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Medical Curriculum Munich – MeCuM

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Entry level: high school
II. Preamble

Medical Curriculum Munich – MeCuM

1. Introduction

MeCuM as a medical undergraduate curriculum ensures a professional education based on medical science and cultivates a modern psychologically and socially competent doctor. The goal of this education is to produce physicians who are capable of life-long learning and of handling the challenges posed by social change and scientific development.

Professionalism of the education will be achieved by:

- Clear definitions of goals
- Sequential structure of the curriculum
- Standardization of skills and techniques
- Interdisciplinary integration
- Step-by-step acquisition of medical competency beginning at the start of the program
- Orientation to cardinal symptoms
- Consequential integration of evidence-based medicine
- Teaching based on modern, scientifically founded methods
- Integrating the students in the planning and composition of the lessons
- Consequentially structured evaluations

The scientifically based education in advanced medical technologies will be achieved by:

- Systematic introduction of the basics of the natural sciences
- Consequential integration of foundational knowledge and clinical application
- Early opportunities to individually engage in key scientific aspects (7 SFB, research / training groups)
- Broad elective possibilities from specialty areas
- Tolerance for study abroad
- Early clearance for scientific occupation

Psycho-social competence will be acquired by:

- Practically relevant educational concepts
- Contact with patients already in the 1st term
- Convey respect for patients’ maturity
- Impart the ability to work as a team
- Consequential development of empathy
- Continuous development of communication abilities

2. Goals

2.1. Fundamental goals

Students should learn and deepen their basic clinical skills. They should learn and practice the various competencies (e.g. competence in communication, the ability to work in a team, etc.) that are essential for the medical profession (Fig. 1).
Fig. 1: The seven areas of competency of a doctor
(The CanMEDS 2005 Physician PhysicianCompetencyFramework;

It is not only essential that knowledge be taught and learned, but it should also be deepened and examined according to the different levels of the Miller pyramid (Fig. 2).

2.2. The three goals of learning
At the end of their studies, students should have mastered the following:

2.2.1. Medical knowledge
(Factual knowledge, reasoning, practical knowledge)

The students should have command of the medical knowledge necessary for the medical profession. This means they know all illnesses including their causes, symptoms, classifications, and their therapies (factual knowledge). These learning goals are presented in a detailed catalog of learning goals as well as on the online platform www.LMUdle.de for all students and instructors to view. The identification and explanation of correlations between, for example, either the clinical pathology and the underlying pathophysiology, or the procedure of a certain examination method including its areas of application and limits, is a further essential learning goal (reasoning). Finally, students in clinical situations should be able to make decisions based on factual and reasoning knowledge concerning suspected diagnoses, further necessary diagnostics and therapy.

2.2.2. Clinical practical skills
At the end of their studies, the essential clinical practical skills should be mastered. A detailed catalog of learning goals for this topic is on the online platform www.LMUdle.de,
The collection of a specific medical history, the physical exam and the structured description of a patient to a medical colleague are all basic skills for a medical doctor. Additionally, students should master all essential practical skills necessary for an entrant.

2.2.3. Communication / professional conduct
At the end of their studies, students should know the basics of patient-oriented communication, empathy towards patients, and of a professional disposition. They should be able to hold problematic conversations and to analyze the conversations of other students according to the points mentioned above. Even the ability to give professional and constructive feedback is a learning goal. Graduates should know the essential points of a professionally competent and correct patient information. Furthermore, they should be able to integrate into a medical team and to adequately communicate with patients, caregivers and doctors. In collegial cooperation, they should be able to solve problem-oriented clinical cases in small groups.

2.3. Catalog of Learning Goals
An extensive catalog of learning goals has been created and made available to all students and instructors at www.LMUdle.de as mentioned above. In addition to the general catalog of learning goals, in which individual illnesses are defined with respect to the expected spectrum of knowledge, a more specialized catalog of learning goals for the clinical practical skills and one for the “practice of skills” exist. These outline the testing objectives of the OSCE-Exam and are available at www.LMUdle.de.

3. Learning concepts

3.1. Background
Students should be systematically accompanied along their way to becoming a practicing physician. In accordance with the fundamental and special learning goals (see 2.), various didactic concepts will be implemented corresponding to the current state of research. The final exams will reveal if these learning goals were achieved (Assessment). Only students who achieve a minimum of criteria receive the respective certificates. The different courses represent an offer, and it is necessary to require attendance by many courses due to organizational reasons (e.g. room bookings, group size, assignment of instructors). A minimum and maximum amount of students is also essential for certain sessions so that the realization of the didactic concepts can be successful (e.g. problem-oriented learning in the form of tutorials). The courses should offer students an added value that cannot be acquired through individual study of literature or the use of electronic media. Yet the additional individual study of knowledge and skills is necessary to achieve the defined goals; the ability and readiness for individual life-long learning is a further fundamental skill necessary for a career as a doctor (see Fig. 1).

3.2. Didactic concept of the course offerings
An essential method to achieve the expected learning goals is that of self-study. Self-study has a prominent and extensive position within the entire program: in each module, students have ample free time that they can dedicate either to the theoretical study of books or to the optional practical skills exercises in the Center for Teaching and Study (ZeUS) or the electronic CASUS-learning cases. Moreover, the objective of the peer-group teaching and learning is to promote the independent preparation of certain topics as well as the critical questioning of specific information. For this purpose there is the online EKG course, among others, for which peer feedback plays an essential role.

Each main topic will be addressed in different courses at different levels of knowledge using different didactic methods. Thereby, the focus is on small group lessons which represent an essential element of the teaching at MeCuM. The course units build on and complement one another as follows:

3.2.1. Medical knowledge
- The systematic main lecture provides the general structure and helps to evaluate. It is possible to provide the lecture slides on the online-platform www.LMUdle.de which students use in order to prepare for and review lectures.
Cases will be prepared in small groups for the purpose of problem-oriented learning (POL-Tutorial) in which students generate hypotheses and concepts regarding the patient cases as well as the underlying pathophysiology, and correct each other’s concepts. In addition to solidifying factual knowledge and the application of reasoning, case-related collegial cooperation in a team is a further essential learning goal of this lesson format.

- The seminars (propaedeutic and methods seminars) provide a connection between the systematic main lectures and the POL-Tutorials. Here, seminar groups of ca. 15-20 students work on the most important propaedeutic concepts (basics) as well as on clinical methods. The goal is to illustrate connections not before understood and to reveal misconceptions through critical discussion; thereby a genuine additional value is created over self-study and the main lecture.

3.2.2. Practical clinical skills
- During the lessons at the hospital bed, students have the opportunity to practice all theoretical and practical skills on an actual patient under supervision by a doctor. The collection of a structured medical history, the physical exam, and the structured description of the patient are the essential learning elements of this lesson format.

- During the skills training, students are instructed in a structured fashion by trained instructors and student tutors in clinical practical skills, based on the methods of Peyton. This serves as preparation for the practical training block. Students have the opportunity to practice in ZeUS at the conclusion of the regular sessions and on all other days of the semester as well. Further, for certain subjects / modules, students can book skills training supervised by trained tutors online.

3.2.3. Communication / professional conduct
- During patient-oriented communication training (POK), students hold challenging conversations, after an introductory session, with standardized actor patients. In addition to experiencing and trying out these extreme situations that are part of a doctor’s daily routine, students learn communication rules (conversation techniques, SPIKES model) that are part of a successful doctor-patient-relationship. The practice of constructive feedback and the reflection of one’s own behavior are also contained in this learning unit.

- During the practical training block (general medicine, surgery, internal medicine, gynecology and pediatrics), students integrate themselves within a team at a station at a clinic or at a general doctor’s office for up to two weeks. They take part in all medical tasks, completing many tasks independently as well as under supervision. A detailed log book, in which the tasks are listed, specifies the level of expectations. The students should care for their patients under supervision and accompany them to the appropriate specialty departments in order to experience the five subjects in reality, and thereby be able to learn and understand better. The exchange with medical colleagues and the participation in the daily routine at stations and in doctor’s offices is a declared goal of the practical training block.

A complete listing of the individual courses with detailed descriptions can be found by each module as well as in the appendix.
A maximal of 10% of the terms of the study regulations are allowed to be omitted per session.

3.3. Assessment
Since it must be confirmed that the students have achieved the learning goals, and since the type of exam substantially influences the learning strategy, the three main learning goals will also be addressed by examination:
3.3.1. Medical knowledge

Medical knowledge will be examined through written exams (summative feedback), consisting of multiple choice (MC) and written-answer questions. Each question will be reviewed multiple times before the exam for quality and relevance, and will be analyzed after the exam. The probability for a correct answer for the MC-questions will be reduced through the use of “Pick-N-Questions”. “Pick-N” means that not only one from x answers is correct, but rather that multiple correct answers must be chosen from a (sometimes) large number of possibilities. These types of questions mostly examine clinical case vignettes with questions to clinical competency (e.g. ‘With what kind of examination can you confirm your suspected diagnosis?’) and factual knowledge. The written-answer questions will mostly examine reasoning and competency. The exam questions will not be made public in order to prevent (ineffective) studying from old exams, and therefore to ensure the examination of currently relevant knowledge. The questions will be newly created for each exam, and old questions will be used only on an exceptional basis. The goal is to establish a large collection of exam questions with whose help future exams can be created. So that the students study continuously throughout the semester, exams will be held in all modules during and at the end of the semester: one part in the middle and one part at the end of the semester.

3.3.2. Clinical practical skills

The clinical practical skills will be evaluated (summative feedback) in the context of objective standardized clinical exams (OSCE) in Module 23. Each student walks through multiple testing stations, each lasting 10-15 minutes and posing a clear task description. A student’s ability to handle the task is evaluated by previously determined checklists. Clinical examination techniques, the taking down of medical histories involving basic clinical symptoms, explanations of technical examinations, the delivery of bad news, the interpretation of clinical findings, and simple technical examinations will be especially tested. The results of these exams constitute a portion of the entire grade for the respective certificate.

