



BEUTH HOCHSCHULE
FÜR TECHNIK
BERLIN

University of Applied Sciences

Department VII
Augenoptik / Optometrie

MODULE HANDBOOK

Bachelor of Science (Optometry)

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Contact persons:

Prof. Dr. R. Kirchberger, E-Mail fb7@beuth-hochschule.de

Prof. Dr. H. Dietze, E-Mail: dietze@beuth-hochschule.de

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List of the required elective modules

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WP01 – Contact Lens Clinics	5 und 6	christian.kemppgens@beuth-hochschule.de	41
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WP03 – Diagnostic Procedures and Low Vision Clinics	5	dietze@beuth-hochschule.de	43
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WP05 – Low Vision Clinics and Binocular Vision Clinics	5 und 6	handorff@beuth-hochschule.de	45
WP06 – Occupational Pedagogy and Low Vision Clinics	6	handorff@beuth-hochschule.de	46
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B01 – Anatomy and Physiology

Data field	Explanation
Module number	B01
Titel module	Anatomy and Physiology (Anatomie und Physiologie)
Credits (Cr)	5 Cr
Workload	68 hrs Workload, 82 hrs self-study
Subject level	Subject-specific basics
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Explain the general structure and functioning of the human body – Explain the basics of biochemistry and molecular biology – Explain important structures of the eye and the adjacent organs as well as important physiological relations
Requirements	None
Where in the syllabus	1 st semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	Yearly
Exam type	If the teacher does not determine the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	cell (membrane, cell growth and division, bioenergetics and electrophysiology of the cell, stem cells); Tissues and organs; Structure and functioning of: Vascular and nervous system (nerve cell, peripheral and central nervous system, potential for action and rest, reflexes and sensation of pain), muscles, lymphatic system, endocrine system, breathing, connective tissue; Introduction of molecular biology (proteins, carbohydrates, lipids); Tissue: epi- u. Endothelium, glands, connective tissue, muscles, blood, nerves; Structures head, orbit and eye; Gen. Anatomy and physiology of the eye and adnexa; Physiology of vision; Nerve and blood supply to the eye and eye and the adnexa
Literature (selection)	<ul style="list-style-type: none"> – Linder Biologie SII, 24. Auflage 2019, Schroedel, ISBN 9783507112803 – Biologie Anatomie Physiologie, 9. Auflage, Menche, Nicole (Herausgeber), Urban & Fischer Verlag/Elsevier GmbH, ISBN 9783437268045
Additional comments	The module language is German

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B02 – Principles of Contact Lens Fitting

Data field	Explanation
Module number	B02
Title module Title Units	Principles of Contact Lens Fitting (Grundlagen der Kontaktlinsenanpassung) B02.1 Principles of Contact Lens Fitting B02.2 Principles of Contact Lens Fitting Lab
Credits (Cr)	5 Cr
Workload	85 hrs Workload (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	Students are able to <ul style="list-style-type: none"> – describe the optical principle of slit lamps and ophthalmometers – describe the shape of the cornea mathematically – perform a complete slit lamp examination of the anterior segment – measure the curvature of the cornea in its center and in its periphery – differentiate, classify and record contact lens related abnormalities – explain the contact lens related anatomy, physiology, topography
Requirements	none
Where in the syllabus	1 st semester Bachelor
Type of learning	B02.1: seminaristic teaching; B02.2: lab exercises
Status	Compulsory module
Frequency	Yearly (winter semester)
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: written examination (B02.1) + practical examination (B02.2); Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	B02.1: optical and mechanical principles of slit lamp and keratometers; mathematical description of the cornea shape; cl-relevant physiology and anatomy; composition & assessment of the tear film; norm variants and common anomalies of the anterior segment; changes, inflammation, allergies and injuries to the cornea and conjunctiva related to contact lenses; B02.2: slit lamp techniques; exercises for contact lens-specific examination of the anterior section of the eye (techniques for examining: tear film, lids, conjunctiva, limbus, cornea, anterior chamber, iris and crystalline lens); Exercises to describe and record frequent slit lamp findings, keratometer measurements; calculation of astigmatism and numerical eccentricity
Literature (selection)	<ul style="list-style-type: none"> – Müller-Treiber A.: Kontaktlinsen Know how. DOZ-Verlag – Sickenberger W.: Klassifikation von Spaltlampenbefunden. DOZ-Verlag – Baron H., Ebel J.: Kontaktlinsen. DOZ-Verlag – Efron N., Morgan P.: Contact Lens Complications. Butterworth Heinemann – Phillips A.J., Speedwell L.: Contact Lenses. Butterworth Heinemann
Additional comments	The module language is German

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B03 – Subjective Refraction

Data field	Explanation
Module number	B03
Title module Title units	Subjective Refraction (Subjektive Refraktionsbestimmung) B03.1 Subjective Refraction B03.2 Subjective Refraction Lab
Credits (Cr)	5 Cr
Workload	102 hrs presence (3 SWS SU + 3 SWS Ü), 48 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	Students are able to <ul style="list-style-type: none"> – name and explain the symptoms for refractive errors – understand the influence of ametropia on the visual acuity – explain the principles for subjective refraction for spherical and astigmatic ametropia – perform subjective refraction on eyes with spherical and astigmatic ametropia using a trial frame and a phoropter
Requirements	none
Where in the syllabus	1 st semester Bachelor
Type of learning	B03.1: seminaristic teaching; B03.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: written examination (B03.1) and practical examination (B03.2). Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2 nd exam period
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable contents
Contents	B03.1: epidemiology and lifelong development of ametropia; optical and anatomical principles of ametropic eyes; typical signs and symptoms of ametropia (myopia, hyperopia, astigmatism); devices and charts for subjective refraction and the relevant assessment of vision; influence of refractive errors on visual acuity; optical fundamentals and procedures for determining spherical and astigmatic refractive errors as well as monocular and binocular balancing; physiology and parameters of accommodation; methods for assessing presbyopia and for near-lens determination; frequent anomalies of accommodation B03.2: exercises on anamnesis and needs analysis; principles of recording; basic rules of communication with the customer / patient; determination of the best spherical glass; cross-cylinder method; cylinder fogging-method; monocular and binocular balancing; measuring visual acuity; exercises to determine the near addition and to assess the ability to accommodate
Literature (selection)	<ul style="list-style-type: none"> – Diepes, H.: Refraktionsbestimmung. DOZ-Verlag – Dietze H.: Die optometrische Untersuchung, Thieme-Verlag – Augenglasbestimmung. ZVA-inform-Broschüre. DOZ-Verlag
Additional comments	The module language is German

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B04 – Principles of Ophthalmic Optics

Data field	Explanation
Module number	B04
Title module Title units	Principles of Ophthalmic Optics (Grundlagen der Augenoptik) B04.1 Principles of Ophthalmic Optics B04.2 Principles of Ophthalmic Optics Lab
Credits	5 Cr
Workload	102 hrs presence (4 SWS SU + 2 SWS Ü), 48 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	Students are able to <ul style="list-style-type: none"> – calculate and draw the paraxial image in the emmetropic and ametropic eye, taking into account individual ocular dimensions – explain important parameters for lenses and frames – distinguish materials and process, repair and modify frames – explain materials and technologies for surface processing of lenses – measure, center and edge single vision lenses – assemble and check glasses with single vision lenses
Requirements	none
Where in the syllabus	1st semester Bachelor
Type of learning	Integrated module with seminaristic teaching (B04.1) und lab exercises (B04.2)
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Exam for B04.1 (70%) and practical examination for B04.2 (30%; prerequisite for effectiveness the module grade: successful completion of the required exercises. For didactic reasons there is no practical exam for the 2 nd exam period.)
Module mark	See exam type
Approved equivalent modules	Qualification as dispensing optician
Contents	B04.1: cardinal points, sizes, distances and axes of the eye; anatomical and optical dimensions of the Gullstrand eye; paraxial optics of the eye; structure, distribution and function of retinal receptors; image formation, location and size in the emmetropic and ametropic eye; basics knowledge of spherical and astigmatic refractive errors; anatomic principles and image formation in the accommodating eye; metallic, synthetic and natural frame materials; mineral and organic spectacle lens materials; principles of surface treatment and processing of frame and lens materials; important lens parameters and measuring points; dimensions of spectacle frames and principles for their measurement B04.2: exercises for assembling and disassembling glasses (plastic, metal, nylon, rimless); exercises for centering, edging and framing glasses (machine, manual); exercises for aligning glasses; exercises to determine the parameters of spectacle lenses
Literature (selection)	<ul style="list-style-type: none"> – Kommick, Schal, Fricke, Thape, Fischer: Augenoptik in Lernfeldern. Holland + Josenhans – Bohn H.: Technologie für Augenoptiker. DOZ-Verlag
Additional comments	The module language is German.

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B05 – English for Optometrists

Data field	Explanation
Module number	B05
Title module	English for Optometrists (Fachenglisch)
Credits	5 Cr
Workload	68 hrs presence (4 SWS Ü), 82 hrs self-study
Subject level	General
Learning outcomes/ competencies	Students will be able to <ul style="list-style-type: none"> – understand and speak common phrases related to optometry – communicate with English-speaking patients – read and understand literature and texts related to optometry
Requirements	Advanced English knowledge (A-level or more) recommended
Where in the syllabus	1 st semester Bachelor
Type of learning	Seminaristic teachings, text work, language exercises, listening exercises
Status	Compulsory module
Frequency	Yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester in the period according to §19 (2) RSPO, the following examination form applies: Written exercises (50%) and presentation (50%)
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Understanding reading of texts related to optometry in English-language (mainly excerpts from books and publications); development of subject-specific terminology and phraseology on the following topics: customer reception and farewell; history taking; description of measurement results and findings; acceptance of a telephone call in English; discussion of payment arrangements in English
Literature (selection)	<ul style="list-style-type: none"> – Hoffmann H.G., Hoffmann M.: Großer Lernwortschatz Englisch. Hueber Verlag – Stevens J.A.: Powergrammatik Englisch. Hueber Verlag
Additional comments	The module language is German/English

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B06 – Principles of Mathematics and Statistics

Data field	Explanation
Module number	B06
Title module Title units	Principles of Mathematics and Statistics (Mathematik und Statistik Grundlagen) B06.1 Principles of Mathematics and Statistics B06.2 Principles of Mathematics and Statistics exercises
Credits (Cr)	5 Cr
Workload	68 hrs presence (3 SWS SU + 1 SWS Ü), 82 hrs self-study
Subject level	General
Learning outcomes/ competencies	Students know the basics of mathematics and statistics required for optics and optometry
Requirements	none
Where in the syllabus	1st semester Bachelor
Type of learning	Seminaristic teaching and corresponding exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Repetition of elementary rules and arithmetic operations: converting equations and resolving them according to variables, fractional calculation; functions: polynomials (quadratic equations), (simple) fractional-rational functions, trigonometric functions (unit circle, wave functions), exponential, logarithmic functions; geometry: circular function, parabola, ellipse, hyperbola; conic sections; differential calculation for functions with one variable; partial derivatives; basic concepts of statistics (sample, population, probability); location and dispersion parameters (median, mean, standard deviation); error probabilities; basics of descriptive and assessing statistics; distributions (normal distribution curve)
Literature (selection)	to be announced by teacher
Additional comments	The module language is German.

