultrasound, application techniques, ultrasonophoresis, phototherapy, solar spectrum, infrared and ultraviolet rays, heliotherapy, laser therapy, types of lasers, biological effects of laser therapy, electrotherapy, static electricity, voltage, electric power, galvanization, stable and unstable galvanization, hydrogalvanic procedures, drug electrophoresis, faradic and neofaradic current, diadynamic currents, interferential currents, techniques of application, exponential current, electrodiagnostics and electrostimulation, TEHC, high-frequency currents, darsonvalization, short wave diathermy.
Exercises
Thermotherapy, paraffin therapy, paraffin application and application techniques, cryotherapy, cryotherapy application and techniques, sauna, inhalation therapy, hydrotherapy – pool, tube, local baths, electrotherapy, classification of electrotherapies, types of devices, application of galvanic current to patients, hydrogalvanic procedures, four-cell baths, galvanic bath, drug electrophoresis, therapy application to patients, electrotherapy, devices and equipment, exponential current, sources, electrodiagnostics and electrostimulation, alternating low-frequency current, faradic current, techniques of application, medium-frequency currents (interferential currents), application to patients, high-frequency currents, short-wave, microwave and ultra-shortwave diathermy, sonotherapy, direct and indirect (subaquatic) application of ultrasound, ultraphonophonophoresis technique, phototherapy, ultraviolet rays, infrared rays, techniques of application, laser therapy, laser devices, application techniques, magnetotherapy, types of devices.

Literature:
Literature in Serbian:
1. Mihailović V.: Fizikalna terapija, udžbenik, Obodsko slovo, Rijeka Crnojevića, 2002.
2. Veljković M.: Opšta fizikalna terapija, udžbenik, Visoka medicinska škola Ćuprija, 2004.
3. Kunej D., Stanković T.: Praktikum fizikalne terapije, Visoka medicinska škola, Zemun, 2004.
4. Lidel L.: Nova knjiga o masaži, Panonija, Novi Sad, 2006.
Literature in English:
5. Goodman C. C., Snyder T. K.: Differential Diagnosis for Physical Therapists: Screening for Referral, Saunders, Otawa, 2012.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	45	30	0	0

Methods of teaching:
Lectures, exercises, exercises on dummy, field visit, case analyses, dicussions, workshop, e-learning, clinical practice.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30

Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

SPECIALIZED ENGLISH FOR MEDICINE1

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Specialized English for Medicine 1**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Course objective is familiarization with characteristics of the English language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Grammar: English alphabet, basic reading and writing rules, greeting, personal pronouns, possessive pronouns, present tenses, gender and number of nouns, colors, interrogative and affirmative sentences; aspects of everyday life in English-speaking countries; prepositions with dative and accusative, the imperative, modal verbs, perfect tenses, clause framework; specialist texts in connection with students´ future profession, specialist terminology, examples of commercial, specialist texts from practice; examples of documents students will deal with in practice.
Exercises
Students practice everyday situation dialogues (giving/understanding orientation instructions, retelling happenings, making plans, scheduling meetings, giving descriptions, reporting etc.); understanding texts on everyday life situations (e. g. advertisements), they expand vocabulary relating to their environment, family, job.

Literature:
Literature in Serbian:
1. Dragović R.: Engleski za zdravstvene radnike, udžbenik, Naučna knjiga, Beograd, 2004.

Literature in English:
2. MacLean J.: English in Basic Medical Science, Oxford University Press, Oxford, 2000.
3. Turner S. Y., Sefika K.: Medical English for International Doctors and Nurses: How to communicate with your patients and colleagues effectively in English, textbook, Kindle Edition, London, 2015.
4. Murphy R.: English Grammar in Use, Cambridge University Press, Cambridge, 2014.
5. McCarthy M., O'Dell F.: English Vocabulary in Use, Cambridge University Press, Cambridge, 2006.
6. Hornby A.S.: Oxford Advanced Learner's Dictionary of Current English, Oxford University Pres, Oxford, 2008.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Seminar paper	0		
Exercises/professional practice	40		
Colloquiums	20		

SPECIALIZED ENGLISH FOR MEDICINE 2

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Specialized English for Medicine 2**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, third semester
ECTS:	5
Requirement:	Specialized English for Medicine 1