3.3.3. Communication / professional conduct

During POK training, all students hold challenging conversations that are common to a doctor’s daily routine with standardized actor patients or in roll play (e.g. breaking bad news), at times being video recorded to aid in giving feedback. The students then receive formative feedback from patients, their classmates and their medical tutor. Feedback regarding the professional conduct with patients, caregivers, medical colleagues and superiors is given to students during the course of the practical training block by the station doctors and attending physicians. For the OSCE, the standardized actor patients complete a Global Rating of the professional conduct of the students during the collection of their medical history. A negative evaluation results in a reduction of points (summative feedback). Additionally communication, empathy, and professional conduct will be evaluated on the checklists of each OSCE station where patients are examined.
III. First Study Section – Preclinical

During that period, students should primarily acquire knowledge related to the basics of medicine. Therefore, the following subjects determine the schedule of the First Study Section:

- Anatomy
- Biochemistry
- Physiology
- Medical Psychology
- Medical Sociology

Introductions to the medical occupational field and to medical terminology complete this phase.

The curricula of basic scientific disciplines such as chemistry, biology and physics target medical content.

For medical students, the practical course “Introduction to Clinical Medicine” (2nd year) represents the first patient interaction during their studies. Further, they initially complete examination courses.

The last section of the 4th semester is reserved for organ-related integrated seminars and seminars with clinical implications. The aim of these units is to promote systematic analytical thinking and to ensure students establish a link between the content of different basic subjects.

According to the German Medical Licensing Regulations, students complete the First Study Section after a period of two years by passing the First Part of the Medical Licensing Exam.

15 certificates (“Scheine”) are required in order to register for the First Licensing Exam. In addition, it is necessary to provide a “Certificate about practical nursing” (90 days) and evidence of first aid training.

It is recommended to complete the practical nursing period prior to medical studies.
IV. Second Study Section – Clinical

Longitudinal course

The L-course (L= Longitudinal Life-long Learning)

- Medical history and physical examination
- Pharmacology review
- Forensic medicine
- The history of the theory of medical ethics
- General medicine in a Munich practice of choice
- Palliative care
- Ethical questions regarding the beginning and the end of life
- High-altitude medicine

1. Faculty

1.1. Organizational team

Module spokesperson  Prof. Dr. med. Orsolya Genzel-Boroviczény

Team  Dr. Mareike Diekmann
 Dr. Karina Holak
 Dr. Patricia Hinske

Secretary  Stephanie Siefken-Ebenhöh

2. Goals

2.1. Fundamental Goals

The L-course should act as a common thread throughout the medical studies program and should communicate the central values, codes of conduct and outlooks of the medical profession to the students along their path to becoming doctors. The goal is to give students the necessary tools to be able to face their patients competently, sensitively, politely, and respectfully. We are convinced that proper medical conduct is understandable, communicable, and learnable.

The course extends longitudinally over all semesters and has the following goals:
- To introduce students to the doctor’s roll and to the responsibility to the patient and to society
- To communicate the methods of holding a conversation
- That students recognize the importance of cooperation with others
- To communicate standardized, systematic collections of medical history, physical exams and documentation
- To provide an introduction to ambulatory medicine

2.2. The three goals of learning

2.2.1. Medical knowledge and clinical practical skills
The course contains the following elements which have never been taught before or have never been taught in this form:

1. Begin the three-part examination course already in the 1st term in combination with Medical Psychology (Communications Skills) in the Case History course (3rd semester). In the 4th semester, a systematic introduction and training in the physical exam follows. In the 5th semester, the students spend the entire day at the station, assist the students of the 3rd semester with case history collections, and receive an introduction to the psychiatric medical history collection.

2. “ambu” courses that primarily cover how to deal with patients and their ambulatory short- and long-term care when that is marked by a special social and personal complexity. Parallelly, the collection of case histories, physical examinations, and the presentation and documentation of patients will be developed, the abilities to communicate and work in a team will be promoted, and evidence-based medicine (EBM) will be reinforced. Students should be able to reach a viable working diagnosis in a short time with limited, diagnostic, and economically sensible means and to have a concept regarding the following therapeutic methods. This course extends over 2 years and contains regular participation in patient care in an ambulatory setting (polyclinic and general practitioner offices), reinforcing seminars in which students take on the role as tutor, lectures, and practical trainings.

3. A two-part palliative course that discusses the basic elements of palliative medicine in a seminar form.

4. The medical studies program at the LMU should contain all aspects of the future medical profession and therefore also a didactical education.

2.2.2. Communication / professional conduct

The interaction between doctor and patient is at the center of the program. The course should drill and communicate the practical application and theoretical understanding of the methods and techniques of a medical discussion and of medical interaction in all situations of the medical profession (e.g. the collection of case histories or patient information). This especially includes the preparation of problematic situations such as how to handle one’s own mistakes, the impartation of bad news, or difficult patients. Furthermore, this includes the understanding of how cultural and social affiliations influence the relationship and communication between doctor and patient.

A further focus relates to the roll of the doctor with respect to the patient and to society. This includes on one side the understanding of societal expectations of a doctor, and on the other side the conflict between demand and possibility. The meaning of the economic aspects of diagnostics and therapy within the German health system, as well as the legal conditions of the medical practice (e.g. regarding documentation requirements, criminal and civil disputes) are topics in this portion of the course.

Finally, one of the fundamental mindsets that should be conveyed is the understanding that therapeutic concepts are constantly changing and that the demands of the medical profession can only be fulfilled by the readiness to constantly acquire new knowledge. The sharpening of one’s awareness for one’s own limits and the readiness to consult a third party are essential matters as well.

The medical studies program at the LMU should contain all aspects of the future medical profession and therefore also a didactical education.

The supervised participation of students with the teaching should therefore be required.

2.3. Catalog of learning goals

A complete catalog of learning goals has been created and is available for all students and instructors at www.LMUdle.de.
3. Organization of the L-course

3.1. Exams and assessments

L5: All-day interdisciplinary examination course
Lesson on patients
Final exam in the form of a demonstration of an examination of the cardio-vascular, respiratory, and gastro-intestinal systems
Written MC-exam (30 questions)

Psychosomatic medicine and psychotherapy
Practical training at the hospital bed
Collection of a complete bio-psycho-social medical history according to the instructions given during training, followed by the completion of an examination protocol

L5: Epidemiology, medical biometry and medical computer science
L6: Quantitative methods in clinical epidemiology
L9: Fundamentals of epidemiology and healthcare (Q1)

Three written MC-exams; 20 MC-questions with multiple correct answers

L6: ambu I + L7: ambu II
Ambulatory medicine seminar: case-oriented student tutorials
Epicrisis

L6: + L7: Ambu- General medicine exam:
40 MC-questions with only one correct answer

L6: + L9: Palliative medicine
A written MC-exam covering the contents of both modules

L8: Health economy, health systems, public health care (Q3)
Written MC-Exam, 30 questions with one correct answer

L8: History, theory, and ethics of medicine (Q2)
Written exam, open answer

L8: Forensic medicine
Written MC-exam and 3 open answers

L8: Prevention, health promotion
Written MC-exam, 30 questions with one correct answer

L9: Work medicine, social medicine
Written MC-exam, 30 questions with one correct answer

L9: Clinical environmental medicine (Q6)
Written MC-exam, 30 questions with one correct answer

3.2. Types of instruction
(see 3.1)
The course is built like a helix, so that important topics are revisited through the changing perspective of the student from the beginning of the studies to their completion. Ideally students should work in groups that stay together for one year. The course is not truly a block course, but rather meets each semester weekly on Wednesday, meeting for three consecutive hours in the 1st term and for the entire day in the 2nd section. The choice of topics for the course is adjusted for each semester.
In the first semester, the course begins with a lecture series intended to give the new medical students a bigger picture of the program. Therefore, except for the Dean who will give the introduction and greeting, lecturers are chosen outside of the medical school of the LMU. The interactions of medicine with other subjects and concepts, and the societal responsibility of the medical profession, are topics of the series.
Module 1

Basics of clinical medicine

- Human genetics
- Hygiene, microbiology and virology
- Clinical chemistry and laboratory medicine
- Pathology
- Pharmacology and toxicology
- Infectiology and immunology
- Imaging methods
- Radiation treatment and protection

1. Faculty

1.1 Organizational team
Module spokesperson Prof. Dr. Josef Eberle
Team Prof. Dr. Christian Sommerhoff
Secretary Christine Barth

2. Goals

2.1 Fundamental goals
Module 1 is at the beginning of the second term and functions as a hinge between the pre-clinical program and the following clinical modules. It runs parallelly to the L-5 course. In module 1, students learn more about the connections between the natural sciences and concrete symptoms. Their previously gained knowledge of anatomy, physiology, biology and biochemistry will serve as a basis with which to describe the pathological processes and changes. The goal is to have a detailed understanding of the pathophysiological connections to the formation of symptoms of an illness.

The students receive clustered fundamental knowledge of diagnostics using imaging and laboratory medicine. In addition to the expansion of knowledge and its practical application on chosen examples, students are introduced to the basics of pharmacotherapy and toxicology. Thus module 1 builds the basis for the lessons in the cardinal symptoms given in modules 23 through 5.

2.2. The three goals of learning

2.2.1. Medical knowledge
(Factual knowledge, reasoning, practical knowledge)
The students should
- learn the genetic basics of illnesses for chosen examples and understand the meaning of the results of a genetic consultation (using pre-clinical biology, physiology, and biochemistry),
• know the micro- and macro-pathological correlations to important illness groups and their pathophysiological connections (using pre-clinical physiology, anatomy, and histology),
• know the basics of imaging methods and be able to identify standard results (using pre-clinical anatomy),
• develop and understand the methods, indications and limits of standard laboratory examinations (using pre-clinical physiology, biochemistry),
• develop and understand the methods, indications and limits of standard infection and immunodiagnostics examinations for practical case examples (using pre-clinical biology, biochemistry),
• understand the importance of hygiene for medical measures and practice the application of basic hygiene rules, and
• develop the general basics of toxicology and pharmacology.