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B07 – Pathology, Immunology und Pharmacology

Data field	Explanation
Module number	B07
Title module	Pathology, Immunology and Pharmacology (Pathologie, Immunologie und Pharmakologie)
Credits (Cr)	5 Cr
Workload	68 hrs presence (4 SWS SU), 82 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/competencies	Students are able to: <ul style="list-style-type: none"> – understand basic principles of general pathology and immunology – understand the composition and effectiveness of pharmaceutical agents – understand the composition and effects of important diagnostic and therapeutic drugs for the eye – interpret ocular side effects of ocular and systemic drugs
Requirements	Competencies of module B01 recommended
Where in the syllabus	2 nd semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	Yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Biology of micro-organisms (virus, bacteria, fungi, parasites); general immunology (antigens, antibodies, specific and unspecific immune response, allergy); inflammation and wound healing; infectious diseases; auto-immune diseases; pharmaco-kinetics and dynamics; vegetative nervous system and effectiveness of pharmacological agents: analgetica, local anaesthetics, anti-inflammatory drugs, anti-biotics, anti-allergical, anti-septical and anti-viral drugs; disinfectants and preservatives; factors influencing the bio-availability of ocular drugs; principles and application of ocular drugs (cycloplegic, mydriatic and anaesthetic drugs, fluorescein); principals and composition of frequently prescribed therapeutic and prophylactic ocular drugs (drugs for lowering of IOP, anti-biotic, anti-allergic, anti-inflammatory drugs); frequent side effects of systemic drugs on the eye and of ocular drugs on the system.
Literature (selection)	<ul style="list-style-type: none"> – Kleine Arzneimittellehre für Pflege- und Gesundheitsfachberufe 7., überarb. Aufl. 2017, ISBN 9783662544198 – Carl Erb, Torsten Schlote. Medikamentöse Augentherapie, 6. vollständig überarbeitete und erweiterte Aufl. 2017, ISBN: 9783131179265 – Torsten Schlote, Ulrich Kellner. Unerwünschte Arzneimittelwirkungen in der Augenheilkunde, 1. Aufl. 2011, ISBN: 9783131532411
Additional comments	The module language is German

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B08 – Spherical Contact Lenses

Data field	Explanation
Module number	B08
Title module Title units	Spherical Contact Lenses (Rotations-symmetrische Kontaktlinsen) B08.1 Spherical Contact Lenses B08.2 Spherical Contact Lenses Lab
Credits (Cr)	5 Cr
Workload	102 hrs of presence (2 SWS SU + 4 SWS Ü), 48 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	B08.1: The students are able to <ul style="list-style-type: none"> – Explain the image formation by the contact lens – eye system – Estimate, calculate and determine the optical power of contact lens, tear lens and over-refraction – Perform the preliminary and final assessment necessary for fitting contact lenses – Select an appropriate rotationally symmetrical rigid or soft contact lens for a given eye – Select and determine material, geometry and power for a prescription of contact lenses – Apply appropriate contact lens hygiene
Requirements	Competencies of module B02 recommended
Where in the syllabus	2 nd semester Bachelor
Type of learning	B08.1: Seminaristic teaching; B08.2: Lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: written examination (B08.1) and practical examination (B08.2); Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Optical principles of correction of refractive errors with CL; optical effect of CL on the eye; tear lens; over-refraction; residual astigmatism; error cylinder; spherical and aspherical CL; manufacturing process and materials for soft and rigid CL; B08.2: selection and fitting of soft and rigid spherical and aspherical contact lenses; synchronism vs. three-point support; assessment of CL fit depending on rear surface geometry and diameter; determination of parameters for CL prescription; peculiarities for fitting disposable CL
Literature (selection)	<ul style="list-style-type: none"> – Müller-Treiber A.: Kontaktlinsen Know How. DOZ-Verlag – Baron H., Ebel J.: Kontaktlinsen. DOZ-Verlag – Phillips A.J., Speedwell L.: Contact Lenses. Butterworth Heinemann
Additional comments	The module language is German

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B09 – Ophthalmoskopy und Retinoskopy

Data field	Explanation
Module number	B09
Title module Title units	Ophthalmoscopy and Retinoscopy (Ophthalmoskopie und Skiaskopie) B09.1 Ophthalmoscopy and Retinoscopy B09.2 Ophthalmoscopy and Retinoscopy Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (2 SWS SU + 3 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/competencies	The students are able to <ul style="list-style-type: none"> – Understand the relationship between refractive errors and light reflexes – Determine the objective refraction of an eye using retinoscopy – Recognise, interpret and record normal variants of ocular fundus – Assess the central fundus using direct ophthalmoscopy
Requirements	Competencies of modules B03 and B04 recommended
Where in the syllabus	2 nd semester Bachelor
Type of learning	B09.1: seminaristic lectures; B09.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester in the period according to §19 (2) RSPO, the following examination form applies: Written examination (B09.1) + practical examination (B09.2). The exam for B09.2 consists of two sub-exams: a) ophthalmoscopy on the living eye and interpretation of fundus photos, and b) retinoscopy on the exercise eye and on the living eye. Both sub-exams a) and b) must be passed individually. Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B09.1: optical principles of direct and indirect ophthalmoscopy; relevant anatomy and blood supply of posterior eye; norm variants and criteria for differentiation for: general fundus appearance, optic disc, macula, retinal blood vessels, periphery; description and basic knowledge for common abnormalities of posterior eye; optical principles for retinoscopy (refractive error and characteristic light reflexes); principles of static streak retinoscopy for spherical and astigmatic refractive errors; introduction to advanced methods of retinoscopy (e.g. Mohindra-r.; Nott-r.; dynamic retinoscopy; MEM) B09.2: Exercises on direct ophthalmoscopy (model eye and real eye); interpretation of fundus camera photos with respect to norm variants and common abnormalities; recording of fundus findings; exercises on static streak retinoscopy on model eyes and living eyes with spherical and astigmatic refractive errors
Literature (selection)	<ul style="list-style-type: none"> – Dietze H.: Die optometrische Untersuchung. Thieme-Verlag – Dietze H.: Ophthalmoskopie. DOZ-Verlag
Additional comments	The module language is German.

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B10 – Physiological Optics I

Data field	Explanation
Module number	B10
Title module	Physiological Optics 1 (Physiologische Optik 1)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS SU), 99 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The Students are able to <ul style="list-style-type: none"> – Understand the physiological principles of resolution, visual acuity, contrast sensitivity and colour perception – Understand and explain procedures for assessing visual acuity, contrast sensitivity and colour deficiency
Requirements	Competencies of module B04 recommended
Where in the syllabus	2 nd semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Qualification of dispensing optician
Contents	Physiological and biochemical principles of the visual process; resolving power and types of visual acuity; optotypes and test charts for the determination of visual acuity and contrast sensitivity; termination criterion and psychometric function for visual acuity; contrast vision and contrast sensitivity; methods for measuring contrast sensitivity; physiological principles of colour vision; principles and methods to determine colour vision deficiencies
Literature (selection)	<ul style="list-style-type: none"> – Dietze H. Die optometrische Untersuchung. Thieme Verlag – Köhl H., Roth G.: Augenoptik. DOZ-Verlag – R. Rabbett. Bennett and Rabbett's Clinical Visual Optics. Butterworth Heinemann
Additional comments	The module language is German.

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B11 – General Optics 1

Data field	Explanation
Module number	B11
Title module Title units	General Optics 1 (Allgemeine Optik 1) B11.1 General Optics 1 B11.2 General Optics 1 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand the origin and character of light – understand the principles of reflection and refraction of light at flat and curved surfaces – understand the imaging on lenses and simple optical systems
Requirements	none
Where in the syllabus	2 nd semester Bachelor
Type of learning	B11.1: seminaristic teaching; B11.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination (B11.1) and laboratory report with consultation in groups (B11.2); Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Qualification as Dispensing Optician
Contents	B11.1: nature of light; law of reflection; image formation by mirrors; law of refraction; method of two circles; deflection of light by plane-parallel plates and prisms; paraxial optics and image formation by spherical surfaces and by thin and thick lenses; the afocal lens; image formation by two-lens systems B11.2: experiments on the topics listed under B11.1
Literature (selection)	<ul style="list-style-type: none"> – Roth G.: Allgemeine Optik. DOZ-Verlag – Köhl H.: Die geometrische Optik. DOZ-Verlag
Additional comments	The module language is German.