Course objective:
Course objective is familiarization with characteristics of the English language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Grammar: comparison of adjectives; causal clauses, future tense, preterite, conditional sentences, verbs of movement, active and passive voice; aspects of everyday life in English speaking countries: holiday, family life, education, life in city; relative clauses, verbs with prepositions, adjective forming suffixes and prefixes, deepening knowledge on dependent clauses; everyday life, business life and media in English speaking countries; specialist terminology relevant for students´ future profession, grammatically and linguistically more complex texts; work material corresponding to everyday practice at work.
Exercises
Students practice how to express themselves orally and in writing on everyday life topics, such as free time, job, media, fashion, politics; they practice shorter discussions and stating their opinion, asking others on their views and pointing to opposite aspects of different views.

Literature:
Literature in Serbian:
1. Dragović R.: Engleski za zdravstvene radnike, udžbenik, Naučna knjiga, Beograd, 2004.

Literature in English:
2. MacLean J.: English in Basic Medical Science, Oxford University Press, Oxford, 2000.
3. Turner S. Y., Sefika K.: Medical English for International Doctors and Nurses: How to communicate with your patients and colleagues effectively in English, textbook, Kindle Edition, London, 2015.
4. Murphy R.: English Grammar in Use, Cambridge University Press, Cambridge, 2014.
5. McCarthy M., O'Dell F.: English Vocabulary in Use, Cambridge University Press, Cambridge, 2006.
6. Hornby A.S.: Oxford Advanced Learner's Dictionary of Current English, Oxford University Pres, Oxford, 2008.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

SPECIALIZED GERMAN FOR MEDICINE 1

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Specialized German for Medicine 1**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	first year, first semester
ECTS:	5
Requirement:	no

Course objective:
Course objective is familiarization with characteristics of the German language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Grammar: German alphabet, basic reading and writing rules, greeting, personal pronouns, possessive pronouns, present tenses, gender and number of nouns, colors, interrogative and affirmative sentences; aspects of everyday life in German-speaking countries; prepositions with dative and accusative, the imperative, modal verbs, perfect tenses, clause framework; specialist texts in connection with students´ future profession, specialist terminology, examples of commercial, specialist texts from practice; examples of documents students will deal with in practice.
Exercises
Students practice everyday situation dialogues (giving/understanding orientation instructions, retelling happenings, making plans, scheduling meetings, giving descriptions, reporting etc.); understanding texts on everyday life situations (e. g. advertisements), they expand vocabulary relating to their environment, family, job.

Literature:
Literature in Serbian:
1. Menschen A1 KB und Menschen A1 AB, udžbenik (video materijal: http://matifmarin.blogspot.rs/p/menschen-film-stationen-clips.html), Klett Verlag, Stuttgart, 2018.
2. Nikolovski V.: Gramatička vežbanja „Eine kleine Übungsgrammatik“, Zavod za udžbenike i nastavna sredstva, Schritte international 1, Grammatikspiele.

Literature in German:
3. Pude E. A., Specht F.: Menschen, Deutsch als Fremdsprache Kursbuch mit DVD-ROM, udžbenik, Hueber Verlag, Munchen, Deutschland, 2012.
4. Loibl B. et all.: Schritte Plus im Beruf, Kommunikation am Arbeitsplatz, Max Hueber Verlag, Ismaning. Deutschland, 2015.
5. Becker N., Braunert J.: Alltag, Beruf, Kursbuch+Arbeitsbuch, Max Hueber Verlag, Ismaning, 2009.
6. Becker N., Braunert J., Schlenker W.: Unternehmen Deutsch Grundkurs. Kursbuch, Klett Verlag, Stuttgart, 2005.
7. Becker N., Braunert J.: Unternehmen Deutsch Grundkurs, Arbeitsbuch, KlettVerlag, Stuttgart, 2004.
8. https://www.hueber.de/seite/pg_lernen_lerner_dvd_mns, knjiga i link.
9. https://www.hueber.de/seite/pg_lernen_uebungen_mns, dodatne on line vežbe.
10. Grammatik - Ganz klar Übungsgrammatik A1-B1, uz audio materijal, Hueber Verlag, kratak pregled gramatike sa vežbanjima „Hallo aber Deutsch“.
11. www.schubert.