2.2.2. Clinical practical skills
The students
• have the opportunity to take a standardized blood sample (BA) from each other under doctor supervision (using a multiple-step method in accordance with the L-5 course: explanation→ film→ practice on a dummy→ BA on partner with a butterfly needle -> BA on partner with rigid system→ BA on patients),
• give a short presentation to a current topic in order to develop their professional communication skills in a scientific context (research, presentation, discussion).

The average required load in module 1 (Monday, Tuesday, Thursday, Friday) is ca. 15 hours without the longitudinal course L5 (Wednesday) and is therefore at the theoretical optimum to allow for enough free-time for individual study.

2.2.3. Communication / professional conduct

2.3. Catalog of learning goals
As mentioned above, a complete catalog of learning goals has been created and is available to all students and instructors at www.LMU.de. In addition to the catalog of learning goals of module 23, in which individual illnesses are defined according to the expected spectrum of knowledge, a special catalog of learning goals for clinical practical skills and one for the “skills exercises” exist (Fig. 4). These outline the testing objectives of the OSCE-Exam and are available at www.LMU.de.

3. Organization of Module 1

3.1. Structure of the courses
The following subjects and interdisciplinary areas are taught in Module 1:

Human genetics (ÄAppO §27 Sec. 1, Subject Nr. 9)
Human genetics builds upon knowledge of biology and is addressed compactly and exam-oriented with exercises using concrete case examples in the lectures.

Hygiene, Microbiology, Virology (ÄAppO §27 Sec. 1, Subject Nr. 10)
The practical work in the course auditorium in realistic clinical case vignettes is embedded in the lecture series Microbiology, Hygiene, Immunology and Virology.

Clinical chemistry, laboratory diagnostics (ÄAppO §27 Sec. 1, Subject Nr. 13)
Built upon the knowledge taught in the pre-clinical subjects of biochemistry and physiology, the lecture systematically introduces the basics and applications of clinical laboratory and hematological methods as well as the interpretation of the parameters for diagnosis, therapy control, and prevention from illnesses. During practical exercises in the laboratory and seminars using case examples, students compile indications and sources of mistakes in routine laboratory diagnostics following important testing methods (blood and urine analysis, organ and coagulation diagnostic, etc.)
Pathology (ÄAppO §27 Sec. 1, Subject Nr. 16)
The essentials of pathology will be presented in the lectures on the basis of pre-clinical knowledge of anatomy and histology. Courses in macro- and micro-pathology as well as small-group seminars are available for further development. A lecture series on pathophysiology will be offered aid in understanding the general context.

Pharmacology, toxicology (ÄAppO §27 Sec. 1, Subject Nr. 17)
The essentials of pharmacology are addressed in a lecture series with additional seminars which should allow students to develop a basic understanding of the parameters of pharmacokinetics. The aspects of pharmacodynamics and specific substance characteristics are treated as a foundation for the concrete application of pharmaceuticals using various examples from substance groups (hypnotics, antiepileptics, antiparkinson drugs, antipsychotics, analgesics, antirheumatics, local anesthetics, antibiotics, chemotherapeutics, hormones), of organ systems (autonomic nervous system, heart, cardiovascular system, blood coagulation, digestive tract, kidneys), and from therapy fields (asthma, narcosis, metabolic illness, diabetes, gout, fat metabolism).

Infectiology, immunology (ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 4)
A large portion of the lessons in Subject 10 (Hygiene, Microbiology, Virology) is taught from an infectiological perspective, i.e. using clinical case examples with focuses on prophylaxis, diagnostics, and therapy. For the topic of immunology, the fundamentals from the pre-clinical lessons (physiology, biology, biochemistry) are developed in the lecture series and are practiced in some practical examples in the course. An interactive case discussion occurs in the form of a seminar.

Imaging methods, radiation treatment and protection (ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 11)
In the lectures and seminars, based on physics, biology, and anatomy, students learn the basics of the application of radiation and waves for use in diagnostic imaging as well as for therapy.

3.2. Exams and assessments

Students attend two 7-week-long lesson blocks, each with 3 subjects (subject combinations 1 and 2). The assessments occur at the end of each lesson block after a few days which are set aside for studying (dependent upon the calendar). Make-up exams are held during the last week of semester break before the beginning of the next semester and are usually structured the same as the original exams.
The exams are made up of MC-questions in the classical format (1 out of 5) or in the extended format (multiple correct answers). The number of MC-questions per subject varies:

Human genetics
20 MC-questions with one correct answer out of 5

Hygiene, microbiology, virology with infectiology, immunology
40 MC-questions (20 bacteriology, 5 hygiene, 9 virology, 6 immunology; with one and multiple correct answers)

Clinical chemistry, laboratory diagnostics
40 MC-questions with one and multiple correct answers

Pathology
40 MC-questions with one correct answer

Pharmacology, toxicology
40 MC-questions with one correct answer

Imaging methods, radiation treatment and protection
30 MC-questions with one correct answer
All MC-questions are regularly validated and optimized in close cooperation with the Department of Medicine Didactics (Prof. Martin Fischer, Dipl.-Ing. Matthias Holzer). The results of each exam will be monitored with regard to testing average, grade distribution, instances of index clause, and reliability. In the subjects “Hygiene, Microbiology, Virology”, additional points from the graded seminars are part of the total grade. Participation in an internet-based practical training for the interdisciplinary area “Imaging methods, radiation treatment and protection” must be proven. The practical trainings and seminars are required. Attendance of the lectures is suggested.

In Module 1, students earn their first interdisciplinary certificate (1. FUELNW) which contains the rounded average grades from the exams for subjects 9, 10, 13, 16, and 17. Additionally, students receive certificates for the interdisciplinary areas 4 (grade identical with subject 10) and 11 (grade identical with the respective exam). After successfully completing Module 1, students have the opportunity to begin their project semester (Module 6).

### 3.3. Types of instruction

The students complete two 7-week-long lesson blocks, each with 3 subjects (subject combinations 1 and 2)

**Human genetics**
Lectures with exercises

**Hygiene, microbiology, virology**
Lecture series “Problem-oriented learning in the auditorium” (POLiS), practical work in the course auditorium

**Clinical chemistry, laboratory diagnostics**
Lecture, practical exercises in the laboratory and seminars

**Pathology**
Course in macro- and micro-pathology as well as seminars in small groups, lectures

**Pharmacology, toxicology**
Lecture series with accompanying seminars

**Infectiology, immunology**
Clinical case examples, lectures, practical examples in the course, seminar with interactive case discussion

**Imaging methods, radiation treatment and protection**
Lecture and seminars, practical training in the internet
Module 23

Interdisciplinary fundamental year of medicine

- Internal medicine
- Surgery
- Anesthesia and Emergency medicine
- Nephro-urogenital System
- Orthopedics
- Pharmacology
- Pathology
- Radiology, nuclear therapy and radiation therapy

1. Faculty

1.1 Organizational team

Module spokesperson
Prof. Dr. M. Dreyling
Prof. Dr. M. Siebeck

Research Assistants
H. Khvorost
A. Hesse

Secretary
I. Albayrak (BLUT, GI, KARDIO),
A. Maranon (BLUT, GI, KARDIO),
I. Movileanu (AINS, RESPI)
K. Sickinger (MUSK)
K. von der Recke (NUGS)

2. Goals

2.1 Fundamental Goals

In Module 23, the objectives of the former modules 2 (the semester of internal medicine) and 3 (the semester of surgery) are integrated into an interdisciplinary clinical foundational year for which eight organ-oriented four week blocks were created, in which future lessons will occur. Every Module 23 student completes each organ block, each lasting a total of four weeks. Many interdisciplinary medical subjects have a place in Module 23, either in the organ blocks or in the context of interdisciplinary sessions.

The main goals of Module 23 are:
- To focus on knowledge and skills that every doctor must have mastered by his first day on the job (foundational year of medicine).
- To portray an interdisciplinary reality of healthcare through an interdisciplinary curriculum: the daily cooperation between doctors of various disciplines in patient care and research should be taught to future generations.
- To limit the attendance requirements to the minimum given in the German Medical Licensing Regulations (ÄAppO) as well as in the Study Regulations of the LMU: students should have enough free time for private study and extra-curricular interests.
- For continuous study: eliminate the large final exams at the end of each semester in favor of smaller, more frequent exams, thereby increasing the effective time for private study.
• To decentralize the curricular-based activities in order to include as many people
dedicated to medical didactics as possible, and to put the responsibility for the
curriculum’s content back onto the departments.
• To centralize the administration, MeCuM-services, and medical didactic science, in order
to synergize and lighten the load of the practical instructors.
• Retain and further develop the especially established and prominently evaluated lesson
concepts from Modules 2 and 3.

2.2. The three goals of learning
For the planning of exams and of lesson sessions, a detailed operationalized catalog of
learning goals was created for Module 23, thereby outlining the testing objectives for the
block exams. It is available at www.LMUdle.de.

2.2.1. Medical knowledge
During Module 23, students learn organ-oriented illnesses with their causes, symptoms, and
therapies in an interdisciplinary approach (factual knowledge). Students should be able to
recognize and explain connections between, for example, clinical symptoms and their
underlying pathophysiology or the process of an examination method, its area of application,
and its limits (reasoning). Finally, students should be able to make decisions in clinical
situations regarding suspected diagnoses, necessary further diagnostics, and therapy based
on their factual and reasoning knowledge (practical knowledge).