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B12 – Ophthalmic Lenses and Dispensing 1

Data field	Explanation
Module number	B12
Title module Title units	Ophthalmic Lenses and Dispensing 1 (Brillenoptik und -anpassung 1) B12.1 Ophthalmic Lenses and Dispensing 1 B12.2 Ophthalmic Lenses and Dispensing 1 Lab
Credits (Cr)	5 Cr
Workload	68 hrs presence (2 SWS SU + 2 SWS Ü), 82 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand and explain optical and anatomical adjustment requirements for single vision glasses – Calculate sphero-cylindrical and prismatic effects of single vision lenses – Explain the optics and surface design of single vision lenses
Requirements	none
Where in the syllabus	2 nd semester Bachelor
Type of learning	B12.1: Seminaristic teaching; B12.2: Lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not determine the form of examination and the modalities of examination at the beginning of the semester within the period specified in §19 (2) RSPO, the following form of examination applies: written examination (B12.1) and practical examination (B12.2); Prerequisite for the effectiveness of the module grade: Successful completion of the required exercises, unless otherwise agreed with the teacher. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Qualification as Dispensing Optician
Contents	B12.1: requirements for centration in the spectacle lens-eye system; Prismatic (side) effect of single vision lenses; aberrations of spectacle lenses; difference between spherical and aspherical lens surfaces; B12.2: determination of basic anatomical parameters of the human skull; exercises to assess the influence of the facial muscles on the seating behaviour of glasses; exercises for the anatomical fitting of different types of frame materials with various anatomical conditions; exercises on statics of frames made of different materials and proportions; determination of parameters of spectacle frames and glasses; measurement exercises on prismatic single vision lenses; exercises on optical fitting of single vision spectacle lenses
Literature (selection)	<ul style="list-style-type: none"> – Diepes H., Blendowske R.: Optik und Technik der Brille. DOZ-Verlag – Fahrner D.: Brillenkunde: Kopf & Brille. DOZ-Verlag – Schikorra A.: Einstärken- und Mehrstärken-Brillengläser. DOZ-Verlag – Schulz W., Eber J.: Brillenanpassung. DOZ-Verlag – Nolting J., Wassmer K.: Abbildungsfehler DOZ-Verlag 2001
Additional comments	The module language is German.

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B13 – Ocular Pathology

Data field	Explanation
Module number	B13
Title module	Ocular Pathology (Pathologie des Auges)
Credits (Cr)	5 Cr
Workload	68 hrs presence (4 SWS SU), 82 hors self-study
Subject level	Specific / fundamentals
Learning outcomes/competencies	The students are able to <ul style="list-style-type: none"> – Explain typical pathologies of the anterior and posterior sections of the eye – Understand the effect of common ocular pathologies on vision – Differentiate between normal variants of the healthy eye and signs for ocular pathology – Understand causes of and symptoms for sudden vision loss and know how to apply appropriate first aid measures
Requirements	Competencies of modules B01 and B07 recommended
Where in the syllabus	3 rd semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Causes, subjective and objective symptoms, differential diagnosis and therapeutic options for ocular pathology of: eye lids, tear apparatus, conjunctiva, sclera, cornea, iris, ciliary body, crystalline lens, vitreous, retina, optic nerve; pathological causes for gradual and sudden vision loss; ocular emergencies and first-aid measures by optometrists; overview of procedures, indications, tolerances and risks of refractive surgery, cataract surgery, glaucoma surgery, keratoplastic
Literature (selection)	<ul style="list-style-type: none"> – Grehn, F.: Augenheilkunde. Springer Verlag – Kanski, J.: Klinische Ophthalmologie. Urban & Fischer – Lang, G.K.: Augenheilkunde. Thieme Verlag – Reim M.: Diagnosen am Augenhintergrund. Thieme Verlag
Additional comments	The module language is German

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B14 – Toric Contact Lenses

Data field	Explanation
Module number	B14
Title module Title units	Toric Contact Lenses (Torische Kontaktlinsen) B14.1 Toric Contact Lenses B14.2 Toric Contact Lenses Lab
Credits (Cr)	5 Cr
Workload	102 hrs presence (2 SWS SU + 4 SWS Ü), 48 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students will be able to <ul style="list-style-type: none"> – Explain the optical principle and the principal design of soft and rigid toric CL – Explain principals and strategies for fitting soft and rigid toric CL – Understand the basics to calculate a market price for CL – Select, fit and assess appropriate toric contact lenses – Instruct and advice patients on CL handling and care
Requirements	Competencies of modules B02 and B08 recommended
Where in the syllabus	3 rd semester Bachelor
Type of learning	B14.1: seminaristic teaching; B14.2: lab exercises
Status	Compulsory module
Frequency	Yearly
Exam type	If the teacher does not determine the form of examination and the modalities of examination at the beginning of the semester within the period specified in §19 (2) RSPO, the following form of examination applies: Written examination (B14.1) + practical examination (B14.2); Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B14.1 Optical designs and principles of toric CL; mechanisms for stabilisation of toric CL; optical interaction between astigmatic eye and toric CL; criteria for selection and fit of toric soft and rigid CL; CL systems and various wearing modes; marketing fundamentals of and basic economic calculations for contact lenses B14.2 selecting, fitting and assessing toric contact lenses of various geometries and stabilisation principles (RGP: VPT, RT, BT; soft CL: prismatic, dynamic, mixed); measurement and assessment of over-refraction and residual astigmatism; instruction and patient advice on CL-handling and care; particularities for fitting disposable CL of various designs
Literature (selection)	<ul style="list-style-type: none"> – Baron H., Ebel J.: Kontaktlinsen. DOZ-Verlag – Müller-Treiber A.: Kontaktlinsen - Know How. DOZ-Verlag – Phillips A.J., Speedwell L.: Contact Lenses. Butterworth Heinemann – Efron N., Morgan P.: Contact Lens Complications. Butterworth Heinemann – Korb D R.: The Tear Film, Butterworth Heinemann
Additional comments	The module language is German.

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B15 – Binocular vision 1

Data field	Explanation
Module number	B15
Title module Title units	Binocular Vision 1 (Binokularsehen 1) B15.1 Binocular Vision 1 B15.2 Binocular Vision 1 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students will be able to <ul style="list-style-type: none"> – Explain the principles of binocular and stereoscopic perception – Understand the epidemiology, common signs and symptoms as well as treatment options for heterophoria – Understand and apply tests and procedures for associated and dissociated phoria – Understand and assess the accommodation and vergence apparatus – Determine an appropriate prescription for spherical or prismatic lenses or vision therapy
Requirements	Competencies of modules B04, B09 and B10 recommended
Where in the syllabus	3 rd semester Bachelor
Type of learning	B15.1: Seminaristic teaching; B15.2: lab exercises
Status	Compulsory module
Frequency	Yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B15.1: written examination; B15.2: practical test. Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B15.1: anatomy and physiology of extra-ocular muscles (EOM) and eye movement; innervation of EOM; types of monocular and binocular eye movements; physiology of binocular and stereoscopic perception; epidemiology and classification of binocular vision disorders (BVD); effects of BVD on monocular and binocular visual function; measurement principles for dissociated and associated phoria; principles, rules and test types for assessment of accommodation and vergence (e.g. fusional reserves, AC/A ratio, relative accommodation); B15.2: exercises on measuring and assessing stereoscopic vision; assessment of dissociated and associated phoria; measuring fusional reserves; determination of AC/A-ratio; exercises on assessment of accommodation (e.g. magnitude of a., relative a., lag of a., accommodative facility, MEM-retinoscopy); integrated or graphical analysis for interpretation of test results and measurements; exercises on transforming the measurements into a prescription for binocular vision disorders and a corresponding management plan, basic exercises for visual training
Literature (selection)	<ul style="list-style-type: none"> – Dietze H. Die optometrische Untersuchung. Thieme Verlag – Goersch H.: Einführung in das Binokularsehen. Der Augenoptiker 07/1980 – Evans B.J.W. Pickwell's Binocular Vision Anomalies. B. Heinemann
Additional comments	The module language is German

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B16 – Physiological Optics 2

Data field	Explanation
Module number	B16
Title module Title units	Physiological Optics 2 (Physiologische Optik 2) B16.1 Physiological Optics 2 B16.2 Physiological Optics 2 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students will be able to <ul style="list-style-type: none"> – Understand and assess important visual functions – Interpret, record and communicate the assessment results – Understand the physiology of and the correlation between physical stimuli and visual perception – Understand the effects of ocular aberrations and other limiting factors on vision
Requirements	Competencies of modules B04 and B10 recommended
Where in the syllabus	3 rd semester Bachelor
Type of learning	B16.1: seminaristic teaching; B16.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester in the period according to §19 (2) RSPO, the following examination form applies: Written examination (B16.1) + practical examination (B16.2); Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B16.1: physiological, psycho-physical and technical principles for assessment of important visual functions (accommodation, adaptation and glare, peripheral vision); principles of manual (Goldmann-) and automated perimetry; interpretation of visual field print outs for the normal and abnormal eye; basic knowledge of visual perception (perception of contrast, orientation, form, movement, flicker etc.); localization of centres of perception in the visual pathway; perceptual delusions; limits of visual resolution and effect of diffraction, polychromatic and monochromatic aberrations; measurement and correction of ocular aberrations; B16.2: exercises for assessment of all visual functions covered by module B10; (logMAR, Snellen, decimal and reading visual acuity; contrast sensitivity, colour vision); exercises for assessment of adaptation and sensitivity to glare, exercises on visual fields (confrontation tests; kinetic and automatic perimetry on eyes with and without simulated visual field defects; supra-threshold and threshold perimetry; exercises on aberrometry
Literature (selection)	<ul style="list-style-type: none"> – Literatur für Modul B10 – Ditzinger T. Illusionen des Sehens: Eine Reise in die Welt der visuellen Wahrnehmung. Spektrum Akademischer Verlag – Goldstein E. B, Irtel H.: Wahrnehmungspsychologie. Spektrum Akademischer Verlag – Gregory R.: Eye and Brain: The Psychology of Seeing. Oxford University Press
Additional comments	The module language is German

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B17 – General Optics 2

Data field	Explanation
Module number	B17
Title module	General Optics 2 (Allgemeine Optik 2)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS SU), 99 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Calculate and understand two-lens systems – Understand the beam and beam boundaries through apertures – Understand the wave nature of light and its effects related to optometry – Understand the emission of light by lamps and photometry
Requirements	Competencies of modules B04 and B11 recommended
Where in the syllabus	3 rd semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Ray and beam limitations; Aperture diaphragm and pupils; field diaphragm and hatches; telecentric ray path; ideal and non-ideal bundle limitation; wave nature of light (dispersion, diffraction, interference, polarization); light generation by means of temperature and luminescence radiators; black radiator, incandescent lamps, fluorescent lamps, LEDs and lasers; photometry: luminous flux, illuminance, luminance, luminous intensity
Literatur (selection)	<ul style="list-style-type: none"> – Roth G.: Allgemeine Optik. DOZ-Verlag – Köhl H.: Die geometrische Optik. DOZ-Verlag – Schröder G., Treiber H.: Technische Optik: Grundlagen und Anwendungen. Vogel Verlag
Additional comments	The module language is German

