Study plan

Name of study plan: Optics and Optometry

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Optics and Optometry

Type of study: Bachelor full-time

Required credits: 180 Elective courses credits: 0 Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 180

The role of the block: Z

Code of the group: F7PBO POV 21

Name of the group: Optics and Optometry

Requirement credits in the group: In this group you have to gain 180 credits

Requirement courses in the group: In this group you have to complete 57 courses

Credits in the group: 180

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
F7PBOAF1	Human Anatomy and Physiology I. Jakub Tlapák Jakub Tlapák Jakub Tlapák (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBOAF2	Human Anatomy and Physiology II. Jakub Tlapák Jakub Tlapák Jakub Tlapák (Gar.)	Z,ZK	4	2P+2C	L	Z
F7PBOAFPO	Anatomy, Physiology and General and Special Pathology of Eye Jakub Arendá , Libor Eichenmann Libor Eichenmann Libor Eichenmann (Gar.)	ZK	2	2P	Z	Z
F7PBOBP	Bachelor Thesis Petr Písa ík, Martin F s, Iva Klimešová, Monika Donevová, Jana Urzová, Markéta Žáková, Veronika Vym talová, Lenka Lhotská, Ján Lešták, Petr Písa ík Petr Písa ík (Gar.)	Z	10	4XT+1.5S	S L	Z
17BOZP	Occupational Safety and Health, Fire Protection and First Aid Petr Kudrna Petr Kudrna (Gar.)	Z	0	1P	Z	Z
F7PBOBV	Binocular Vision Markéta Žáková, Ond ej Policar, P emysl Ku era Ond ej Policar Markéta Žáková (Gar.)	Z,ZK	7	2P+4C	Z	Z
F7PBOBCH	Biochemistry for Optometrists Romana Široká Romana Široká (Gar.)	Z,ZK	2	1P+1C	Z	Z
F7PBOBLG	Biology for Optometrists Aneta Buchtelová, Ta ána Jarošíková, Hana Vrbová, Kristýna Marková Ta ána Jarošíková Ta ána Jarošíková (Gar.)	Z,ZK	4	2P+2L	Z	Z
F7PBOBT	Spectacles Technology Jakub Král Jakub Král (Gar.)	Z,ZK	6	2P+4C	Z	Z
F7PBOCHO	Chemistry for Optics and Optometry Romana Široká Romana Široká Romana Široká (Gar.)	Z,ZK	3	2P+1C	L	Z
F7PBOEVO	Economy and Management Martina Caithamlová Martina Caithamlová (Gar.)	KZ	2	1P+1S	Z	Z
F7PBOFO	Pharmacology of Eye Ján Lešták Ján Lešták (Gar.)	Z	2	2P	L	Z
F7PBOFYZ	Physics for Optometrists Petr Písa ík, Jana Urzová, Eva Urbánková, Jan Mikšovský Petr Písa ík Jana Urzová (Gar.)	Z,ZK	4	2P+2C+1L	L	Z
F7PBOGMB	Genetics and Molecular Biology for Optometrists Veronika Vym talová, Aneta Buchtelová Veronika Vym talová Veronika Vym talová (Gar.)	Z,ZK	3	2P+2C	L	Z

F7PBOHO	General Histology and Histology of Eye Kamila Procházková, Ji í Uhlík Ji í Uhlík (Gar.)	KZ	2	1P+1C	Z	Z
F7PBOHE	Hygiene and Epidemiology Lucie Lidická Emil Pavlík Emil Pavlík (Gar.)	KZ	2	1P	L	Z
F7PBOITT	Information Technologies and Telemedicine Lenka Lhotská Lenka Lhotská Lenka Lhotská (Gar.)	KZ	2	2P	Z	Z
F7PBOKC1	Contact Lenses I. Libor Eichenmann, Iva Klimešová, Markéta Žáková, Ji í Michálek Libor Eichenmann Ji í Michálek (Gar.)	Z,ZK	3	2P+2C	L	Z
F7PBOKC2	Contact Lenses II. Libor Eichenmann, Iva Klimešová, Markéta Žáková, Ji í Michálek, Leontýna Varva ovská Ji í Michálek Ji í Michálek (Gar.)	Z,ZK	5	2P+2C	Z	Z
F7PBOKRV	Correction of Refractive Errors Ján Lešták Ján Lešták Ján Lešták (Gar.)	ZK	1	1P	L	Z
F7PBOLTL	Medical Terminology and Latin for Optometrists Dana Rebeka Ralbovská Dana Rebeka Ralbovská (Gar.)	Z	2	1P	Z	Z
F7PBOMCH	Macromolecular Chemistry for Optometrists Ji í Michálek Ji í Michálek Ji í Michálek (Gar.)	Z,ZK	3	1P+1C	Z	Z
F7PBOMAZ	Management and Administration in Healthcare Ji i erný Ji i erný Ji i erný (Gar.)	KZ	2	1P	Z	Z
F7PBOMVV	Metodology of Research Petr Písa ík, Marie Pospíšilová Petr Písa ík Marie Pospíšilová (Gar.)	KZ	2	1P+1S	Z	Z
F7PBOMI	Microbiology and Imunology Veronika Vym talová, Aneta Buchtelová Veronika Vym talová Veronika Vym talová (Gar.)	KZ	2	1P+1L	L	Z
F7PBONR	Clinical Refraction Ji í Novák Ji í Novák Ji í Novák (Gar.)	ZK	2	1P	Z	Z
F7PBONMP	Proposal and Management of Project Marie Pospíšilová Marie Pospíšilová Marie Pospíšilová (Gar.)	KZ	2	1P+1C	L	Z
F7PBOATO	Professional English Terminology for Opticians and Optometrists Eva Moty ková Eva Moty ková Eva Moty ková (Gar.)	Z	2	2S	L	Z
F7PBOP1	Professional Training I. Petr Písa ík, Markéta Žáková Petr Písa ík Petr Písa ík (Gar.)	Z	4	2XT	L	Z
F7PBOP2	Professional Training II. Petr Písa ík, Markéta Žáková Petr Písa ík Petr Písa ík (Gar.)	Z	20	10XT+1.5C	L	Z
F7PBOOFP	Opthalmology Instruments Martin F s, Ji í Novák Ji í Novák Ji í Novák (Gar.)	ZK	3	3P	Z	Z
F7PBOOK1	Opthalmology - Pathology, Clinic I. Martin F s. Šárka Pitrová Šárka Pitrová (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBOOK2	Opthalmology - Patology, Clinic II. Martin F s, Šárka Pitrová Šárka Pitrová (Gar.)	Z,ZK	3	2P+2C	L	Z
F7PBOOP1	Optical Laboratory I. Jakub Král Jakub Král (Gar.)	KZ	2	2C	L	Z
F7PBOOP2	Optical Laboratory II. Jakub Král Jakub Král Jakub Král (Gar.)	KZ	2	2C	L	Z
F7PBOOPAT	Optical Aids and Assistive Technologies for the Visually Impaired Zuzana Mudrová Zuzana Mudrová Zuzana Mudrová (Gar.)	Z,ZK	2	1P+1C	Z	Z
F7PBOOF	Physical Optics Petr Písa ík, Jan Mikšovský, Marie Pospíšilová, Ji í Novák Petr Písa ík Ji í Novák (Gar.)	Z,ZK	4	2P+2L	Z	Z
F7PBOOGB	Geometric and Opthalmic Optics Petr Písa ík, Ji í Novák Petr Písa ík Ji í Novák (Gar.)	Z,ZK	5	3P+2C	L	Z
F7PBOOVP	Optometry in Practice Markéta Žáková Markéta Žáková (Gar.)	KZ	2	2P+1C	Z	Z
F7PBOPTDK	Prospective Technologies for Diagnostics and Vision Correction Ji í Novák Ji í Novák Ji í Novák (Gar.)	KZ	2	2P	L	Z
F7PBOPZP	Problems of Persons with Visual Impairment Martina Králová Martina Králová (Gar.)	KZ	2	1P+1C	L	Z
F7PBOPVZ	Sales Skills and Employee Management Markéta Žáková, P emysl Ku era P emysl Ku era Markéta Žáková (Gar.)	KZ	2	2P	Z	Z
F7PBOPPP	Programming Tools and Fundamentals of Data Processing Petr Písa ík Petr Písa ík (Gar.)	Z	1	0.5P+0.5C	Z	Z
F7PBOPO	OPT Project Petr Písa ík, Martin F s, Iva Klimešová, Monika Donevová, Jana Urzová, Markéta Žáková, Veronika Vym talová, Lenka Lhotská, Ján Lešták, Petr Písa ík Markéta Žáková (Gar.)	KZ	5	4C	Z	Z
F7PBOPP	First Aid Pavel Böhm Pavel Böhm (Gar.)	KZ	2	1P+1C	L	Z
F7PBOPSO	Psychology and Communication Dana Rebeka Ralbovská Dana Rebeka Ralbovská (Gar.)	KZ	2	1P+1S	Z	Z
F7PBOSRB	Strabology and Basics of Orthoptics V ra Lehká V ra Lehká V ra Lehká (Gar.)	KZ	2	1P+1C	Z	Z