2.2.2. Clinical practical skills
Module 23 offers many opportunities to train practical skills. In addition to required sessions
in which various skills are taught, students can choose from a wide offering of voluntary
skills-trainings and elective courses to further develop special interests. Among the defined
learning goals are, among others, taking down a medical history and completing a physical
exam, a course on suture and knotting, inserting of a feeding tube, bedside test, writing a 12-
channel-EKG, venous blood withdrawal, as well as inserting peripheral permanent venous
catheter.

2.2.3. Communication / professional conduct
An important learning goal in Module 23 is to impart essential skills for the daily medical
communication and professional conduct in the clinic. Therefore, students receive assistance
for conversations with patients, for team communication, and for feedback conversations
with colleagues through various exercises with standardized patients and simulations.

3. Concept of learning

3.1. Didactic concept
In addition to the basic practical skills, key components, such as the capability for life-long
learning and to handle large amounts of information in a sensibly structured way, should
especially be taught. The curriculum for Module 23 is structured in such a way that the
sessions with compulsory attendance provide students with an initial overview and incentives
regarding the important topics, followed by the students working on these topics in practical
and theoretical self-study. For this self-study, students in Module 23 will be provided enough
time and support. Furthermore, the learning goals and their competency levels that must be
mastered are recorded in a transparent catalog of learning goals in order to ease students in
the planning their own studying.

3.2. Course offerings
In Module 23, the specific block sessions occur on Mondays, Tuesdays, and Thursdays. The
L-course on Wednesday is thematically adjusted to the lessons block and offers
interdisciplinary seminars, oriented to cardinal symptoms, in order to acquaint students with
a holistic way of thinking that covers all organs. Then every Friday after a four-week block
there is an exam covering that specific organ block. On the other Fridays, interdisciplinary
lectures will be held, with participation of the department heads, in which the new clinical-
pathological conference and overview lectures of pharmacology will be integrated as well.
3.2.1. **Block courses**

The sessions with compulsory attendance build on each other within the blocks: foundational knowledge is initially taught in the lecture blocks and seminars, and then it is applied and developed during tutorials throughout the week. At the end of the block week is the Bedside-Teaching, during which students put their acquired knowledge into practice. The handbooks of each block provide a detailed overview of the teaching sessions as well as tips for documentation for preparation and review. The lectures were specifically adjusted according to each of the afternoon sessions within each block. During preparation for Module 23, a particular focus was laid on the composition of the interactive seminars with innovative teaching methods. Now, less emphasis should be placed on the pure transmission of knowledge, and more emphasis should be placed on the application and development of knowledge that has already been acquired.

Voluntary offers such as E-Learning, Skills-Training and clinical mornings round out the compulsory lessons and stimulate one’s individual study.
The following subjects and interdisciplinary areas are taught in Module 23:

**Traumatology**
The care of severe and multiple injured patients is an enormous challenge for everyone involved. During the traumatology week the students get the opportunity to acquire the TEAM-G®-Certificate.
TEAM-G® (Trauma Evaluation and Management Germany) is the official version of the international established Advanced Trauma Life Support (ATLS®) of the American College of Surgeons (ACS) for medical students.
In Germany the ATLS®-Program – and therefore TEAM-G® – is carried out by the German Association for Emergency Surgery (Deutsche Gesellschaft für Unfallchirurgie = DGU) together with selected medical faculties.
ATLS®-Courses are very popular training seminars for doctors worldwide. This course format is conducted in several countries and often a precondition for the active participation in an in-hospital trauma care.
Additionally several interactive lectures are offered. A highlight of the traumatology week represents the practical training of the technical human rescue which is carried out in cooperation with the occupation fire-brigade Munich.
The students are expected to prepare themselves with the TEAM-G®-Manual (Primary Survey: ABCDE scheme), available at [www.LMUdle.de](http://www.LMUdle.de).
The MC-exam after the NUGS block contains 5 questions about traumatology.

**NUGS (Nephro – Uro – Genital – System)**
The NUGS block includes the diseases of the kidneys, the efferent urinary tract and the male genitals. The following areas are represented in NUGS: Nephrology, urology, pathology, pharmacology, radiology, radiotherapy, nuclear medicine, graft surgery, laser medicine and experimental urology.
An interdisciplinary lecture is offered in the mornings, whereas the afternoons are intended
for practice-oriented teaching in small groups. The lectures are available at www.LMUdle.de. The NUGS block also provides a practical training “skills urology” where the students can learn how to do a sonography of kidneys or a rectal-digital examination of the prostate with the help of a prostate phantom model and much more. The OSCE in NUGS contains an oral and a practical part. Topics are causes, diagnostics, differential diagnoses and therapy of dysuria, BPH syndrome, prostate carcinoma and urosepsis. The practical part contains a digital rectal examination, palpation of a prostate phantom model and interpretation of the results as well as interpretation of test results and uroflowmetry. The MC-exam consists of 10 questions for internal medicine and 15 questions for urology.

Rheumatology
The rheumatology week contains lectures during the mornings as well as seminars and tutorials during the day to become acquainted with all rheumatologic diseases. Focus will be given to general topics like manifestations, pathophysiology and therapy of rheumatologic diseases as well as to specific diseases such as polyarthritis, inflammatory back pain, SLE and M.Wegener. All seminars and lectures are available at www.LMUdle.de. The rheumatology OSCE consists of one station with a standardized patient. The MC-exam after the “Respiratory System” block contains 5 questions about rheumatology.

Respiratory System
The departments pneumology, thoracic surgery, radiology and radiotherapy are represented in the block “Respiratory System”. The bedside teaching is also supported by doctors of the Asklepios Clinic in Gauting, where four groups attend the bedside teaching during this block. Additionally a course teaching literature research (with a short exam at the end of the course day) and the practical training block in surgery take place within the block. The block “Respiratory System” itself lasts only three weeks. At the end of the second bedside teaching there is a short oral exam consisting of a structured case presentation (approx. 3 min.), a demonstration of a thorax examination as well as two oral questions referring to pneumology/thoracic surgery. The written exam at the end of two blocks contains 10 internistic and 5-6 surgical questions about the respiratory system.

Musculoskeletal System
The musculoskeletal block covers orthopedics, emergency surgery and physical medicine/rehabilitation and lasts four weeks. The individual disciplines are split by week, so that each student attends two weeks in orthopedics as well as one week in emergency surgery and one week in physical medicine/rehabilitation. To ensure as much as intensive support for the students as possible, two groups at 30 students are formed which pass these disciplines in a different order. One group is participating the emergency surgery week in the inner city, whereas all the other courses will be in Großhadern exclusively. During the course week physical medicine/rehabilitation a radiology seminar explaining the imaging of the musculoskeletal system is taking place. Besides lectures, seminars and tutorials there are bedside teachings including a voluntary attendance in the operating room. Also examination courses in orthopedics are provided in which the students learn how to examine a knee joint, hip joint, foot/upper ankle joint, spine, shoulder, elbow and hand. To practice at home students can find videos explaining the examination techniques online at www.LMUdle.de or at the homepage of the orthopaedic clinic (http://www.klinikum.uni-muenchen.de/Orthopaedische-Klinik-und-Poliklinik/de/lehre/index.html). During the emergency surgery week there are two practical courses including a cast & bandage course as well as a suture & tie course. At the beginning of orthopedics there is an entrance test consisting of questions whose results are represented as a third in the cumulative grade of orthopedics. At the end of the whole block two practical OSCE-examinations take place, one in orthopedics and one in emergency surgery. The OSCE in orthopedics is based on the examination course and lasts 10 minutes per student. The OSCE in emergency surgery consists of two parts: a practical one which tests the content
of the practical courses and a short clinical case in which the student gets the opportunity to slip into the role of the assistant physician discussing the patients’ history, diagnostics and therapy of common medical conditions occurring in emergency surgery. The students have to bring their coat, a reflex hammer and a goniometer. The MC-exam at the end of two blocks contains 10 questions in emergency surgery, 15 questions in physical medicine/rehabilitation and 15 questions in orthopedics.

**Blood and Immunology**
The block “Blood and Immunology” deals with haematology, coagulation and infectiology. Focuses include for example lymphomas, leukemias, HIV, anemias and coagulation abnormalities. Beside lectures, seminars, tutorials and bedside teaching there are POK (patient oriented communication) tutorials in which the students get the possibility to improve their skills concerning breaking bad news with the help of role plays using standardized patients. The MC-exam consists of 10 questions referring to “Blood and Immunology” and belongs to the Internal Medicine Certificate. Each student has to pass an OSCE lasting 25 minutes including two topics. One task tests communication skills (e.g. an educative conversation) whereas the other tests clinical-practical skills (e.g. to perform a test or an examination).

**AINS (Anaesthesia, Intensive Care, Emergency Medicine and Pain Therapy)**
AINS contains the Clinic for Anaesthesiology, the Institution for Emergency Medicine and Medicine Management, the Institution for Clinical Radiology and the Institution for Pharmacology. Students rotate weekly attending the four main disciplines. Seminars, tutorials and bedside teachings help the students to become familiar with topics like airway management, sepsis, hemotherapy, respiratory insufficiency and many more. In the Emergency Medicine week students have practical courses every day. With the aid of phantoms students learn how to perform Basic Life Support (BLS) and reanimation on cardiac arrest. A highlight represents the simulation of treatment algorithms concerning important emergency medical symptoms in which the students are able to “treat” their phantoms working together in emergency medical teams. At the beginning of every Emergency Medicine seminar there is an entrance test with 5 MC-questions each, covering the basics of the respective topic of the day. Students can prepare themselves with the help of an emergency medicine script (“Lernskript Notfallwoche”) available at www.LMU.de. At the end of the block there are two OSCEs, one in anaesthesiology and one in emergency medicine. The OSCE in anaesthesiology covers tasks like blood gas analysis, mask ventilation, interpretation of a chest x-ray or an ECG and many more. To prepare for the practical OSCE in emergency medicine (which represents several simulations of emergency treatments) students can attend voluntary reanimation courses at the ZeUS Großhadern. The written exam at the end of two blocks contains 20 questions relating to anaesthesiology and intensive care and 15 questions dealing with emergency medicine. MC-questions as well as open questions are asked.

