Master of Science (M.Sc.) Vision Science and Business (Optometry)

Module Manual

based on the study and examination regulations for the continuing education, part-time master's degree Master of Science (M.Sc.) Vision Science and Business (Optometry) at Aalen University

(Part MAW-TB-VSB-510)

Table of Content

(the following modules are described in this module manual)

Compulsory Modules

No.	Module Lecture	Type	Study semester SWS				CP
			1	2	3	4	
29001	**Optometric Project**						5
29101	Optometric Project	V,P	1				5
29102	Optometric Project Presentation	P	X				
29002	**Leadership**						5
29301	Studium Generale	V,P			2		5
29302	Leadership and Communication	V,P			1		
29010	**Master Thesis**						30
9999	Master Thesis	P				X	30
9998	Master Thesis Colloquium	P				X	

Total Compulsory Modules 40 CP

Elective Modules (those modules - that are compulsory for the European Diploma Optometry EDO are marked)

No.	Module Lecture	Type	Study semester SWS				CP
			1	2	3	4	
29830	**Human Biology**						5 (EDO)
29401	Ocular Anatomy	V		2			5
29402	Physiology	V		2			
29831	**Pathology**						5 (EDO)
29403	Histology	V,L		2			5
29404	Systems Pathology	V		2			
29832	**Pharmacology**						10 (EDO)
29405	General Pharmacology	V		4			10
29406	Ocular Pharmacology	V		4			
29833	**Ocular Disease**						10 (EDO)
29407	Intro to Ocular Disease 1	V,L		3			10
29408	Intro to Ocular Disease 2	V,L		4			
29834	**Clinical Optometry in the US**						5
29409	Interactive Clinical Cases	V,L		1			5
29410	Clinical Optometry in the US	V,P		1			
29835	**Vision Therapy and Binocular Vision**						10 (EDO)
29411	Binocular Vision Disorders	V,L		4			10
29412	Vision Therapy	V,L		4			
29836	**Pediatric Optometry**						5 (EDO)
29413	Pediatric Optometry	V,L		2			5
29414	Case Management Pediatric	V,P		2			
29837	**Sports Vision**						5
29415	Sports Vision	V,L		1			5
29416	Clinical Observations in the US	P		X			

No.	Module Lecture	Type	Study semester SWS				CP
			1	2	3	4	
29838	**Low Vision**						5 (EDO)
29417	Low Vision	V,L		3			5
29418	Low Vision Project	P		X			
29839	**Scientific Methods**						10 (EDO)
29419	Biostatistics	V,P		2			10
29420	Scientific Methods	V,L		2			
29840	**Contact Lenses and Refractive Surgery**						5 (EDO)
29421	Contact Lenses	V,L		2			5
29422	Refractive Surgery	V,L		2			
29841	**Interdisciplinary Optometry**						5
29423	Interdisciplinary Optometry	V,L		2			5
29424	Interdisciplinary Case Management	P		X			
29842	**Audio and Vision**						5
29425	Audio and Vision	V,L		2			5
29426	Audio and Vision Project	V,L		1			
29843	**Myopia Management**						5
29427	Myopia Management	V,L		2			5
29428	Myopia Case Management	P		X			
29844	**Marketing Management**						5 (EDO)
29429	Marketing and Communication	V,L		2			5
29430	Integral Competencies	V,P		1			
29845	**Business Simulation**						5
29431	Business Strategy	V,P		2			5
29432	Business Simulation Project	V,P		2			
29846	**Sustainable Digital Transformation**						5
29433	Digital Business Models	V,L		2			5
29434	Start-up Management	V,P		2			
29847	**Clinical Experience**						5 (EDO)
29435	Clinical Experience	V,L		1			5
29436	Clinical Experience Portfolio	P		X			
29848	**Clinical Case Studies: Logbook**						5 (EDO)
29437	Clinical Case Studies	V,L		1			5
29438	Case Documentation: Logbook	P		X			
29849	**Research Project**						20
29439	Research Project	P		X			20
29440	Research Project Presentation	P		X			

Total Elective Modules compulsory for the European Diploma Optometry 80 CP

Type (of lecture)
V: Vorlesung (course lecture)
L: Labor (lab course)
P: Projekt (project work)

Explanations
1 CP (Credit Point) = 30 hours 60 minutes each of study
1 SWS (Semester hour per week) = 15 hours 45 minutes each of lecture

Compulsory modules

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name		**Optometric Project**				**Module no. 29001**	
CP	**Semester hours per week**	**Work-load**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	1	150	15	135	☒ winter semester ☐ summer semester	1	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Compulsory module		1st	-	
Form of studies			☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report				
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29101	Optometric Project	All members of the faculty	Lecture Project	1	4	1	PLP 20 minutes graded
	Course type	**Year of study**					
	Compulsory course	1st	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29102	Optometric Project Presentation	All members of the faculty	Project	-	1	1	
	Course type	**Year of study**					
	Compulsory course	1st	-				
Permitted aids							

Learning goals/competence

Professional competence
The students are able to analyze and structure problems in the optometric field and design a solution based on scientific research techniques. They are able to arrange and explain their findings in the context of evidence-based optometry.

Methodological competence
The students are able for applying the knowledge in practice. After completion of the module, the students can evaluate the strengths and weaknesses of their own project. They are able to formulate the results in a presentation.

Interdisciplinary general competence
The students can demonstrate the ability to identify a viable problem in the optometric field and present a discussion on the relevance to primary eye care and vision science. They are able to design a plausible solution for the identified problem using scientific techniques and carry out validation procedures to establish the effectiveness of the proposed solution. The students are able to summarize their findings.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☒	☐

Lecture contents

Manufacturing (lecture number 29101) and presenting (lecture number 29102) an optometric project in a scientific research field

Basics of scientific research
- quantitative and qualitative methodological of empirical social sciences
- research design

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Dependent on the optometric project Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name		**Leadership**				**Module no. 29002**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	3	150	45	105	☒ winter semester ☐ summer semester	3	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Compulsory module		2nd	-	
Form of studies			☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☒ Seminar ☒ Assignment ☐ Project work ☐ Other: Paper, Report				
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29301	Studium Generale	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Project	2	3	3	PLM 30 minutes graded
	Course type	**Year of study**					
	Compulsory course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29302	Leadership and Communication	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Project	1	2	3	
	Course type	**Year of study**					
	Compulsory course	2nd	-				
Permitted aids							

Learning goals/competence

Professional competence
The students use communication as a planned process of interactions. They are able to guide employees and customers. They can transfer skills in the management of all stakeholders. They can ascertain their own strengths and weaknesses.

Methodological competence
The students demonstrate fundamental knowledge and insights in different communication styles, verbal and non-verbal communication, cultural differences and cross-cultural communication techniques. The students will enhance their knowledge of methods of controlling negotiations. They are able to device the best methods of communication. They will further devise strategies for conflict management. They will propose methods for setting objectives and gathering feedback.

The students are able to prepare and evaluate scientific material and subsequently summarize it. The students are able to explain the scientific matter and validate it.

Interdisciplinary general competence
The students will develop abilities specifically relating to negotiations or the conducting of negotiations. The students are able to identify their strengths, weaknesses, and potential through the personal assessment center and the feedback on that. The students are able to combine knowledge from anthropology, psychology, communication studies and statistics.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

Studium Generale
A combination of humanities such as anthropology, psychology, communication studies and scientific research. The students also learn about developing a research hypothesis and how to design an experiment to test this hypothesis. Students also learn how to analyze research data, write a scientific abstract as well as how to make a scientific presentation.

