

Transilvania University of Braşov, Romania

Study program: Optometry

Faculty: Product Design and Environment

Study period: 4 years

1st Year

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Mathematical Analysis	ANMA	Romanian	5	2	3		

Course description (Syllabus): Set. Figures. Relations. Sequences and series of figures. Functions. Limits. Continuity. Differentiation on \mathbb{R} . Functions. Limits. Continuity. Differentiation on \mathbb{R}^n . Sequences and series of functions. Implicit defined functions. Functional dependence. Extremum and conditioned extremum. Primitives of functions and Riemann integrals. Improper integrals. Parameter integrals. Euler Functions. Multiple integrals. Integrals formulas. Line integrals and surface integrals.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Materials Science and Technology	STMA	Romanian	5	3		2	

Course description (Syllabus): The course is a concise introduction to the microstructures and processing of materials (metals, ceramics, polymers and composites) and shows how these are related to the properties required in engineering field. It is included a programmed-learning text with questions at the end of each course, which has proved to be helpful for the students. It is tried to present the material in an uncomplicated way. The main subjects are: Orientation and Introduction. Electronic and Atomic Structure and Metallic Bonding. Crystal Structures, Miller Indices, Single crystals, Polycrystalline and Nanocrystalline materials. Imperfections in Crystals, Diffusion, Thermal, Magnetic, Mechanical and Electrical Properties. Failure and Corrosion. Phase Diagrams, Phase Transformations. Heat treatments. Metals and alloys. Polymers. Ceramics. Composites materials. Industrial casting processes, Plasticity theory and friction, Forging, Rolling, Extrusion. Welding.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Chemistry	CHIM	Romanian	4	2		1	

Course description (Syllabus): Principles of chemistry and properties of matter explained in terms of modern chemical theory with emphasis on topics of general interest to the optometrist engineer. Understand the molecular structure and properties of chemical substances in describing and solving real technological problems. Demonstrate quantitative problem-solving skills in many aspects of chemistry, including solutions and properties of solutions, metals and corrosion, polymers.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Computer-aided Graphics I	GRAC1	Romanian	5	2		2	

Course description (Syllabus): Drawing standards. Graphic representations used in technical drawing. Views and sectional views. Dimensioning. Representation of the machine parts and components. Designation of surface characteristics. Limits of size. Assembly drawing.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Computer Programming and Programming Languages I	PCLP1	Romanian	4	1		2	

Course description (Syllabus): The course provides students with concepts appropriate to working on building basic algorithms and their representation through programs written in high level programming languages (C / C + +). Familiarize students with current programming techniques, training of technical skills in solving problems correctly. The main objective of the course is acquiring knowledge to use C / C + + application programming.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Introduction to Optometry	IOPT	Romanian	4	2		2	

Course description (Syllabus): This course introduces fundamental principles in developing optometry field. It develops the ability to understand relationships between different cognitive fields; develop sequential thinking; set patterns of analysis; and spatial visualization through problem-solving. Topics include: aspects of developing optometry profession in Europe and in world, analyze of visual parameters and eye ball, animal vision, color perception, history of spectacles and contact lenses, succinct presentation of apparatus for examination of visual features etc.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Foreign Languages - English	LE1	English	2	1	1		
Foreign Languages - French	LF1	French					
Foreign Languages - German	LG1	German					
Foreign Languages - Espanol	LS1	Spanish					

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply the knowledge for foreign languages, reading and writing information in optometric field.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physical Training and Sport I	EFS1	Romanian	1		1		

Course description (Syllabus): At times teaching physical education students will gain skills in sports, learn and practice different sports.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Linear Algebra, Analytical Geometry and Differential Equations	AGAD	Romanian	4	2	2		

Course description (Syllabus): Equations and systems of equations, analytic geometry concepts, theories and concepts related to solving linear algebra problems.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Applied Mechanics	MECA	Romanian	5	3	2		