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B18 – Low Vision 1

Data field	Explanation
Module number	B18
Title module Title units	Low Vision 1 (Low Vision 1) B18.1 Low Vision 1 B18.2 Low Vision 1 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand visual restrictions and their effect on the quality of life – Explain characteristics of magnifying optical devices and indications for their prescription – Assess visual function and determine the need for magnification – Explain optical properties and proper usage of magnifying lenses and glasses
Requirements	Competencies of modules B04, B05 and B10 recommended
Where in the syllabus	3rd semester Bachelor
Type of learning	B18.1: Seminaristic teaching B18.2: Lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B18.1 written examination; B18.2 practical test; Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B18.1: Epidemiology and common causes of visual impairment; social, economic and educational effects of visual impairment; visual function of visually impaired and particularities of their assessment (subjective refraction, visual acuity, reading speed, illumination, contrast sensitivity); technical and optometric terms for describing optical properties of low vision aids; types and characteristics of magnifying lenses and glasses; types and properties of filter lenses; B18.2: History taking in patients with low vision; principles of communication with low vision patients; self-experience using simulators for low vision; exercises for assessment of visual function in low vision patients (visual acuity, contrast sensitivity, visual field); exercises for determination of need of magnification; experiments with magnifying lenses and glasses
Literature (selection)	<ul style="list-style-type: none"> – Dickenson C.: Low Vision: Principles and Practice. Elsevier Health – Diepes H., Krause K., Rohrschneider K.: Sehbehinderung. DOZ-Verlag – Jackson A. J., Wolffsohn J. S., Bailey I. L.: Low Vision Manual. BH – Kampik A., Grehn F.: Augenärztliche Rehabilitation. Thieme Verlag
Additional comments	The module language is German.

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B19 – Ocular Effects of Age and Systemic Disorders

Data field	Explanation
Module number	B19
Title module	Ocular Effects of Age and Systemic Disorders (Systemische Veränderungen und Auge)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS SU), 99 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand the lifelong development of the visual system and refraction and distinguish deviations from the normal state – Explain physiological changes and visual functions in the aging eye – Explain the influence of systemic changes and diseases on the eye and vision
Requirements	Competencies of modules B01, B07, and B13 recommended
Where in the syllabus	4 th semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	Pre- and postnatal development of the eye and the visual system; Developmental disorders of the visual system in childhood and their optometric management; eye diseases in childhood, age related changes of visual functions and refractive error; changes in the ageing eye and their clinical appearance. Systemic diseases and their impact on the visual system (cardiovascular diseases, rheumatic diseases, neurological diseases, connective tissue disorders, immunological disorders, diseases of the endocrine system, hereditary disorders, inflammatory disorders, infectious diseases, tumours)
Literature (selection)	<ul style="list-style-type: none"> – Cavallotti C., Luciano C.: Age related Changes in the Human Eye, Springer Verlag – Klinische Ophthalmologie, Kanski, J.2008, 6. Aufl., Urban & Fischer in Elsevier, ISBN 9783437234729; Kapitel 24: Systemische Erkrankungen – Kaiser H.J., Flammer J.: Kinderophthalmologie. Verlag Hans Huber – Basiswissen Augenheilkunde, Walter, P., Plange, N., Kapitel: Auge und Sehen in Kindheit und Alter – altersspezifische Erkrankungen und Augenbeteiligung bei Allgemeinerkrankungen, 1. Aufl. 2017, Springer ISBN 9783662528006 – Embryologie, Moore, Keith, 6. Aufl., 2013, Urban & Fischer Verlag, ISBN 9783437411137
Additional comments	The module language is German

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B20 – Multifocal Contact Lenses

Data field	Explanation
Module number	B20
Titel Module Titel units	Multifocal Contact Lenses (Mehrstärken-Kontaktlinen) B20.1 Multifocal Contact Lenses B20.2 Multifocal Contact Lenses Lab
Credits (Cr)	5 Cr
Workload	68 hrs presence (2 SWS SU + 2 SWS Ü), 82 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Explain strategies and principles for CL correcting presbyopia, as well as the optical design and mode of operation of presbyopia CL – Select and fit suitable KL for presbyopia – Select, fit and dispense a custom CL of all types and for all indications taught in semester 1-4 – Use modern devices and procedures for recording the corneal topography and ocular dimensions and use them for CL fitting
Requirements	Competencies of modules B02, B08 and B14 recommended
Where in the syllabus	4 th semester Bachelor
Type of learning	B20.1: seminaristic teaching; B20.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B20.1: written examination; B20.2: practical test; Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B20.1: Optical fundamentals and principles for correcting presbyopia with CL; indications for various CL types; CL hygiene; legal requirements for fitting and dispensing CL; follow-up inspection; CL complications and troubleshooting B20.2: Selection and fit of CL for presbyopia (alternating and simultaneous systems, aplanatic and mixed systems; monovision, modified monovision) and in corneal astigmatism; particularities for exchange systems; measurements using the current technical options of the contact lens laboratory
Literature (selection)	<ul style="list-style-type: none"> – Baron H., Ebel J.: Kontaktlinsen. DOZ-Verlag – Müller-Treiber A. Kontaktlinsen Know-how, DOZ-Verlag – Phillips A.J., Speedwell L.: Contact Lenses. Butterworth Heinemann – Efron N.: Contact Lens Complications. Elsevier – Korb D R.: The Tear Film, Butterworth Heinemann
Additional comments	The module language is German

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B21 – Binocular Vision 2

Data field	Explanation
Module number	B21
Title module Title units	Binocular Vision 2 (Binokularsehen 2) B21.1 Binocular Vision 2 B21.2 Binocular Vision 2 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü), 65 hrs self-study
Subject level	Specific / fundamentals
Learning outcomes/ Competencies	The students are able to <ul style="list-style-type: none"> – Explain the epidemiology and the classification of fixation disparity and strabismus – Understand and assess the sensoric status in fixation disparity and in various types of strabismus – Explain and apply the measurement and correction method by H. J. Haase – Apply procedures to detect and assess strabismic disorders
Requirements	Competencies of modules B04, B09, B10 and B15 recommended
Where in the syllabus	4 th semester Bachelor
Type of learning	B21.1: seminaristic teaching; B21.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B21.1: written examination; B21.2: practical test; Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B21.1: sensoric compensation of heterophoria: principles and theories of fixation disparity; theory by H.J. Haase (MKH); principles and techniques for detection and measurements of fixation disparity; epidemiology and classification of strabismus; motoric and sensoric processing in strabismus with abnormal correspondence and in ocular motility disorders; comparison between sensoric compensation in strabismus and fixation disparity; pathophysiology, visual effects and methods for assessment and treatment of amblyopia; typical signs and symptoms for common ocular motility disorders incl. cranial nerve palsies B21.2: exercises using methods to detect and assess fixation disparity (e.g. MKH, Mallet-unit); transformation of measurement results into a binocular prescription; exercises using standard tests for assessment of strabismus and motility disorders (e.g. cover test, Maddox rod and cross, Worth test, Brückner test, Hirschberg test, Bagolini test, ocular motility test); complete monocular and binocular refraction at distance and near on selected subjects or patients
Literature (selection)	<ul style="list-style-type: none"> – Haase H.-J.: Winkelfehlsichtigkeit mit Fixationsdisp. DOZ-Verlag – Schroth, V.: MKH in Theorie in Praxis. DOZ-Verlag – Lang, J.: Strabismus: Diagnostik, Schielformen, Therapie. Verlag Hans Huber – sowie die für das Modul B15 angegebene Literatur
Additional comments	The module language is German.

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B22 – Advanced Investigate Techniques in Optometry

Data field	Explanation
Module number	B22
Title module Title units	Advanced Investigative Techniques in Optometry (Spezielle Optometrische Untersuchungen) B22.1 Advanced Investigative Techniques in Optometry B22.2 Advanced Investigative Techniques in Optometry Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (2 SWS SU + 3 SWS Ü), 65 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Explain and apply typical screening tests and procedures – Interpret, record and communicate the results of common investigative techniques – Determine refraction and visual acuity in toddlers and pre-school children
Requirements	Competencies of all modules with biomedical and optometric content recommended up to and including the third semester
Where in the syllabus	4th semester Bachelor
Type of learning	B22.1: seminaristic teaching; B22.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B22.1: written examination; B22.2: practical test. Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B22.1: general concepts and definitions for screening; principles of screening or other investigative procedures for: glaucoma, cataract, diabetic retinopathy, amblyopia, afferent and efferent pupil defects, ocular motility disorders; principles of laser scanning ophthalmoscope and optical coherence tomography; meaning and interpretation of common findings in normal and abnormal eyes; tests and strategies for examining toddlers and pre-schoolers and criteria for prescribing visual aids in children; B22.2: Exercises on screening strategies for all disorders listed under B22.1; exercises using modern imaging technology (e.g. OCT, HRT, optos) incl. interpretation of results; exercises on application of common diagnostic drugs (Goldmann tonometry, cycloplegic refraction, indirect ophthalmoscopy of central end peripheral fundus); exercises on assessment and determination of refraction and visual acuity in toddlers and pre-school children
Literature (selection)	– Dietze H: Die optometrische Untersuchung, Thieme Verlag
Additional comments	The module language is German

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B23 – Ophthalmic Lenses and Dispensing 2

Data field	Explanation
Module number	B23
Title module Title units	Ophthalmic Lenses and Dispensing 2 (Brillenoptik und –anpassung 2) B23.1 Ophthalmic Lenses and Dispensing 2 B23.2 Ophthalmic Lenses and Dispensing 2 Lab
Credits (Cr)	5 Cr
Workload	102 hrs presence (3 SWS SU + 3 SWS Ü), 48 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand optical properties of the spectacle lens - eye system – Explain the optics and design of multifocal spectacle lenses – Calculate lens combinations using power vectors – Explain the optics and design of progressive lenses and understand the connection to higher order aberrations of the eye – Explain optical and anatomical adjustment requirements for varifocals, VDU work glasses and sports glasses – Determine and interpret centering data for different types of glasses
Requirements	Competencies of module B04 and B12 recommended
Where in the syllabus	4 th semester Bachelor
Type of learning	B23.1: seminaristic teaching; B23.2: lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B23.1: written examination; B23.2: practical test. Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B023.1: image properties for the optical system eye – refractive deficit; effect of spectacle lenses on retinal image size, amplitude of accommodation and need for convergence; prismatic (side) effect of multifocal lenses; power vector calculation for spectacle lens combinations; centering of spectacle lenses with prismatic power; modern spectacle lens design with respect to higher order aberrations; optical design and principles of: progressive lenses, lenses for computer work, lenses for sports glasses B023.2: exercises for fitting and centering multifocal glasses and glasses for special visual tasks, in particular workplace glasses and sports glasses; optical fitting of individual progressive lenses and spectacle lenses for special applications; conventional and video-based acquisition of centering data relevant to lens ordering; determination and measurement of optical properties of spectacle lenses
Literature (selection)	<ul style="list-style-type: none"> – Diepes H., Blendowske R.: Optik und Technik der Brille. DOZ-Verlag – Kalder D.: Gleitsichtgläser 1+2. WVAO
Additional comments	The module language is German.