Leadership
- Managerial role and tasks
- Tools for human resource development
- Specific leadership scenarios: performance evaluation; feedback; setting objectives
- Motivation in the business context
- Conflict management

Communication
- Essentials in planning of communication regarding negotiations
- Conversational management in negotiations
- Strategies and methodological of controlling communication and negotiations
- Exercising sales talk at an optometry practice

Language	☒ German	☒ English	☐ Spanish	☐ French
	☐ Chinese	☐ Portuguese	☐ Russian	☐ Other_____

Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Master Thesis**	**Module no. 29010**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
30	-	900	-	900	☐ winter semester ☒ summer semester	4	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Compulsory module	2nd	-

Form of studies	☐ Lecture ☒ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☐ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
9999	Master Thesis	All members of the faculty	Project	-	27	4	Master thesis (PLS) and its presentation (PLR) 20 minutes graded
	Course type	**Year of study**					
	Compulsory course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
9998	Master Thesis Colloquium	All members of the faculty	Project	-	3	4	
	Course type	**Year of study**					
	Compulsory course	2nd	-				
Permitted aids							

Learning goals/competence
Professional competence The students can conduct an in-depth literature review to support a research hypothesis. They are able to develop a discussion that leads to the statement of a well-defined research question and hypothesis. They are able to design the appropriate methodology for data collection as a means of testing the research hypothesis. They are able to summarize research results with proper statistical methodology and discuss inferences gained from the research. **Methodological competence** The students can develop entry level research design such as designing the proper methodology for data collection as a means of testing the research hypothesis, data analysis skills such as reporting and summarizing the research results with proper statistical methods, and a deeper appreciation for scientific literature through extensive library research.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents
Autonomous elaboration of a complex scientific issue, a final presentation of the Master Thesis is given by the student to all members of the degree program and also to all interested e.g. alumni

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Depends on the topic of the Master Thesis Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	Final grade consists of a combined modules examination: PLS (80 %), PLR (20%)
Comments/other	
Last updated	September 20, 2021

Elective modules

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Human Biology**	**Module no. 29830**

CP	Semester hours per week	Workload	Contact time	Self study	Begin of offer	Se-mester	Duration
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☐ Project work ☐ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	Title of the course/lecture	Lecturer	Type	Semester hours per week	CP	Se-mester	Module exam: type/length/ grading
29401	Ocular Anatomy	Kathleen L. Krenzer, O. D. Ph.D., D.A.T., Adjunct Assistant Professor at New England College of Optometry (NECO)	Lecture	2	3	will be announced on the notice board and in the LMS canvas	PLK 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29402	Physiology	Adjunct Faculty	Lecture	2	2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						

Permitted aids	

Learning goals/competence

Professional competence

The students are able to describe and explain ocular structures, orbit and embryogical development of the eye in depth. The students explain the knowledge of the blood supply, nervous innervations and muscles of the ocular structures and adnexa in relation to the ocular structures. The students are able to describe and relate the physiology in regards to control mechanisms manifestations including homeostasis, blood and circulation, endocrine system and hormonal function. They can demonstrate in-depth knowledge regarding the maintenance of the human body specifically in the areas of cardiovascular system, respiratory system, renal physiology and the endocrine systems.

Methodological competence
The students can analyze specific examples of how the ocular anatomy is related to normal function, how it is involved in the presentation and subsequent treatment of ocular conditions. The students can solve clinical related problems that involve pathological processes and disease.

The students can explain the basic organization of the human body, control systems, maintenance, support and movement and relate these to the anatomical structure of each area. They are able to correlate physiology of systems that are closely linked with the functioning of the eye.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☐	☒	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents

Ocular Anatomy
- Ocular adnexa: eyebrows, superior palpebral sulcus inferior folds, canthi, lid margin, lacrimal system, blood supply and innervation of ocular adnexa
- Ocular surface: cornea, conjunctiva, sclera
- Anterior uvea: iris, anterior chamber angle, ciliary body, blood supply of iris and ciliary body
- Lens and vitreous
- Choroid and retina
- Optic nerve: gross landmark, cross section, visual pathway
- Embryology of the eye: development of the eye, clinical correlations
- The orbit: bones of orbit, extraocular muscles, nerves of orbit, cranial nerves not related to eye movement, nerves of orbit related to ocular movement, apex of orbit: orbital passages, muscle cone

Physiology
- Homeostasis: definition and body control system
- Blood and circulation: physical characteristics, composition, diagnostic tests
- Cardiovascular system: physiological properties of cardiac muscle, specialized tissue, extrinsic and intrinsic control of the heart, cardiac arrhythmias, electrocardiogram and its interpretation, heart as a pump, coronary circulation, hypertension, angina pectoris, myocardial infarction, and congestive heart failure
- Renal physiology: capillary dynamics and exchange of fluid between the blood and interstitial fluid, formation of urine by the kidney, glomerular filtration, tubular function, and plasma clearance, regulation of body fluids by kidney
- Respiratory system: pulmonary anatomy, mechanisms of ventilation and breathing, pulmonary circulation, blood transport and tissue gas exchange, ventilation/perfusion relationship, central mechanism of respiratory control, acid base regulation, chemical control of breathing
- Endocrine systems: chemical nature, response, transport and mechanism of hormones and action; feedback regulation and hormonal control, pituitary gland, thyroid gland, adrenal glands: biosynthesis and transport of thyroid hormones, physiological functions, and control mechanisms, pathologic

conditions involving the thyroid gland, and treatment, gastro-intestinal hormones: gastrin, cholecystokinin, secretion and gastric inhibitory peptide, endocrine pancreas - Insulin and glucagon as it relates to diabetes mellitus

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas Ocular Anatomy: - Tortora, G./Grabowski, S. (2017): Principles of Anatomy and Physiology. 15th Edition. John Wiley & Sons. Physiology: - Sherwood, L. (2015): Human Physiology: From cells to systems.9th Edition. Thompson-Brooks/Cole. - Snell, R. S./Lemp, M. (2013): Clinical Anatomy of the Eye. 2nd Edition. Wiley-Blackwell.
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Pathology**	**Module no. 29831**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☐ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☐ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29403	Histology	Debora L. Nickla, M.S., Ph.D., Professor at New England College of Optometry (NECO)	Lecture Labs	2	2	will be announced on the notice board and in the LMS canvas	PLL and PLK 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29404	Systems Pathology	Kathleen L. Krenzer, O. D. Ph.D., D.A.T., Adjunct Assistant Professor at New England College of Optometry (NECO)	Lecture	2	3	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to demonstrate the knowledge of the fundamentals of histology and its relation to the eye. They can explain the functions of all cells, how specific organelles support these functions; and how structure supports function. The students can analyze organization of cells within tissues, organs, and organ systems and explain the functional significance.

The students are able to describe the pathological changes; how the pathology relates to the clinical presentation and understanding the difference between the biological and clinical goals of therapy. They are able to demonstrate knowledge and in understanding of the fundamentals of the types of pathological processes that underlie the clinical manifestation of disease.

Methodological competence
The students are able to distinguish between these classes based on cell morphology including the four classes of specialized cells that make up organs: epithelial tissue, connective tissue, nerve and muscle. The students are able to relate to other biological science curriculum on completion of this course.

The students can evaluate the pathological processes involved in a disease in understanding the biological constructs that underlie the clinical presentation, the clinical course and the rationale for therapeutic intervention. The students can explain how the pathological processes play roles in a select group of systemic disorders that are prevalent among those likely to seek care from an optometrist.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☐	☒	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents

Histology
- Cell organelles and function
- Histological techniques
- Review: Epithelium/ocular epithelium

Lab 1: Ocular epithelium, connective tissue, integument, cartilage and bone
Lab 2: Connective tissue, blood and muscle tissues
Lab 3: Integument/eyelid, nervous system, exocrine and endocrine systems
Lab 4: Blood, muscle; systems histology: cardiovascular, renal, respiratory and digestive systems
Lab 5: Nervous system, cardiovascular system

General Pathology
- Pathology and Pathophysiology: cell Injury and adaptation and cell death
- Tissue responses to damage types of inflammation
- Immunology
- Neoplastic processes
- Metabolic disorders

Systems Pathology
- Cardiovascular dysfunction and primary essential hypertension
- Human deficiency virus: HIV and AIDS
- Respiratory systems