Course description (Syllabus): To know and work with the basic concepts and main theorems in Mechanics, the interdependencies between them and to be able to correctly orient their search when they require a certain information. To create a basis for a general technical education, which is necessary in other studied subjects. To know how to approach practical challenges concerning the application of forces, their influence on equilibrium and motion, the possibilities of balancing a system, the different rigid motions within mechanisms (planetary, differential, worm-worm gear, etc.). To know and use correctly the new concepts, both in writing and discussing with the teaching staff, to be capable of working in a team but also to lead a team during the laboratory or home assignments. To correctly create the connections with other subjects using the concepts in Mechanics, permanently enhancing this way their knowledge and based on a solid ground.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Electrotechnics	ELTH	Romanian	3	2		1	

Course description (Syllabus): Electrical components analysis, principles and laws that govern building, command, control and drive circuits and devices specific to the optometric equipment.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physics	FIZI	Romanian	3	2	1		

Course description (Syllabus): General principles of physics, notions of mechanics, thermodynamics, optics physics, nuclear and atomic knowledge.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Computer-aided Graphics II	GRAC2	Romanian	4	2		2	

Course description (Syllabus): Making drawings accurately by using OSNAP modes. Using the methods of selection. Control the drawing views. Making simple drawings using drawing commands according to the ISO projections disposal. Rules of projection representation in engineering graphics. Drawing graphical construction using editing techniques. Introduction to AutoLISP programming language. Making complex drawing using editing techniques and UCS system. Simple representation of threaded parts. Conventions of representation and dimensioning of threads. Using layers. Overview of text styles. Create texts. Create and insert blocks.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Computer Programming and Programming Languages II	PCLP2	Romanian	4	1		2	

Course description (Syllabus): The course presents advanced concepts of: Programming in C / C + +, Current programming technique, Object-Oriented Programming, and Microsoft Visual C # 2008 / 2010. The course provides students with basic notions: one-and multidimensional arrays, arrays of pointers, classes, data abstraction, operator overloads and visual programming environments.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Communication. Ethics and Academic Integrity	CEIA	Romanian	2	1	1		

Course description (Syllabus): The purpose of Information Literacy course is to enhance students' ability to locate, gather and evaluate information in any format. Overall objectives are to support the university curricula and participate in the academic communication process to promote lifelong learning skills and continuous educational achievement. General skills concerning information culture - information literacy – are structured upon 3 components: information access, assessment and use. Within the course the students will gain the specific competencies required by the documentation activity and then to communicate the scientific information.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Foreign Languages - English	LE2	English	2	1	1		
Foreign Languages - French	LF2	French					
Foreign Languages - German	LG2	German					
Foreign Languages - Espanol	LS2	Spanish					

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply the knowledge for foreign languages, reading and writing information in optometric field.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physical Training and Sport II	EFS2	Romanian	1		1		

Course description (Syllabus): At times teaching physical education students will gain skills in sports, learn and practice different sports.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Practical Work (30 hours)	PRAC1	Romanian	1				

Course description (Syllabus): Familiarization with the bachelor's field; visits to companies in the field.

2nd Year

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Special Mathematics and Mathematical Statistics	MSSM	Romanian	4	2	2		

Course description (Syllabus): Differential equations with constant coefficients. Fields theory. The theory of complex functions. Fourier series. Laplace Transform. Elements of mathematical statistics.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Applied Informatics	INAP	Romanian	5	2		2	

Course description (Syllabus): Introduction in graphical programming environment, Programming elements, Data types and structures, Programming structures, Graphical representation, Objects of the frontal panel, Operations with files, Application planning.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Electronics	ELEC	Romanian	4	2		1	

Course description (Syllabus): Analysis of electronic components, principles and laws that govern the propagation of electron beams, circuits and devices specific to the optometric field.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Biomechanics	BMEC	Romanian	4	2		2	

Course description (Syllabus): Mechanics and modern biology, Basic principles of mechanics, Basic laws, Principal models in mechanics, Physics – mechanics models of bodies, Biostatics, Bio-dynamics, Biomechanics of locomotors.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physiological Optics I	OPFZ1	Romanian	4	2		2	