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B24 – Low Vision 2

Data field	Explanation
Module number	B24
Title module Title units	Low Vision 2 (Low Vision 2) B24.1 Low Vision 2 B24.2 Low Vision 2 Lab
Credits (Cr)	5 Cr
Workload	85 hrs presence (3 SWS SU + 2 SWS Ü); 65 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Explain the principles behind magnifying vision aids based on telescopes – Explain different electronically magnifying vision aids – Perform all procedures necessary to determine and fit optical or electronic low vision aids – Select an appropriate low vision aid and explain their correct usage and handling
Requirements	Competencies of module B18 recommended
Where in the syllabus	4 th semester Bachelor
Type of learning	B24.1: seminaristic teaching; B24.2: Lab exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B24.1: written examination; B24.2: practical test; Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B24.1: characteristics of illumination and visual ergonomics for visually disabled persons; optical and mechanical properties of (spectacle mounted) telescopes and (spectacle) microscopes; selection and fit of low vision aids with respect to refractive error; properties of magnifying electronic devices; complete process of determining and dispensing low vision aids. B24.2: exercises on visual ergonomics for low vision patients; exercises on monoculars and (spectacle mounted) telescopes; exercises on the effects of uncorrected refractive errors on the effectiveness of low vision aids; exercises on stationary and mobile screen readers; exercises for installing magnifying visual aids in spectacle frames
Literature (selection)	See module B18
Additional comments	The module language is German.

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B25 – Clinical Optometry 1

Data field	Explanation
Module number	B25
Title module Title units	Clinical Optometry 1 (Klinische Optometrie 1) B25.1 Clinical Optometry 1 B25.2 Clinical Optometry 1 Lab
Credits (Cr)	5 Cr
Workload	68 hrs presence (1 SWS SU + 3 SWS Ü), 82 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Plan and carry out an optometric examination for customers / patients with different mental and physical requirements – Explain findings, symptoms and possible solutions for typical case studies – Use typical examination techniques, interpret the results and make clinical decisions – Advise customers / patients about causes, treatment modalities and consequences of visual disturbances
Requirements	Competencies of all modules with biomedical and optometric content up to and including the fourth semester are recommended. The following modules / units must be completed: B03 Subjective Refraction, B13 Ocular Pathology, B16.1 Physiological Optics II
Where in the syllabus	5th semester Bachelor
Type of learning	Integrated module with seminar lessons (B25.1) and clinical lab exercises (B25.2)
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester in the period according to §19 (2) RSPO, the following examination form applies: case study (B25.1) and case documentation (B25.2), 50% each; Prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, there is no practical exam in the 2nd exam period.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B25.1: general and specific strategies for an optometric eye examination; discussion of selected case reports and examples to make a clinical decisions / a diagnosis / a differential diagnosis / a management plan; guidance for communication with patients and the ophthalmologist. B25.2 Case-related independent ocular assessment and ocular investigation of real patients (obligatory parts of a full eye exam are: history taking, initial tests, retinoscopy, subjective refraction, visual acuity, direct or indirect ophthalmoscopy, slit lamp); making a diagnosis / differential diagnosis and development of management plan; discussion of results with patients and appropriate advice; writing optometric reports for patients (obligatory) and referral letters to other eye care practitioners (case dependent);
Literature (selection)	See modules with biomedical or optometric content
Additional comments	The module language is German.

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B26 – Required Elective Module 1

Data field	Explanation
Module number	B26
Title module	Required Elective Module 1 (Wahlpflichtmodul 1)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS Ü), 99 hrs self-study
Subject level	General science (advanced)
Learning outcomes/ competencies	See catalogue of required elective modules
Requirements	See catalogue of required elective modules
Where in the syllabus	5 th semester Bachelor
Type of learning	See catalogue of required elective modules
Status	See catalogue of required elective modules
Frequency	yearly
Exam type	See catalogue of required elective modules
Module mark	See catalogue of required elective modules
Approved equivalent modules	See catalogue of required elective modules
Contents	For contents, see modules WP01 and WP02 from the compulsory elective module catalogue. For this elective module, module WP01 or module WP02 can be selected from the elective module catalogue.
Literature (selection)	See description of the elective modules WP01 and WP02
Additional comments	<p>At the decision of the faculty council of faculty VII, further modules can be provided as compulsory elective modules. The faculty council decides on the offer of further elective modules before the beginning of the semester.</p> <p>Upon request, the student can also choose a module from another Bachelor course as an elective module. The dean of the department decides on the application.</p> <p>In the case of a temporary study abroad, the credits earned in modules there can be recognized in full as compulsory elective modules if the content of the modules is not comparable to that of the compulsory modules of this curriculum. The dean of the department decides on the recognition.</p>

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B27 – Required Elective Module 2

Data field	Explanation
Module number	B27
Title module Title units	Wahlpflichtmodul II (Required Elective Module 2)
Credits (Cr)	5 LP
Workload	68 Hours Presence (4 SWS Ü), 82 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	See catalogue of required elective modules
Requirements	See catalogue of required elective modules
Where in the syllabus	5 th semester Bachelor
Type of learning	See catalogue of required elective modules
Status	See catalogue of required elective modules
Frequency	yearly
Exam type	See catalogue of required elective modules
Module mark	See catalogue of required elective modules
Approved equivalent modules	See catalogue of required elective modules
Contents	See modules WP03 to WP05 from the compulsory elective module catalogue For this elective module, a module from WP03 to WP05 can be selected from the elective module catalogue.
Literature	See description of the elective modules WP03 and WP05
Additional comments	At the decision of the faculty council of faculty VII, further modules can be provided as compulsory elective modules. The faculty council decides on the offer of further elective modules before the beginning of the semester. Upon request, the student can also choose a module from another Bachelor course as an elective module. The dean of the department decides on the application. In the case of a temporary study abroad, the credit points earned in modules there can be recognized in full as compulsory elective modules if the content of the modules is not comparable with that of the compulsory modules of this curriculum. The dean of the department decides on the recognition.

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B28 – Scientific Methods

Data field	Explanation
Module number	B28
Title module Title units	Scientific Methods (Wissenschaftliches Arbeiten) B28.1 Project Work B28.2 Data Analysis and Evaluation
Credits (Cr)	5 Cr
Workload	68 hrs presence (2 SWS SU + 2 SWS Ü), 82 hrs self-study
Subject level	General science (advanced)
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Understand the structure of scientific texts – Find and cite scientific literature – Derive scientific hypotheses – Plan and carry out a scientific project – Evaluate the results and write a scientific text
Requirements	Competencies of module B06 recommended
Where in the syllabus	5th semester Bachelor
Type of learning	Seminar teaching including project work and presentation, arithmetic exercises
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B31.1 homework with consultation; B31.2 written exercises; prerequisite for the effectiveness of the module grade: successful completion of the required exercises.
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B28.1: Instructions for planning and carrying out scientific studies; requirements and structure of a scientific paper; literature search; types of study designs and scientific publications; evaluation of selected specialist publications; citation rules, references and bibliography; independent project planning and implementation; evaluation of results, writing up a scientific text and presenting the results. B28.2: sequence and basic concepts of empirical research: variables, hypotheses, sample and entity, scales, study designs, quality criteria; descriptive statistics with frequency, graphs and characteristic values; application of descriptive statistics in SPSS; inference statistics with test statistics and p-value; significance level, confidence intervals and decision making; inference statistical test for differences (Chi-Quadrat, Mann-Whitney-U, Wilcoxon, t-Test); application of inference statistics in SPSS
Literature	<ul style="list-style-type: none"> – Esselborn-Krumbiege H.: Von der Idee zum Text. Eine Anleitung zum wissenschaftlichen Schreiben. UTB Verlag – Franck N., Stary J.: Die Technik wissensch. Arbeitens: Eine praktische Anleitung. UTB Verlag – C. Weiß: Basiswissen Medizinische Statistik. Springer Verlag
Additional comments	The module language is German

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B29 – Business Administration

Data field	Explanation
Module number	B29
Title module Title units	Business Administration (Betriebswirtschaft) B29.1 Business Law B29.2 Business Accountancy
Credits (Cr)	5 Cr
Workload	68 hrs presence (2 SWS SU + 2 SWS SU), 82 hrs self-study
Subject level	Supplementary general science
Learning outcomes/ competencies	The students know: <ul style="list-style-type: none"> – German civil code – Legal requirements for conducting optometry as a health care profession – Fundamentals of accountancy – the basics of cost and plan cost accounting
Requirements	
Where in the syllabus	5th semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: B29.1 written examination; B29.2. Exam
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	B29.1: Civil Code (BGB); German civil code; legal requirements for business contracts; legal requirements and professional conduct of optometry; legal requirements for vocational and professional optometric training; selected cases for lawsuits and malpractice typical in optometry; legal requirements for starting-up a business B29.2: fundamentals of accounting; annual accounts; cost accounting; planned cost accounting
Literatur	<ul style="list-style-type: none"> – Blank A., Hagel H., Hahn H.: Betriebswirtschaftslehre mit Rechnungswesen für die Höhere Berufsfachschule. Bildungsverlag E1ns – Schreiber P.: Rechtliche Grundlagen der Augenoptik. DOZ-inform. DOZ-Verlag. – Speth H., Waltermann A., Hug H.: Betriebswirtschaftslehre mit Rechnungswesen für Fachoberschulen. Merkur Verlag
Additional comments	The module language is German