- Diabetes mellitus
- Inflammatory conditions and dermatological lesions

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas- Histology: -Young, B. et al (2006): Wheater's Functional Histology. 5th Edition. Churchill Livingstone. Systems Pathology: - Kumar, V./ Cotran, R./ Astor, J. (2017): Robbins Basic Pathology. 10th Edition. Elsevier.
Composition of the final mark	Final grade consists of a combined modules examination. PLL (20%), PLK (80%)
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Pharmacology**					**Module no. 29832**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	8	300	120	180	☒ winter semester or ☐ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☐ Project work ☐ Other: Paper, Report						
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29405	General Pharmacology	Prof. Lorne Yudcovitch, O.D., M.S., F.A.A.O. Pacific University College of Optometry	Lecture	4	5	will be announced on the notice board and in the LMS canvas	PLK 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29406	Ocular Pharmacology	Diane T. Adamczyk, B. S., O.D., Professor of Optometry at SUNY	Lecture	4	5	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to provide detailed explanations of the application of the principles in pharmacology, biological factors influencing drug response, pharmacokinetics and drug delivery systems, includes the clinical properties of widely systemic drugs and interactions and ocular and visual side effects of systemic medications in clinical use. The students are able to analyzes properties, clinical attributes and practical applications of pharmaceutical agents used in ophthalmic diagnosis and therapy. The students are able correlate the pharmacology with related medical science, the action and uses of drugs in advances in medicine. The students can understand and demonstrate knowledge on applications of pharmaco-dynamics to therapeutics and to correlate these principles to the ocular system. They also are able to evaluate the application and use of therapeutics in systemic and ocular application in a clinical setting. The students can explain of ophthalmic pharmacology and clinical application of drugs used in the diagnosis and treatment of ocular disease and ocular manifestations of systemic disease with special attention to practical matters including contraindications, precautions, dosage, administration, side effects and drug interactions. They can evaluate the legal considerations related to use and prescription of ocular pharmaceuticals

Methodological competence
The students are able to correlate pharmacology with related medical science, the action and uses of drugs in advances in medicine. The students are able to place the emphasis on applications of pharmaco-dynamics to therapeutics and to correlate these principles to the ocular system. The students will understand the use of therapeutics in systemic and ocular application. The students are able to understand and demonstrate knowledge on applications of pharmaco-dynamics to therapeutics and to correlate these principles to the ocular system.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☐	☒	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents

Principles of general pharmacology
- General principles in pharmacology
- Routes of drug administration
- Pharmacokinetics of drug
- Half life of drug: protein binding
- Concentration of unbound drug
- Bio-Transformation or metabolism
- Excretion of drugs

General aspects of neuropharmacology: autonomic nervous system drugs
- Anatomical subdivision of the autonomic nervous system
- Central nervous system
- Autonomic system
- Neuro-humoral transmission in the autonomic system
- Mechanisms for signal termination, cholinergic system
- Mechanisms for signal termination, adrenergeic system

General Pharmacological drugs and their applications
- Cardiovascular drugs, histamine and antihistamine, systemic glucocorticoids, sedative hypnotic and anit-epiletic drugs, analgesics, antipyretics, and anti-inflammatory drug: non narcotic and narcotic analgesics, anti-depressants and anti-psychotics, amphetamines and sympathomimetics

Principles of Ocular Pharmacology
- Survey of current optometric drug uses
- Preparation and packaging of ophthalmic drugs
- Drug actions, drug effectiveness, drug safety
- The medical prescriptions
- Factors influencing the objectively demonstrated patient response
- Review of general drug transport mechanisms
- Ocular penetration
- Routes of ocular administration

Optometric diagnostic drugs and their applications
- Clinical usage, special hazards/precautions in ophthalmic drug use, surface active drugs, topical anesthetics, autonomic drugs, actions and effect, physical agents, over the counter ophthalmic products, dyes, stains and their uses

Survey of ophthalmic drug usage. Mechanisms of how the drugs work, effectivity, side effects
- Glaucoma drugs, sulfonamides, antibiotics, anti-viral agents, anti-fungal agents, corticosteroids, others

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas General Pharmacology: - Katzung, G. (2013): Basic and Clinical Pharmacology. 13-Edition. Appleton and Lange. Ocular Pharmacology: - Bartlett, D./Jaanus, S./Blaho, K. (2000): Clinical Ocular Pharmacology.4th Edition. Butterworth and Heinemann. (Pls. note: This edition contains a chapter by your lecturer Prof. Dr. Diane Adamczyk)
Composition of the final mark	
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Ocular Disease**					**Module no. 29833**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	7	300	105	195	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☐ 1 semester ☒ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☐ Other: Paper, Report						
Admission requirement							

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29407	Intro to Ocular Disease 1	Bina Patel, O.D., Professor, New England College of Optometry (NECO) Labs: Georg Scheuerer, Thomas Hofmann, Oliver Buck, et al all M.Sc.	Lecture Labs	3	5	will be announced on the notice board and in the LMS canvas	PLL and PLK 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29408	Intro to Ocular Disease 2	Bina Patel, O.D., Professor, New England College of Optometry (NECO), Jinjong Chung, Laureen	Lecture Labs	4	5	will be announced on the notice board and in the LMS canvas	

		Kirkness, Adjunct Faculty New England College of Optometry Labs: Georg Scheuerer, Thomas Hofmann, Oliver Buck, et al, all M.Sc.					
	Course type	**Year of study**					
	Elective course						
Permitted aids		Diagnostic procedure equipment: slit lamp, biomicroscope, tonometer, visual field machines such as frequency doubling perimeter, Humphrey visual fields, Goldmann visual fields, direct ophthalmoscope, penlight, auxiliary diagnostic lenses such as 90D, 78D, 60D, gonioscopy lenses, Optic coherence tomography, fundus camera, blood pressure/stethoscopes					

Learning goals/competence

Professional competence

The students are able to describe normal variations and abnormal findings of the anterior portion of the eye. They are able to make differential diagnosis on red eye presentations and they are able to formulate a management and treatment plan. The students are able to detect and explain the manifestations of dry eye and lacrimal disorders. They are able to detect and correlate the effects on vision/refractive errors with the manifestation of cataracts and understand the relationship between ocular findings and systemic diseases where applicable. The students are able to demonstrate proficiency in using a slit lamp biomicroscopy, lacrimal assessment, and demonstrate the knowledge and skills to understand the workings of the optic nerve head and related variations. The students can evaluate of optic nerve damage as it relate to glaucoma, mechanisms involved and diagnostic tools used in diagnosis such as goldmann tonometry, gonioscopy, visual field, direct ophthalmoscope, optical coherence tomography, auxiliary lenses with biomicroscopy use fundus camera. They can evaluate of how the condition is managed and treated including the importance of timely referrals. They are able to develop proficient diagnostic skills that will be incorporated into a primary eye examination.

The students have knowledge and skills in understanding normal variations and abnormal findings of the posterior portion of the eye. They are able to detect and explain the manifestations of common uveal diseases macular disease, vitreal variations and disorders, pigmented lesions in the retina and choroid, peripheral retinal variations and diseases including the pathophysiological process and optic nerve inflammatory conditions. The students are able to detect and correlate the effects on vision/refractive errors with the manifestation of macula diseases and other optic nerve inflammatory diseases. They can evaluate the relationship between ocular findings related to common systemic diseases. They can evaluate the ocular vascular manifestations such as diabetes, hypertension, etc., and normal and abnormal pupillary responses and findings and as they correlate to the parasympathetic and sympathetic nervous system, management and underlying causes. The students can demonstrate the knowledge to understand of benign peripheral retinal degenerations, formation of retinal holes, tears and detachments, understanding of management and treatment options. The students can explain normal varations and abnormal pigmented related lesions of the retina and choroid. They can analyze and interpretate of fluroscein angiography and optical coherence tomography and how it relates to common vascular, macula, vitreal disorders. The students gained proficiency in using instruments to diagnose posterior segment disorders such as fundus camera, optical coherence tomography, auxiliary lenses with biomicroscopy, binocular indirect ophthalmoscope, blood pressure measurement, pupil measurements. They know how the condition is managed and treated including the importance of timely referrals. They develop proficient diagnostic skills that will be incorporated into a primary eye examination.

Methodological competence

The students can demonstrate competency in proficiency with diagnostic skills in techniques such as slit lamp, Goldmann tonometry, gonioscopy, direct ophthalmoscope, binocular indirect ophthalmoscope, auxiliary lens use with biomicroscopy. The students are able to interpret results from instruments used in aiding with the diagnosis or screening such as optical coherence tomography, fundus camera and visual fields.

Interdisciplinary general competence

The students are able to correlate clinical findings to their knowledge in ocular disease and be able to develop and carry out appropriate management and treatment including involvement of multidisciplinary health care providers. They are able to apply subjects covering ocular anatomy, histology, physiology, general and ocular pharmacology principles. They can provide the foundation and knowledge to incorporate diagnostic procedures and apply them to patient care.