Course description (Syllabus): Optical layers of the eyeball, vision physiology, color vision, visual acuity, field of vision and optometric, parameters of the visual function.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Opto-electronics	OPEL	Romanian	4	2		2	

Course description (Syllabus): Introduction to optoelectronics, nature of light, Maxwell's equations, electromagnetic spectrum; Introduction to geometric optics: Laws, postulates, reflection and refraction of light, total reflection;

Luminescence and associated phenomena: photoluminescence, catodo-luminescence, electroluminescence; Liquid crystals: properties, devices, applications, display systems; Light Emitting Diodes: properties, devices, applications, display systems; Photo-detectors: properties, photonic devices, applications; Laser diode, laser diode devices, applications; Optical fibers: classification, propagation of radiation, manufacturing technologies, couplings and joints, applications; Optical fiber communications, fiber channel distribution information; Optical modulation of information, modulation circuits.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Anatomy and Physiology	ANFZ	Romanian	2	1		1	

Course description (Syllabus): Analysis of the human body anatomical components of the visual system and totally functioning of anatomical connections between the structures of the human body.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Foreign Languages - English	LE3	English	2	1	1		
Foreign Languages - French	LF3	French					
Foreign Languages - German	LG3	German					
Foreign Languages - Espanol	LS3	Spanish					

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply the knowledge for foreign languages, reading and writing in optometric field.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physical Training and Sport III	EFS3	Romanian	1		1		

Course description (Syllabus): At times teaching physical education students will gain skills in sports, learn and practice different sports.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Mechanisms and Elements of Precision Mechanics	MEPM	Romanian	4	3	1		

Course description (Syllabus): Basics of mechanisms structure; Geometry and kinematics of involute gears; Structural, kinematic and dynamic aspects of gear with fixed axes; Structural, kinematic and dynamic aspects of linkages. Joints (screw joints and screw transmissions; feather and key joints; spline joints; pins and bolts;); Springs (elastic characteristics, helical cylindrical compression spring); Couplings (permanent rigid couplings; mobile couplings; elastic couplings); Gears (materials; tooth failure; spur gear – contact and bending stress calculation, permissible stress; gear forces); Ball bearings (kinds of bearings; failures; calculation; ball bearing mountings); Chain and belt drives – geometric calculation.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Numerical Methods	MNUM	Romanian	3	2		2	

Course description (Syllabus): Errors (absolute and relative errors, error sources, error propagation, graphs of Procedure). Solving algebraic and transcendental equations (function representation method, the method half interval, recursive definition of the variable method, Newton-Raphson method). Matrix algebra and linear systems of equations (adding matrices, multiplying matrices, calculate determinants, matrix transposition, matrix adjoin calculation, matrix inversion, solving linear systems of equations – Gauss-Jordan method, Gauss-Seidel method). Interpolation method (Newton polynomial of the first case, the Lagrange polynomial, interpolation by polynomials of degree three). Numerical derivation (derivation formulas of interpolation, Taylor series method development, method differences

symmetrical function by polynomial approximation method). Numerical integration (trapezoids rule, Simpson's rule, Romberg's method, Gauss). Applications in Optometry.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Geometrical Optics	OPGE	Romanian	4	1	2		1

Course description (Syllabus): Introduction. Principles and fundamental laws of geometric optics. Reflective optics - mirrors, blades dividers. Refracted optics - blade plane-parallel light. Refracted optics – convergent lenses. Refracted optics – divergent lens. Optical instruments

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Measurement Techniques and Systems I	TDCI	Romanian	3	2		1	

Course description (Syllabus): Dimensional precision, Tolerances ISO system, Basic concepts on technical measurements, Study of processing and measurement errors through statistical methods, Dimension chains.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physiological Optics II	OPFZ2	Romanian	4	2		2	

Course description (Syllabus): Optical layers of the eyeball, vision physiology, color vision, visual acuity, field of vision and optometric, parameters of the visual function.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Technical Drawing and Infographic	DTIG	Romanian	3	1		2	