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B30 – Business Management for Ophthalmic Opticians

Data field	Explanation
Module number	B30
Title module Title units	Business Management for Ophthalmic Opticians (Betriebsführung für Augenoptiker)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS SU), 99 hrs self-study
Subject level	General science (advanced)
Learning outcomes/ competencies	The students are able to <ul style="list-style-type: none"> – Evaluate and analyse market, location and competition – Plan advertising strategies and forms of communication – Create a business and financial plan – Calculate prices for optometric services and optical products
Requirements	none
Where in the syllabus	5 th semester Bachelor
Type of learning	Seminaristic teaching
Status	Compulsory module
Frequency	yearly
Exam type	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: Written examination
Module mark	See exam type
Approved equivalent modules	Modules of comparable contents
Contents	contemporary marketing knowledge of business economics; current situation and development of market; analyses of market and creation of business concepts; fundamentals of advertising and successful communication; personnel management instruments (personnel planning, personnel acquisition, employee promotion); Goods and assortment planning; Basics for calculation of optometric services and optical goods; legal and economic foundations for business start-ups (financial plan, financial security, business plan, location analysis)
Literatur	<ul style="list-style-type: none"> – Köhler, J.: Dienstleistungsmarketing. DOZ-Verlag – Kotler, P.: Grundlagen des Marketing. Pearson Studium
Additional comments	The module language is German

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B31 – Internship 1

Data field	Explanation
Module number	B31
Title module	Internship 1 (Praxisphase 1)
Credits (Cr)	10 Cr
Workload	300 hours, corresponds to 40 full working days
Subject level	Specific / advanced
Learning outcomes/ competencies	The students combine their knowledge gained during their studies with initial experience in professional practice
Requirements	120 credit points from modules in subject semesters 1 to 5 (see study regulations for the Bachelor's program in ophthalmic optics / optometry). Modules B04 and B12 must be passed.
Where in the syllabus	6th semester Bachelor
Type of learning	work in a setting related to dispensing optics
Status	Compulsory module
Frequency	yearly
Exam type	undifferentiated performance assessment
Module mark	If the teacher does not specify the examination form and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the module is considered passed if a) the independent selection, optical and anatomical fitting, dispensing and wearing advice for at least 20 glasses, and b) independent glazing of at least 20 glasses is confirmed in writing by the practice. The glasses under a) and b) can be different. For both a) and b) the glasses must contain at least one copy from the following categories: single vision glasses, varifocal glasses, glasses with prismatic effect, glasses for high ametropia (from ± 6.00 D in at least one principal meridian) or anisometropia (difference from ± 2.5 D in at least one principal meridian), plastic frame, metal frame, rimless or half-rim glasses (glasses can contain multiple categories.)
Approved equivalent modules	Qualification as dispensing optician
Contents	Selection, optical and anatomical fitting and dispensing of lenses, frames and glasses in a practice or optician's shop; glazing of lenses of a variety of powers and framing into frames of a variety of materials; for more information, see https://studiengang.beuth-hochschule.de/ao/studium/bachelor/praxisphase Notes: The internship is tied to an internship contract that is concluded with a contract partner of Beuth University. The contractual partner confirms and assesses the services provided in writing at the end of the internship. If the intern falls ill, the missed times must be made up for. It is permissible to extend the practical phase to cooperation partners of the contract partner.
Literature	
Additional comments	The module language is German

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B32 und B33 – General Science Modules 1 and 2

Data field	Explanation
Module number	B32 und B33
Title module	General Science Modules 1 and 2 (Studium Generale 1 und 2)
Credits (Cr)	2,5 Cr
Workload	68 hrs presence (2 SWS SU + 2 SWS Ü), 82 hrs self-study
Subject level	General
Learning outcomes/ competencies	The inter-disciplinary course work generates and links general knowledge in subjects such as social sciences, politics, languages, economics, business administration and others with special consideration of gender-specific questions.
Requirements	
Where in the syllabus	6th semester Bachelor
Type of learning	Seminaristic teaching, exercises, presentations, role playing, text work
Status	Compulsory elective (two modules must be selected from a variety of offers)
Frequency	every semester
Exam type	see description of the respective course
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	The course content comes from the areas of politics and social sciences, humanities, economics, law and industrial sciences as well as foreign languages. The contents, which are updated every semester, are structured and described: http://www.beuth-hochschule.de/i/
Literature	Will be announced in the respective descriptions of the courses
Additional comments	The choice of courses in this module is the responsibility of the students. Students who want to complete their internship outside of Berlin are advised to advance modules B32 and B33 to semesters 1 to 5.

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B34 – Required Elective Module 3

Data field	Explanation
Module number	B34
Title module	Required Elective Module 3
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS Ü), 99 hrs self-study
Subject level	Specific / advanced
Learning outcomes/ competencies	See catalogue of elective modules
Requirements	See catalogue of elective modules
Where in the syllabus	6th semester Bachelor
Type of learning	See catalogue of elective modules
Status	See catalogue of elective modules
Frequency	yearly
Exam type	See catalogue of elective modules
Module mark	See catalogue of elective modules
Approved equivalent modules	See catalogue of elective modules
Contents	For this elective module, module WP01 or module WP02 can be selected from the elective module catalogue. For content, see modules WP01 and WP02 from the required elective module catalogue.
Literature	See description of required elective modules WP01 and WP02
Additional comments	Upon decision of the faculty council of faculty VII, further modules can be provided as compulsory elective modules. The faculty council decides on the offer of further elective modules before the beginning of the semester. Upon request, the student can also choose a module from another Bachelor course as an elective module. The dean of the department decides on the application. In the case of a temporary study abroad, the credit points earned in modules there can be recognized in full as compulsory elective modules if the content of the modules is not comparable with that of the compulsory modules of this curriculum. The dean of the department decides on the recognition.

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B35 – Required Elective Module 4

Data field	Explanation
Module number	B35
Title module	Required Elective Module 4 (Wahlpflichtmodul IV)
Credits (Cr)	5 Cr
Workload	68 respectively 85 Hours Presence (4 SWS exercise or 5 SWS exercise), 82 or 65 hrs self-study
Subject level	specific, advanced
Learning outcomes/ competencies	See catalogue of elective modules
Requirements	See catalogue of elective modules
Where in the syllabus	6th semester Bachelor
Type of learning	See catalogue of elective modules
Status	See catalogue of elective modules
Frequency	yearly
Exam type	See catalogue of elective modules
Module mark	See catalogue of elective modules
Approved equivalent modules	See catalogue of elective modules
Contents	For this elective module, a module WP05 to WP07 from the required elective module catalogue must be selected. For content, see modules WP05 to WP07 from the required elective module catalogue
Literature	See description of required elective modules WP05 to WP07
Additional comments	By decision of the Faculty Council of Faculty VII, further modules may be provided as elective modules. The Faculty Board decides on the offer of further elective compulsory modules before the beginning of each semester. Upon application, the student may also choose a module from another Bachelor's programme as a compulsory elective module. The dean of the department decides on the application. In the case of temporary studies abroad, the credit points earned in modules there can be fully recognised as elective modules if the contents of the modules are not comparable with those of the compulsory modules of this curriculum. The dean of the faculty decides on the recognition.

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B36 – Required Elective Module 5

Data field	Explanation
Module number	B36
Title module	Required Elective Module 5 (Wahlpflichtmodul 5)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS Exercise), 99 hrs self-study
Subject level	specific, advanced
Learning outcomes/ competencies	See catalogue of elective modules
Requirements	See catalogue of elective modules
Where in the syllabus	6th semester Bachelor
Type of learning	See catalogue of elective modules
Status	See catalogue of elective modules
Frequency	yearly
Exam type	See catalogue of elective modules
Module mark	See catalogue of elective modules
Approved equivalent modules	See catalogue of elective modules
Contents	For this elective module, module WP08 or module WP09 from the elective module catalogue can be selected. For content, see modules WP08 to WP09 from the compulsory elective module catalogue
Literature	See description of elective modules WP08 and WP09
Additional comments	By decision of the Faculty Council of Faculty VII, further modules may be provided as elective modules. The Faculty Board decides on the offer of further elective compulsory modules before the beginning of each semester. Upon application, the student may also choose a module from another Bachelor's programme as a compulsory elective module. The dean of the department decides on the application. In the case of temporary studies abroad, the credit points earned in modules there can be fully recognised as elective modules if the contents of the modules are not comparable with those of the compulsory modules of this curriculum. The dean of the faculty decides on the recognition.