The students are able to correlate clinical findings to their knowledge in ocular disease. They are able to develop and carry out appropriate management and treatment including involvement of multidisciplinary health care providers. They are able to apply subjects covering ocular anatomy, histology, physiology, systems pathology general and ocular pharmacology principles. The students can provide the foundation and knowledge to incorporate diagnostic procedures and apply this to patient care. The students are able to recognize, understand and manage anterior and posterior segment ocular emergencies. They are able to work in efforts to reduced incidence of visual blindness as a public health effort as related to common manifestations of systemic diseases such as diabetes.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

Lids, lashes, and adnexa: overview, congenital abnormalities, normal variations, inflammatory and infections, malignant and benign lesions of infection of lids.
- Lacrimal system: overview, dry eye, diagnostic evaluation, abnormal lacrimal tear production, congenital and acquired abnormalities of the lacrimal drainage system.
- Conjunctiva: overview, conjunctiva variations, malignant and benign lesions, infections and inflammation of conjunctiva: bacterial, viral, trachoma inclusion organisms, allergic.
- Episclera and sclera: overview, etiology, diagnosis, classification, clinical course.
- Uvea: overview, classification, clinical presentation, pathogenesis, etiology, diagnostic consideration, management.
- Anterior chamber assessment. Gonioscopy: features observed, normal and abnormal features, open versus closed; angles, reasons for gonioscopy, pathological presentations.
- Cornea: overview, edema, scarring, neovascularization, examination procedures, corneal degenerations and dystrophies, drug depositions, management and options of treatment.
- Lens: overview, lens variations, aging changes, cataracts, clinical evaluation, understanding of surgical treatment.
- Optic nerve head: C/D estimation, variations, examination,
- Glaucoma: diagnosis, primary open angle glaucoma, secondary open angle glaucomas, narrow angle glaucoma, acute angle closure glaucoma, ocular hypertenision, glaucoma suspect, methods of detection, understanding of treatment and understanding of some of the basic surgical treatment.
- Diagnostic labs: slit lamp examination, lacrimal and dry eye evaluation, tonometry, gonioscopy, optic

nerve evaluation, optical coherence tomography application: anterior and posterior segment

Fundus examination: comparison of instruments, diagnostic techniques
- Pupils: pupillary reaction, normal and abnormal, afferent pupillary APD defects, cause of abnormal shape
- Congenital optic nerve abnormalities: common disorders, prognosis, short and long term complications, application to visual fields
- Acquired optic nerve abnormalities: optic nerve swelling, typical findings, diagnostic techniques, visual fields, management
- Differential diagnosis of retinal and choroidal lesions: vitreal attachment, hemorrhages, pigmented lesions, exudates, drusen, vascular changes
- Fluorescein angiography: procedure, reasons, side effects, interpretation normal/abnormal,
- Macula: overview, examination techniques, complications to layers, age related macula degeneration, CNV formation and causes, NEI clinical findings and application, idiopathic central serous choroidopathy, epiretinal membrane, macula holes, cystoid macula edema,
- Vitreous: overview, common variations, asteroid hyalosis, post, vitreous detachment, management
- Retinal vascular occlusive disease: retinal vascular pathiophysiology, clinical presentation, complications and management of CRAO, BRAO, CRVO, BRVO
- Hypertensive retinopathy: review, findings and staging, management, blood pressure
- Diabetic retinopathy: review of systemic diabetes, risk factors, pathiophysiology of retinopathy, ETDRS
- Classification system, management protocols, application of studies
- Peripheral retina: overview, common age related variations, retinal holes, tears, detachment
- Posterior segment inflammations: Understand the manifestation of the process systemically and clinical manifestation, toxoplasmosis, toxocara, histoplasmosis
- Diagnostic laboratory: auxiliary lenses with slit lamp, Goldmann 3 mirror, binocular indirect ophthalmoscopy, optical coherence tomography, Goldmann 3 mirror, pupillary testing

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas - Alexander, L. (2002): Primary Care of the Posterior Segment. 3rd Edition. McGraw-Hill Pub. - Kanski, J. (2019): Clinical Ophthalmology: A Systematic Approach. 9th Edition. Elsevier.
Composition of the final mark	Final grade consists of a combined modules examination: PLL (25 %), PLK (75 %)
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Clinical Optometry in the US**					**Module no. 29834**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	2	150	30	120	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☐ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report						
Admission requirement							

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29409	Interactive Clinical Cases	Bina Patel, O.D., Professor, Joanne Caruso, O.D., New England College of Optometry (NECO)	Lecture Labs	1	2	will be announced on the notice board and in the LMS canvas	PLM 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29410	Clinical Optometry in the US	Bina Patel, O.D., Professor, Joanne Caruso, O.D., New England College of Optometry (NECO)	Lecture Project	1	3	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students can develop a deeper understanding of how primary care practice is incorporate in patient care in the US and demonstrate entry-level competency in punctual plug and foreign body removal. The students can develop a more in depth understanding of the application of optical coherence tomography and its relation to optic nerve and macula disorders. The students can explain evidence based medicine and related topics related to ocular pathology, binocular abnormalities.

Methodological competence
The students are able to demonstrate competency in proficiency with diagnostic skills techniques in the labs of the Aalen partner university in the US.

Interdisciplinary general competence
The students have a deeper understanding of how optometrists are providing a primary care role to eye care in the US. The students are able to explain how the profession optometry interacts and supports other professional disciplines including ophthalmology in the US. The students can explain the optometry's importance and contribution in prevention of blindness and role in public health related profession.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

Workshop and interactive discussion and presentations
Diabetic retinopathy
Visual field and fundus findings
Glaucoma cases
Optical coherence tomography interpretation and use of the technique with interesting cases
Foreign body removal overview and workshop
Punctual plugs overview and workshop

Interactive lecture presentations
Anterior segment ocular disease grand rounds
Posterior segment ocular disease grand rounds
Emergency anterior and posterior segment ocular presentations
Research on myopia and clinical application
Evidence based medicine cases related to refractive errors
Retinal update and research

Clinical observations
Clinical observations at community health centers, veteran's hospital, or secondary referral centers

Language	☐ German	☒ English	☐ Spanish	☐ French
	☐ Chinese	☐ Portuguese	☐ Russian	☐ Other_____

Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Vision Therapy and Binocular Vision**					**Module no. 29835**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	8	300	120	180	☒ winter semester or ☐ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies			☒ Lecture ☐ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☒ Other: Paper, Report				
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29411	Binocular Vision Disorders	Karl Citek, B.S., O.D., MEd, FAAO Ryan Bulson, OD, MS, FAAO both Professors at the College of Optometry at the Pacific University Labs: Katja Schiborr et al, all M.Sc.	Lecture Labs	4	5	will be announced on the notice board and in the LMS canvas	PLL and PLK 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29412	Vision Therapy	Scott Cooper, B.S., O.D., MEd, FAAO, Graham Erickson, B.S., O.D., FAAO, FCOVD both Professors at the College of Optometry at the Pacific University	Lecture Labs	4	5	will be announced on the notice board and in the LMS canvas	

		Labs: Katja Schiborr et al, all M.Sc.					
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students can explain how binocular vision disorders impact the daily lives of the public. They can anaylse the neurophysiology of accommodation, vergence and eye movements and have detailed understanding of functional aspects of accommodation, vergence and eye movements. The students know and apply psychophysical measurement principles to evaluation of visuomotor skills. They are able to identify visuomotor anomalies and prioritize relative to clinical care. They are able to apply various methods of analysis to evaluate individual measurements of specific functions and indirect clues to related functions. The students are able to identify specific visual syndromes based on formal analysis. They are able to prioritize treatment options and apply logically derived prescriptions whenever applicable based on a formally derived diagnosis.