Course description (Syllabus): Draw outlines and geometrical modeling in 2D, limitation and multiplication commands, 3D geometrical modeling, Boolean operations, ensembles of objects, technical documentation for a virtual model.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Processing Technologies	THPL	Romanian	3	2		1	

Course description (Syllabus): Processing methods. Classification, structural features, kinematics characteristics; Techniques and mechanical cutting and micro-cutting methods: classification, processing principles; Machining techniques and methods (micro) plastic deformation; Machining techniques and methods (micro) injection; Machinability characteristics of materials.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Foreign Languages - English	LE4	English	2	1	1		
Foreign Languages - French	LF4	French					
Foreign Languages - German	LG4	German					
Foreign Languages - Espanol	LS4	Spanish					

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply the knowledge for foreign languages, reading and writing in optometric field.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Physical Training and Sport IV	EFS4	Romanian	1		1		

Course description (Syllabus): At times teaching physical education students will gain skills in sports, learn and practice different sports.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Practical Work (60 hours)	PRAC2	Romanian	3				

Course description (Syllabus): Activities in optical shop for developing the abilities into communication field, design of optometric shops and office etc.

3rd Year

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
CNC Working Machines	MLCN	Romanian	4	2		1	

Course description (Syllabus): Introduction in classical study of technological process, CNC Programming elements, Types CNC machines, turning and milling operations.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Elements of Mechanical and Optical Engineering	EIMO	Romanian	4	2		2	

Course description (Syllabus): Elements of Mechanical Engineering; Elements of Tribology; Prosthetic components; Elements of robotics; Photometry, subjective and objective methods for measuring optical radiation; Technical optics applications based on the phenomena of interference, diffraction and polarization of light, dispersion, absorption of light; Laser effect, laser, principle of operation, types of lasers; Photoelectric effect; Technical optical light sources; Objective measurements of color.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Medical Informatics	INME	Romanian	4	2		2	

Course description (Syllabus): Medicine in the age of computers. Human body – a supercomputer. Medical Databases. Biomedical signals – acquisition and processing. Medical Imagistics. Computer Aided Diagnosis. Medical Expert Systems. Hospital Information Systems. Virtual Reality in medicine. Telemedicine.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Measurement and Instrumentation Systems (Ocular Refraction) I	SMIR1	Romanian	5	2		2	

Course description (Syllabus): Measurement of visual refraction, visual simulation of ametropia, entropies, correction of ametropias, eye lens accommodation, keratometry, eye refraction – astigmatism, myopia, hypermetropia, aniseikonia, chromatic aberrations etc.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Training Apparatus and Visual Rehabilitation	AARV	Romanian	5	2		2	

Course description (Syllabus): Presentation physiology eye movements (eye static, analysis of eye movements, movements monocular, binocular movement, physiology convergence and divergence eye movement reflexes); Getting neurophysiology sensory-motor (sensory neurophysiology, motor neurophysiology, muscle receptor functioning); Physiology of binocular vision (binocular vision mechanism, the three degrees of binocular vision,

binocular perception and spatial localization, monocular depth perception, the landscape in space, development of binocular vision, binocular vision functional importance); Functional amblyopia (classification, pathogens, the emergence of amblyopia, the relationship between amblyopia and fixation behavior, the study of visual functions in amblyopia eye); Methods of examination oculomotor disorders (physical examination, subjective examination, monocular fixation exam, exam dylopia, retinal correspondence examination, binocular integration exam, general exam criteria); Strabismus (etiology, pathogens, pathogenesis of amblyopia, methods of examination); Heteroforia (etiology, pathogenesis, clinical examination); Heterotropia (classification, esotropia - classification, accommodative esotropia, unaccommodative, particular forms of esotropie, exotropie, strabismus divergent primary, secondary divergent strabismus); Paralytic strabismus (symptoms, clinical forms, diagnosis); Training subjects crosses (equipment, training methods, recovery); Recovery of subjects crosses.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Medical Optics and Optics Equipment	OMEEO	Romanian	4	2		2	