F7PBOSUR1	Subjective Refraction I. Markéta Žáková, Leontýna Varva ovská Markéta Žáková Markéta Žáková (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBOSUR2	Subjective Refraction II. Markéta Žáková, Leontýna Varva ovská, P emysl Ku era Markéta Žáková Markéta Žáková (Gar.)	Z,ZK	4	2P+4C	L	Z
F7PBOUO	Introduction to Optics and Optometry Petr Písa ík, Jana Urzová, Markéta Záková, Ján Lešták, Eva Urbánková, Ji í Novák Petr Písa ík Petr Písa ík (Gar.)	Z,ZK	2	1P+1C	Z	Z
F7PBOVKM	Selected Chapters from Mathematics for Optometrists Jana Urzová, Lukáš Liebzeit Lukáš Liebzeit Jana Urzová (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBOVZF	Diagnostic of Visual Functions Ján Lešták, P emysl Ku era P emysl Ku era Ján Lešták (Gar.)	KZ	2	1P+1C	Z	Z
F7PBOZFO	Foundations of Physiological Optics Jií Novák Jií Novák Jií Novák (Gar.)	ZK	2	2P	L	Z
F7PBOZPE	Fundamentals of Pedagogy and Education Monika Donevová Monika Donevová (Gar.)	KZ	2	1P+1C	L	Z
F7PBOZSM	Fundamentals of Statistics and Measurement Processing Jana Urzová, Lukáš Liebzeit Lukáš Liebzeit Jana Urzová (Gar.)	KZ	3	1P+2C	Z	Z
F7PBOVLZ	Fundamentals of Public Health Care and Legislation in Health Care Jan B íza Jan B íza Jan B íza (Gar.)	KZ	2	2P	L	Z
F7PBOEO	Medical Ethics Martina Dingová Šliková Martina Dingová Šliková (Gar.)	Z	1	1P	Z	Z

Characteristics of the courses of this group of Study Plan: Code=F7PBO POV 21 Name=Optics and Optometry

F7PBOAF1 | Human Anatomy and Physiology I.

The aim of Anatomy part of studying is to gain an overview of the structure and composition of the human body. The aim of Physiology part of studying is to understand the functioning of living matter based on the description of a cell and the exchange of chemicals, energy and information with the environment. Entry requirements of the course: - - Output knowledge, skills, abilities and competences: The course serves to understand the relationships between the structure and functions of the human body. The teaching follows modern pedagogical trends consisting in a direct connection between the morphology and the functions of organ systems. Seminar teaching is closely linked to the topics of lectures and connected with practical exercises. It focuses significantly on problems of program and uses activation methodologies to increase student motivation. The use of modern multimedia programs (eg

F7PBOAF2 Human Anatomy and Physiology II.

of pathological changes in the central nervous system, visual pathway and eye itself.

Z,ZK

Introduction to pathology: definition, goals, history, disease, symptoms. Etiology and pathogenesis of the diseases at the organ, tissue, cellular and molecular level. External factors of the deseases origin and development. Pathogenic stimuli. Wound healing. Inflammation as a defensive and autoaggressive phenomenon. Circulatory disorders, atrophy, necrosis. Tumors. Specific features of pathological changes of the central nervous system, eye, optical pathways.

ADAM and others) is a matter of course. From a theoretical and practical point of view, the main emphasis will be on the morphology and function of vital organs and systems.

F7PBOAFPO Anatomy, Physiology and General and Special Pathology of Eye

ZK

Definitions, goals, history, diseases, symptomatology. Etiology and pathogenesis of a disease on a tissular, cellular and molecular level. External factors of the origin and development of the disease. Pathogenic impulses. Wound healing. Inflammation as a defensive and autoaggressive phenomenon. Circulatory disorders, atrophy, necrosis. Tumours. Specific features

F7PBOBP Bachelor Thesis

Ζ

Work of the student under the guidance of the supervisor and possible consultant on the assigned BP topic, using knowledge and skills from previous courses and in the allotted time. Outcome knowledge, skills, abilities and competences: The student is able to work on the assigned topic in a defined format, in a defined time and is able to work under the guidance of the BP supervisor and also in a team. The student is able to use knowledge, skills and knowledge from previous courses to solve the assigned problem. This is a Bachelor's thesis, which is defended in front of the HSS committee. This thesis is assessed by the supervisor and the opponent according to the ECTS grading scale. Subsequently, these evaluations

and the result of the state final examination in the subject areas are included in one final evaluation.

17BOZP Occupational Safety and Health, Fire Protection and First Aid Z 0

F7PBOBV Binocular Vision Z.ZK 7

This course builds on courses dealing with refraction of the eye and visual functions. Topics include: theory of binocular vision and conditions of its origin, development of visual functions, disorders of binocular vision, practical examination of binocular vision, heterophoria and fixation disparity, relationship of accommodation and vergence, vergence disorders and visual training.

F7PBOBCH Biochemistry for Optometrists

Z,ZK

2

The course is aimed at providing students with the basic knowledge of biochemistry, the structure and properties of biochemically important substances that make up living organisms, and the principles of metabolic and energy transformations in organisms. Emphasis is placed on understanding the importance of these substances to the life of organisms and linking the knowledge gained to the wider context. During the lectures, students will get to know the basics of biochemistry of organ systems and some important pathologies Attention is also paid to the biochemistry of vision.