Methodological competence
The students can integrate presented material within current practice setting, whenever applicable. They are able to interpret and utilize horizontal fixation disparity curves in diagnosis and treatment. The students can explain and apply bioengineering model of accommodation and vergence to vision therapy. They can organize and prepare to apply vision therapy to patients with easily treatable diagnoses. They can evaluate sensory aspects of vision therapy as they pertain to improvement or resistance to improvement. The students are familiar with the benefits and limitations of computer-based vision therapy. They are able to identify which patients with vertical deviations should be treated with prism and which should receive vision therapy. They are able to provide vision therapy for vertical deviations and understand the principles of diagnosis and treatment of strabismus. They are be familiar with specialized areas of vision therapy and explain how to incorporate vision therapy into daily practice: office and patient management

Interdisciplinary competence
The students can acquire mastery of the knowledge on a level where the student can educate the public within their scope of practice.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☒	☐

Lecture contents

Binocular Vision Disorders
- Neurophysiology of vision
- Overview of common non-strabismic visuomotor: binocular vision anomalies
- Basic analysis techniques for visuomotor: binocular vision problems; identification of syndromes
- Methodological of case analysis to consider clinical data as individual measurements of specific functions, as indirect clues to related functions and as information to allow identification of specific syndromes.
  These analyzes lead to discussion of treatment options, prioritization of treatments, and prescriptive

calculations.
- Application: case examples

Vision Therapy
- Interpretation and utilization of horizontal fixation disparity curves
- Incorporation of vision therapy into daily practice
- Biomechanical model of accommodation and vergence
- Vision Therapy approaches
- Sensory aspects of Vision Therapy
- Computer-based Vision Therapy options
- Vision Therapy for vertical deviations
- Strabismus

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas - Scheiman/Wick (2019): Clinical Management of Binocular Vision. Heterophoric. Accommodative, and Eye Movement Disorders. 5th Edition. Lippincott Williams and Wilkins. - Griffin/Grisham (1995): Binocular Anomalies; Diagnosis and Vision Therapy. Butterworth-Heinemann. - Birnbaum (1993): Optometric management of nearpoint vision disorders. Butterworth-Heinemann. - Ciuffreda/Tannen (1995): Eye Movement Basics for the Clinician. Mosby. - Dictionary of Visual Science
Composition of the final mark	Final grade consists of a combined modules examination: PLL (25 %), PLK (75 %)
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Pediatric Optometry**					**Module no. 29836**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		-

Form of studies	☒ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☒ Project work ☒ Other: Paper, Report
Admission requirement	Successful completion of module “Vision Therapy and Binocular Vision”

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29413	Pediatric Optometry	John P. Lowery, OD, MEd, FAAO, Hannu Laukkanen, OD, MEd, FAAO, FCOVD-A Professors at the College of Optometry at the Pacific University Labs: Katja Schiborr et al, all M.Sc.	Lecture Labs	2	3	will be announced on the notice board and in the LMS canvas	PLK and PLR 60 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29414	Case Management Pediatric	John P. Lowery, OD, MEd, FAAO, Hannu Laukkanen, OD, MEd, FAAO, FCOVD-A	Lecture Project	2	2	will be announced on the notice board and in the LMS canvas	

		Professors at the College of Optometry at the Pacific University Labs: Katja Schiborr et al, all M.Sc.					
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students will become an entry-level optometrist with the knowledge and skills to understand vision disorders impacting the pediatric population. The students are able to relate basic knowledge of vision development. They can formulate knowledge and skills in assessment techniques unique to pediatric optometry. The students are able to ascertain the relationships between vision and learning; and are able to transfer the skills in optometric case management for the pediatric patient.

Methodological competence
The student are able to transfer methods in assessment techniques for pediatric patients.

Interdisciplinary competence
The students are able to develop the mastery of the knowledge on a level where the student can educate the public within their scope of practice as well as develop communication skills to be able to organize key information from a pediatric patient.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

- Overview of vision disorders and developmental milestones impacting the pediatric population
- Basic examination and assessment of the infant, toddler, pre-school, and school-aged child
- Near-point vision analysis and assessment of visual perception
- Relationship between vision and learning
- Lens prescribing and vision therapy in pediatric optometry

Clinic based assignments

- Basic examination and assessment of the infant, toddler, pre-school, and school-aged child
- Near-point vision analysis and assessment of visual perception
- Relationship between vision and learning
- Lens prescribing and vision therapy in pediatric optometry

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning

	Management System) Canvas Required text: “Clinical Pediatric Optometry” by Press & Moore Suggested Reading: - Scheiman, M./Rouse, M. (2006): Optometric Management of Learning-Related Vision Problems. Elsevier. - Birnbaum, M. (1993): Optometric Management of Nearpoint Vision Disorders. 2. Edition Butterworth-Heinemann.
Composition of the final mark	Final grade consists of a combined modules examination: PLK (75 %), PLR (25 %)
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Sports Vision**					**Module no. 29837**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	1	150	15	135	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report						
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29415	Sports Vision	Graham Erickson, B.S., O.D., FAAO, FCOVD, Fraser C. Horn, OD, FAAO, Professors of Optometry at the College of Optometry at the Pacific University	Lecture Labs	1	2	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course		-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29416	Clinical Observations in the US	Willard Bleything B.S., M.Sc., O.D., F.A.A.O., Distinguished University Professor of Optometry and Public Health at the College of Optometry at the Pacific University	Project	-	3	will be announced on the notice board and in the LMS canvas	

	Course type	Year of study		
	Elective course			
Permitted aids				

Learning goals/competence

Professional competence

The students are able to determine the pertinent visual skills utilized in sport. The are able to provide the rationale and research results in support of specific sports vision performance skills including normative data. They are able to provide strategies for a comprehensive evaluation of athletes to provide a background for protective eyewear issues; and, to learn vision training techniques utilized in visual skills related to athletes.

The students can demonstrate the ability to build sports vision services into an optometric practice. They are able to determine the visual skills most pertinent in various sports and apply research results in testing for specific sports performance skills. They are able to organize a comprehensive evaluation for athletes competing in various sports. The students are able to manage refractive treatment options including filters and eyewear considerations for safety; and, apply vision training to enhance visual skills essential to sports.

Methodological competence

The students are able to employ strategies to build sports vision into an optometric practice and to provide case management strategies for refractive components, enhancement filters, contact lenses, and refractive surgery for athletes.

Interdisciplinary competence

The students are able to educate the public within their scope of practice.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

The theory and practice of sports vision is presented in detail. The course emphasizes exploration of the research base supporting sports vision services, analysis of visual and environmental task demands in sports, evaluation procedures for athletes, and optometric intervention approaches. Strategies for practice development are discussed. The emphasis of the lab portion will be integration of didactic information with instrumentation used in sports vision.
A sports vision screening is conducted with a sports team in the US. This project involves designing the evaluation, creating screening forms, setting up and conducting the screening, analyzing data, and creating reports.

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Erickson, G. (2007): Sports Vision: Vision Care for the Enhancement of Sports Performance. Butterworth-Heinemann.
Composition	

of the final mark	
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name		**Low Vision**				**Module no. 29838**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	3	150	45	105	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies		☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report					
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29417	Low Vision	Georg Scheuerer, M.Sc., Andreas Polzer	Lecture Labs	3	4	will be announced on the notice board and in the LMS canvas	PLK 60 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29418	Low Vision Project	Georg Scheuerer, M.Sc., Andreas Polzer	Project	-	1	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to explain the usage, application and dispensing including fitting of magnifying aids. The students can establish the psychology of a visually handicapped person, behaviour, motivation of patients. They can develop knowledge of medical/ocular conditions requiring the use of low vision aids. The students are able to generate advanced knowledge of optics and visual application of low vision aids in ocular conditions. They are able to relate how blind and visually impaired individuals function and their needs including social services.

Methodological competence
The students are able to transfer certain knowledge about the quantity of magnifying aids, how to use and handle them and also about fitting these aids.

