Manual

Module descriptions for the
Master of Science (M. Sc.)
in Vision Science and Business (Optometry)

gültig ab Studienjahr 2010/11

(Studien- und Prüfungsordnung SPO 28)

Contents

Compulsory modules

No.	Module	Type	Semester semester hours per week				CP
			1	2	3	4	
29010	**Ophthalmic Project**						**5**
29110	Ophthalmic Project	V,P	1				5
29123	Ophthalmic Project Presentation	V,P					
29011	**Leadership**						**5**
29210	Studium Generale	V,P		2			5
29225	Leadership and Communication	V,P		1			
29051	**Master Thesis**						**25**
29251	Master Thesis	P				x	25
29351	Master Thesis Presentation	P				x	

Elective modules

No.	Module	Type	Semester semester hours per week				CP
			1	2	3	4	
29012	**Human Biology**						**5**
29111	Ocular Anatomy	V	2				5
29112	Physiology	V	2				
29013	**Pathology**						**5**
29113	Histology	V,L	2				5
29114	Systems Pathology	V	2				
29014	**Pharmacology**						**5**
29115	General Pharmacology	V	2				5
29116	Ocular Pharmacology	V	2				
29015	**Ocular Disease**						**10**
29117	Intro to Ocular Disease 1	V,L	3				10
29118	Intro to Ocular Disease 2	V,L		4			
29016	**Clinical Optometry**						**5**
29119	Intro to Ocular Disease 3	V,L		1			5
29120	Clinical Optometry Boston USA	V,P		1			
29017	**Research Project**						**20**
29211	Research Project	P	x	x			20
29212	Research Project Presentation	P		x			
29018	**Binocular Vision**						**10**
29213	Binocular Vision Disorders	V,L		2	2		10
29214	Vision Therapy	V,L			4		
29019	**Pediatric Optometry**						**5**
29215	Pediatric Optometry	V,L			2		5
29318	Case Management Pediatric	V,P			2		

29020	**Sports Vision**						**5**
29216	Sports Vision	V,L				1	5
29217	Sports Vision Field Study USA	V,P				1	
29021	**Low Vision**						**5**
29218	Low Vision	V,L		3			5
29310	Low Vision Project	P		1			
29022	**Optical Fabrication Technology**						**10**
29219	Project Management and Innovation	V,P			2		10
29311	Surface Processing & Coating Tech.	V,L				2	
29023	**Contact Lenses**						**5**
29220	Contact Lenses	V,L		2			5
29312	Contact Lenses Project	P		1			
29024	**Workplace Design**						**5**
29221	Vision, Light and Ergonomics	V,L			2		5
29313	Workplace Design Project	P			1		
29025	**Audio and Vision**						**5**
29314	Audio and Vision	V,L		2			5
29319	Audio and Vision Project	V,L		1			
29026	**Eye Glass Design**						**5**
29315	Eye Glass Design	V,L			2		5
29320	Eye Glass Design Project	V,L			2		
29027	**Marketing Management**						**5**
29121	Marketing	V,L				2	5
29122	Marketing Project	V,P				1	
29028	**Business Simulation**						**5**
29222	Business Strategy	V,P		2			5
29223	Business Simulation Project	V,P			2		
29029	**Business Management**						**5**
29224	Value Based Management	V,L			2		5
29317	Business Plan	V,P			2		

Type of course

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

1 CP (Credit Point) means 30 hours of study
1 semester hour per week = approx.15 hours of lecture

General Information

(1) The “Master of Science (M.Sc.) Vision Science and Business” is a part time degree program which allows one to continue full time practice. The didactic portion of the degree program is covered over four semesters (approximately 24 months).

(2) Successful completion of the program requires at least 300 credit points preceding the Bachelor’s degree.

Compulsory modules

Aalen University	**Faculty** Optics and Mechatronics	Module description
	Course of Study M. Sc. in Vision Science and Business	
	Module Coordinator Prof. Kümmel	

Module name	**Ophthalmic Project**					**Module no. 29010**	
CP	**Semester hours per week**	**Workload**	**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**
29110	Ophthalmic Project	All members of the faculty	Tutorial	1	4	1	Paper and project presentation 30 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**	
29123	Ophthalmic Project Presentation	All members of the faculty	Tutorial	-	1	1	
	Course type	**Year of study**					
	Compulsory course	1st	-				
Permitted aids							

Learning goals/competence

Ability to analyze and structure a problem in the ophthalmic field and to design a solution based on scientific research techniques
Develop the capacity for applying the knowledge in practice

The student will demonstrate the ability
- to identify a viable problem in the ophthalmic field and develop a discussion on the relevance to primary eye care and vision science,
- to design a plausible solution to the problem through scientific techniques, and
- to carry out validation procedures to establish the effectiveness of the proposed solution