F7PBOBLG Biology for Optometrists

Z,ZK

4

In the course the student will gain clear knowledge of general and cell biology, through the formation of cells and organelles (endosymbiotic theory) and basic chemical composition of cells (simple inorganic and organic substances, carbohydrates, fats, amino acids, biopolymers - NK and proteins), construction of non-cellular forms (especially viruses) and cells, both prokaryotic (bacteria) and eukaryotic (plant, animal and fungal cells), they will also get acquainted with cell metabolism (anabolism and catabolism), growth and cell differentiation, division (cell cycle and its regulatory mechanisms) to after extinction by apoptosis and necrosis. They will get acquainted with the basics of microbiology (viral and bacterial diseases of man) and applications in technical and medical fields. He will gain detailed knowledge about the internal structure of the eukaryotic cell, its endomembrane system and semiautonomous organelles and the processes that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necessary for the implementation of genetic information, the processes of replication, transcription, translation (ie proteosynthesis) and gene expression, the genetic code. In general genetics with basic genetic terminology and processes of passing genetic information from parents to offspring according to Mendel's and Morgan's laws, changing genetic information in the form of mutations and possibilities of repair in the cell. Human genetics (clinical genetics) includes basic examination methods and human genetic diseases (autosomal dominant, recessive, gonosomal dominant, recessive, mitochondrial and others). Following the great development of molecular biology and biochemistry techniques, the student is acquainted with genetic engineering and its methods of genetically modified organisms and their preparation, as well as tissue cultures and biotechnologies. Applied biology in technical and medical fields describes the use of biological structure

F7PBOBT Spectacles Technology

Z,ZK

6

The student is introduced to the basic operation of the Optical Laboratory. The student learns the habits that are standard in completing spectacle correction. The student learns to obtain individual client parameters, centration and selection of the appropriate lens for subsequent eyeglass fitting. The student also learns to adjust and repair spectacle correction.

F7PBOCHO Chemistry for Optics and Optometry	Z,ZK 3	
Students will learn the basic areas of applied chemistry, organic chemistry, polymer chemistry and macromolecular chemistry in		
F7PBOEVO Economy and Management This course provides a portfolio of tools from micro-economics, presents basic economic terms, legal forms of entrepreneurship	KZ 2	2
contents of the subject are the problematics of accounting statements (P&L, balance sheet, cash flow). The subject al		
price strategy and the tax system. Students will get a general overview of the company and its key functional areas.	,	,,
F7PBOFO Pharmacology of Eye	Z 2	
Pharmacokinetics of drugs into the eye, application of drugs, the therapeutic effect and side effects. The most commonly used d		
F7PBOFYZ Physics for Optometrists	Z,ZK 4	
The course represents for students a unit that will allow them to gain basic knowledge in the areas of: mechanics, thermodynam		-
especially in those sub-areas that they can use in further study and practice. Emphasis is placed on theoretical knowledge, but a quantities. The limits of classical physics will be presented in a suitable form.	also on solving problems and measuring selected	u
F7PBOGMB Genetics and Molecular Biology for Optometrists	Z,ZK 3	
General genetics: basic genetic expressions. Genotypes and Phenotypes. Mendel's theory of inheritance. Basis of clinical genetic	1 ' 1	
and gonosomal heredity and monogenic autosomal and gonosomal hereditary dominant and recessive disorders, polygenic her	-	
$types\ of\ mutations\ and\ mutations\ consequences, physical,\ chemical\ and\ biological\ mutagens.\ Carcinogenesis,\ cell\ cycle\ regulation,$		
changes in tumors. Clinical cytogenetics. Inborn chromosomal abnormalities numerical and structural, causes of chromosomal a		
chromosomal abnormalities. Immunogenetics, heredity of blood groups. Prenatal cytogenetic diagnosis - methods, indications, en hybridization in situ. Methods in Assisted Reproduction Technology. Molecular biology. Genetic Engineering. DNA cloning. Gene		S,
F7PBOHO General Histology and Histology of Eye	KZ 2	
Basics of cytology, general histology, microscopic anatomy, and embryology. Basics of processing samples for histological exam	1 1 -	essorv
structures. Development of eye in human embryo.		,
F7PBOHE Hygiene and Epidemiology	KZ 2	
Students should learn theoretical basics of Epidemiology and Hygiene disciplines in depth covered by lecture topics. As result o	f this subject, student should be familiar with targ	gets
and working methods used in all disciplines of infectious and non-infectious epidemiology, environmental epidemiology and in so		
Protection. Outcoming knowledge, skills, abilities and competences: Knowledge of basic methods used in preventive medical dis		
F7PBOITT Information Technologies and Telemedicine	KZ 2	
The aim of the course is to introduce to students the basics of information technology and telemedicine at the level of a more procomprehensive overview of the use of information technology in medicine and telemedicine, and specifically in the field of optics		
overview and knowledge of the principles and mechanisms, so that the student has a clear idea of the possibilities and risks associated and risks associated and the possibilities and risks associated and risks associat	. , ,	
Based on the acquired knowledge, the student should be able to choose appropriate hardware and software solutions according		
have a basic awareness of security in IT. The student should get a good basis for the use of information technology.		
F7PBOKC1 Contact Lenses I.	Z,ZK 3	
Contact lens history and development. Contact lens terminology. Manufacturing methods. Classification of contact lenses and the		-
Different methods of contact lens wearing and replacement. Contact lens care: composition and principles of action. Indications	·	
and rigid lenses. Instrumentation of contact lens practice. Patient history, basic examination and contact lens selection. Instruction lens insertion and removal.	ons regarding handling and contact lens care. Co	macı
F7PBOKC2 Contact Lenses II.	Z,ZK 5	
Toric contact lenses, Bifocal and multifocal lenses and other methods of presbyopia correction. Contact lenses for children. Coloure		peutic
use of contact lenses. Special types of contact lenses. Special uses of contact lenses (sports, demanding occupations and envir	·	•
interactions with contact lenses. Complications of contact lenses and their solutions. Application of soft and rigid spherical lense	s. Application of contact lenses in astigmatism ar	nd
presbyopia. Basic and specific care of contact lenses. Inspection of patients with contact lenses.		
F7PBOKRV Correction of Refractive Errors	ZK 1	
Subject is focused on theory and practical examination of refractive errors and various possibilities of correction of refractive error Objective methods of refraction. Correction of myopia. Correction of hypermetropia. Correction of myopia.		
of binocular balance. Basic techniques of surgical correction of refractive errors. Refractive surgery. Methods of laser keratorefra	. , ,	HallOH
F7PBOLTL Medical Terminology and Latin for Optometrists	Z 2	
During the course, students are introduced to individual terms based on Latin as well as Greek expressions. Students are continuous	l l	
and therapeutic procedures. Teaching takes place mainly in the form of self-study.		
F7PBOMCH Macromolecular Chemistry for Optometrists	Z,ZK 3	
An introduction to macromolecular chemistry with respect to contact lens and spectacle optics materials. In particular, common	types of polymers and their structural units will be	е
discussed, with a focus on selected materials that somehow enter into the manufacturing process of contact lenses, respectively		
of their monomers (MMA, HEMA, MA, NVP, CAB, etc.). Attention will be paid to the basic concepts and laws in macromolecular glass transition temperature, polymerization degree, molar mass of polymers, types of polymer structures, types of polymerization		
on radical polymerization with its individual phases). In the context of contact lens materials, copolymerization issues will be exp		
attention will be paid to polymer gels, network structure, characterization of gels, rubbery elasticity, hydrogels, polysiloxanes, sili		
selected properties (botnation properties, mechanical properties, optical properties) and how to determine them. In addition to the	ne application of hydrogels in medical and techni	ical
practice, polymers for spectacle optics and "auxiliary" polymers used in contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP,) will be a contact lens manufacturing or packaging (PE, PP, PP, PP, PP, PP, PP, PP, PP, PP,	pe continuously emphasized. Crosslinking agents	S,
stepwise polyreactions and polymer analogue reactions will also be mentioned.	1 17	
F7PBOMAZ Management and Administration in Healthcare	KZ 2	
Getting to know the structure of the health sector and financing models Health. Zoom administrative management issues various interconnection. Orientation in the specific features of health facilities and European systems of health care workplaces.	s types of medical workplaces, their necessary	
F7PBOMVV Metodology of Research	KZ 2	
F7PBOMI Microbiology and Imunology	KZ 2	
Microbiology: Microorganisms, division. Non-cellular forms of infections - viruses. Procaryotes. Bacterial cell structure and function	l l	a.
Eucaryotes. Cell structure and function of eukaryotic microorganisms - fungi, protozoa. Metabolism and growth of microorganisms		
of environmental factors on the growth of microorganisms - temperature, pH. Antimicrobials - antivirals, antibiotics and chemothera	peutics, mechanism of action, disinfection, steriliz	zation.
The microbiome of the human body. Human microbial diseases. Infectious diseases of the eye caused by microorganisms - viral, the microbiome of the human body. Human microbial diseases.		
Cells and organs of the immune system. Antigens. Development of the immune response. The main histocompatibility complex. TI		
Cytokines. B lymphocytes and antibody production. Immunoglobulins. Defense functions of the immune system. Anti-infective im and immunity, the effect of human microbiome on the immune system. Immunopathology. Immunodeficiency. Autoimmune disea		uUII
and annually, the enect of numeri moreoletic of the immune system. Immunepathology, immuneticine ite. Autoinfillule disea		