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B37 – Internship 2

Data field	Explanation
Module number	B37
Title module	Internship 2 (Praxisphase 2)
Credits (Cr)	15 Cr
Workload	(450 hours, equivalent to 60 full working days)
Subject level	specific, advanced
Learning outcomes/ competencies	Students combine the knowledge acquired during their studies with initial experience in professional practice
Requirements	150 credit points for modules of semesters 1 to 6 (see also study regulations Bachelor Optometry)
Where in the syllabus	7th semester Bachelor
Type of learning	work in a setting related to optometry
Status	compulsory module
Frequency	yearly
Exam type	Differentiated performance assessment by the internship provider and practice report.
Module mark	70% differentiated performance assessment + 30% practice report
Approved equivalent modules	Modules of comparable content
Contents	<p>The intership can be carried out either in a specialised optician's/optometrist's practice, in a contact lens fitting institute, in an ophthalmologist's practice or eye clinic, in a research institute (optometry/ophthalmology or related), in the ophthalmic optics industry or in the field of low-vision rehabilitation.</p> <p>If the internship is carried out in an optometry- or ophthalmology practice, at least 10 complete optometric examinations or visual aid fittings must be carried out and recorded (compliant with the ECOO criteria). See also https://studiengang.beuth-hochschule.de/ao/studium/bachelor/praxisphase</p> <p>Information: The internship place is bound to an internship contract, which is concluded with a contractual partner of Beuth University. At the end of the internship, the contractual partner confirms and assesses the services rendered in writing and signs the internship report prepared by then.</p> <p>In case of illness of the intern, the missed times must be made up for. It is permissible to extend the practical phase to cooperation companies of the contractual partner. For further information, see also the valid regulations for practical phases at Beuth Hochschule.</p>
Literature	
Additional comments	the module language is German

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B38 – Graduate Thesis

Data field	Explanation
Module number	B38
Title module Title units	Final Examination Module (Abschlussprüfung) B38.1 Bachelor's Thesis (Bachelor-Arbeit) B38.2 Oral Final Examination (Mündliche Abschlussprüfung)
Credits (Cr)	15 Cr
Workload	30 - 45 minute oral final examination
Subject level	specific advanced
Learning outcomes/ competencies	<u>Bachelor's Thesis</u> Independent processing of a scientific project with written elaboration (about 30 - 60 pages) <u>Oral Final Examination</u> The oral final examination is mainly oriented towards the subject areas of the final thesis. The final examination is intended to determine whether the student has sound knowledge in the subject areas to which the thesis is thematically assigned and is able to independently justify the results of the thesis.
Requirements	Admission according to the actual framework study and examination regulations (RSPO).
Where in the syllabus	7th semester Bachelor
Type of learning	<u>Bachelor's Thesis</u> Supervised work; according to § 29 (7) RSPO, the supervisor of the Bachelor thesis is responsible for the supervision <u>Oral Final Examination</u> Presentation (approx. 15 min) and oral examination
Status	compulsory module
Frequency	every semester
Exam type	Final examination according to RSPO
Module mark	Grading of the final examination by the examination board
Approved equivalent modules	none
Contents	<u>Bachelor's Thesis</u> Theoretical and/or experimental work to solve practical issues <u>Oral Final Examination</u> Defending the Bachelor thesis and its results in critical discussion; presentation techniques
Literature	specific advanced
Additional comments	<u>Bachelor's Thesis</u> Duration of processing: 3 - 4 months according to § 29 (8) RSPO <u>Oral Final Examination</u> By agreement between the candidate and the examination board, the final examination can also be held in English.

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Catalogue of Required Elective Modules

WP01 – Contact Lens Clinics

Data field	Explanation
Module number	WP01
Title module	Contact Lens Clinics (Klinisches Praktikum Kontaktlinsenanpassung)
Credits (Cr)	5 Cr
Workload	51 hours presence (3 SWS exercises), 99 hours self-study
Subject level	specific advanced
Learning outcomes/ competencies	The students acquire clinical skills under factual real-life practical conditions. They are able to <ul style="list-style-type: none"> – Fit, order and dispense contact lenses – Carry out targeted and problem-oriented eye exams – Advise customers/patients and, if necessary, instruct them in the handling and special features of contact lenses – Treat customers/patients politely and respectfully and maintain appropriate time management
Requirements	The following modules / units must be passed: B02.2 Grundlagen der Kontaktlinsenanpassung Praktikum, B08.2 Rotationssymmetrische Kontaktlinsen Praktikum, B14.2 Torische Kontaktlinsen Praktikum
Where in the syllabus	5th and 6th semester Bachelor
Type of learning	Clinical workshop with real patients
Status	Elective module
Frequency	every semester
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: Case report (60%) and case documentation (40%). For didactic reasons, no examination will take place in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	examination of the anterior segment of the eye for suitability for wearing contact lenses; problem and needs-oriented determination, fitting, ordering and dispensing of contact lenses with appropriate instruction, follow-up and if necessary, problem management
Literature	to be announced by teacher
Additional comments	the module language is German

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WPO2 – Dispensing Clinics

Data field	Explanation
Module number	WPO2
Title module	Dispensing Clinics (Klinisches Praktikum Brillenanpassung)
Credits (Cr)	5 Cr
Workload	51 hours presence (3 SWS exercise), 99 hours self-study
Subject level	specific advanced
Learning outcomes/ competencies	<p>The students acquire clinical skills under factual real-life practical conditions. They are able to</p> <ul style="list-style-type: none"> – Fit spectacles optically and anatomically – Carry out a frame and glass consultation – Advise customers/patients and, if necessary, instruct them on the handling and special features of the visual aid – Grind and glaze prescription lenses into a spectacle frame – Treat customers/patients politely and respectfully and maintain appropriate time management
Requirements	The following modules / units must be passed: B12 Brillenoptik und -anpassung I, B23.2 Brillenoptik und -anpassung II Praktikum
Where in the syllabus	5th and 6th semester Bachelor
Type of learning	Clinical workshop with real patients
Status	Elective module
Frequency	every semester
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: Case study (50%) and practical examination (50%) on the patient. For didactic reasons, no examination will take place in the 2nd exam period.
Module mark	See study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	Problem and demand-oriented fitting, glazing and dispensing of glasses for real customers; determination of data necessary for ordering and centering glasses; conversion of a prescription into an individual lens order; instruction and advice for customers on the proper use of the vision aid
Literature	to be announced by teacher
Additional comments	the module language is German

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WP03 – Diagnostic Procedures and Low Vision Clinics

Data field	Explanation
Module number	WP03
Title module Title units	Diagnostic Procedures and Low Vision Clinics (Diagnostische Verfahren und Low Vision Clinics) WP03.1: Diagnostic Procedures WP03.2: Low Vision Clinics
Credits (Cr)	5 Cr
Workload	68 hours presence (2 SWS Ü WP03.1 + 2 SWS Ü WP03.2), 82 hours self-study
Subject level	specific advanced
Learning outcomes/ competencies	WP03.1: Students will acquire skills for the application and interpretation of different examination procedures in the sense of ophthalmologic assistance WP03.2: Students acquire clinical competencies under factual real-life practical conditions. They are able to <ul style="list-style-type: none"> – Determine, order, if necessary, manufacture and dispense visual aids for the visually impaired – carry out targeted and problem-oriented investigations, measurements and needs assessments – Advise customers/patients and, if necessary, instruct them in the handling and special features of the visual aid
Requirements	WP03.1 Competencies of all modules with biomedical and optometric contents up to and including the fourth semester as well as module B24 are recommended; WP03.2 the following modules / units must be passed: B03 Subjektive Refraktionsbestimmung and B18 Low Vision I
Where in the syllabus	5th semester Bachelor
Type of learning	Laboratory exercises (WP03.1); Clinical workshop with real patients (WP03.2)
Status	Elective module
Frequency	yearly
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: oral presentation (50%) and written examination (50%) (WP03.1) + practical examination on the patient (WP03.2); for didactic reasons no examination will be held in the 2nd exam period.
Module mark	See study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	WP03.1: principle and application of imaging procedures and interpretation of findings (e.g. OCT, HRT, Pentacam, optomap), introduction to and interpretation of selected findings for: electrophysiological procedures, fluorescence angiography, fundus autofluorescence, gonioscopy, Rostock-Cornea-Module (HRT), procedures for determination and calculation of intraocular lenses (e.g. IOL master); legal requirements and procedures for sight tests for different types of driving licences WP03.2: Determination of visual performance and magnification requirements; problem- and demand-oriented selection, fitting and dispensing of magnifying vision aids with corresponding patient instruction
Literature	<ul style="list-style-type: none"> – siehe auch Angaben für Module B18 und B24 sowie – Kampik A.: Augenärztliche Diagnostik. Thieme Verlag – Straub W.: Augenärztliche Untersuchungsmethoden. Thieme Verlag
Additional comments	The module language is German.

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WP04 – Diagnostic Procedures and Binocular Vision Clinics

Data field	Explanation
Module number	WP04
Title module Title units	Diagnostic Procedures and Binocular Vision Clinics (Diagnostische Verfahren und Klinisches Praktikum Binokularsehen) WP04.1: Diagnostic Procedures WP04.2: Binocular Vision Clinics
Credits (Cr)	5 Cr
Workload	68 hours presence (2 SWS exercise WP04.1 + 2 SWS exercise WP04.2), 82 hours self-study
Subject level	specific advanced
Learning outcomes/ competencies	WP04.1: Students will acquire skills for the application and interpretation of different examination procedures in the sense of ophthalmologic assistance WP04.2: Students acquire clinical competencies under factual real-life practical conditions. They are able to <ul style="list-style-type: none"> – Detect and differentiate binocular vision disorders – Determine and prescribe visual aids or other measures for persons with binocular vision problems – Carry out targeted and problem-oriented investigations, measurements and needs assessments
Requirements	For WP04.1: competencies of all modules with biomedical and optometric contents up to and including the fourth semester are recommended; for WP04.2: the following modules / units must be passed: B03 Subjektive Refraktionsbestimmung, B15.2 Binokularsehen I Praktikum, B21.2 Binokularsehen II Praktikum
Where in the syllabus	5th semester Bachelor
Type of learning	Laboratory exercises (WP04.1); clinical workshop with real patients (WP04.2)
Status	Elective module
Frequency	yearly
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: oral presentation (50%) and written examination (50%) (WP04.1); case study and assessment during the semester (WP04.2); for didactic reasons, no examination will take place in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	WP04.1: principle and application of imaging procedures and interpretation of findings (e.g. OCT, HRT, Pentacam, optomap), introduction to and interpretation of selected findings for: electrophysiological procedures, fluorescence angiography, fundus autofluorescence, gonioscopy, Rostock-Cornea-Module (HRT), procedures for determination and calculation of intraocular lenses (e.g. IOL master); legal requirements and procedures for sight tests for different types of driving licences WP04.2: examination of patients with heterophoria, strabismus or other disorders of binocular vision; if necessary, determination, ordering and dispensing of a visual aids with appropriate instruction
Literature	<ul style="list-style-type: none"> – Kampik A.: Augenärztliche Diagnostik. Thieme Verlag – Straub W.: Augenärztliche Untersuchungsmethoden. Thieme Verlag – siehe auch Angaben für Module B15 und B21
Additional comments	The modul language is German.