Competence area	Concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents

Manufacturing (lecture number 29110) and presenting (lecture number 29123)
an ophthalmic project in a scientific research field

Basics of scientific research
- quantitative methods of empirical social sciences
- qualitative methods in the empirical social sciences
- research design

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Depends on the subject of the Ophthalmic Project Literature for scientific research, e.g. - Nicol, N./Albrecht, R. (2007): Wissenschaftliche Arbeiten schreiben mit Word 2007; mit CD-ROM: Formvollendete und normgerechte Examens-, Diplom- und Doktorarbeiten. Addison-Wesley. München. - Online im Internet: Becker, F.: Zitat und Manuskript. Erfolgreich recherchieren. Richtig zitieren. Formal korrekt gestalten. Stuttgart. http://www.schaeffer-poeschel.de/download/zitat/zitat_und_manuskript.pdf [Stand: 01.08.2009]
Composition of the final mark	Final grade: Paper and project presentation
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics	Module description
	Course of Study M. Sc. in Vision Science and Business	
	Module Coordinator Prof. Dr. Nagl	

Module name	**Leadership**	**Module no. 29011**

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	2	☒ 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**
29210	Studium Generale	Nagl/ Adjunct Faculty	Lectures Project	2	3	2	Presentation 60 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**	
29225	Leadership and Communication	Nagl/ Adjunct Faculty	Lectures Project	1	2	2	
	Course type	**Year of study**					
	Compulsory course	1st	-				
Permitted aids							

Learning goals/competence

- Widening the horizon through lectures in philosophy, ethics and sustainability
- Developing the personality and gaining social competence
- Managing complexity
- Knowledge of scientific research

Knowledge
- of human resource development tools: how to inspire employees, customers, and all other stakeholders
- of taking decisions
- of feedback rules
- of conflict management in groups

Communicative abilities specifically relating to negotiations or the conduct of negotiations
Communication as a planned process of interactions
Development of methods of controlling negotiations
Enhanced knowledge of professional sales talks

Competence area	Concentration	minor concentration	in small amounts
Professional competence	☐	☐	☒
Methods competence	☒	☐	☐
Social competence	☒	☐	☐

Lecture contents

Studium Generale
A combination of the humanities: anthropology, psychology, communication studies, etc.

Leadership
- Managerial role and tasks
- Communication and leadership
- Human resource development tools
- Special leadership situations: performance evaluation; feedback; setting objectives
- Motivation in the business context
- Conflict management

Communication
- Essentials and planning of communication in negotiations
- Conversational management in negotiations
- Strategies and methods of controlling communication and negotiations
- Exercising sales talk at an optometrists' practice

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Scripts Bibliographic hints will be given at the first lecture day, e.g. - Haubrock, A. (2004): Personalmanagement. Stuttgart. Kohlhammer. - Rosenstiel, L.v. et al. (1999): Führung von Mitarbeitern. 4. Aufl. Stuttgart. Schäffer-Poeschel. - Schuler, H. (2001) (Hrsg): Lehrbuch der Personalpsychologe. Bern. Hogrefe. - Schulz v. Thun, F. (1989): Miteinander Reden. Störungen und Klärungen. Reinbeck. Rowohlt.

Composition of the final mark	Graded
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics	Module description
	Course of Study M. Sc. in Vision Science and Business	
	Module Coordinator Prof. Dr. Nagl	

Module name	**Master Thesis**	**Module no. 29051**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
25	-	750	-	750	☐ 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**
29251	Master Thesis	All members of the faculty	Tutorial	-	22	4	Master thesis and its presentation 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**	
29351	Master Thesis Presentation	All members of the faculty	Tutorial	-	3	4	
	Course type	**Year of study**					
	Compulsory course	2nd	-				
Permitted aids							

Learning goals/competence

To develop entry-level research design knowledge and skills, data analysis skills, and a deeper appreciation for the scientific literature through extensive library research

The student will demonstrate the ability to: do an in-depth literature review to support a research hypothesis; develop a discussion that leads to the statement of a well defined research question and hypothesis; design the proper methods for data collection as a means of testing the research hypothesis; report and summarize the research results with proper statistical methods; and, discuss the inferences gained from the research

Competence area	Concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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 course and also to all interested

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Depends on the subject of the master thesis Literature for scientific research, e.g. • Nicol, N./Albrecht, R. (2007): Wissenschaftliche Arbeiten schreiben mit Word 2007; mit CD-ROM: Formvollendete und normgerechte Examens-, Diplom- und Doktorarbeiten. Addison-Wesley. München. • Online im Internet: Becker, F.: Zitat und Manuskript. Erfolgreich recherchieren. Richtig zitieren. Formal korrekt gestalten. Stuttgart. http://www.schaeffer-poeschel.de/download/zitat/zitat_und_manuskript.pdf [Stand: 01.08.2009]
Composition of the final mark	Master thesis and its presentation
Comments/other	
Last updated	July 1st 2010