**Endocrinological System**
The block “Endocrinological System” is structured in four main topics each lasting one week. The first week deals with diseases of the pituitary gland and the adrenal gland, the second week with calcium metabolism and thyroid diseases, the third week with diabetes and diabetic foot syndrome whereas the fourth week covers the fat metabolism. Within these weeks students attend several lectures, seminars, tutorials and bedside teachings. Students can learn how to do a sonography of the thyroid or how to plan an insulin therapy and many more. The OSCE at the end of the block consists of two parts: the first part represents an endocrinological examination (e.g. an examination of the thyroid) and the second part is an educative conversation/ pre-operation discussion where the student should enlighten the patient on an upcoming procedure/operation. The MC-exam at the end of two blocks consists of 8 internistic and 5 surgical questions concerning endocrinology.

**Cardiovascular System**
The Cardiovascular System block is composed of cardiology, cardiac surgery, angiology,
vascular surgery, anesthesia, physiology, pharmacology and radiology.
The first week deals with atherosclerosis with coronary heart disease and myocardial infarction as well as prevention. The second week continues with topics like syncope, bradycardiac/tachycardiac dysrhythmias and pancarditis. In the third week vitia and acute and chronic heart failure are taught. The last week consists of peripheral arterial occlusive disease, venous diseases and aneurysms.
One special feature of the Cardiovascular System block is the inclusion of interdisciplinary fields. That way the clinical knowledge is taught with theoretical background and practical skills.
Lectures are given by representatives of two or more specialties. Like this, colleagues of cardiac and vascular surgery round off conservative disciplines whereas physiologists and anesthesiologists contribute to topics like heart failure to improve the understanding of clinical procedures.
Seminars teach both diagnostic methods (ECG, echocardiography) and pathophysiological basics of coronary heart diseases and heart failure.
On two morning students get the possibility to attend different cardiac surgical operations where they can gain interesting insights in cardiac surgical procedures.
In a pharmacological class the most important medication for the treatment of cardiac diseases and their interactions are discussed.
Under supervision of the ward physician students learn how to take a patient’s history and how to do a physical examination within the bedside teaching.
Students deepen their knowledge with the help of tutorials.
On two morning students get the possibility to attend different cardiac surgical operations where they can gain interesting insights in cardiac surgical procedures.
In a pharmacological class the most important medication for the treatment of cardiac diseases and their interactions are discussed.
Under supervision of the ward physician students learn how to take a patient’s history and how to do a physical examination within the bedside teaching.
Students deepen their knowledge with the help of tutorials.

Gastrointestinal System
In the interdisciplinary organ block “Gastrointestinal System” internal medicine and surgery are equally represented: Gastroenterology, hepatology, gastroenterologic oncology and visceral surgery. Additionally contents of interdisciplinary fields like radiology, infectiology, radiotherapy, clinical pharmacology and specific pathology are integrated.
The block is organized in 4 thematic weeks: The first week deals with diseases of the esophagus and the stomach, the second week with the intestines, the third with the gallbladder and the pancreas and the fourth week with liver diseases. In each of these thematic weeks students attend lectures, seminars, tutorials and bedside teachings.
In addition, a digital rectal examination with a standardized patient as well as two skills trainings (gastric tube and abdomen ultrasound) are taught.
The OSCE at the end of the block consists of two OSCE stations and standardized patients as well as probands take part. Possible OSCE stations could be taking a medical history, demonstrating a physical examination of the abdomen, how to put a gastric tube, doing an abdomen ultrasound or a digital rectal examination with the aid of a phantom model.
The MC-exam contains 27 questions: 12 questions internal medicine and 15 questions surgery.

3.2.2. Practical training block in internal medicine
The focus of the practical training block “Internal medicine” is on acquiring competency in communication. Students may freely choose the station at which they would like to complete their practical training block, depending on their interests and previous evaluation results.
Even the learning goals to be achieved are defined by the students. As the conclusion of the practical training block, a newly developed simulation of medical rounds is run in the ZeUS teaching clinic during which the students learn the most common challenging situations during rounds, how to communicate in a team, as well as how to fulfill the multiple roles needed during the rounds.
It is obligatory to fill in two online questionnaires concerning personal learning objectives during this training block.

3.2.3. Practical training block in surgery
The stations and the learning goals are individually chosen by the students in the practical training block “Surgery” as well. The focus here is on acquiring practical competencies. Therefore, suture sets are made available for voluntary practice and important behavioral
measures regarding the correct hygienic conduct on the ward and in the operating room are drilled. Each student has to write an operation report to prove his attendance. This report has to be read and signed by a surgeon who was present during the chosen operation. More information and a sample report are available at www.LMU.de.

3.2.4. **Interdisciplinary Friday lecture**

Having a system of lecture blocks does not mean that there are no longer any large, broad lectures for all Module 23 students. Rather, for many students, these lectures gain a central importance as staples of interdisciplinary integration through the ample room for case discussions. These interdisciplinary lectures happen every Friday and offer the students the opportunity to further develop the knowledge they have acquired through interdisciplinary case examples and especially through the contributions of the participating interdisciplinary subjects.

3.2.5. **Electives**

In order to develop special interests, multiple extra sessions are offered on Friday afternoons. These are open to the students’ choice and offer many opportunities for further education. Example offers are a crash-course in the interpretation of imaging, emergency simulations, or seminars for the preparation of scientific research.

3.3. **Assessment**

On the last Friday of a four-week organ block, an oral-practical exam will be given and a written one every 8 weeks containing the topics of two organ blocks. The frequency of exams is thereby increased, however the individual written exams in Module 23 will be less time-intensive since no longer a complete semester (Module 3) or half a semester (Module 2) must be tested, but rather merely two four-week blocks. This system has the advantage that a manageable, self-contained amount needs to be studied rather than the entire content of the whole semester, thereby allowing room for students to focus on individual interests. Moreover, distributing the exams over the whole semester allows the students to receive feedback about their current performance level faster and more frequently, and to have the chance to adjust their studying habits for the next four-week block.

The oral-practical exams are called “OSCE” (Objective Structured Clinical Examination) and usually consist of different stations. At www.LMU.de you can find a video explaining the structure of the exam (“What is an OSCE?”). At the end of every Modul 23 semester students get the chance to complete some questions of the pathology and pharmacology exam regarding the specialties taught in Modul 23. The extensive exams take place in Modul 4.

4. **Development**

Module 23 is an interdisciplinary year in basic medicine that was developed and designed by students for students and then subsequently adjusted to meet the needs of the instructors and students by the respective lecturers. With the help of comprehensive workshops and advanced trainings, the newest teaching and learning concepts are integrated into the curriculum in order to attain the most successful learning for students possible.

During the planning of Module 23, students were constantly present in all areas and thereby made a valuable contribution to its implementation. Many of the suggestions were collected during the basic year in medicine and will be employed in the coming semesters. The organizational team strongly depends on the feedback of the students; only by regular and constructive evaluations can weaknesses be recognized and changed. One of the strengths of Module 23 is that students do not have to wait a whole semester until changes take place, but rather can profit from the comments a month later in the next block. Students interested in the improvement of the teaching are always welcome in the Module 23 team.
Module 4

Nervous system and sensorium

- Neurology and neurosurgery
- Psychiatry and psychosomatic medicine
- Ophthalmology
- Otorhinolaryngology (Ear-nose-throat)
- Dermatology
- Pharmacology

1. Faculty

1.1 Organizational team

Module spokesperson PD Dr. Cornelius Schüle
Dr. Konstantinos Dimitriadis

Secretary Kathrin Schenker

1.2 Associated departments, subjects and faculty

Ophthalmic Clinic – Inner City
Prof. Dr. Thurau

Department of Dermatology – Inner City
Prof. Dr. Thomas
Frau Hermann (secretary)

Department of ENT - Großhadern
Dr. Schrötzlmeier
PD Dr. Betz
Frau Odoemena (secretary)

Department of Psychiatry – Inner City
PD Dr. Schüle
Dr. Musil
Frau Schenker (secretary)

Department of Psychosomatic Medicine – Inner City
PD Dr. Padberg
Frau Huber (secretary)
2. Goals

2.1. Fundamental Goals

The fundamental goal of Module 4 is the understanding of illnesses of the nervous system and of the sensorium. This area is divided into the following subjects:

- Ophthalmology
- Dermatology and Venerology
- Otorhinolaryngology
- Clinical pharmacology and pharmacotherapy (as interdisciplinary area)
- Neurology, neurosurgery, neuropathology, neuroimmunology, and neuroradiology
- Psychiatry and psychotherapy
- Psychosomatic medicine and psychotherapy

3. Organization of Module 4

3.1. Structure of the courses

The following subjects and interdisciplinary areas mentioned in the German Medical Licensing Regulations (ÄAppO) are taught in Module 4:

Ophthalmology (ÄAppO §27 Sec. 1, Subject Nr. 4) In this subject, students should learn the most important symptoms of ophthalmology and therefore have the possibility to correctly advise a patient with sight problems or with underlying diseases that can impair sight, and to correctly direct them through the health system.

Dermatology, venerology (ÄAppO §27 Sec. 1, Subject Nr. 6) In addition to the main lecture that teaches the fundamentals throughout the semester, each student will become acquainted with the material through eight seminars in the block “Dermatology”. It is important to us that students have a solid basis in how to handle skin diseases, no matter which area of expertise they later choose. This knowledge is developed and practiced at the hospital bed.

Otorhinolaryngology (ÄAppO §27 Sec. 1, Subject Nr. 8) In otorhinolaryngology, students will learn the knowledge and techniques for taking down a medical history that are necessary to
recognize illnesses in this field, and to gain insight into their treatment.