Interdisciplinary general competence
The students are able to demonstrate knowledge, understanding and skills, and be able to discuss, explain, and manage patients whose vision cannot be improved significantly using conventional spectacles or contact lenses, in order to make the most of their residual vision using magnifying systems and imaging technology.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

- Pathology (diabetic retinopathy, glaucoma, macula degeneration, retinopathia pigmentosa)
- Visual impairment and blindness
- Medical filter-glasses
- Management of life with reduced vision
- Mobility and orientation
- Social assistance, financial aids
- Development of vision in childhood
- Vision and elder patients
- Electrophysiological diagnostics
- Electronic retinal systems
- Simulation and aggravation
- Fitting of Low Vision aids under real circumstances
- Electronically visual systems
- Social advisory service (social and technical criterions)

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas

	- Weale: The Senescence of Human Vision - Publications in peer reviewed optometry journals Hammerstein: Rehabilitation in der Augenheilkunde - Low Vision Stiftung (Hrsg): 2. Interdisziplinärer Low Vision Kongress, Diagnostik, Therapie, Rehabilitation - Lund, Waubke (Hrsg): Ophthalmologische Rehabilitation - Wagner: Sehbehinderung und soziale Kompetenz
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Rainer Börret	Module description SPO 510

Module name	**Scientific Methods**	**Module no. 29839**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	4	300	60	240	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☒ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29419	Biostatistics	Prof. Dr. Wilhelm Kleppmann	Lecture Project	2	2	will be announced on the notice board and in the LMS canvas	PLK and PLR 120 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29420	Scientific Methods	Prof. Dr. Rainer Börret/Dr. Bernd Dörband/ Katja Schiborr, M.Sc.	Lecture Labs	2	8	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to analyze the physical and optical properties, as well as the design and function of ophthalmic lenses. The students are able to list and describe the general steps of the scientific methods, to apply the scientific methods critically in their academic work, and to use the scientific methods to ask critical and logical questions, and design appropriate studies. After completion, the students can apply the knowledge in an industrial, research and business setting and for an ideal and in-depth counselling of customers.

Methodological competence
The students are able to demonstrate fundamental knowledge and insight into biostatistics for application in laboratory experiments as well as for research. The students can demonstrate knowledge and anaylse in the areas of research design and optical research. They are able to evaluate studies in terms of the scientific methods, weaknesses, and applicability for their presentation. The students can gain a basis for a future career in the field of research and development in the optometric area.

Interdisciplinary general competence
The students can demonstrate interdisciplinary thinking, teamwork as well as presentation techniques.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents
- Introduction to research methodology in the optometric field - Formulation of a research question and study design in the optometric field - Consideration and management of ethical issues - Qualitative methods - Quantitative methods - Statistical analysis - Critical analysis of a research paper

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	Final grade consists of a combined modules examination: PLK 50%, PLR 50%
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name		**Contact Lenses and Refractive Surgery**				**Module no. 29840**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies		☒ Lecture ☐ Tutorial ☒ Lab ☒ Self study ☒ Seminar ☐ Assignment ☐ Project work ☐ Other: Paper, Report					
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29421	Contact Lenses	Mike Wyss, M.Sc.	Lecture Labs	2	3	will be announced on the notice board and in the LMS canvas	PLK 60 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29422	Refractive Surgery	Mike Wyss, M.Sc.	Lecture Labs	2	2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence
Professional competence

The students can demonstrate enhanced knowledge in contact lens fitting in pediatric and presbyopic populations and specialty fittings (e.g. keratoconus after corneal transplants or corneal surgery). They are able to compare different methods of contact lens fittings and choose the most appropriate method depending on the patient. They will be also be able to identify and analyze fittings and wearing problems in order to solve them in cooperation with the patient. The students are able to demonstrate knowledge, understanding and skills, and be able to discuss, explain, and undertake examinations and management of patients wanting to undergo or who have undergone refractive surgery. The students can demonstrate competence in the areas of (1) patient counselling and (2) pre- and post-operative assessments.

Methodological competence
The students are able to fit contact lenses for children, 40+ and undertake do specialty fittings. After attending the module, they are able to compare various models from the area of special contact lenses and assess their advantages and disadvantages.

Interdisciplinary competence
The students are able to master the knowledge on a level where the students can educate the public within their scope of practice.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

Contact Lenses
- New materials in soft and rigid contact lenses, their specifications and usage
- Current studies and outcomes in relation to contact lenses and solutions
- Effect of dry eye and contact lenses usage
- Silicon hydrogels and alternatives contact lens material options
- Keratoconus update, complications and new studies, fitting options, contact lens fittings and challenges
- Pediatric fitting and challenges, contact lens options
- Cases and usage of bandage contact lenses
- Contact lens options for the pediatric population including management
- Therapeutic usage of contact lenses in pathological corneal disorders
- Types and principles of multifocal lenses fitting and usage
- Special and specific anamnesis related to contact lenses

Refractive surgery
- Patient counselling
- Management of refractive surgery patients
- Refractive surgery options
- Techniques used in the pre-operative assessments
- Identification of post-operative complications
- Referral pathways
- Legal, professional and ethical obligations

Language	☒ German	☒ English	☐ Spanish	☐ French
	☐ Chinese	☐ Portuguese	☐ Russian	☐ Other_____

Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Interdisciplinary Optometry**					**Module no. 29841**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	2	150	30	120	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☒ Other: Paper, Report						
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29423	Interdisciplinary Optometry	Dr. med. Gregor Pfaff, Marion Pfleger, M.Sc.	Lecture Labs	2	4	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29424	Interdisciplinary Case Management	Dr. med. Gregor Pfaff, Marion Pfleger, M.Sc.	Project	-	1	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to use targeted methods for planning optometric services and managing resources in an interdisciplinary environment. The students are able to interact with others across healthcare disciplines. The students are able to engage actively in developing healthcare systems, taking a range of professional viewpoints into account.

Methodological competence
The students are able to communicate to and advise customers comprehensively about possibilities and solutions if interdisciplinary problems occur.

Interdisciplinary general competence
The students are able to recognize the overlap in knowledge and expertise of staff from different disciplines.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents
Interdisciplinary Optometry with a focus on - Assessment, management and symptom-based case management of the ocular and related systemic health conditions - Conducting evidence-based research and using that for enhancing evidence-based clinical decision-making skills in an interdisciplinary environment

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Steffen Kreikemeier	Module description SPO 510

Module name	**Audio and Vision**					**Module no. 29842**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	3	150	45	105	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies			☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☐ Project work ☒ Other: Paper, Report				
Admission requirement							

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29425	Audio and Vision	Prof. Dr. Steffen Kreikemeier	Lecture Labs	2	3	will be announced on the notice board and in the LMS canvas	Oral exam (PLM) 30 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29426	Audio and Vision Project	Prof. Dr. Steffen Kreikemeier	Lecture Labs	1	2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students can explain central auditory and visual processing disorders and their therapy. They are able

to detect disorders early by knowing their signs and symptoms and refer them to specialists. They are able to observe and participate in evaluations and therapy for patients with perceptual problems associated with learning disabilities, traumatic brain injury, stroke and developmental abnormalities. They can analyze procedures for modifying visual performance associated with hearing and co-manage strategies.

Methodological competence
The students are able to detect dyslexia in the pediatric population and know the fundamental importance of early detection. They will know when and where to refer an affected person and how to co-manage auditory-visual processing disorders by enhancing the vision part.

Interdisciplinary general competence
The students are able apply this knowledge to patient care.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☒	☐

Lecture contents
- Development of the brain with target on auditory and visual processing - Central auditory/visual processing - Tests for the auditory and visual perception - Pediatric issues with auditory/visual processing disorders - Therapy of central auditory and visual processing disorders

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Bibliographic hints will be given
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Myopia Management**	**Module no. 29843**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	2	150	30	120	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☒ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☐ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29427	Myopia Management	Dr. Anne Seidemann Dr. Wolfgang Becken Dr. Yohann Bénard	Lecture Labs	2	3	will be announced on the notice board and in the LMS canvas	PLK and PLR 60 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29428	Myopia Case Management	Dr. Anne Seidemann Dr. Wolfgang Becken Dr. Yohann Bénard	Project		2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students can demonstrate expertise in prevalence, development, risk factors, and management of myopia as a whole. The students can evaluate pathologies of myopia and the associated public health implications.
The students can apply advanced level, independent judgements to appropriately prescribe myopia management in clinical practice while considering current issues relevant to research of myopia management. The students are able to describe and apply accepted therapy options in myopia management and assess studies for relevance.
The students can have scientific and practical competence in the optical aspects of designing spectacles lenses. They are able to recall important spectacle lenses design factors for comfortable vision, such as aberrations due to curvature, thickness and other eye glass design criteria. The students can also be able to identify and solve problems that can occur in patients based on their presented symptoms including those related to myopia.