Elective modules

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Human Biology**	**Module no. 29012**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	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**
29111	Ocular Anatomy	Kathleen L. Krenzer, O.D., Ph.D., Adjunct Prof. of Optometry	Lecture Blended Learning	2	3	1	Written test 120 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**	
29112	Physiology	Srinivas Natrajan, D.V.M., M.S., O.D., Ph.D, F.A.A.O., Prof. Emeritus	Lecture	2	2	1	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

Basis knowledge of ocular anatomy and understanding of normal findings in the eye and clinical disease. All structures of the eye, innervations, vascular supply to the eye, muscles related to ocular movement, adnexal and orbital structures, and embryology of the eye will be examined. The course will present specific examples of how the anatomy is related to normal function and how it is involved in the presentation and subsequent treatment of ocular conditions. Physiology will explore the various each anatomical unit of the body including basic organization of the human body, control systems, maintenance, support and movement and relate these to the anatomical structure of each area. In addition emphasis will be on the physiology of systems that are closely linked with the functioning of the eye.

Competence area	Concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☐	☒	☐
Social 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 oancreas
- Insulin and glucagons related to diabetes mellitus

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

Literature	Script Distance learning: platform moodle Ocular Anatomy: - Tortora, G./ Grabowski, S. (2005): Principles of Anatomy and Physiology. 11th Edition. Wiley & Sons. Physiology: - Sherwood, L. (2008): Human Physiology: From cells to systems. 6th Edition. Thompson-Brooks/Cole.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Pathology**	**Module no. 29013**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	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**
29113	Histology	Debora L. Nickla, M.S., Ph.D., Associated Prof. of Biology	Lecture Lab Blended Learning	2	2	1	Lab work (20%) and written test (80%) 120 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**	
29114	Systems Pathology	Kathleen L. Krenzer, O.D., Ph.D., Adjunct Prof. of Optometry	Lecture Blended Learning	2	3	1	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

Basic knowledge of the cellular components that constitute organs and form the basis for their specific functions. The material covered in this course will provide the basis for the reminder of the biological science curriculum. Following are the major course goals: Four classes of specialized cells make up most organs: epithelial tissue, connective tissue, nerve and muscle. Most organs are highly vascularized. The student should be able to distinguish between these classes on the basis of cell morphology.

General pathology presents basic pathological processes, such as cell injury, inflammation and repair, immunity and hypersensitivity and neoplasia. Based on an understanding of other basic science disciplines (i.e. anatomy, histology, biochemistry, physiology) this course will demonstrate how the basic pathological processes become manifest in clinical disease. Systems Pathology will expand upon the concepts of general pathology to examine specific organ systems, specific multi-organ conditions with high morbidity within the patient population, and the underlying general pathological processes. To understand the pathological processes involved in a disease is to understand the biological constructs that underlie the clinical presentation, the clinical course and the rationale for therapeutic intervention. Conditions with ocular manifestations will be highlighted.

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☐	☒	☐
Social 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 Distance learning: platform moodle Histology: -Wheater, P, Young, B. et al (2006): Wheater's Functional Histology. 5th edition. Churchill Livingstone. Systems Pathology: - Kumar, V./ Cotran, R./Robbins, S. (2002): Robbins Basic Pathology. 7th edition. Saunders.
Composition of the final mark	Final grade of a combined modules examination: Lab work (20%) and written test (80%)
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Pharmacology**	**Module no. 29014**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	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**
29115	General Pharmacology	Srinivas Natrajan, D.V.M., M.S., Ph.D, O.D., F.A.A.O., Prof. Emeritus	Lecture	2	3	1	Written test 240 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**	
29116	Ocular Pharmacology	Diane T. Adamczyk, O.D., F.A.A.O., Prof.	Lecture Blended Learning	2	2	1	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

General Pharmacology embraces a detail explanation of the basic principal areas of 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.

Ocular Pharmacology eals with properties, clinical attributes and practical applications of pharmaceutical agents used in ophthalmic diagnosis and therapy. The course emphasizes the basic principles of ophthalmic pharmacology and clinical application of drugs used in the diagnosis and treatment of ocular disease and ocular manifestations of systemic disease. Special attention is paid to practical matters, including contraindications, precautions, dosage, administration, side effects, drug interactions, and legal considerations related to use and prescription of ocular pharmaceuticals.

The objectives of the module is the correlation of pharmacology with related medical science, the action and uses of drugs in advances in medicine, the emphasis on applications of pharmaco-dynamics to therapeutics and to correlate these principles to the ocular system and to understand the use of therapeutics in systemic and ocular application.