Neurology (ÄAppO §27 Sec. 1, Subject Nr. 14) Neurology, neurosurgery, neuropathology, neuroimmunology, neuroradiology, the Institute for Stroke and Dementia Research, as well as the "Dizziness Center" deal with illnesses of the periphery and central nervous systems as well as the muscular system.

The neurological specialties work closely together with the related disciplines of psychiatry, psychosomatics, otolaryngology, ophthalmology, internal medicine, and rehabilitative medicine.

The neurology / neurosurgery part of Module 4 will attempt to give students structured, clinical-practical access to the field of expertise.

Clinical pharmacology / Pharmacotherapy (ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 9) The lectures address chosen aspects of pharmacotherapy that are relevant for the health of the sensorium, including how to handle antiepileptics, dermatic agents, opthalmic agents, hypnotics, sedatives, psychopharmaceuticals (antipsychotics and antidepressants), antiparkinson and antimigrane drugs. For the discussion of antinfectives, the focus will be on antifungal and viraustatic agents. In any case, the focus is less on the indications for individual agents, but rather on undesired effects and interactions.

Psychiatry and Psychosomatic medicine (ÄAppO §27 Sec. 1, Subject Nr. 18 and 19) Between "Psychiatry and Psychotherapy" and "Psychosomatic Medicine and Psychotherapy" are not only overlapping areas and important complements, but also differing perspectives, giving reason to hold the two lectures together.

Psychiatry and psychotherapy (ÄAppO §27 Sec. 1, Subject Nr. 18) An essential goal of this lesson is the psychopathological findings. A well-founded description of results is the determining requirement for a proper diagnosis.

Psychosomatic medicine and psychotherapy (ÄAppO §27 Sec. 1, Subject Nr. 19) Students learn:
— the classification of psychosomatic illnesses (reactive and posttraumatic disorders, personality disorders, psychoneuroses, somatoform disorders, behavior disorders, and psychosomatic disorders) — psychosomatics in different fields of medicine, e.g. in gynaecology, pediatrics, oncology, especially from the perspective of the treatment of illnesses (psychosomatic connections) — the essentials of psychotherapy (medical treatment with methods based in psychoanalytical-psychodynamic or behavioral therapy)

3.2. **Exams and assessments**
The more samples one takes, the more exact the result. Therefore, in Module 4 there are written, oral and some practical exams. In order to motivate students of continuously study throughout the semester, the oral exams are set at the end of each subject block. During the exam week at the end of the semester, students must construct a psychoathological result in the subject "Psychiatry". Additionally during the exam week, a written MC-exam occurs for all of the Module 4 subjects.

Normally during the exam week, there are no teaching sessions in order to allow students the opportunity to concentrate on exam preparation.

**Oral exam: practical training block**
Each practical training block ends with a subject-specific oral exam (no grade, just pass or fail). The exam is considered 'passed' when at least the grade '4' (adequate) is attained. The subjects "Psychosomatics" and "Psychopharmacology" will not hold any practical training during the oral exams.

**MC-exam at the end of the semester**
Each semester ends with an MC-exam in which all subjects are once again tested in their entirety. The subjects “Ophthalmology”, “Dermatology”, “Otorhinolaryngology”, “Neurology” and “Psychiatry” account for 100% of the entire certificate. 25% of the grade for “Psychosomatics” comes from the performance in the L-course.

The grade for “Pharmacology” is also made up of points from Module 23.
The number of MC-questions varies per subject area:

- Ophthalmology: 25 MC-questions
- Dermatology: 25 MC-questions
- Otorhinolaryngology: 25 MC-questions
- Neurology: 30 MC-questions
- Pharmacology: 30 MC-questions and 10 open-answer questions
- Psychiatry: 30 MC-questions
- Psychosomatic medicine: 20 MC-questions

In order to pass the MC-exam, 60% of the total points, or the respective minimum number of points by use of the index clause, are necessary. Even though all subjects will be tested together, each subject will be examined individually; the questions will be segregated and labeled according to each subject.

All MC-questions are regularly validated and optimized in close cooperation with the Department of Medicine Didactics (Professor Dr. Fischer). The results of each exam will be monitored with regard to testing average, grade distribution, instances of index clause, and reliability.

Psychopathological result
During the exam week, an oral exam on the psychopathological finding takes place in the subject “Psychiatry”, for which a video, presenting standard clinical situations, will be shown. This exam that focuses on the psychopathological finding is graded “Pass” or “Fail”.

Third interdisciplinary certificate
The subjects “Neurology”, “Psychiatry”, and “Psychosomatics” together comprise the certificate “Third interdisciplinary certificate”. The grade on this certificate is calculated as the average of all 3 subjects; however, the individual grades for each subject will be on the certificate as well.

3.3. Types of instruction

Practical training block
The semester is divided in two main blocks (Block A: Neurology-Psychiatry; Block B: Ophthalmology, Dermatology, ENT, Psychosomatic medicine). Lectures in Pharmacology and Problem-Based-Tutorials extend over each block. The contents of the pharmacology lectures are respectively matched to the subjects of the block. Half of the students start with Block A and half with Block B, after 8 Weeks all students switch block. There is an exam week after each block. During the 8-week-blocks students visit teaching sessions in all subjects of the block. Teaching in all subjects is organized in similar way (online Lectures through podcasts, life lectures, seminars, bed-side teaching, Problem-Based-Tutorials).

Introduction
The semester begins with an introduction, in which the individual subjects are introduced and an overview of the learning goals is given.

Lectures
Most days there are 2 hours of lectures, during which students should receive a systematic overview of the individual subjects. Several lectures

Seminars
To deepen students’ knowledge lectures are followed in matched thematic entities by seminars in smaller groups (24 Students).

Bed-Side-Teaching
Each Bed-Side-Teaching take place with 6 students and 1 lecturer. These occur at the ward or in an outpatient clinic. Students should as practical objectives be able to be confident in taking history, examining and presenting the patient. Student should also be able to identify differential diagnosis and perform a differentiated clinical examination based on the chief complain of the patient.

Problem-based seminars
In Problem-based seminars, students will be introduced to a medical problem. In groups of 12 students and 1 lecturer/moderator they work on small cases presenting medical problems. Key learning objective are the ability to identify the relevant problem, learn problem solving strategies, draw clinical pathways and train clinical reasoning. Topics and Problems are interdisciplinary and involve all subjects of the semester. It is expected that students actively participate in the group work.

Unfortunately, not all of the content, that is important for each subject, can be completely dealt with during the compulsory lessons. Therefore, it is necessary that students supplement their learning with the study of books; at the beginning of the module and in each subject, we will make reading recommendations.
Module 5

The stages of life

- Gynecology
- Pediatrics
- Pediatric surgery
- Geriatrics + Pharmacology seminar
- Elective
- General medicine (only during semester breaks)

1. Faculty

1.1 Organizational team
Module spokesperson       PD Dr. med. Matthias Kappler
Coordinator              Elena Drame, Dipl. Soz.
Secretary                Janine Moggert

1.1.1. Associated departments, subjects and faculty

Children's Hospital: Dr. von Haunersches Kinderspital
Director:                 Prof. Dr. C. Klein
Teaching responsible:    PD Dr. M. Kappler

Department of Gynecology and Obstetrics – Inner City: Frauenklinik Maistr.
Director:                 Prof. Dr. C. Dannecker
Teaching responsible:    Dr. U. Andergassen
                         Dr. B. Kost

Department of Gynecology and Obstetrics – Großhadern
Director:                 Prof. Dr. C. Dannecker
Teaching responsible:    Dr. S. Mittenzwei
                         PD Dr. M. Lenhard

Center for Geriatrics and early rehabilitation
Teaching responsible:    Dr. W. Wüst
General Practice

Teaching responsible: Prof. J. Schelling

Clinical-Pathological Conference - Institute of Pathology

Director: Prof. Dr. T.Kirchner
Teaching responsible: C. Woischke

Pharmacology

Teaching responsible: PD Dr. H. Mückter
Dr. A. Pecar

2. Goals

2.1. Fundamental Goals

Module 5 – the stages of life – is one of the last semesters of the medical curriculum (MeCuM) at the Ludwig-Maximilian-University Munich. The main subjects are “Pediatrics” and “Gynecology and Obstetrics”. With the new “ÄAppO” (Medical Licensure Regulation) coming into effect, “Geriatrics” is initially a compulsory subject of the medical curriculum, carrying with it the societal demands on today’s medical science. In addition, sessions on pediatric surgery and pharmacology as well as clinical-pathological conferences will take place. Students will also have the opportunity to further investigate a subject of their interest in the context of a week-long elective, choosing from a large offering of electives from natural medicine to language lessons to forensic medicine. The two-week clerkship in general medicine can also be booked as holiday dates in Modul 5.

Module 5 is called “The stages of life” because a thematic arc is made over the entire human life, from birth to old age. Thereby at the end of their studies, students receive an overview of the important core topics of medicine essential for every prospective doctor, even when they choose to follow a specialty outside of those offered in this program.

In Module 5, the individual subjects occur one after the other, so that the students can concentrate on one subject at a time.

<table>
<thead>
<tr>
<th>Semester weeks</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>B: 50% of the students</td>
<td>PTB Group B1</td>
<td>PTB Group B2</td>
<td>G</td>
<td>Gynecology</td>
<td>E</td>
<td>EW</td>
<td></td>
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</tbody>
</table>

PTB Practical training block pediatrics
G Geriatrics
E Elective
EW Examination week

Fig. 1: Rotation plan of Module 5

Module 5 not only implies the education in the specific areas of expertise but also contributes to the development of basic clinical-practical and soft skills (e.g. communication skills, team work, etc.) which are essential for the medical profession.