F7PBONR	Clinical Refraction	ZK	2
	of causes and occurrence of refractive errors. Optical system of eye (schematic and reduced eye model, retinal image, visual	• •	
	opia, myopia, astigmatism, presbyopia, aphakia). Occurrence and frequency of refractive errors. Causes of refractive errors. A pia, aniseikonia. Measurement of refractive errors.	ccommodation a	nd its changes.
F7PBONMP	Proposal and Management of Project	KZ	2
	nated effort by a group of people, its types and stages of project design, SWOT analysis. Requirements for individual types of p		
	ct management, organization, coordination and implementation of the project. Presentation of the project. Team managemer	-	- 1
leadership. Determination	on of team types. Communication within the team and between managers and subordinates. Leadership workshops. Motivation	on. The system of	grant agencies
in the country. Getting p	roject abroad. Bachelor thesis as a project. Possibilities of software products for the design and management of the project		
F7PBOATO	Professional English Terminology for Opticians and Optometrists	Z	2
	s to improve and broaden communication skills and professional vocabulary and communication with the patient.		
F7PBOP1	Professional Training I. s to use the theoretical and practical knowledge acquired in lectures and exercises in real practice conditions. During classes.	Z Index the profes	4
	by contract), the student gradually learns the correct procedures and exercises in real practice conditions. Buring classes,	•	
· -	es, the grinding of spectacle lenses and the determination of objective and subjective refraction.	iai praotioo aio iii	o care, repair
F7PBOP2	Professional Training II.	Z	20
F7PBOOFP	Opthalmology Instruments	ZK	3
Functional principles of	different diagnostic and therapeutic ophthalmic devices will be discussed. Students will be able to test most of machines duri	ng practical lesso	ns at clinical
	physical principles, technical construction and parameters of following devices and methods will be studied: slit lamp, ophthal		
377	noscope, refractometer, tonometer, campimeter, Heidelberg retinal tomograph, optical coherence tomography, retinal nerve file	, ,	` '' '
	e, devices for subjective investigation of astigmatism, devices for investigation of ocular movements, corneal topohraphs, testing hines, Hertel exophthalmometer, devices for color vision testing.	or retractive balan	ice, eikonometer,
F7PBOOK1	Opthalmology - Pathology, Clinic I.	Z,ZK	4
	the basic symptoms of diseases of the eye and its surroundings, the individual parts of the eye and the ocular adnexa are gra	,	•
number of slides are use	ed to instruct students on the clinical examination of individual pathologies and their basic characteristics. Interpretation links	students to the ir	ntegration of
	natomy and physiology with the fundamentals of effective pharmacotherapy. The teaching follows modern trends in the diagnostic		1
	emented by video presentations of interesting cases. Interesting case studies from clinical practice are also demonstrated. The	_	
	and connected with practical exercises aimed at acquiring skills in investigation. With the help of quizzes, students can contin lectured material. In terms of theory and practice, the main emphasis is on the student's ability to acquire the most important	=	- 1
•	their future profession. Part of the training course is a full-day practical block, which students complete in ON KLADNO unde		·
ophthalmologist.		•	
F7PBOOK2	Opthalmology - Patology, Clinic II.	Z,ZK	3
	basic retinal diseases, their conservative and surgical treatment, general diseases and their influence on the eye, congenital	-	
· ·	almology and traumatology in ophthalmology. Instruction links students to the integration of anatomy, pathological anatomy and		
•	erapy. The teaching follows modern trends in the diagnosis and treatment of pathological conditions, and is supplemented by ons of interesting case reports from clinical practice. Theoretical teaching is closely linked to the topics of the lectures and cor	•	•
	redge and skills in practical investigation of a given pathology of the eye. Using quizzes, students can continuously check their k	· · · · · · · · · · · · · · · · · · ·	
• •	terms of theory and practice, the main emphasis is on the student's ability to acquire the most important knowledge that they	_	· .
in their future profession	n as an optometrist. Exercises at the FBMI CTU will be followed by a tour of the departments of the Eye Clinic JL, where they	participate in the	operation at the
	rectly in the operating room. They will participate in cataract surgery procedures using modern technologies such as virtual na		
	able to test their knowledge using a 3D virtual reality studio designed for ophthalmology training. They will have a guided tour e in practical blocks at ophthalmology clinical departments (Ophthalmology Department of Kladno Hospital, Ophthalmology C	-	
	y in Prague and Ophthalmology Department of Kolín Hospital), where they get acquainted with the organization of operation,		
	under the guidance of ophthalmologists in general and specialized departments such as retinal or glaucoma outpatient clinic		
students gain a broad th	neoretical and practical overview of the problems and diagnosis of eye diseases, including their treatment or surgical interven	tion.	
F7PBOOP1	Optical Laboratory I.	KZ	2
	students will learn the basics of spectacle lens and frames applications with respect to refractive status of the eye and practic		, ,
•	logy (cutting, grinding, edging, polishing) of spectacle lenses processing, centering the lens, bevelling the lens into frames ar sible to apply theoretical knowledge from opthalmic optics in practice.	id adjusting the s	pectacle frames.
F7PBOOP2	Optical Laboratory II.	KZ	2
	students will learn the fundamental methods for practical dispensing of individual spectacle lenses. Students will practice the		
	nd of individual spectacle lenses processing. Dispensing progressive and degressive spectacle lenses. The course makes possi		•
from opthalmic optics in	practice.		
F7PBOOPAT	Optical Aids and Assistive Technologies for the Visually Impaired	Z,ZK	2
F7PBOOF	Physical Optics	Z,ZK	4
	e familiar with the basic parts of physical optics, which will enable him to better understand the professional issues of eye opti		
	pasics and application of physical optics in technology and biomedicine. Individual physical phenomena and processes from t and polarization of light) are discussed in detail here, together with their consequences and practical applications in the field		
	hods used in optometry. The basics of the photon theory of light, the quantum principle of the interaction of light with matter, t		
-	ce, technology, and biomedicine, especially in the field of optometry and ophthalmology, are also mentioned. The exercises ta		
optical measurements.			
F7PBOOGB	Geometric and Opthalmic Optics	Z,ZK	5
	basics of geometrical optics and its applications in the field of optical design of simple optical elements and systems (lenses,		
correction of refraction e	course deals with a description and analysis of a human eye as an optical imaging system. The design and analysis of variou errors is presented	is types of specia	icie ienses ioi
F7PBOOVP	Optometry in Practice	KZ	2
F7PBOPTDK	Prospective Technologies for Diagnostics and Vision Correction	KZ	2
	future applications of modern methods for diagnostics of a human eye and correction of aberrations of an eye. Techniques of		
	of the eye, analysis of an influence of aberrations on vision and possibilities to apply these factors into the design of ophthalm		
	on optical properties and aberrations of an eye, possibilities of anterior segment analysis and its application for the correction of the	he eye. Trends in	the development
ot ophthalmic corrective	tools, methods and instruments for a superior diagnostics and analysis of properties of the eye.		