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☐	☒	☐
Social 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, ystemic 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 Distance learning: platform moodle General Pharmacology: - Katzung, G. (2006): Basic and Clinical Pharmacology. 10th edition. Appleton and Lange. Ocular Pharmacology: - Bartlett, S./Bartlett, J./Jaanus, S. (2000): Clinical Ocular Pharmacology.4th edition. Butterworth and Heinemann.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Ocular Disease**	**Module no. 29015**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	7	300	105	195	☒ winter semester ☐ summer semester	1 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**
29117	Intro to Ocular Disease 1	Prof. Patel, Prof. Dr. Cavallerano, Caruso O.D., Hofmann, Buck	Lecture Lab Blended Learning	3	5	1	Lab work and written test 240 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**	
29118	Intro to Ocular Disease 2	Prof. Patel, Drs. Chung, Kirkness	Lecture Lab	4	5	2	
	Course type	**Year of study**					
	Elective course	1st	-				

Permitted aids	Diagnostic procedure equipment: slit lamp biomicroscope, tonometer, visual fields, direct ophthalmoscope, penlight, auxillary diagnostic lenses

Learning goals/competence

Aims: To provide the foundation and knowledge for differentiation of normal and common abnormal presentations of the eye and ocular adnexa; to provide a foundation and knowledge of diagnostic testing in a primary eye care practice; to recognize abnormalities from variations that are normal versus abnormal; and, to be able to detect and diagnose using didactic knowledge and diagnostic procedures and apply this to patient care related to the structural aspects of the eye including lids, lashes, and adnexa, lacrimal system, conjunctiva, episclera and sclera, uvea, cornea, lens, optic nerve, pupils, retina and choroid

Competence: The student will demonstrate the knowledge and skills in understanding normal variations and abnormal findings of the eye and understand the relationship between eye findings and systemic disease; be able to demonstrate proficiency in performing a fundus examination, a lacrimal assessment, fluorescein angiography and use of the biomicroscope (slit lamp), Goldmann tonometer, gonioscope (and 3 mirror use), visual field devices, direct and binocular indirect ophthalmoscope; be able to correlate clinical findings to their knowledge in ocular disease; and, be able to develop and carry out appropriate strategies for involving other multidisciplinary health care providers.

Competence area	concentration	minor concentration	In small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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.
- *G*onioscopy: features observed, normal and abnormal features, open versus closed; angles, reasons for
- gonioscopy, usage of gonioscopy lenses in 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, surgical tx.
- *Fundus examination*: comparison of instruments, diagnostic techniques
- *Optic nerve head*: c/d estimation, variations, examination,
- *Glaucoma*: definition, prevalence, risk factors, diagnosis, classification primary, secondary open, closed, management
- *Visual field*: definitions, methods of testing, defects typically associated with glaucoma
- *Diagnostic labs*: slit lamp, lacrimal, tonometry, gonioscopy, optic nerve, visual fields
- *Pupils*: pupillary reaction, normal and abnormal, 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

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Distance learning: platform moodle - Catania, L. (1996): Primary Care of the Anterior Segment. 2nd edition. - Casser, L. et al (1997): Atlas of Primary Eye care Procedures. 2nd edition. McGraw-Hill Pub. - Alexander, L. (2002): Primary Care of the Posterior Segment. 3rd edition. McGraw-Hill Pub. - Kanski, J. (2003): Clinical Ophthalmology: A Systematic Approach.5th edition. Butterworth-Heinemann.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Clinical Optometry**					**Module no. 29016**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	2	150	30	120	☐ 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**
29119	Intro to Ocular Disease 3	Prof. Patel, Prof. Dr. Cavallerano, Caruso, O.D., Prof. Nickla	Lecture Labs Blended Learning	1	2	2	Lab work and written test 120 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**	
29120	Clinical Optometry Boston USA	Prof. Patel, Prof. Dr. Cavallerano, Caruso, O.D., Prof. Nickla	Lectures Clinical & surgical obser-vation	1	3	2	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

The purpose of the module clinical optometry including the two week program in the US is to provide lectures and workshops that will complement the Ocular Disease module. The part in the US allows specialized labs and workshops, which would not be feasible at Aalen University.

The two week program in the US is designed to provide the students, lectures, workshops and clinical observations in areas of ocular disease. The program in the US also allows the students to go to clinics within our network to observe "American Eye Care" and also surgical care (refractive and cataract). The lectures of this module are also provided in areas of common interest such as advanced contact lenses as well hyperopia and myopia.