Number of classes:

Lectures	Exercises	Other classes (professional practice...)	Study research work (Degree Paper...)	Other forms of teaching (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligation	Points	Final Exam	Points
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exrcises/professional practice	40		
Colloquiums	20		

SPECIALIZED GERMAN FOR MEDICINE 2

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Specialized German for Medicine 2**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	second year, third semester
ECTS:	5
Requirement:	Specialized German for Medicine 1

Course objective:
Course objective is familiarization with characteristics of the English language, adoption of phrases and patterns necessary for communication at professional level and adoption of techniques of written and oral expressing in professional communication.

Course outcome:
Students will be able to apply the acquired knowledge in professional communication, create corresponding written forms in accordance with their professional communication and use speech patterns appropriate to a given situation.

Course content:
Lectures
Grammar: comparison of adjectives; causal clauses, future tense, preterite, conditional sentences, verbs of movement, active and passive voice; aspects of everyday life in German-speaking countries: holiday, family life, education, life in the city; relative clauses, verbs with prepositions, adjective forming suffixes and prefixes, deepening knowledge on dependent cluases; everyday life, business life and media in English speaking countries; specialist terminology relevant for students´ future profession, grammatically and linguistically more complex texts; work matrial corresponding to everday practice at work.
Exercises
Students practice how to express themselves orally and in writing on everyday life topics, such as free time, job, media, fashion, politics; they practice shorter discussions and stating their opinion, asking others on their views and pointing to opposite aspects of different views.

Literature:
Literature in Serbian:
1. Menschen A1 KB und Menschen A1 AB, udžbenik (video materijal: http://matifmarin.blogspot.rs/p/menschen-film-stationen-clips.html), Klett Verlag, Stuttgart, 2018.
2. Nikolovski V.: Gramatička vežbanja „Eine kleine Übungsgrammatik“, Zavod za udžbenike i nastavna sredstva, Schritte international 1, Grammatikspiele.

Literature in German:
3. Pude E. A., Specht F.: Menschen, Deutsch als Fremdsprache Kursbuch mit DVD-ROM, udžbenik, Hueber Verlag, Munchen, Deutschland, 2012.
4. Loibl B. et all.: Schritte Plus im Beruf, Kommunikation am Arbeitsplatz, Max Hueber Verlag, Ismaning. Deutschland, 2015.
5. Becker N., Braunert J.: Alltag, Beruf, Kursbuch+Arbeitsbuch, Max Hueber Verlag, Ismaning, 2009.
6. Becker N., Braunert J., Schlenker W.: Unternehmen Deutsch Grundkurs. Kursbuch, Klett Verlag, Stuttgart, 2005.
7. Becker N., Braunert J.: Unternehmen Deutsch Grundkurs, Arbeitsbuch, KlettVerlag, Stuttgart, 2004.
8. https://www.hueber.de/seite/pg_lernen_lerner_dvd_mns, knjiga i link.
9. https://www.hueber.de/seite/pg_lernen_uebungen_mns, dodatne on line vežbe.
10. Grammatik - Ganz klar Übungsgrammatik A1-B1, uz audio materijal, Hueber Verlag, kratak pregled gramatike sa vežbanjima „Hallo aber Deutsch“.
11. www.schubert.

Number of classes:

Lectures	Exercises	Other classes (professional practice...)	Study research work (Degree Paper...)	Other forms of teaching (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
lectures, practical exercises, communication, e-learning.

Grading (maximum 100 points)

Pre-Exam obligations	Points	Final Exam	Points
Lecture attendance	3	Exam	30
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	40		
Colloquiums	20		

SPORTS MEDICINE

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Sports Medicine**
Language of instruction:	English, Serbian
Course status:	mandatory
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Course objective:
Acquisition of knowledge on specific features of etiology, pathogenesis, course, prognosis, prevention, treatment of sports injuries from the aspect of physiotherapy. Familiarization of students with basics of sports physiology and sports medicine, as well as of the manners of functioning of organs and organ systems at a higher, changed, level of psychophysical exertion.