Course description (Syllabus): Optical apparatus – microscope, telescope and projector. Optical apparatus for visual functions investigation – phoropter, biomicroscope, skiascop, autorefractometer etc. Methodology for optometric investigation procedures.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Medical Optics and Optics Equipment II - project	OMEOP	Romanian	2				2

Course description (Syllabus): Design of different variant of Optical apparatus – microscope, telescope and projector.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Optical Materials	MATO	Romanian	2	1	1		

Course description (Syllabus): Presentation of optical materials used to design and product spectacles, lenses and accessories for optical devices.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Medical Apparatus Reliability	FIAM	Romanian	3	2		2	

Course description (Syllabus): Elements of probability theory; basic notions of reliability; systems reliability calculation by Markov processes; reliability calculation for series, parallel and jointed systems; reliability allocation; systems maintenance and availability; reliability test – defects distribution; reliability of mechatronic biomedical systems.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Medical Apparatus Ergonomics	ERGO	Romanian	2	2		1	

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply construction and operation techniques of medical devices and also of the dedicated places according to anthropometric and ergonomic principles. In this respect, applicative work is foreseen in order to perform determinations upon the work capacity of the human factor in medical field but also in order to properly use and construct the necessary equipment. The course is a subject core course offering the graduates knowledge concerning analysis, ergonomic adjustment of equipment, anthropometric assessments and measurements but also the conception of working space in order to obtain comfort and safety during the work process. The course allows the students to obtain skills in anthropometrical evaluation activities, working capacity evaluations, measuring and changing design of optometric activity spaces. Also, the course develops competencies in the field of quality assurance of the working place, in frame adjustment activity and the use of optometric and medical equipment.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Measurement Systems and Instrumentation II	MASI	Romanian	3	2		2	

Course description (Syllabus): Measurement, Measurement influence factors, Errors, measuring methods, measuring apparatus and instruments, Apparatus and instruments for measuring lengths, angles, mass, temperatures, physical sizes characteristic of fluids, Apparatus and instruments for measuring electric values.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Laboratory Testing Apparatus	APLA	Romanian	4	2		2	

Introduction to physiological measurements; Design and construction of equipment for biological sample preparation; Installation, diagnostics and troubleshooting for optical analysis equipment; Construction and troubleshooting, for peristaltic pumps dispensers and centrifuges; Design, construction and adaptation of automated equipment for biological testing; Design, construction and adaptation of test equipment computer aided systems;

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Measurement and Instrumentation Systems (Ocular Refraction) II	SMIR2	Romanian	4	2		2	

Course description (Syllabus): Measurement of visual refraction, visual simulation of ametropia, entropies, correction of ametropias, eye lens accommodation, keratometry, eye refraction – astigmatism, myopia, hypermetropia, aniseikonia, chromatic aberrations etc.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Glasses Fitting Technology	TMOD	Romanian	5	3		2	

Course description (Syllabus): Glasses - optical instrument and proper eye protection; Types of lenses used for corrective or protective glasses; Frames for glasses; The technology of manufacture and assembly of plastic lenses and frames; The technology of manufacture and assembly of metal frames; Centering lens technology for glasses; Processing technology for the eye contour spherical lenses and their fitting into the frame; Manufacturing technology and frame mount lens bifocals; Technology of production and installation of astigmatic lenses; Technology of production and installation of prismatic lenses; Workstation for optical assembly; Getting anatomy of head and facial aesthetic elements. Glasses adjustment.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Glasses Fitting Technology - project	TMODp	Romanian	2				2

Course description (Syllabus): Glasses - optical instrument and proper eye protection; Types of lenses used for corrective or protective glasses; Frames for glasses; The technology of manufacture and assembly of plastic lenses and frames; The technology of manufacture and assembly of metal frames; Centering lens technology for glasses; Processing technology for the eye contour spherical lenses and their fitting into the frame; Manufacturing technology and frame mount lens bifocals; Technology of production and installation of astigmatic lenses; Technology of production and installation of prismatic lenses; Workstation for optical assembly; Getting anatomy of head and facial aesthetic elements. Glasses adjustment.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Ocular Pathology	FPAT	Romanian	3	1		1	

Course description (Syllabus): The course is designed to provide to the students the material required to understand and apply the knowledge for eye pathology, ocular diseases and ways of their identification, analysis of different observation techniques and patient management.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Practical Work (90 hours)	PRAC3	Romanian	4				

Course description (Syllabus): Activities in optometric office and participation to optometric investigations.