Competence area	Concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☐	☒

Lecture contents

Interactive lecture presentations
- Anterior and posterior segment grand rounds
- Dry eye
- Emergency eye care
- Keratitis
- Research on myopia and hyperopia and clinical application update
- New technology workshops
- Orthokeratology
- Uveitis

Workshop presentations
- Diabetes
- Glaucoma
- Glaucoma technology
- Foreign body removal overview and workshop
- Punctual plugs overview and workshop

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

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Distance learning: platform moodle See also module Ocular Disease
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Module includes intensive instruction of 10 days Boston, MA, US

Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Kümmel	Module description

Module name	**Research Project**	**Module no. 29017**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
20	-	600	-	600	☒ winter semester ☐ summer semester	1 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**
29211	Research Project	Prof. Kümmel/ Adjunct Faculty	Project	-	17	1 + 2	Paper, presentation and its discussion 45 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**	
29212	Research Project Presentation	Prof. Kümmel/ Adjunct Faculty	Project presen-tation	-	3	2	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence
Aims: To develop advanced skills in doing independent research in the field of optometry utilizing scientific techniques along with project management skills and time management skills Competence: The student will demonstrate the ability to: develop a 'statement of the problem' and frame the research question (hypothesis); develop appropriate methodology to investigate the research question; report and summarize the research results with proper statistical methods; analyze and interpret the research results in light of the original research question and hypothesis; and, summarize and apply inferences gained from the research

Competence area	**Concentration**	**minor concentration**	**in small amounts**
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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 methods and the results of the research project and the presentation

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Depends on the subject of the research project
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Binocular Vision**					**Module no. 29018**	
CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	8	300	120	180	☐ winter semester ☒ summer semester	2 3	☐ 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**
29213	Binocular Vision Disorders	Prof. Dr. Cooper, Prof. Dr. Citek	Lecture Blended Learning Labs	4	5	2	Lab work and written test 360 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**	
29214	Vision Therapy	Prof. Dr. Cooper, Prof. Dr. Erickson	Lecture Labs	4	5	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

- Understand how binocular vision disorders impact the daily lives of the public we serve
- Understand the neurophysiology of accommodation, vergence and eye movements
- Gain detailed understanding of functional aspects of accommodation, vergence and eye movements
- Know and apply psychophysical measurement principles to evaluation of visuomotor skills
- Be able to identify visuomotor anomalies and prioritize relative to clinical care
- Be able to apply various methods of analysis to evaluate individual measurements of specific functions and indirect clues to related functions
- Based on formal analysis, be able to identify specific visual syndromes
- Based on a formally derived diagnosis, be able to prioritize treatment options and apply logically-derived prescriptions whenever applicable
- Integrate presented material within current practice setting, whenever applicable
- Interpret and utilize horizontal fixation disparity curves in diagnosis and treatment
- Understand and apply bioengineering model of accommodation and vergence to vision therapy
- Understand, organize and prepare to apply vision therapy to patients with easily treatable diagnoses
- Understand sensory aspects of vision therapy as they pertain to improvement or resistance to improvement
- Become familiar with the benefits and limitations of computer-based vision therapy
- Identify which patients with vertical deviations should be treated with prism and which should receive vision therapy
- Be able to provide vision therapy for vertical deviations
- Understand the principles of diagnosis and treatment of strabismus
- Become familiar with specialized areas of vision therapy
- Understand how to incorporate vision therapy into daily practice: office and patient management

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents

Binocular Vision Disorders
- Introduction
- Neurophysiology of vision
- Overview of common non-strabismic visuomotor: binocular vision anomalies
- Basic analysis techniques for visuomotor: binocular vision problems; identification of syndromes
- Methods 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 analyses 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
- Other topics in Vision Therapy

Language	☐ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Distance learning: platform moodle - Griffin/Grisham (1995): Binocular Anomalies; Diagnosis and Vision Therapy. Butterworth-Heinemann. - Scheimann/Wick (1994): Clinical Management of Binocular Vision. Lippincott. - 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 of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Pediatric Optometry**	**Module no. 29019**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	Elective module	2nd	-

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

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29215	Developmental Milestones in Pediatric Optometry	Prof. Dr. Bleything/ Prof. Dr. Lowery/ Prof. Dr. Laukkanen	Lecture Lab	2	3	3	Written test and assigned case work-ups 240 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29318	Case Management in Pediatric Optometry	Prof. Dr. Lowery/ Prof. Laukkanen/ Prof. Dr. Baxstorm/ M.Sc. Berner	Lecture Lab	2	2	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids	Personal Retinoscope; Direct ophthalmoscope, trial lens cases, prism sets supplied by College						

Learning goals/competence

To develop an entry-level optometrist with the knowledge and skills to understand vision disorders impacting the pediatric population; who has a basic knowledge of vision development; who has knowledge and skills in assessment techniques unique to pediatric optometry; who understands the relationships between vision and learning; and, who has the knowledge and skills in optometric case management for the pediatric patient.