F7PBOPZP	Problems of Persons with Visual Impairment	l KZ	2
Education and training	g - integration. Social and legal problems. Psychological care for persons with visual impairment. Organizations of seriously vis	1	
	tory tools (camera magnifiers, digital magnifiers). Non-optical compensatory tools (white cane, indicators of light and surface,		
	nental adaptations for persons with visual impairment. Rehabilitation of persons with vision handicap. System of training in usi		
	cial devices for persons with visual impairment.	0 1 1	, 0
F7PBOPVZ	Sales Skills and Employee Management	KZ	2
F7PBOPPP	Programming Tools and Fundamentals of Data Processing	Z	1
_			
	d on the practical mastery of such software tools, which the student will use not only during their studies, but especially will us aims to get acquainted with modern software and focuses on office applications, processing and visualization of experimental		
	e course are aligned with the syllabus of the internationally recognized concept of testing computer knowledge and skills ECD		
License).	e course are anytied with the synabus of the internationally recognized concept of testing computer knowledge and skills ECD	L (Luropean Comp	dier Driving
	ODT Project	V7	5
F7PBOPO	OPT Project	KZ	_
	e is methodical guidance of students in scientific research or development activities in the field of Optics, Optometry or Ophth f the project, which will lead to the final Bachelor's Thesis (BP). The secondary objective of the course is to guide students in the		
	signed task, applying the practices of the field to the tasks or projects solved by the students, as well as deepening the comm	-	
	ing the knowledge of typographic rules, including proofreading marks, etc.	unication skills of ti	ie students. La
-		1/7	0
F7PBOPP	First Aid	KZ	2
•	rief overview of the main principles and procedures of providing emergency first aid with special attention to the procedures for		ai functions an
	ions. The subject also includes situations of mass casualty of victims in crisis situations and emergencies, including the pheno	1	
F7PBOPSO	Psychology and Communication	KZ	2
=	tudents will be acquainted with the problems of psychology of patients, with mental states in diagnostic - therapeutic activities, in		-
	atment and in coping with chronic states of the disease. Students are provided with theoretical knowledge of basic psychologi	•	
	ious types and degrees of damage to health, instructions on how to manage difficult situations in care about the individual ne	eds of the sick, disa	ibled and dying
•	the importance of caring for the mental state of health professionals.	1	
F7PBOSRB	Strabology and Basics of Orthoptics	KZ	2
F7PBOSUR1	Subjective Refraction I.	Z,ZK	4
3asic knowledges at	out refraction of the eye. Techniques of the subjective refraction perform testing frame or the phoropter. Techniques of the exa	mination near vision	٦.
F7PBOSUR2	Subjective Refraction II.	Z,ZK	4
	students deepen their theoretical knowledge and practical skills of subjective refraction with the test frames and test sets of gla	1 '	will follow on
-			
-	actice working with phoropter and other techniques. The teaching will also cover specific and difficult refractive conditions and	the relationship be	tween refractiv
-	eneral diseases. An essential topic is the examination of pediatric patients and patients with specific needs. An important score	pe of the subject is	an introduction
to the examination of	binocular vision.		
to the examination of	binocular vision. Introduction to Optics and Optometry	Z,ZK	2
to the examination of F7PBOUO The course summari	binocular vision. Introduction to Optics and Optometry zes the knowledge of optics and optometry and is an introductory course that will show students the possibilities of their future	Z,ZK e profession. During	2 the lectures,
to the examination of F7PBOUO The course summaristudents will be acqu	binocular vision. Introduction to Optics and Optometry zes the knowledge of optics and optometry and is an introductory course that will show students the possibilities of their future ainted with the basic concepts, development, current state and future of the field studied. Students will get acquainted with the	Z,ZK e profession. During	2 the lectures,
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to the examination of F7PBOUO The course summaristudents will be acquoptics using selected F7PBOVKM The course summaricalculus of real function of trigonometric expressions.	Introduction to Optics and Optometry zes the knowledge of optics and optometry and is an introductory course that will show students the possibilities of their future ainted with the basic concepts, development, current state and future of the field studied. Students will get acquainted with the numerical problems. Emphasis is placed on getting acquainted with the content and basic concepts of further study. Selected Chapters from Mathematics for Optometrists zes and systematizes the secondary school curriculum and builds on them. Students will get acquainted with the basics of line ons of one real variable in applications. Emphasis is placed on the requirements of further study - solving equations of various typessions and geometry of conic sections and the mutual position of the sphere and the plane.	Z,ZK e profession. During e basics of ray, wav Z,ZK ear algebra, differer pes and their systen	2 If the lectures, e and quantum 4 Itial and integra
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List of courses of this pass:

i	Name of the course	Completion	Credits
17BOZP	Occupational Safety and Health, Fire Protection and First Aid	Z	0
F7PBOAF1	Human Anatomy and Physiology I.	Z,ZK	4
	ly part of studying is to gain an overview of the structure and composition of the human body. The aim of Physiology part of studying is t		functioning
	ed on the description of a cell and the exchange of chemicals, energy and information with the environment. Entry requirements of the		-
_	competences: The course serves to understand the relationships between the structure and functions of the human body. The teaching		_
	in a direct connection between the morphology and the functions of organ systems. Seminar teaching is closely linked to the topics of I		
_	is. It focuses significantly on problems of program and uses activation methodologies to increase student motivation. The use of moder		
	ers) is a matter of course. From a theoretical and practical point of view, the main emphasis will be on the morphology and function of v		
			•
F7PBOAF2	Human Anatomy and Physiology II.	Z,ZK	4
-	nology: definition, goals, history, disease, symptoms. Etiology and pathogenesis of the diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and diseases at the organ, tissue, cellular and molecular and the organ and the organ at the organ, tissue, cellular and molecular and the organ and the organ at the		
the deseases orig	gin and development. Pathogenic stimuli. Wound healing. Inflammation as a defensive and autoaggressive phenomenon. Circulatory di	isorders, atrophy,	necrosis.
	Tumors. Specific features of pathological changes of the central nervous system, eye, optical pathways.		
F7PBOAFPO	1 3, 3 3, 1	ZK	2
Definitions, goals, h	nistory, diseases, symptomatology. Etiology and pathogenesis of a disease on a tissular, cellular and molecular level. External factors o	of the origin and d	evelopmen
of the disease. Path	nogenic impulses. Wound healing. Inflammation as a defensive and autoaggressive phenomenon. Circulatory disorders, atrophy, necros	is. Tumours. Spec	ific features
	of pathological changes in the central nervous system, visual pathway and eye itself.		
F7PBOATO	Professional English Terminology for Opticians and Optometrists	Z	2
	The aim of this course is to improve and broaden communication skills and professional vocabulary and communication with the page 1975.	atient.	
F7PBOBCH	Biochemistry for Optometrists	Z,ZK	2
	d at providing students with the basic knowledge of biochemistry, the structure and properties of biochemically important substances th	· .	
	of metabolic and energy transformations in organisms. Emphasis is placed on understanding the importance of these substances to the		•
	ned to the wider context. During the lectures, students will get to know the basics of biochemistry of organ systems and some important	-	
the knowledge gain		i patriologies Attei	וווטוו וא מואנ
E=DD0D10	paid to the biochemistry of vision.	7.71	
F7PBOBLG	Biology for Optometrists	Z,ZK	4
In the course the st	tudent will gain clear knowledge of general and cell biology, through the formation of cells and organelles (endosymbiotic theory) and b	asic chemical cor	nposition o
cells (simple inorga	inic and organic substances, carbohydrates, fats, amino acids, biopolymers - NK and proteins), construction of non-cellular forms (espe	ecially viruses) and	d cells, both
prokaryotic (bacte	eria) and eukaryotic (plant, animal and fungal cells), they will also get acquainted with cell metabolism (anabolism and catabolism), gro	owth and cell diffe	rentiation,
division (cell cycle	and its regulatory mechanisms) to after extinction by apoptosis and necrosis. They will get acquainted with the basics of microbiology	(viral and bacteria	al diseases
of man) and applica	ations in technical and medical fields. He will gain detailed knowledge about the internal structure of the eukaryotic cell, its endomembrane		
	ations in technical and medical fields. He will gain detailed knowledge about the internal structure of the editaryotic cell, its endomembrane	system and semia	autonomous
	processes that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necesses that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necesses that take place in them.	-	
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organelles and the pof genetic information	processes that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necessary	essary for the imp with basic genetic	lementatior terminology
organelles and the pof genetic information and processes of page 2.	processes that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necon, the processes of replication, transcription, translation (ie proteosynthesis) and gene expression, the genetic code. In general genetics w	essary for the imp with basic genetic of mutations and	lementatior terminology possibilities
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organelles and the p of genetic information and processes of particles of repair in the con- recessive, mitochoog	processes that take place in them. Following in the field of molecular biology, they will get acquainted with the basic processes that are necesses, the processes of replication, transcription, translation (ie proteosynthesis) and gene expression, the genetic code. In general genetics was assing genetic information from parents to offspring according to Mendel's and Morgan's laws, changing genetic information in the form sell. Human genetics (clinical genetics) includes basic examination methods and human genetic diseases (autosomal dominant, recess	essary for the imp with basic genetic of mutations and sive, gonosomal d genetic engineer	lementation terminology possibilities ominant, ing and its
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F7PBOFYZ	Physics for Optometrists	Z,ZK	4
•	ents for students a unit that will allow them to gain basic knowledge in the areas of: mechanics, thermodynamics, electricity and magr se sub-areas that they can use in further study and practice. Emphasis is placed on theoretical knowledge, but also on solving problei		
copedially in the	quantities. The limits of classical physics will be presented in a suitable form.	ms and measuring	Scicolou
F7PBOGMB	Genetics and Molecular Biology for Optometrists	Z,ZK	3
-	asic genetic expressions. Genotypes and Phenotypes. Mendel's theory of inheritance. Basis of clinical genetics: heredity of genetic dis	-	
_	redity and monogenic autosomal and gonosomal hereditary dominant and recessive disorders, polygenic heredity, examples of hered	=	-
	and mutations consequences, physical, chemical and biological mutagens. Carcinogenesis, cell cycle regulation, protooncogens, tumor su s. Clinical cytogenetics. Inborn chromosomal abnormalities numerical and structural, causes of chromosomal abnormalities origin, ex		
_	normalities. Immunogenetics, heredity of blood groups. Prenatal cytogenetic diagnosis - methods, indications, ethic problems in gene	•	
	hybridization in situ. Methods in Assisted Reproduction Technology. Molecular biology. Genetic Engineering. DNA cloning. Gene the	herapy.	
F7PBOHE	Hygiene and Epidemiology	KZ	2
	earn theoretical basics of Epidemiology and Hygiene disciplines in depth covered by lecture topics. As result of this subject, student s		Ŭ
_	thods used in all disciplines of infectious and non-infectious epidemiology, environmental epidemiology and in solving of priorities and section. Outcoming knowledge, skills, abilities and competences: Knowledge of basic methods used in preventive medical disciplines is	-	Спеаші
F7PBOHO	General Histology and Histology of Eye	KZ	2
	general histology, microscopic anatomy, and embryology. Basics of processing samples for histological examination. Histological stru	cture of eye and its	
	structures. Development of eye in human embryo.		
F7PBOITT	Information Technologies and Telemedicine	KZ	. 2
	sourse is to introduce to students the basics of information technology and telemedicine at the level of a more professional user. The s overview of the use of information technology in medicine and telemedicine, and specifically in the field of optics and optometry. Empl	_	
•	ledge of the principles and mechanisms, so that the student has a clear idea of the possibilities and risks associated with the use of con	•	-
Based on the acq	uired knowledge, the student should be able to choose appropriate hardware and software solutions according to the requirements o	f applications, he/s	he should
	have a basic awareness of security in IT. The student should get a good basis for the use of information technology.		
F7PBOKC1	Contact Lenses I.	Z,ZK	3
-	y and development. Contact lens terminology. Manufacturing methods. Classification of contact lenses and their materials. Material pro of contact lens wearing and replacement. Contact lens care: composition and principles of action. Indications and contraindications of	-	- 1
	strumentation of contact lens practice. Patient history, basic examination and contact lens selection. Instructions regarding handling a		
	lens insertion and removal.		
F7PBOKC2	Contact Lenses II.	Z,ZK	5
	s, Bifocal and multifocal lenses and other methods of presbyopia correction. Contact lenses for children. Coloured, cosmetic and prosthe ses. Special types of contact lenses. Special uses of contact lenses (sports, demanding occupations and environments, patients with		
	contact lenses. Complications of contact lenses and their solutions. Application of soft and rigid spherical lenses. Application of contact	-	1
	presbyopia. Basic and specific care of contact lenses. Inspection of patients with contact lenses.	· ·	
F7PBOKRV	Correction of Refractive Errors	ZK	1
=	on theory and practical examination of refractive errors and various possibilities of correction of refractive errors. Optical and surgical		
	of refraction. Subjective methods of refraction. Correction of myopia. Correction of hypermetropia. Correction ance. Basic techniques of surgical correction of refractive errors. Refractive surgery. Methods of laser keratorefractive surgery. Implant		
F7PBOLTL	Medical Terminology and Latin for Optometrists	Z	2
During the course,	students are introduced to individual terms based on Latin as well as Greek expressions. Students are continuously acquainted with	the dates of entire	diagnoses
	and therapeutic procedures. Teaching takes place mainly in the form of self-study.		
F7PBOMAZ	,	KZ	2
Getting to know	the structure of the health sector and financing models Health. Zoom administrative management issues various types of medical winterconnection. Orientation in the specific features of health facilities and European systems of health care workplaces.	orkplaces, their ne	cessary
F7PBOMCH	Macromolecular Chemistry for Optometrists	Z,ZK	3
	o macromolecular chemistry with respect to contact lens and spectacle optics materials. In particular, common types of polymers and		
	ocus on selected materials that somehow enter into the manufacturing process of contact lenses, respectively spectacle frames and leaves a selection of the sel		· ·
	(MMA, HEMA, MA, NVP, CAB, etc.). Attention will be paid to the basic concepts and laws in macromolecular chemistry (chain structur nperature, polymerization degree, molar mass of polymers, types of polymer structures, types of polymerizations and their methods, i		
-	ization with its individual phases). In the context of contact lens materials, copolymerization issues will be explained, including graft a	•	
attention will be p	paid to polymer gels, network structure, characterization of gels, rubbery elasticity, hydrogels, polysiloxanes, silicone hydrogels, include	ling their character	ization by
	es (botnation properties, mechanical properties, optical properties) and how to determine them. In addition to the application of hydrog	=	
practice, polymer	rs for spectacle optics and "auxiliary" polymers used in contact lens manufacturing or packaging (PE, PP,) will be continuously empha stepwise polyreactions and polymer analogue reactions will also be mentioned.	asized. Crossiinkin	g agents,
F7PBOMI	Microbiology and Imunology	KZ	2
	croorganisms, division. Non-cellular forms of infections - viruses. Procaryotes. Bacterial cell structure and function. Phylogenetic systems	l l	
-	ructure and function of eukaryotic microorganisms - fungi, protozoa. Metabolism and growth of microorganisms, life cycle of prokaryotic	_	
	ctors on the growth of microorganisms - temperature, pH. Antimicrobials - antivirals, antibiotics and chemotherapeutics, mechanism of a		
	the human body. Human microbial diseases. Infectious diseases of the eye caused by microorganisms - viral, bacterial, fungal and cau the immune system. Antigens. Development of the immune response. The main histocompatibility complex. T lymphocytes and cellular		
	shocytes and antibody production. Immunoglobulins. Defense functions of the immune system. Anti-infective immunity. Innate immunit	•	
	and immunity, the effect of human microbiome on the immune system. Immunopathology. Immunodeficiency. Autoimmune disea		
F7PBOMVV	Metodology of Research	KZ	2
F7PBONMP	Proposal and Management of Project	KZ	2
	ordinated effort by a group of people, its types and stages of project design, SWOT analysis. Requirements for individual types of projent. Project management, organization, coordination and implementation of the project. Presentation of the project. Team management		- 1
=	ination of team types. Communication within the team and between managers and subordinates. Leadership workshops. Motivation.		
in	the country. Getting project abroad. Bachelor thesis as a project. Possibilities of software products for the design and management of	of the project	_
F7PBONR	Clinical Refraction	ZK	. 2
	theory of causes and occurrence of refractive errors. Optical system of eye (schematic and reduced eye model, retinal image, visual appropriation where year of refractive errors. Causes of refractive errors. Accurrence and frequency of refractive errors. Causes of refractive errors. Accurrence		
. 5114041011 011013 (11	Presbyopia, anisometropia, aniseikonia. Measurement of refractive errors.	and It	onanges.