4th Year

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Micro and Nano Systems Technology	TMNS	Romanian	4	3		1	

Course description (Syllabus): Introduction to micro-systems technology: concepts and principles, materials and methods, Micro-fabrication techniques: ultra-precision manufacturing, lithography, surface and bulk micro-fabrication, LIGA, Non-conventional technologies, nano-cutting manufacturing.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Image Processing, Artificial Vision and Medical Imaging	PIVI	Romanian	4	2		2	

Course description (Syllabus): Image processing procedures using dedicated software to develop abilities for different applications, like medical imaging, artificial vision and optometric investigation. Improvement of the picture, restauration, trace contour, find edges, color modifications etc.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Low Vision and Spectacles Prescriptions	VSPO	Romanian	5	3		2	

Course description (Syllabus): Low vision rehabilitation for elderly and for children with major visual problems. Devices and methodology for training and visual rehabilitation processus. Special spectacles and helping devices for low vision.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Low Vision and Spectacles Prescriptions - project	VSPOp	Romanian	2				2

Course description (Syllabus): Low vision rehabilitation for elderly and for children with major visual problems. Devices and methodology for training and visual rehabilitation processus. Special spectacles and helping devices for low vision.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Optomechatronic systems	SOPM	Romanian	3	2		1	

Course description (Syllabus): optomechatronical systems with applications in optometry.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Contact Lenses	LECO	Romanian	5	2		2	

Course description (Syllabus): Generalities. Eye of the optical system. Static ocular refraction. Dynamic ocular refraction. Methods for the determination of ocular refraction; Classification of contact lenses; Types of lenses;

Indications and contraindications; Advantages and disadvantages of contact lenses. Complications of contact lenses; Prescription of contact lenses; Adaptation of contact lenses; Maintenance and use of contact lenses.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Contactology	CONT	Romanian	5	2		2	

Course description (Syllabus): Generalities. Eye of the optical system. Static ocular refraction. Dynamic ocular refraction. Methods for the determination of ocular refraction; Classification of contact lenses; Types of lenses; Indications and contraindications; Advantages and disadvantages of contact lenses. Complications of contact lenses; Prescription of contact lenses; Adaptation of contact lenses; Maintenance and use of contact lenses.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Contact lenses - project	LECOp	Romanian	2				2

Course description (Syllabus): Design and calculation of optical contact lenses to recovery different visual disfunctions.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Contactology - project	CONTp	Romanian	2				2

Course description (Syllabus): Design and calculation of optical contact lenses to recovery different visual disfunctions.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Functional Optometry	OFSC	Romanian	5	2		2	

Course description (Syllabus): Analyze of the visual system evolution of children, methods for investigation, special devices for training and screening visual system for children;

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Paediatric Optometry	OFPD	Romanian	5	2		2	

Course description (Syllabus): Analyze of the visual system evolution of children, methods for investigation, special devices for training and screening visual system for children;

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Coordinate Measuring Machine	MMCO	Romanian	3	2		2	

Course description (Syllabus): Knowing the coordinate machines measuring principle; To acquire the main software interface working in coordinate measuring machines; Knowing the main steps necessary for working with DEA GLOBAL coordinate measuring machine; Knowing the PC-DMIS software environment associated to DEA GLOBAL coordinate measuring machine; Learning how operations work on the car prior DEA GLOBAL machine; Learning how to measure geometrical and form parameters for simple and complex geometry components; Learning how to scan and generate some CAD models for simple and complex geometry components.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Psychology of Vision	PSVE	Romanian	3	2		2	

Course description (Syllabus): Presentation of visual perception, Gestalt principles, color, perception, optical illusions, visual field and depth perception, psychology of movement perception etc.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Ethics and deontology of optometry engineering	EDIO	Romanian	2	1	1		