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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 Distance learning: platform moodle - Required Text: "Clinical Pediatric Optometry" by Press & Moore Suggested Reading: - Scheiman/Rouse: Optometric Management of Learning-Related Vision Problems - Birnbaum, M.: Optometric Management of Nearpoint Vision Disorders
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Sports Vision**	**Module no. 29020**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	2	150	30	120	☐ 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.)	Elective 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**
29216	Sports Vision	Prof. Dr. Erickson	Lecture Lab	1	2	4	Project participation graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29217	Sports Vision Field Study USA	Prof. Dr. Erickson, Prof. Dr. Bleything	Lecture Lab	1	3	4	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

Aims: To provide strategies to build sports vision into an optometric practice; to determine the pertinent visual skills utilized in sports; to provide the rationale and research results in support of specific sports vision performance skills including normative data; to provide strategies for a comprehensive evaluation of athletes; to provide case management strategies for refractive components, enhancement filters, contact lenses, and refractive surgery for athletes; to provide a background for protective eyewear issues; and, to learn vision training techniques utilized in visual skills related to athletes.

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

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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	Graded
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Adjunct faculty	Module description

Module name	**Low Vision**	**Module no. 29021**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☐ 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**
29218	Low Vision	Adjunct Faculty	Lecture	3	4	2	Presentation 30 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**	
29310	Low Vision Project	Adjunct Faculty	Project presen-tation	1	1	2	
	Course type	**Year of study**					
	Elective course	1st	-				

Permitted aids	

Learning goals/competence

Low Vision includes eight main topics:
- Certain knowledge about quantity of magnifying aids, how to use and handle them and also about fitting these aids
- Understanding for the psychological situation of visually handicapped people
- Knowledge about clinical pictures, and medical aids
- Competent advice service and discussion
- Advanced knowledge of vision physiology with background information on selected aspects
- Human behavior associated to physiological context
- Intensive recognition of the problems of visually impaired people at the advisory office
- Insight for blind and visually handicapped people

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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	- 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 - Diepes, Krause, Rohrschneider: Sehbehinderung - Raem (Editor): Handbuch Geriatrie - Weale: The Senescence of Human Vision - Kampik, Grehn (Hrsg): Augenärztliche Diagnostik

	- Straub, Kroll, Küchle: Augenärztliche Untersuchungsmethoden - Publications in peer reviewed optometry journals
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Börret	Module description

Module name	**Optical Fabrication Technology**	**Module no. 29022**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
10	4	300	60	240	☐ winter semester ☒ summer semester	3 4	☐ 1 semester ☒ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M. Sc.)	Elective 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**
29219	Project Management and Innovation	Prof. Dr. Börret/ Prof. Dr. Nagl/ Adjunct Faculty	Lecture Case studies	2	2	3	Oral exam and praesentation 60 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29311	Surface processing and coating technology	Prof. Dr. Börret	Lecture Labs	2	8	4	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

- Understanding of the intricacy of the design process
- Interdisciplinary thinking, team work, project and innovation management, presentation techniques

- Understanding the physical and chemical interaction mechanism of the optical fabrication technologies

- Understanding the advantages and disadvantages of the optical fabrication technologies related to quality, costs and manufacturing time
- For one example out of the technology, the students should make a scientific study.
- This knowledge should be the base for a future career in the field of research and development (R&D) in the optical industry.

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents

Project management

- Project target definition, project organization, project design, project controlling, milestones, critical path …

Surface processing and coating technology

- Computer aided manufacturing
- Algorithms for optical manufacturing
- Molding
- Coating including thin film design
- Metrology for all fabrication steps
- Specification and error budgets

Seminar

- Presentation and report of one optical technology issue
- Understanding of design processes: research, concept, blue print, detailing, implementation, holistic approach, lasting design

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script and Books, e.g. - Hauschildt, J./Salomo, S. (2007): Innovationsmanagement. 4. Aufl. Vahlen Verlag. München - Hölzle, P./Grünig, C. (2002): Projektmanagement: Professionell führen. Erfolge erzielen. Haufe Verlag. Planegg. - Diepes, H./Blendowske, R. (2005): Optik und Technik der Brille. 2 überarb. Aufl. DOZ-Verlag Optische Fachveröffentlichung.