Course outcome:
Upon the completion of the course and passing the exam, the student has a knowledge of general principles and rules of conduct in sports laboratory, he/she is familiar with principal laboratory procedures of functional testing and skills in conducting laboratory tests. The student is familiar in detail with the manner of blood and urine taking and preparation and with methods of elementary laboratory blood and urine tests used in sports medicine practice. In addition to that, the student has knowledge of basic electrophysiology methods, has experience in register keeping, is able to recognize the basic registered parameters, independently measure artery blood pressure, heart auscultation, determine respiratory volumes, oxygen maximal uptake etc.

Course content:
Lectures
Physiotherapeutic diagnostics assessment, plan and programme of physiotherapy within the treatment and rehabilitation of acute, endogenous, exogenous injuries in sport, soft tissue (contusions, distension, rupture of musculotendinous tissues and capsular ligament lesions) and bone and joint system, endogenous chronic sports diseases (capsular ligament lesion systems), post-operational procedures within sports medicine (arthroscopic interventions and invasive orthopaedic surgical intervention). Neuromuscular junction synapse. Mediating and basic mechanisms of synaptic transmission. Division of muscles. Morphopysiological characteristics of skeletal muscles. Skeletal muscle contraction. Motor unit. Tonus and thermogenesis. Muscle functioning, strength and fatigue. Physical aspects of man work (force, strength, function). Smooth muscles. Gas properties. Ventilation. Lung volume and capacity. Transport of gases to the cells. Primary and supportive respiratory muscles.
Intrapleural pressure. Respiration control. Types of breathing. Breathing in conditions of reduced and increased atmospheric pressure. Blood plasma. Erythrocytes. Leucocytes. Immunities and immune bodies. Thrombocytes. Blood clotting and hemostasis. Blood types. Transfusion and transplantation. Bloodstream – functional division. Morphofunctional characteristics of the cardiac muscle. Cardiovascular haemodynamics. Cardiac conduction system. Athlete's heart. Electrocardiography – registration and analysis. Cardiac muscle contraction regulation. Capillary exchange. Peripheral circulation. Puls: definition, types and characteristics. Venous blood flow. Lymphatic system. Neurohumoral mechanisms of blood vessel tonus regulation. Anabolism and katabolism. Mineral substances and vitamins. Energy exchange study methods, energy depositing. Respiratory coefficient. Glycogen supercompensation. Lactic acid. Basal metabolic rate. Energy exchange under strain. Devising daily meal. Acid-base balance regulation. Chemical and physiological buffer systems. Glycaemia regulation. Calcium level regulation. Protein metabolism regulation (impact of physical activity on anabolic process in organism). Membrane potential. Action potential. Irritation rules. Neuron. Synapse division in the CNS. Neuromediators. Reflexes. Basal gangliae and dynamic stereotype forming. Cerebellum, vestibular system, proprioception and the role of balance. Tactile and thermal reception. Viscereroreception. Smell and taste reception. Pain reception. Hypothalamus. Brain limbic system. Cerebral cortex. Dream. Learning and remembering. Consciousness. Energy capacities and their measuring. Steady state. Sports training and types of training. Theory of stress, stress stages, stressor. The role of sport and recreation according to the modern theory of functional systems in the reception and adaptation of organism to the adverse effects of stress. Overtraining and its implication on functional abilities of athletes, injury suffering. Chronobiology and its importance in sport.
Exercises
Testing functional capabilities (selection of a functional test, selection of a type of strain). Determining aerobic capacity (determining maximum oxygen consumption), anaerobic test, maximum strength, average strength, explosive strength, fatigue index; determining oxygen debt and oxygen deficit). Determining stabile state (test selection, monitoring cardiac frequency, monitoring respiratory parameters, monitoring oxygen consumption). Determining cardiac frequency (palpation, ascultation, monitoring cardiac frequency – ECG). Measuring artery blood pressure (TA monitoring – while resting and in the course of functional tests). Dynamometry (familiarization with the device and basic parameters of dynamometric testing of muscle strength, arm flexor strength, testing arm extensor and leg extensor). Body composition testing – basic anthropometric measurement (basic instruments – scale pelvimeter, sliding caliper, caliper, tape measure); determining BMI; determining somatotype, Heath-Carter constitution calculation; determining body fat mass using bioelectric impedance.