F7PBOOF **Physical Optics** Z,ZK 4 The student will become familiar with the basic parts of physical optics, which will enable him to better understand the professional issues of eye optics and optometry. The subject deals in detail with the basics and application of physical optics in technology and biomedicine. Individual physical phenomena and processes from the field of wave optics (e.g. interference, diffraction and polarization of light) are discussed in detail here, together with their consequences and practical applications in the field of instrumentation, correction and diagnostic aids and methods used in optometry. The basics of the photon theory of light, the quantum principle of the interaction of light with matter, the basics of laser technology and its applications in science, technology, and biomedicine, especially in the field of optometry and ophthalmology, are also mentioned. The exercises take place in the form of laboratory optical measurements. F7PBOOFP Opthalmology Instruments Functional principles of different diagnostic and therapeutic ophthalmic devices will be discussed. Students will be able to test most of machines during practical lessons at clinical department. Overview, physical principles, technical construction and parameters of following devices and methods will be studied: slit lamp, ophthalmoscope (direct and indirect, confocal scanning), retinoscope, refractometer, tonometer, campimeter, Heidelberg retinal tomograph, optical coherence tomography, retinal nerve fibre layer analysis (GDx), specular (endothelial) microscope, devices for subjective investigation of astigmatism, devices for investigation of ocular movements, corneal topohraphs, testing of refractive balance, eikonometer, POLA-test, ortopic machines, Hertel exophthalmometer, devices for color vision testing. F7PBOOGB Geometric and Opthalmic Optics Z,ZK 5 This course focuses on basics of geometrical optics and its applications in the field of optical design of simple optical elements and systems (lenses, mirrors, prisms, telescopes, etc.). The second part of the course deals with a description and analysis of a human eye as an optical imaging system. The design and analysis of various types of spectacle lenses for correction of refraction errors is presented. F7PBOOK1 Opthalmology - Pathology, Clinic I. Z,ZK 4 The course focuses on the basic symptoms of diseases of the eye and its surroundings, the individual parts of the eye and the ocular adnexa are gradually discussed, and a large number of slides are used to instruct students on the clinical examination of individual pathologies and their basic characteristics. Interpretation links students to the integration of anatomy, pathological anatomy and physiology with the fundamentals of effective pharmacotherapy. The teaching follows modern trends in the diagnosis and treatment of pathological conditions and is supplemented by video presentations of interesting cases. Interesting case studies from clinical practice are also demonstrated. Theoretical teaching is closely linked to the topics of lectures and connected with practical exercises aimed at acquiring skills in investigation. With the help of quizzes, students can continuously check their knowledge and ability to remember the lectured material. In terms of theory and practice, the main emphasis is on the student's ability to acquire the most important knowledge that they will be able to use in practical life in their future profession. Part of the training course is a full-day practical block, which students complete in ON KLADNO under the direct supervision of an ophthalmologist. F7PBOOK2 Z,ZK 3 Opthalmology - Patology, Clinic II. The course focuses on basic retinal diseases, their conservative and surgical treatment, general diseases and their influence on the eye, congenital eye defects, eye diseases of childhood, neuro-ophthalmology and traumatology in ophthalmology. Instruction links students to the integration of anatomy, pathological anatomy and physiology with the fundamentals of effective pharmacotherapy. The teaching follows modern trends in the diagnosis and treatment of pathological conditions, and is supplemented by video presentations of interesting cases and demonstrations of interesting case reports from clinical practice. Theoretical teaching is closely linked to the topics of the lectures and connected with practical exercises aimed at acquiring knowledge and skills in practical investigation of a given pathology of the eye. Using guizzes, students can continuously check their knowledge and ability to remember the lectured material. In terms of theory and practice, the main emphasis is on the student's ability to acquire the most important knowledge that they will be able to use in practical life in their future profession as an optometrist. Exercises at the FBMI CTU will be followed by a tour of the departments of the Eye Clinic JL, where they participate in the operation at the patient's bedside and directly in the operating room. They will participate in cataract surgery procedures using modern technologies such as virtual navigation system and femtosecond laser. They will also be able to test their knowledge using a 3D virtual reality studio designed for ophthalmology training. They will have a guided tour of the MRI department. The students also participate in practical blocks at ophthalmology clinical departments (Ophthalmology Department of Kladno Hospital, Ophthalmology Clinic of the 1st Faculty of Medicine of the Charles University in Prague and Ophthalmology Department of Kolín Hospital), where they get acquainted with the organization of operation, instrumentation, participate in the examination of patients under the guidance of ophthalmologists in general and specialized departments such as retinal or glaucoma outpatient clinics. By completing the course, students gain a broad theoretical and practical overview of the problems and diagnosis of eye diseases, including their treatment or surgical intervention. Optical Laboratory I. Practical course where students will learn the basics of spectacle lens and frames applications with respect to refractive status of the eye and practical needs of a customer. They will also practice the technology (cutting, grinding, edging, polishing) of spectacle lenses processing, centering the lens, bevelling the lens into frames and adjusting the spectacle frames. The course makes possible to apply theoretical knowledge from opthalmic optics in practice. Optical Laboratory II. Practical course where students will learn the fundamental methods for practical dispensing of individual spectacle lenses. Students will practice the methods for measuring individual parameters of a client and of individual spectacle lenses processing. Dispensing progressive and degressive spectacle lenses. The course makes possible to apply theoretical knowledge from opthalmic optics in practice. F7PBOOPAT Optical Aids and Assistive Technologies for the Visually Impaired Z,ZK 2 F7PBOOVP Optometry in Practice ΚZ 2 F7PROP1 Professional Training I. 4 Ζ The aim of the course is to use the theoretical and practical knowledge acquired in lectures and exercises in real practice conditions. During classes, under the professional guidance of mentors (guaranteed by contract), the student gradually learns the correct procedures and adapts to work in the chosen field. Topics for professional practice are the sale, repair and adjustment of glasses, the grinding of spectacle lenses and the determination of objective and subjective refraction. F7PBOP2 20 Professional Training II. Ζ F7PBOPO OPT Project The aim of the course is methodical guidance of students in scientific research or development activities in the field of Optics, Optometry or Ophthalmology, Control of continuous activity on the topic of the project, which will lead to the final Bachelor's Thesis (BP). The secondary objective of the course is to guide students in the systematic activity of documenting the solution of the assigned task, applying the practices of the field to the tasks or projects solved by the students, as well as deepening the communication skills of the students. Last but not least, deepening the knowledge of typographic rules, including proofreading marks, etc. F7PBOPP First Aid ΚZ 2 The course gives a brief overview of the main principles and procedures of providing emergency first aid with special attention to the procedures for failure of basic vital functions and life threatening situations. The subject also includes situations of mass casualty of victims in crisis situations and emergencies, including the phenomenon of CBRN. Programming Tools and Fundamentals of Data Processing The course is focused on the practical mastery of such software tools, which the student will use not only during their studies, but especially will use these tools and instruments in practice. The course aims to get acquainted with modern software and focuses on office applications, processing and visualization of experimental data and graphic presentation. Selected topics of the course are aligned with the syllabus of the internationally recognized concept of testing computer knowledge and skills ECDL (European Computer Driving License) F7PBOPSO Psychology and Communication 2 During the lectures, students will be acquainted with the problems of psychology of patients, with mental states in diagnostic - therapeutic activities, in providing psychological assistance to patients during treatment and in coping with chronic states of the disease. Students are provided with theoretical knowledge of basic psychological procedures in communication