	- Braunecker, R./Hentschel, B./Tiziani, H. (2008): Advanced Optics Using Aspherical Elements. SPIE Society of Photo-Optical Instrumentation Engi. - Rancourt, J. (1996): Optical Thin Films: User Handbook. SPIE Society of Photo-Optical Instrumentation Engi.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Contact Lenses**	**Module no. 29023**

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	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	Knowledge in fitting rigid and soft contact lenses

Courses/lectures

Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	**Module exam: type/length/ grading**
29220	Contact Lenses	Adjunct Faculty	Lecture	2	4	2	Presentation 30 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**	
29312	Contact Lens Project	Adjunct Faculty	Lab Project	1	1	2	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence
Enhanced knowledge in contact lens fitting esp. in children, 40+ and special cases (e. g. keratoconus, after corneal transplants or corneal surgery)

Competence area	**concentration**	**minor concentration**	**in small amounts**
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents
- New materials in soft and rigid contact lenses, their specifications and usage - Current studies and results of contact lenses and solutions - Contact lenses and dry eye syndrome - Silicon hydrogels and alternatives - Onset, proliferation and new studies in keratoconus supply - Cases and strategies of successful maintenance - Keratoconus update - Cases and usage of bandage contact lenses - Types of dedicated contact lenses for children and their usage - Types and principles of multifocal lenses - Special and specific anamnesis - Avoiding dry eye syndrome - etc.

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	As given in lectures
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Kümmel	Module description

Module name	**Workplace Design**	**Module no. 29024**

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.)	Elective 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**
29221	Vision, Light and Ergonomics	Prof. Kümmel	Lecture	2	4	3	Reports and presentation 60 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29313	Workplace Design Project	Prof. Kümmel	Lecture	1	1	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

- Designing innovative workplaces is about closely tailoring the physical environment to the requirements of developing new knowledge within the organization
- The students will learn to gain competence to achieve this knowledge with a special emphasis on light and illumination and a focus on optimized vision

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents

Gaining and deepening knowledge in workplace design with focus on

- light and illumination and

- optimized vision

Workplace Design Project

Additional emphasis on light and illumination

Focus on optimized vision

Language	☒ German ☐ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Literature will be given before lectures
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Limberger	Module description

Module name	**Audio and Vision**	**Module no. 29025**

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	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**
29314	Audio and Vision	Prof. Dr. Limberger	Lecture Exercise	2	3	2	Oral exam 30 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**	
29319	Audio and Vision Project	Prof. Dr. Limberger	Lecture Exercise	1	2	2	
	Course type	**Year of study**					
	Elective course	1st	-				
Permitted aids							

Learning goals/competence

- Understanding central auditory and visual processing disorders and their therapy
- Especially nowadays, when children have more and more problems with dyslexia, the detection of such disorders is fundamental

Competence area	concentration	minor concentration	in small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social 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
- Children's problems with auditory/visual processing disorders
- Therapy of central auditory and visual processing disorders

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Actual literature of central auditory/visual processing disorders
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Baumbach	Module description

Module name	**Eye Glass Design**	**Module no. 29026**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	Elective 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**
29315	Eye Glass Design	Prof. Dr. Baumbach	Lecture	2	3	3	Written test and project presentation 90 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29320	Eye Glass Design Project	Prof. Dr. Baumbach	Project presen-tation	2	2	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence
Theoretical and practical competence in the optical features of spectacles is passed as well as a deeper knowledge in product characteristics and patents Practical competence in optical features of spectacles is decisive Team work and communication skills will be advanced during the experiment

Competence area	**Concentration**	**minor concentration**	**in small amounts**
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents
- Monocular criteria for optimal vision - Binocular criteria for optimal vision - Optimization example of an eyeglass lens - Patents analysis of eyeglass lenses - Measurement of aberrations of single vision lenses and progressive addition lenses - Measurement of curvature/thickness/weight/etc. - Spectacle wearing experiment - Comparison of actual products

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Diepes, H./Blendowske, R. (2005): Optik und Technik der Brille. 2., überarb. Aufl.. DOZ-Verlag Optische Fachveröffentlichung. Jalie, M.: Ophthalmic Optics
Composition of the final mark	Final grade of a combined modules examination
Comments/other	
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Marketing Management**	**Module no. 29027**

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	4	☒ 1 semester ☐ 2 semesters

Target degree	**Module type**	**Year of study**	**Relevance in courses of study**
Master of Science (M. Sc.)	Elective 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**
29121	Marketing	Prof. Dr. Nagl/ Adjunct Faculty	Lecture	2	2	4	Other module test 120 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	**CP**	**Se-mester**	
29122	Marketing Project	Prof. Dr. Nagl/ Adjunct Faculty	Project presen-tation	1	1	4	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence
Marketing Management provides a comprehensive examination of all major components of marketing strategy and their integration Competence: Developing a marketing strategy for an optometrist`s practice and/or an industrial company by planning and controlling by use concepts, methods and tools (e.g. strategy design, marketing management)

Competence area	**concentration**	**minor concentration**	**in small amounts**
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents
Marketing - Introduction to marketing planning and the planning process - Marketing methods and tools in optometry - Marketing instruments - Service marketing in optometry - Customer relationship management (CRM)/Total loyalty management (TLM) - …. Marketing Project Case/Project study, e.g. - Measurement of customer satisfaction in an optometry practice - Publication of an article in an optometry magazine - Organizing and realization of a marketing event - ….