Literature:
Literature in Serbian:

1. Grujić N.: Fiziologija sporta, udžbenik, Futura, Petrovaradin, 2000.
2. Pećina M. i sar.: Sportska medicina, udžbenik, Medicinski fakultet, Zagreb, 2003.
3. Banović D.: Povrede u sportu, udžbenik, Draslar partner, Beograd, 2006.
4. Barak O. i sar.: Praktikum iz fiziologije sporta, Futura, Petrovaradin, 2006.
5. Nikolić Ž.: Fizikalna terapija lokomotronog aparata, Zavod za izdavanje udžbenika i nastavnih sredstava, Beograd, 2002.
6. Pećina M.: Sindromi prenaprezanja sustava za kretanje , Globus, Zagreb, 2006.

Literature in English:

7. Costill D, Wilmore J.: Physiology of Sport and Exercise, Human Kinetics, Ravena Press, London, 2015.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums/exam	30		

SPORTS ACTIVITIES OF PERSONS WITH DISABILITIES

Study program:	Physiotherapy
Type and level of study:	undergraduate professional studies
Course:	**Sports Activities of Persons with Disabilities**
Language of instruction:	English, Serbian
Course status:	elective
Semester:	third year, sixth semester
ECTS:	5
Requirement:	no

Course objective:
Acquisition of knowledge and skills in evaluating daily needs of patients and activities from an aspect of physiotherapy, as well as functional abilities necessary to carry them out.

Course outcome:
The expected outcome of studying is tranining of students in organization and realization of certain sports activities of disabled persons, whereas the desired outcome of studying is training of students to creatively participate in devising such activities.

Course content:
Theory classes
Types and degrees of disability; groups of sports activities according to the degree and type of disability; principles of training in sports activities; team approach; drawing up plan and programme of activities; evaluation of functional capabilities of patient from an aspect of physiotherapy; analysis of activities; methods of practising self-care activities and everyday life; selection of a practising method; selection of physiotherapeutic procedures; aids and adaptations for self-care and activities of disabled persons; the role of physiotherapist and work therapist in the process of training of different categories of temporarily or permanently disabled patients (neurological, rheumatic, surgical disability); methods in education and training of children in self-care; self-care of elderly persons; specific characteristics of work within visiting service; the role of family; disability as a lifestyle; psychical stability, power of will.
Practical classes
Groups of sports activities of disabled persons; drawing up a training plan for disabled persons according to disability degree; practical application and interpretation of FIM and KATZ indexes; analysis and practising sports activities according to actual capabilities of disabled persons; analysis of self-care activities in patients with hip endoprosthesis, lumbar disc herniation and different types of disabilities in children; examples from practice.

Literature:
Literature in Serbian:
1. Kasum G.: Sport osoba sa invaliditetom, udžbenik, Fakultet sporta i fizičkog vaspitanja, Beograd, 2015.
2. Indira J., Zehrudin J., Kada D., Adnan T.: Sport rekreacija i didaktičke igre osoba sa posebnim potrebama, udžbenik, Mark, Sarajevo, 2005.
3. Vučić R., Marković P., Savković N.: Klinička radna terapija - praktikum sa terapeutskim medicinskim podsetnikom, Alternativa, Beograd, 2006.
4. Kanjuh Ž.: Principi obučavanja u aktivnostima svakodnevnog života - praktikum za potrebe studenata smera strukovni radni terapeut, Visoka medicinska škola, Beograd, 2011.
Literature in English:
5. Hayley F.: Disability and Youth Sport, Taylor & Francis, Boston, 2009.

Number of classes:

Lectures	**Exercises**	**Other classes** (professional practice...)	**Study research work** (Degree Paper...)	**Other forms of teaching** (individual work with student, projects…)
30	30	0	0	0

Methods of teaching:
Lectures, exercises, case analysis, e-learning.

Grading (maximum 100 points)

Pre-Exam commitments	**Points**	**Final Exam**	**Points**
Lecture attendance	3	Exam	40
Activity	7		
Projects/Seminars	0		
Exercises/professional practice	20		
Colloquiums/exam	30		