Course description (Syllabus): Knowing and understanding (adequate knowing and understanding of specific concepts). Understanding basic notions and the main basic knowledge that represents the management content; Learning a managerial way of thinking; Understanding managerial methods and techniques. Gathering experience and specific competencies in the marketing field; Theoretical knowledge: To know the human resources management theories, characteristics of engineering activity, work safety regulations, staff retribution, field regulations. Acquired skills: To create an organizational chart, to establish employment criteria, to create the job requirements sheet, to organize a job interview.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Database and Statistical Processing	BDPS	Romanian	3	2		2	

Course description (Syllabus): The course objectives are meant to familiarize the students with the existent database types, their way of selection according to the purpose they are used for and also to the way of organizing a processing information characteristic for their field of activity. The students will have to be able to select the way to organized and process the data in correlation with their type of activity, to have the required knowledge in order to properly manage the information related to their profession and the subjects they are in contact with.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Marketing and Management	MAMN	Romanian	2	1	1		

Course description (Syllabus): Marketing and management basics with applications in optometry.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Design and maintenance of optometric equipment	PMEO	Romanian	5	2		2	

Course description (Syllabus): Generalities for optometric technique; Equipment for measuring and verifying the lens parameters; Equipment, tools and devices for processing optical contour; Equipment for focusing lens; Equipment for drilling and stapling; Equipment for lenses on nylon threads; Automatic technical equipment optometric; Tools and devices for repairing glasses; Repair and maintenance of equipment, tools and technical devices optometric.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Equipment for Functional Interventions	ECIF	Romanian	5	2		2	

Course description (Syllabus): Generalities for optometric technique; Equipment for measuring and verifying the lens parameters; Equipment, tools and devices for processing optical contour; Equipment for focusing lens; Equipment for drilling and stapling; Equipment for lenses on nylon threads; Automatic technical equipment optometric; Tools and devices for repairing glasses; Repair and maintenance of equipment, tools and technical devices optometric.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Design and maintenance of optometric equipment - project	PMEOp	Romanian	2				2

Course description (Syllabus): Generalities for optometric technique; Equipment for measuring and verifying the lens parameters; Equipment, tools and devices for processing optical contour; Equipment for focusing lens; Equipment for

drilling and stapling; Equipment for lenses on nylon threads; Automatic technical equipment optometric; Tools and devices for repairing glasses; Repair and maintenance of equipment, tools and technical devices optometric.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Equipment for Functional Interventions - project	ECIFp	Romanian	2				2

Course description (Syllabus): Generalities for optometric technique; Equipment for measuring and verifying the lens parameters; Equipment, tools and devices for processing optical contour; Equipment for focusing lens; Equipment for drilling and stapling; Equipment for lenses on nylon threads; Automatic technical equipment optometric; Tools and devices for repairing glasses; Repair and maintenance of equipment, tools and technical devices optometric.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Equipment for Technical Optometry	ETOP	Romanian	4	2		2	

Course description (Syllabus): Components of medical devices. Components for guiding movements. Connecting elements and drive. Elements for transmission, processing and amplification of movements. Elements of reading and recording information and control systems. Tools for medical engineering (forceps, probes, spatulas, hooks, needles, scalpels, testers). Special tools for ophthalmology.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Optometric Components and Medical Instruments	CIME	Romanian	4	2		2	

Course description (Syllabus): Components of medical devices. Components for guiding movements. Connecting elements and drive. Elements for transmission, processing and amplification of movements. Elements of reading and recording information and control systems. Tools for medical engineering (forceps, probes, spatulas, hooks, needles, scalpels, testers). Special tools for ophthalmology.

Course title	Code	Language of instruction	No. of credits	Number of hours per week			
				course	seminar	laboratory	project
Elaboration of the Diploma Project (10 x 2 hours/week + 4 X 28 hours/week)	EPD	Romanian	5				4

Course description (Syllabus): General activities in optometric offices, laboratory and shops to develop the abilities in investigations, adaptation and prescription of optical and optometric devices.