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Distance learning: platform moodle Bibliographic hints will be given at the first lecture day, e.g. - Bruhn, M. (2007): Marketing. Grundlagen für Studium und Praxis. 8. Auflage. Gabler Verlag. Wiesbaden. - Bruhn, M. (2004): Marketingübungen. Basiswissen, Aufgaben, Lösungen. 2. Auflage. Gabler Verlag. Wiesbaden. - Nagl, A. (2004): Dienstleistungsmarketing in der Augenoptik: Ein Ratgeber für die Praxis. DOZ-Verlag. Heidelberg. - Nagl, A. (2008): Der Marketingplan. Beck Verlag. München.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Business Simulation**	**Module no. 29028**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☐ winter semester ☒ summer semester	2 3	☐ 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	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**
29222	Business Strategy	Prof. Dr. Nagl/ Adjunct Faculty	Lecture	2	3	2	Other module test 120 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**	
29223	Business Simulation Project	Prof. Dr. Nagl/ Adjunct Faculty	Project presen-tation	2	2	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

- Knowledge for managing complexity in order to business decisions, make good decisions under pressure
- Strategic decisions and realization of concepts in leadership, strategy, management and marketing
- Team work, project management skills, presentation skills
- Students enhance their company's profitability and marketplace position

Competence area	concentration	minor concentration	In small amounts
Professional competence	☐	☒	☐
Methods competence	☒	☐	☐
Social competence	☒	☐	☐

Lecture contents

Business tools and methods related to this business project in the field of optometry, e.g.:
- Balanced Scorecard
- Calculation, direct costing and break-even analysis
- Definition of targets
- Product placement
- Pricing
- Product life cycles
- Budget planning

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

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Distance learning: platform moodle - Manual of the management game - Special literature for deepening the knowledge in special fields Bibliographic hints will be given at the first lecture day, e.g. - Porter, M.E. (1998): Wettbewerbsstrategien. Frankfurt a. M.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010

Aalen University	**Faculty** Optics and Mechatronics **Course of Study** M. Sc. in Vision Science and Business **Module Coordinator** Prof. Dr. Nagl	Module description

Module name	**Business Management**	**Module no. 29029**

CP	**Semester hours per week**	**Workload**	**Contact time**	**Self study**	**Begin of offer**	**Se-mester**	**Duration**
5	4	150	60	90	☒ 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.)	Elective 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**
29224	Value Based Management	Prof. Dr. Nagl/ Adjunct Faculty	Lecture	2	2	3	Other module test 120 minutes graded
	Course type	**Year of study**					
	Elective course	2nd	-				
Course no.	**Title of the course/lecture**	**Lecturer**	**Type**	**Semester hours per week**	°°	**Se-mester**	
29317	Business Plan	Prof. Dr. Nagl	Lecture Tutorial	2	3	3	
	Course type	**Year of study**					
	Elective course	2nd	-				
Permitted aids							

Learning goals/competence

Application of business management know how in the field of optometry
- how to create value
- how to manage value and
- how to measure value

Understand enterprise risk from the shareholder value perspective

These includes the knowledge and understanding of the strategic management process to ensure system integrity with internal and external environments

Application of this knowledge and develop and present a business plan

Competence area	Concentration	minor concentration	In small amounts
Professional competence	☒	☐	☐
Methods competence	☒	☐	☐
Social competence	☐	☒	☐

Lecture contents

- Accounting
- Rating, Basel convention
- Annual statements, financial ratios
- Calculation
- Controlling
- Investment and Financing

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

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

Language	☒ German ☒ English ☐ Spanish ☐ French ☐ Chinese ☐ Portuguese ☐ Russian ☐ Other_____
Literature	Script Bibliographic hints will be given at the first lecture day, e.g. - Hering, E./Baumgärtl, H. (2000): Managementpraxis für Augenoptiker. DOZ-Verlag. Düsseldorf/Heidelberg. - Nagl, A./Rath, V. (2004): Dienstleistungscontrolling. Liquidität sichern, Effizienz steigern. Kosten senken. Haufe Verlag. Freiburg / Planegg. .

	- Nagl, A. (2010): Der Businessplan. Geschäftspläne professionell erstellen. 5. Auflage. Gabler Verlag.
Composition of the final mark	Final grade of a combined modules examination
Comments/other	Minimum 10 students
Last updated	July 1st 2010