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WP05 –Low Vision Clinics and Binocular Vision Clinics

Data field	Explanation
Module number	WP05
Title module Title units	Low Vision Clinics and Binocular Vision Clinics (Klinisches Praktikum Versorgung Sehbehinderter und Klinisches Praktikum Binokularsehen) WP05.1: Low Vision Clinics WP05.2: Binocular Vision Clinics
Credits (Cr)	5 Cr
Workload	68 hours presence (2 SWS exercise WP05.1 + 2 SWS exercise WP05.2), 82 hours self-study
Subject level	specific advanced
Learning outcomes/ competencies	The students acquire clinical skills under quasi real-life practical conditions. They are able to <ul style="list-style-type: none"> – Determine, prescribe and dispense visual aids or other measures for persons with visual impairment or binocular vision disorders – Carry out targeted and problem-oriented investigations, measurements and needs assessments – Advise patients and, if necessary, instruct them in the handling and wearing mode for the visual aid – Detect and differentiate binocular vision disorders and prescribe or recommend corrective measures
Requirements	WP05.1: The following modules / units must be passed: B03 Subjektive Refraktionsbestimmung and B18 Low Vision I WP05.2: The following modules / units must be passed: B03 Subjektive Refraktionsbestimmung, B15.2 Binokularsehen I Praktikum, B21.2 Binokularsehen II Praktikum
Where in the syllabus	5th and 6th semester Bachelor
Type of learning	Clinical workshop with real patients
Status	Elective module
Frequency	every semester
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: WP05.1: practical examination on the patient; WP05.2: case study and assessment during the semester; for didactic reasons no examination will be held in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	WP05.1: Determination of visual performance and magnification requirements; problem- and demand-oriented selection, fitting and dispensing of magnifying vision aids with corresponding patient instruction WP05.2: examination of patients with heterophoria, strabismus or other disorders of binocular vision; if necessary, determination, ordering and dispensing of a visual aids with appropriate instruction
Literature	<ul style="list-style-type: none"> – WP05.1: see modules B18 und B24 – WP05.2: see modules B15 und B21
Additional comments	the module language is German

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WP06 – Vocational Pedagogy and Low Vision Clinics

Data field	Explanation
Module number	WP06
Title module Title units	Vocational Pedagogy and Low Vision Clinics (Berufs-/Arbeitspädagogik und Klinisches Praktikum Versorgung Sehbehinderter) WP06.1: Vocational Pedagogy WP06.2: Low Vision Clinics
Credits (Cr)	5 Cr
Workload	85 hours presence (3 SWS exercise WP06.1 + 2 SWS exercise WP06.2), 65 hrs self-study
Subject level	specific advanced
Learning outcomes/ competencies	<p>WP06.1 the students are able to:</p> <ul style="list-style-type: none"> – Explain employment law and pedagogical principles for vocational training – Transform subject-related and interdisciplinary tasks into teaching and learning arrangements – Create a training plan taking into account pedagogical principles <p>WP06.2 the students are able to:</p> <ul style="list-style-type: none"> – Determine, prescribe and dispense visual aids or other measures for persons with visual impairment – Carry out targeted and problem-oriented investigations, measurements and needs assessments – Advise patients and, if necessary, instruct them in the handling and wearing mode for the visual aid
Requirements	WP06.2: The following modules / units must be passed: B03 Subjektive Refraktionsbestimmung and B18 Low Vision I
Where in the syllabus	6th semester Bachelor
Type of learning	Seminar (WP06.1); clinical workshop (WP06.2)
Status	Elective module
Frequency	yearly
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: Written examination (60%) and performance of a training sequence in a team (40%) (WP06.1); practical examination on the patient (WP06.2); for didactic reasons no examination will be held in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	<p>WP06.1: assess training requirements and plan training (legal bases, laws, planning, hiring, participants); prepare training (select trainees, framework plan, individual training plan); conduct training (aspects and models of communication, learning to learn, organizing learning, learning techniques, instruction methods, learning goals); complete training (successful examination, dealing with learning difficulties, certificates, laws)</p> <p>WP06.2: Determination of visual performance and magnification requirements; problem- and demand-oriented selection, fitting and dispensing of magnifying vision aids with corresponding patient instruction</p>
Literature	to be announced by the teacher
Additional comments	the module language is German.

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WP07 – Vocational Pedagogy and Binocular Vision Clinics

Data field	Explanation
Module number	WP07
Title module Title units	Vocational Pedagogy and Binocular Vision Clinics (Berufs- /Arbeitspädagogik und Klinisches Praktikum Binokularsehen) WP07.1: Vocational Pedagogy WP07.2: Binocular Vision Clinics
Credits (Cr)	5 Cr
Workload	85 hours presence (3 SWS exercise WP07.1 + 2 SWS exercise WP07.2), 65 hrs self-study
Subject level	specific advanced
Learning outcomes/ competencies	<p>WP07.1 the students are able to:</p> <ul style="list-style-type: none"> – Explain employment law and pedagogical principles for vocational training – Transform subject-related and interdisciplinary tasks into teaching and learning arrangements – Create a training plan taking into account pedagogical principles <p>WP07.2 the students are able to:</p> <ul style="list-style-type: none"> – Detect and differentiate binocular vision disorders – Prescribe, dispense or recommend visual aids or other measures for binocular vision disorders – Advise patients and, if necessary, instruct them in the handling and wearing mode for the visual aid
Requirements	WP07.2: the following modules / unities must be passed: B03 Subjektive Refraktionsbestimmung, B15.2 Binokularsehen I Praktikum, B21.2 Binokularsehen II Praktikum
Where in the syllabus	6th semester Bachelor
Type of learning	Seminar (WP07.1); Clinical workshop (WP07.2)
Status	Elective module
Frequency	yearly
Exam type	Provided that the lecturer does not specify another form of examination and/or deviating examination modalities within the period according to §19 (2) RSPO: Written examination (60%) and performance of a training sequence in a team (40%) (WP07.1); case study and assessment during the semester (WP07.2); for didactic reasons no examination will be held in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	<p>WP07.1: assess training requirements and plan training (legal bases, laws, planning, hiring, participants); prepare training (select trainees, framework plan, individual training plan); conduct training (aspects and models of communication, learning to learn, organizing learning, learning techniques, instruction methods, learning goals); complete training (successful examination, dealing with learning difficulties, certificates, laws)</p> <p>WP07.2: Examination of clients/patients with heterophoria, strabismus or other disorders of binocular vision; if necessary, determination and delivery of a visual aid with appropriate instruction</p>
Literature	to be announced by the teacher
Additional comments	the module language is German

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WP08 – Optometry Clinics 2

Data field	Explanation
Module number	WP08
Title module	Optometry Clinics 2 (Klinische Optometrie 2)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS exercise), 99 hrs self-study
Subject level	specific advanced
Learning outcomes/ competencies	The students are able to: <ul style="list-style-type: none"> – Perform a full optometric examination on clients/patients with different mental and physical conditions – Use typical examination techniques, interpret the results and make clinical decisions – Advise patients on the causes, treatment modalities and consequences of visual disorders and, if necessary, prescribe suitable visual aids
Requirements	All compulsory modules for optometric examination and binocular vision up to and including 5th semester recommended. The following modules / units must be passed: B03 Subjektive Refraktionsbestimmung, B22.2 Spezielle Optometrische Untersuchungen Praktikum, B13 Pathologie des Auges, B16 Physiologische Optik II
Where in the syllabus	6th semester Bachelor
Type of learning	Clinical workshop with real patients
Status	Elective modules
Frequency	yearly
Exam type	If the teacher does not specify another examination form and/or different examination modalities within the period according to §19 (2) RSPO: oral examination using selected case reports. For didactic reasons no examination will be held in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	<p>Problem-oriented optometric examination on the real customer/patient; monocular and binocular refraction; discussion of the examination results with the customer/patient; derivation of a preliminary diagnosis and, if necessary, a differential diagnosis; preparation of a management plan; planning and, if necessary, carrying out follow-up examinations; prescription of a visual aid or other suitable measures; preparation of a report of findings.</p> <p>information: cases seen at an eye hospital or at an ophthalmology practice are accepted provided the students has performed the eye exam independently and the case record is signed by a supervisor</p>
Literatur	See modules of optometry and ophthalmology
Additional comments	the modul language is German.

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WP09 – Contact Lenses for Special Purposes

Data field	Explanation
Module number	WP09
Title module	Contact Lenses for Special Purposes (Spezielle Kontaktlinsen)
Credits (Cr)	5 Cr
Workload	51 hrs presence (3 SWS exercises), 99 hrs self-study
Subject level	specific advanced
Learning outcomes/ competencies	The students are able to: <ul style="list-style-type: none"> – Explain the principles for fitting ortho-keratology, border-limbal and scleral contact lenses – Polish and modify RGP lenses – Apply special tear film tests
Requirements	All mandatory modules for contact lens fitting recommended
Where in the syllabus	6th semester Bachelor
Type of learning	Seminar and laboratory exercises
Status	Elective module
Frequency	yearly
Exam type	If the lecturer does not determine the form of the examination and the examination modalities at the beginning of the semester within the period according to §19 (2) RSPO, the following examination form applies: practical examination; prerequisite for the effectiveness of the module grade: successful completion of the required exercises. For didactic reasons, no examination is held in the 2nd exam period.
Module mark	see study regulations / study plan
Approved equivalent modules	Modules of comparable content
Contents	Principle of orthokeratology; function and principles for fitting of border limbal CL and scleral CL, polishing and modification/reworking of RGP CL; manufacturing of a three-curve RGP CL from a raw lens; tear film tests and diagnosis of dry eye (NIK BUT, interference assessment with cold light source, infrared meibography, TearLab, examination of eyelid wiper, Schirmer I+II, blepharitis and demodex infestation)
Literature	<ul style="list-style-type: none"> – Baron H., Ebel J.: Kontaktlinsen. DOZ-Verlag – Lieb.N., Schlicht A.: Handbuch der Orthokeratologie, Beuth Hochschule Berlin – Müller-Treiber A. Kontaktlinsen Know-how, DOZ-Verlag – Phillips A.J., Speedwell L.: Contact Lenses. Butterworth Heinemann – Efron N.: Contact Lens Complications (Verlag?) – Korb D R.: The Tear Film, Butterworth Heinemann
Additional comments	the module language is German.

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