with patients with v			
	arious types and degrees of damage to health, instructions on how to manage difficult situations in care about the individual needs of and also emphasizes the importance of caring for the mental state of health professionals.	the sick, disable	d and dying,
F7PBOPTDK	Prospective Technologies for Diagnostics and Vision Correction	KZ	2
Principles, present	and future applications of modern methods for diagnostics of a human eye and correction of aberrations of an eye. Techniques of me	asurement of abe	rrations and
geometric parame	ers of the eye, analysis of an influence of aberrations on vision and possibilities to apply these factors into the design of ophthalmic or	orrection tools. A	nalysis of an
influence of the cor	nea on optical properties and aberrations of an eye, possibilities of anterior segment analysis and its application for the correction of the e	ye. Trends in the	developmen
	of ophthalmic corrective tools, methods and instruments for a superior diagnostics and analysis of properties of the eye.		
F7PBOPVZ	Sales Skills and Employee Management	KZ	2
F7PBOPZP	Problems of Persons with Visual Impairment	KZ	2
Education and train	ing - integration. Social and legal problems. Psychological care for persons with visual impairment. Organizations of seriously vision h	andicapped peop	le. Optic and
electronic comper	satory tools (camera magnifiers, digital magnifiers). Non-optical compensatory tools (white cane, indicators of light and surface, ther	nometer with spe	eaker, guide
dogs, etc.), enviro	nmental adaptations for persons with visual impairment. Rehabilitation of persons with vision handicap. System of training in using sp	pecial optical aids	s, training in
	using electronic special devices for persons with visual impairment.		
F7PBOSRB	Strabology and Basics of Orthoptics	KZ	2
F7PBOSUR1	Subjective Refraction I.	Z,ZK	4
	edges about refraction of the eye. Techniques of the subjective refraction perform testing frame or the phoropter. Techniques of the ex		ision.
F7PBOSUR2	Subjective Refraction II.	Z.ZK	4
	s, students deepen their theoretical knowledge and practical skills of subjective refraction with the test frames and test sets of glasse:	s. Further tests w	rill follow on
•	oractice working with phoropter and other techniques. The teaching will also cover specific and difficult refractive conditions and the re		
	general diseases. An essential topic is the examination of pediatric patients and patients with specific needs. An important scope of	•	
	to the examination of binocular vision.		
F7PBOUO	Introduction to Optics and Optometry	Z.ZK	2
	arizes the knowledge of optics and optometry and is an introductory course that will show students the possibilities of their future pro	-,	_
students will be ac	quainted with the basic concepts, development, current state and future of the field studied. Students will get acquainted with the basi	ics of ray, wave a	nd quantum
	optics using selected numerical problems. Emphasis is placed on getting acquainted with the content and basic concepts of furthe	-	•
F7PBOVKM	Selected Chapters from Mathematics for Optometrists	Z,ZK	4
	rizes and systematizes the secondary school curriculum and builds on them. Students will get acquainted with the basics of linear alg	gebra, differential	and integral
calculus of roal fund	tions of one real variable in applications. Emphasis is placed on the requirements of further study - solving equations of various types an	d their systems, r	nodifications
Jaiculus di Teal Iulii	of trigonometric expressions and geometry of conic sections and the mutual position of the sphere and the plane.		
Salculus of real full			
F7PBOVLZ	Fundamentals of Public Health Care and Legislation in Health Care	KZ	2
F7PBOVLZ	Fundamentals of Public Health Care and Legislation in Health Care rn about health systems around the world as well as the history and development of organizational and reimbursement systems in he		1
F7PBOVLZ Students will lea	9	ealth care. In relat	tion to the
F7PBOVLZ Students will lead	rn about health systems around the world as well as the history and development of organizational and reimbursement systems in he	ealth care. In relate the EU, but also	tion to the in the world
F7PBOVLZ Students will lead organisational system Application of Act I	rn about health systems around the world as well as the history and development of organizational and reimbursement systems in he ems, they will also learn about the principles of health care financing, both preventive and curative, not only in the Czech Republic and	ealth care. In relat the EU, but also health and safety	tion to the in the world prevention.
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Fundamentals of Statistics and Measurement Processing

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