Methodological competence
The students are able to apply appropriate training and experience in effective communication to a range of audiences including one-on-one interactions with myopic children, their parents and families and other health practitioners involved in their care. The students are able to apply advanced disciplinary knowledge that is both theoretical and practical in the field of myopia management. The students will have practical competence in optical features of spectacles. They are able to integrate the technical and optical characteristics of lenses with physiological consequences in vision.

Interdisciplinary general competence
The students can understand and implement interdisciplinary and interprofessional collaboration. The students are able to communicate and collaborate in scholarly, ethical, respectful and responsible ways, and demonstrate a commitment to lifelong learning.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents

- An evidence-based approach to myopia diagnosis, management and control
- From the development of refractive error to physiological and optical aspects of designing spectacle lenses

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas
Composition of the final mark	Final grade consists of a combined modules examination: PLK 50 %, PLR 50 %
Comments/other	
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Marketing Management**					**Module no. 29844**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	3	150	45	105	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies			☒ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☒ Assignment ☒ Project work ☒ Other: Paper, Report				
Admission requirement							

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29429	Marketing and Communication	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Labs	2	3	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29430	Integral Competencies	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Project	1	2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to integrate all major components of marketing strategies. The students are able to

demonstrate fundamental knowledge and insight in different communication styles, in verbal and non-verbal communication, in cultural differences, and in cross-cultural communication techniques. The students are able to communicate effectively with the patient using a broad range of communication styles appropriate to the educational level, cognitive ability, and age profile of the patient. The students are able to communicate in a respectful tone and manner, to listen actively and communicates effectively, to listen and ask questions to understand the patient's concerns and viewpoints, to communicate in a timely manner, to be aware of and responsive to verbal and non-verbal communication, to recognize and adjust to cultural differences, and to use effective cross-cultural communication skills if appropriate. The student are able to communicate with a diverse group of patients with a range of ophthalmic conditions and needs and to provide information in a way which is appropriate to the patient.

The students are able to demonstrate fundamental understanding, knowledge, accountability, and responsibility of the legal obligations for optometric practice, the ethical and cultural standard, a safe environment through quality assurance and risk management strategies. The student can use strategies to promote health and prevent illnesses, and to participate in continuing professional development activities to maintain competencies and knowledge in areas of optometric practice.

Methodological competence
The students can develop a marketing strategy for an optometrist`s practice and/or an industrial company. They are able to plan marketing concepts and apply tools (e.g. strategy design and marketing management). They are able to assess various marketing tools and work out a strategic plan that best suits their business.

Interdisciplinary general competence
The students can develop a more critical and measured reading of optometric and medical literature; the application of current and best research evidence to clinical care; study design and its transfer into clinical care; and a community perspective to individual patient care.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents
Marketing and Communication - Marketing methods, tools and planning process for optometrists - Service marketing for optometrists - Communication styles, verbal and non-verbal communication, cultural differences, cross-cultural communication techniques **Integral Competencies** - Patient's concerns and viewpoints - Communication with diverse group of patients with a range of ophthalmic conditions and needs - Providing information in a way which is appropriate to the patient - The ability to break bad news in an appropriate and considerate manner.

Language	☒ German	☒ English	☐ Spanish	☐ French
	☐ Chinese	☐ Portuguese	☐ Russian	☐ Other_____

Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas Bibliographic hints will be given, amongst others - Nagl, A. (2017): Der Marketingplan. Die 10 Gebote erfolgreichen Marketings. 2. Edition. Beck Verlag. München. - Nagl, A. (2004): Dienstleistungsmarketing in der Augenoptik: Ein Ratgeber für die Praxis. DOZ-Verlag. Heidelberg.
Composition of the final mark	
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Business Simulation**					**Module no. 29845**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters
Target degree			**Module type**		**Year of study**	**Relevance in courses of study**	
Master of Science (M.Sc.)			Elective module				
Form of studies	☒ Lecture ☒ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report						
Admission requirement	Basic knowledge in business and marketing, knowledge of core concepts in strategic management, business administration, leadership and marketing						

Courses/lectures							
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29431	Business Strategy	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Project	2	3	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29432	Business Simulation Project	Prof. Dr. Anna Nagl/ Adjunct Faculty	Lecture Project	2	2	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/competence

Professional competence
The students are able to make strategic decisions and realize concepts in leadership, strategy, management and marketing. They can demonstrate knowledge about basic business characteristics of an optometry practice, such as mission statements, calculations, and budget planning. They are able to overview complex relationships within a business itself and in connection with competitors.

Methodological competence
The students are able to manage complex business decisions under pressure. They can get immediate feedback in a simulated environment. The students can therefore try out various ways of handling difficult situations and decisions in an actual business.

Interdisciplinary general competence
The students can gain experience in teamwork, project management skills and presentation skills. The students are able to enhance their company's profitability and marketplace position.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☒	☐

Lecture contents

Business tools and methods related to this business project in the field of optometry, e.g.:
- Mission Statement and Values
- Balanced Scorecard
- Calculation, direct costing and break-even analysis
- Budget planning
- new management concepts and Key Performance Indicators (KPIs)

Business simulation, strategic and operational game in the field of optometry
- Planning of a virtual business unit
- Business game with computer simulation
- Presentation of strategies, milestones and results

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas - Manual of the management game - Literature for deepening the knowledge in special fields
Composition of the final mark	
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Anna Nagl	

Module name	**Sustainable Digital Transformation**	**Module no. 29846**

CP	Semester hours per week	Workload	Contact time	Self study	Begin of offer	Se-mester	Duration
5	4	150	60	90	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☒ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	Title of the course/lecture	Lecturer	Type	Semester hours per week	CP	Se-mester	Module exam: type/length/ grading
29433	Digital Business Models	Prof. Dr. Anna Nagl/ Prof. Dr. Jürgen Stiefl/ Adjunct Faculty	Lecture Labs	2	2	will be announced on the notice board and in the LMS canvas	PLP 30 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29434	Start-up Management	Prof. Dr. Anna Nagl, Adjunct Faculty	Lecture Project	2	3	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						

Permitted aids	

Learning goals/competence

Professional competence

The students are able to build and present a business model for a sustainable and innovative idea. The students are able to analyze strategic choices and operational implementation of digital transformation and sustainability. The students are able to carry out a business plan. The students are able to explain the entrepreneurial process and the sources of financing which are relevant in different development stages of enterprises.

Methodological competence
The students are able to transfer business management skills in the field of optometry, such as how to create value and how to manage a start-up company. The students are able to evaluate alternative strategic options for innovative optometry practices.

Interdisciplinary general competence
The students can validate this knowledge by developing and presenting a business model and a business plan. The students are able to demonstrate entrepreneurial skills.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☒	☐

Lecture contents

- New digitally enhanced business models emphasizing platforms and ecosystems
- Development of a design-driven organisational culture, that fosters successful innovation and sustainable business models
- Methodology design thinking

Development of a business model and a business plan, e.g.
- for a project within a company
- for a start-up company

including
- Drafting and realization of an application-oriented business
- Plan facts and data on founding a start-up
- Descriptions, errors in designing a business plan
- Application of calculation realization of a business case
- etc.

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Updated literature recommendations are available in the LMS (Learning Management System) Canvas Bibliographic hints will be given, e.g. - Bozem, K./Nagl, A. (2022): Digitale Geschäftsmodelle erfolgreich realisieren. Business Model Building mit Checklisten und Fallbeispielen. Springer Gabler Verlag. Wiesbaden.

	- Nagl, A. (2020): Der Businessplan. Geschäftspläne professionell erstellen. 10. Edition. Springer Gabler Verlag. Wiesbaden.
Composition of the final mark	
Comments/other	Minimum 10 students
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Clinical Experience**	**Module no. 29847**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	1	150	15	135	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☒ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/ lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29435	Clinical Experience	Adjunct Faculty	Lecture Labs	1	4	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29436	Clinical Experience Portfolio	Adjunct Faculty	Project	-	1	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						
Permitted aids							

Learning goals/ competence

Professional competence
The students are able to identify problems in the clinical field. They are able to design a plausible solution to the problem using scientific techniques. The students are also be able to carry out validation procedures to establish the effectiveness of the proposed solution.