2.2. The three goals of learning

At the end of Module 5, students should have mastered the following areas of medicine of the stages of life:
2.2.1. **Medical knowledge**  
(Factual knowledge, Reasoning, Practical knowledge)  
The students should have a command of the medical knowledge necessary for the medical profession. This means they must know the illnesses and their causes, symptoms, classification, and their therapy (factual knowledge). A further learning goal is to recognize and explain the relationships between, for example, the clinical symptoms and the underlying pathophysiology or between the process of an examination methods and its area of application and its limits (reasoning). Finally, students should be able to make decisions regarding preliminary diagnoses, necessary further diagnostics, and therapy in clinical situations, based on facts and reasoning.

2.2.2. **Clinical practical skills**  
At the end of Module 5, students should have mastered the essential clinical-practical skills. The purposeful collection of a case history, the physical exam, and the structured representation of a patient to medical colleagues are basic competencies for the medical profession, and are therefore the main learning goals of Module 5. Additionally, students should learn the practical skills of the various specialty areas including, for example, the collection and documentation of anthropometric data for a child, the creation of a partogram, the applications of the Leopold handles, as well as a geriatric assessment, just to name a few examples.

2.2.3. **Communication / professional conduct**  
At the end of Module 5, students should know the basics of patient-oriented communication, medical empathy, and the professional mindset. They should be able to hold problematic discussions and to analyze the discussions of other students according to the aforementioned criteria. The ability to give professional and constructive feedback is also a learning goal of the module. Additionally, students shall have integrated themselves into a medical team at a pediatric, gynecological or geriatric station or a general medicine practice, and have adequately communicated with patients, caretakers, and doctors. They should be able to solve problem-oriented clinical cases through collegiate cooperation in small groups as well.

2.3. **Catalog of learning goals**  
A detailed catalog of learning catalogs of most of the subjects offered is available for all students and instructors at www.LMUidle.de.

3. **Organization of Module 5**

3.1. **Structure of the courses**  
The majority of the courses are organized by the individual clinical experts of each subject. The organizational team (see 1.1) and the module spokesperson are the first points of contact for students and instructors, and are available for questions, suggestions and criticism.

Didactic concept of the course offerings:
Each core topic will be addressed in various courses at different levels of knowledge using various didactic methods. Here the focus is on the small group lesson, which comprises an essential element of the teaching of Module 5.

**Sessions on pediatrics (ÄAppO §27 Sec. 1, Subject Nr. 12)**
The lessons in pediatrics follow a four-week theoretical lesson block with lectures, seminars and tutorials, and a corresponding 1-week practical training block. Both units are accompanied and supplemented by a compulsory online-seminar. The theoretical block concludes with an intermediary exam, and at the end of the semester there is a final exam.

The 12 lectures on the key fields of pediatrics (infectious diseases, pulmonology, gastroenterology, metabolic medicine, neurology, oncology, hematology, endocrinology,
nephrology, cardiology, neonatology and nutrition) represent a substantial share of 30% of the Module 5 workload. The lectures are available on the online learning platform LMUdle for students to prepare and later revise.

Integrated into the theoretical pediatric teaching there are also 12 lecture hours on topics of pediatric surgery: neonatal surgery, pediatric visceral surgery, pediatric traumaology, pediatric urology, pediatric plastic surgery, spina bifida & hydrocephalus and special pediatric surgical-oncological research.

Furthermore, each student attends 5 seminars with a particular focus on: vaccinations, developmental neurology, gastroenterology, emergency and communication training. Eventually, students are prepared for the practical training block during a course on physical examination. This is an examination course on infants in which the students learn to identify and practice the peculiarities of history taking and physical examination aimed specifically at children.

In 8 two-hour POL tutorials, students work on 4 clinical cases. For 4 weeks, each student group is continuously supervised by a tutor who has participated in a five-day faculty training including didactic concepts on the cases and specifics relating to them.

A four-hour revision course follows up on the training of differential diagnostic considerations and in increasing the students’ awareness of interdependence and interrelatedness in the clinical context. Thus, the diagnostic and therapeutic management of important pediatric diseases are discussed with interactive short vignettes and images. The outcomes of the training are tested in a written exam with open-answer questions.

In addition, students extend and apply knowledge acquired in the theoretical courses in a pediatric online seminar. It consists of 6 CASUS learning cases and 2 video-based learning units (“Age-Guessing”, “Introduction to the children’s examination”). For students who are particularly interested in pediatrics, there are 5 more learning cases for voluntary training. The successful completion is rewarded with a certificate.

Following the four-week theoretical lessons, students attend a one-week practical training block in groups of 3 for hands-on clinical practice. 20 intensive care and general units, outpatient departments and day hospitals are involved in this training. The students will be integrated into the medical team, get to know the day-to-day routines on the wards, hospitalize patients and discuss the anamnesis of physical examination and test results as well as the adequate treatment with their respective ward doctors or consultants. Finally, the elaboration of a medical report is required. Students’ performances are recorded in a logbook and assessed on the basis of a standardized evaluation form.

Special sessions on pediatrics: communication training, pediatric reanimation course and pediatric rheumatology seminar

For the purpose of improving the preparation of students for the coming entrance into daily professional life, a two-hour communication training (Breaking bad news) using video is given. This should give students the opportunity to simulate difficult discussions in pediatrics through role-playing.

The pediatric reanimation course will be supervised by the colleagues of the pediatric intensive care station and is very popular. With this course, we offer 25% of the students the opportunity to acquire knowledge and, especially, practical skills in the area of pediatric reanimation.

The neurological pediatric examination course is supervised exclusively by neuropediatricians, and offers participants the opportunity to examine healthy pre-school children, in an examination similar to that for school-aged children, for possible developmental delays or disorders.

The pediatric rheumatological seminar is offered from the director of the rheumatological ambulatory clinic. Students have the opportunity to see, examine, and to develop differential
diagnoses for patients with rheumatological as well as immunological-infectiological issues within the context of the specialty ambulatory clinic and in the clinic.

The course **travel medicine and tropical diseases in childhood**, provides students with the most important tropical medical-pediatric subjects (e.g. Severe Acute Malnutrition, malaria) in practice. Thereby is the focus on the treatment strategies under simple medical conditions.

In the course **conversational situations “pediatric/juvenile examination”**, participating students learn how to get into a conversation with children or teenagers, and how to create a trusting atmosphere for discussion.

During the voluntary course **pediatric surgical lessons on patients**, interested students have the opportunity to spend one day in the operating room.

All additional offers can be booked online by the students.

The final performance assessment in pediatrics takes place at the end of semester in the form of a multiple-choice exam with 40 questions.

**Gynecology and obstetrics (ÄAppo §27 Sec. 1, Subject Nr. 7)**

Every student participates in 10 seminars on the following topics covering general and specific gynecology, gynecological oncology, general and specific obstetrics, urogynecology, gynecological endocrinology and the desire to have children. These allow the learned information to be developed in a practically-oriented fashion with help from case representations, practicing on phantoms, or collecting medical histories.

During **10 two-hour-long POL-tutorials**, students work on 5 chosen clinical cases. In so doing, students have the opportunity to work on paper-based-cases especially developed for this teaching format, and to develop their own problems, hypotheses, and solution concepts by discussing with one another, as well as under the direction of a medical tutor. The specified cases are splitted in the same proportion between obstetrics and gynecology and are based on the themes from lectures, seminars, exercises and pathological case conferences, which took place in the same week. Each group is usually continuously supervised by two tutors, who have participated on a five-day high school teacher training.

Parallely, students take part in **a week-long practical training block** in groups, each with 3 students, in order to test out the daily work of a doctor. 12 normal stations participate from gynecology and obstetrics, special function units (e.g. the delivery room or the prenatal diagnostics), ambulatory and day care clinics. The responsible physicians of each department are the ones in charge. The students will be integrated into clinical daily routine, get patients assigned and should acquire on this way knowledges, practical skills and appropriate medical behavior. Finally, the acquired knowledge will be proved in an oral examination, as well as using a standardized evaluation form.

**10 main lectures** are offered in the basic subjects of “gynecology and obstetrics” (i.a. pregnancy and prenatal care, pregnancy-associated diseases, normal and pathological birth, inflammatory diseases of the genitals and the breasts, STD, benign tumors in gynecology, gynecologic oncology, gynecological endocrinology and reproductive medicine, urogynecology).

Differential diagnostic considerations and potentially psychosomatic backgrounds will be addressed and brought to light during **weekly exercises**. Thereby special topics of obstetrics, of conservative and surgical gynecology, psychosomatic and pharmacology will be processed.

For better orientation during each block, each student receives a folder which contains material regarding the organization, topics and events, tools of Obstetrics and Gynecology with theoretical learning materials, as well as working material for specific courses (electronic/on paper).
Special sessions in gynecology and obstetrics
Students have the opportunity to spend a day in a course block in the form of a gynecological office, the gynecological outpatient clinic or the delivery room.

In cooperation with the neonatal intensive care unit, students are offered to voluntary participate in an intensive seminar regarding the initial care of newborns. This should be done by any obstetrician and should therefore be part of the teaching block.

A special highlight for especially dedicated students is the birthing simulation course, which is conducted with help from the NOELLE-simulator in the “Center for Teaching and Study, ZeUS”. In the future, additional practical skills should be acquired using various phantoms and simulation dolls (birth).

All additional offers can be booked online by the students.

Geriatrics (ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 7)
Lecture: in 2 two-hour blocks, the following contents essential to the topic “Geriatric medicine” will be discussed: demographic development, physiological aging, multimorbidity, definition of the geriatric patient, typical illness patterns, geriatric assessment, tasks of geriatric doctors, dementia, nutrition problems, geriatric pharmacotherapy.

Seminar and exercise: in each 3-hour session, the main topics of geriatric syndromes, gait abnormality and falling, dementia and pain therapy are interactively discussed with the students.

The lessons on patients (4 separate hours) occur in the form of a bedside teaching in the geriatric day care clinic focusing on the collection of medical histories, the practical completion of a geriatric assessment, and the diagnostics of geriatric syndromes.