Methodological competence
The students are able to analyze and structure a problem in the clinical field. They are able to design a solution based on basic scientific research techniques.

Interdisciplinary general competence
The students are able to conduct a general ocular health assessment in the overall management of patient conditions relative to referrals and consultations.

Based on: https://www.ecoo.info/wp-content/uploads/2016/10/Part-III-ECOO-Portfolio-Guidance-Feb-2021.pdf [version September 20, 2021]

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

This content is a requisite for students seeking expanded clinical knowledge and experience in comprehensive clinical care. Each part is designed to enhance skill-building in all areas of clinical care and provides advanced clinically relevant education for optometrists-in-training who have previous experience inpatient care.

The course is designed to expand the clinical knowledge and critical thinking skills by building on existing knowledge and clinical experience, and by using case study presentations to advance clinical thought process.

Each presentation consists of lecture and case studies and is designed to be interactive and participatory. Emphasis is placed on case development and presentation as a practical learning tool and in promoting excellence in patient care. Students will learn universally accepted best practices in analyzing and presenting cases.

Comprehensive case modules are offered in each of the following areas:

1. Visual optics, including:
a. Refraction and refractive errors
b. Binocular vision
c. Low vision rehabilitation
d. Optical appliances

2. Anterior segment
a. Contact lenses
b. Conjunctiva, cornea, sclera
c. Kerato-refractive surgical considerations
d. Lens and iris

3. Posterior segment
a. Vitreous
b. Retina
c. Optic nerve, including glaucoma

4. Miscellaneous
a. Ocular trauma
b. Uveitis/systemic disease
c. Orbital anomalies/oculoplastics
d. Neurological disorders
e. Basic pharmacology considerations
f. Refractive Surgery

Based on: https://www.ecoo.info/wp-content/uploads/2016/10/Part-III-ECOO-Portfolio-Guidance-Feb-2021.pdf [version September 20, 2021]

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Relevant textbooks, handouts and templates are available in the LMS (Learning Management System) Canvas
Composition of the final mark	
Comments/other	These 130 cases are required to fulfil the requirements of the European Optometry Diploma.
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M.Sc. Vision Science and Business (Optometry) **Module Coordinator** Prof. Dr. Anna Nagl	Module description SPO 510

Module name	**Clinical Case Studies: Logbook**	**Module no. 29848**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5		150		150	☒ winter semester or ☒ summer semester	will be announced on the notice board and in the LMS canvas	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module		

Form of studies	☐ Lecture ☐ Tutorial ☐ Lab ☒ Self study ☐ Seminar ☐ Assignment ☒ Project work ☐ Other: Paper, Report
Admission requirement	

Courses/ lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29437	Clinical Case Studies	Georg Scheuerer, M.Sc. Oliver Buck, M.Sc.	Lecture Labs	1	4	will be announced on the notice board and in the LMS canvas	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course						
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29438	Case Documentation: Logbook	Georg Scheuerer, M.Sc. Oliver Buck, M.Sc.	Project	-	1	will be announced on the notice board and in the LMS canvas	
	Course type	**Year of study**					
	Elective course						

Permitted aids	

Learning goals/ competence

Professional competence
The students are able to appraise patients with and without visual disorders/diseases especially clinically. The students are able to transfer further skills in optometric examination techniques. The students are able to discriminate between healthy and pathologic findings that might be presented differently from “textbook cases”. They are able to organize and grade the findings and know when referrals are

necessary.

Methodological competence
The students are able to generate techniques to detect eye diseases through practical experience with feedback from supervising ophthalmologists and lecturers. They are able to prepare evidence-based optometric knowledge and practical experience in order to make the right decision. The students are able to summarize their findings.

Interdisciplinary general competence
The students are able to assess patients (anterior and posterior segment) and detect abnormal conditions, to evaluate the central retina (optic nerve and fovea) and to develop the logbook. They are able to justify their findings in an appropriate way for patients within their scope of practice.

Based on: https://www.ecoo.info/wp-content/uploads/2016/10/Part-III-ECOO-Portfolio-Guidance-Feb-2021.pdf [version September 20, 2021]

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☒	☐	☐

Lecture contents

"Primary Care Eye Examinations (5 Cases): All the records should cover a complete eye examination, starting with a summary of the history, any previous treatment up to the time of the examination and follow the ECOO-guidance. The five patients selected should include two with binocular vision anomalies, one patient with low vision and one patient who is 12 years of age or younger.

Abnormal Ocular Condition Cases (5 Cases): All the records should cover a complete eye examination, starting with a summary of the history, any previous treatment up to the time of the examination and follow the ECOO-guidance. The discussion should include a description of the abnormal ocular condition and how the presentation in this case differs from the text book description. Three of the cases should include letters referring the patient to an ophthalmologist or onto the next step in the health system ladder.

Contact lenses (5 Cases) including 1 RGP fitting: All the records should cover a complete eye examination, starting with a summary of the history, any previous treatment up to the time of the examination and follow the ECOO-guidance. The contact lens fittings should be illustrated with appropriate diagrams or photographs.

Dispensing (5 Cases): All the records should cover a complete eye examination, starting with a summary of the history, any previous treatment up to the time of the examination and follow the ECOO-guidance. These records should be of patients whose ophthalmic dispensings presented particular challenges. Outline the nature of the dispensing difficulty and justify the solution chosen."

Based on: https://www.ecoo.info/wp-content/uploads/2016/10/Part-III-ECOO-Portfolio-Guidance-Feb-2021.pdf [version September 20, 2021]

Language	☒ German	☒ English	☐ Spanish	☐ French
	☐ Chinese	☐ Portuguese	☐ Russian	☐ Other_____
Literature	Script			

	Relevant textbooks, handouts and templates are available in the LMS (Learning Management System) Canvas Scheuerer, G., Patel, B., Nagl, A. (2014): Klinisches Logbuch: Best Practice Dokumentation. Schriftenreihe aus dem DOZ-Verlag 33. Optische Fachveröffentlichung. Heidelberg.
Composition of the final mark	
Comments/other	20 detailed case records that demonstrate experience of the whole range of optometric practice are required to fulfil the requirement of the European Optometry Diploma.
Last updated	September 20, 2021

Aalen University	**Faculty** Optics and Mechatronics	Module description SPO 510
	Course of Study M.Sc. Vision Science and Business (Optometry)	
	Module Coordinator Prof. Dr. Dirk Flottmann	

Module name	**Research Project**	**Module no. 29849**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
20	-	600	-	600	☐ winter semester ☒ summer semester	2	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M.Sc.)	Elective module	1st	-

Form of studies	☐ Lecture ☒ Tutorial ☒ Lab ☒ Self study ☐ Seminar ☒ Assignment ☐ Project work ☒ Other: Paper, Report
Admission requirement	

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29439	Research Project	Prof. Dr. Dirk Flottmann/Prof. Dr. Anna Nagl/ Adjunct Faculty	Project	-	17	2	PLP 20 minutes graded
	Course type	**Year of study**					
	Elective course	1st	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29440	Research Project Presentation	Prof. Dr. Dirk Flottmann/Prof. Dr. Anna Nagl/ Adjunct Faculty	Project	-	3	2	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

Professional competence
The students develop advanced skills in independent research in the field of optometry utilizing scientific methods including project and time management skills. They are able design, plan and organize a research project. The students will also gain further practice in scientific and professional writing.

Methodological competence
The students are able to prepare and evaluate scientific material and subsequently summarize it. The students can demonstrate the ability to develop a 'statement of the problem' and frame the research question (hypothesis) as well as analyze and interpret the research results using appropriate methodological statistics. The students are able to analyze and interpret the results/outcomes and summarize, conclude and draw inferences obtained from the research. The students are able to prepare and structure a research paper and publish it.

Competence area	Concentration	Minor concentration	In small amounts
Professional competence	☒	☐	☐
Methodological competence	☒	☐	☐
Interdisciplinary general competence	☐	☐	☒

Lecture contents

- Preparing a research paper in a scientific research field in theory and practice: applied sciences
- Presentation of the research work
- Discussion over the methodology and the results of the research project and the presentation

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Depends on the topic of the research project
Composition of the final mark	
Comments/other	
Last updated	September 20, 2021