Pharmacological seminar “The multimorbid patient“(ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 9)
This seminar occurs once for each student and has the goal to sensitize students for the essential clinical aspects of pharmacology and for them to demonstrate these using a case study. The interactions or side effects of medication, the problems and quantification of renal failure and thus changes in the pharmacokinetics of individual drugs will be discussed in small teamwork, as well as the verification of the medication on the basis of guidelines. Also in the foreground stays the drug delivery via tube and the awareness of the principles of evidence-based medicine. For this seminar attendance is required, a grading does not take place.

Clinical pathological case-study conference (ÄAppO §27 Sec. 1, Interdisciplinary area Nr. 5)
This session occurs as a one-hour lecture in the modules 23 and 5. In module 5, it takes place on 9-10 separate dates. It treats the gynecopathology (6 dates), especially the ovary, uterus and breast. Paidopathology (4 dates) covering diseases of the placenta, the fetus and the newborn is taught as well. It is expected that each student attends the Clinical-pathological case conference during the mentioned modules and there is the possibility of an attendance check.

The session in module 5 closes up by a written examination consisting of 30 multiple-choice questions.
Before, there are two exams in module 23, each containing 10 multiple-choice questions. The grade is made up of points from modules 23 and 5. The maximum score is 50 points.

Elective in the 2nd term
The elective occurs during one week of the semester, lasts 21 hours, and is dedicated to teaching on patients, seminars, tutorials, lectures, and in practical trainings. There are multiple subject offerings, currently 50, that are offered, including internal and surgical subspecialties of (pediatric-) psychiatry, natural medicine, tropical medicine, radiation therapy, and palliative medicine, among many others. The aim of this course is to enable students to learn in a compressed form a single subject or deepen it.

The exam occurs in most subjects oral at the end of the elective week, in individual cases written.

**Practical training block: general medicine (ÄAppO 527 Sec. 1, Subject Nr. 1)**

The practical training block “general medicine” occurs at the end of the general medicine education for students. During the practical training block, the knowledge and skills, acquired during the previous courses on general medicine, should be supplemented and developed as the basis for ambulatory and general practitioner care. The lessons on patients occur in multiple general practitioner teaching practices in and around Munich; normally, students are assigned to one practice for the period of two weeks. The evaluation of practical performance in general medicine training is carried out by the teaching physician in the practice, who assigns a grade for the fulfilled tasks under his supervision. These tasks are defined and include two patient reports from the practice (an acute and a chronic one), one investigation for prevention or early detection and one technical inspection (e.g. cardiogram, spirometry and ergometry). The block practical training can be booked exclusively during semester breaks in Module 5. Also, the training is offered within MeCuM module 6 during the semester as well as in the holidays.

### 3.2. Exams and assessments

The students should be systematically accompanied on their way to becoming a doctor. According to the basic and special learning goals (see 2.), various didactic concepts that comply with the current state of research are implemented.

Through final exams, it will be determined if the learning goals have been achieved (assessment). Only the students who have achieved the minimum criteria receive a certificate for the courses from Module 5.

The various courses present an offer. Because of organizational reasons (e.g. room booking, group sizes, instructor distribution), it is necessary by many courses to require attendance. Except for the lectures, all sessions in Module 5 are compulsory. According to the study regulations, a maximum of 10% of each course may be missed.

Even for the realization of the didactic concepts of the individual courses (e.g. problem-oriented learning in the form of tutorials), a minimum and maximum number of students is essential for its success.

The courses should offer students an added value that cannot be acquired through individual study of literature or the use of electronic media. Yet the additional individual study of knowledge and skills is necessary to achieve the defined goals; the ability and readiness for individual life-long learning is a further fundamental skill necessary for a career as a doctor.

The exams in Module 5 will be organized by the secretaries and the module spokesperson with her team. The composition of the exams is a cooperative effort of all instructors involved from various clinics. The creation of exam questions from the various subject areas is a special challenge each semester. The authors of the questions are trained during special exam-workshops by the medical faculty.

Since it must be confirmed that the students have achieved the learning goals, and since the type of exam substantially influences the learning strategy, the three main learning goals will also be addressed by examination.

The exams are made up of the following parts:
**Multiple-choice exams:** these will be given in the subjects “Pediatrics”, “Gynecology and Obstetrics”, “Geriatrics” and “Clinical-Pathological Conference”.

**Written exams with open-answer questions:** At the end of the theoretical lesson block in pediatrics and before the beginning of the practical training block, an intermediary exam is held. Open-answer questions on figures and short case vignettes will be asked.

**Oral exams:** in certain subjects, especially in electives, standardized pre-determined questions with fixed evaluation schemes are used for examination.

**Log book:** At the beginning of the week in the block practical trainings “General medicine”, “Pediatrics” as well as “Gynecology and Obstetrics”, students receive a “program” of practical tasks that they must complete during the week-long block. These tasks are then documented in this log book, which serves as a certification of completion that is necessary to receive the certificate. Additionally, in pediatrics students have to write a doctor’s letter. In gynecology occurs a mixture of oral exam, evaluation on the ward and case discussion/epicrisis.
Module 6

Project Semester

The project semester at the Ludwig-Maximilians-University is a semester, in which students are exempt from compulsory teaching units. Each student dedicates to this semester own projects, such as the medical thesis or projects in the Medical Education / Public Health / foreign projects etc.

Thus, it is possible to perform or write the doctoral thesis during the standard period of study.

The Faculty’s goal is to promote through module 6 young scientists on the one hand and on the other hand to give interested students scope for development for research opportunities. In addition, the module 6 offers the possibility to organize on its own initiative and carry out scientific projects abroad.

Since the summer semester 2010 students of the module 6 can take up to additional voluntary events. This courses are on the one hand courses that are designed to help in the preparation of a doctoral thesis, and on the other hand there are (refresher) courses for deepening the clinical skills.

Courses around the doctoral thesis
- Data Entry and Basic Analysis with Excel
- Practical Introduction to Scientific Research
- The Vista into Statistics: How do I analyze medical papers?
- Do’s and Don’ts in the Statistical Analysis in the Context of Medical Promotion
- Clinical and Genetic Epidemiology
- Planning and Conduct of Epidemiological Studies
- Creativity Techniques for Graduate Students

More Offers
- Emergency Refresher Courses
- State Examination Revision Course
- Overseas Projects
- Language Courses for Physicians
- L- course Seminar Refresher
LMU-StaR

LMU state exams review course: the concept

1. Statement of the problem

One of the main problems with the new state exams is the fact that the entirety of clinical knowledge is tested in one exam and no longer, as was planned by the old regulation, in three exams. A survey of LMU students shortly before the exam showed a considerable necessity for such a preparation course: the students felt only unsatisfactorily prepared for the exam and especially asked for a review of clinical-theoretical knowledge, which the main part of the new exam is.

2. LMU-StaR as an answer

The review program described here should support students in their review and in the practical application of the knowledge gained throughout MeCuM\textsuperscript{LMU}. The review program “LMU-StaR” developed according to these goals is based on three pillars:

2.1. Longitudinal (L-StaR)

What is L-StaR?
The longitudinally arranged part of the review program, L-StaR, is a course that occurs during the practical year, Modul 6 or an additional free semester and offers, therefore, a continuous review of clinical and theoretical knowledge. The course consists of separate, independent blocks that cover the different organ systems in internal medicine, surgery, anesthesiology, intensive medicine, including the accompanying pharmacology and microbiology. In order to secure an optimal learning success, the teaching will be conducted along two paths: lectures and seminars.

Process
A total of 18 weeks is planned for one L-StaR-cycle. It starts with the beginning of the semester and there are two events weekly till 100 days before the final state exam. 100 days before the exam there are only events on Fridays so that the students have more time for their own study. An L-StaR day begins, for example, with an introduction to the subject matter in the form of a lecture with content focused on the exam. The lecture will be given by experienced lecturers of the LMU. For the special preparation for the written part of the medical exam, students will discuss exam examples with an expert in a seminar that resembles the structure and style of the case studies in the official exam.

2.2. Compact (C-StaR)

What is C-StaR
As a supplement to L-StaR, a compact review program (C-StaR) should achieve a focused exam preparation of key topics as well as of electives in a highly condensed format. The courses are extremely relevant to the exams because of their use of IMPP-facts. The structure is similar to L-StaR with a mixture of lectures, TED-questions, and interactive discussion in expert seminars.
Currently there are four week-long courses available:

- C-StaR Orthopedics/ Emergency Surgery
- C-StaR Gastroenterology/ Visceral Surgery
- C-StaR Gynecology/Pediatrics
- C-StaR Neurology/Psychiatry

2.3. **Virtual (V-StaR)**

**What is V-StaR?**
A virtual part completes the LMU StaR concept. V-StaR is a computer-supported offer that is available for the individual use of the students using the internet. Here students can work on case studies from the L-StaR tutorials, as well as use additionally chose material such as online case books and further material from the school’s collection.

**Users and target groups**
Contrary to L- and C-StaR, V-StaR is not limited by location or by time. Therefore, a comprehensive collection of various teaching materials and programs is available to students at all times. Thus, there is no limit to the number of people who can benefit from this service. The content will, however, be conceptionally tailored to students in the higher clinical semesters in order to meet the demands of a focused preparation for the state exams.
MeCuM-Mentor

Mentoring program

What is mentoring?
The term “mentor” comes from ancient Greek mythology, in which Mentor was trusted with raising Odysseus’ son, Telemachos, in his absence. Thus Mentor became his advisor, his teacher, his protector, and his friend in a relationship based on affection and trust.

Since then, this term is applied to similar relationships. Throughout history there has been a number of famous mentor-mentee relationships, such as Alexander the Great and Aristotele, Beethoven and Haydn, Schiller and Goethe.

Not until the 1970s were formal mentoring programs implemented in business administration and academia. Since then, mentoring has been defined in many different ways.

“Mentoring is a dynamic reciprocal relationship in a work environment between two individuals where often but not always one is an advanced career incumbent and the other is a less experienced person. The relationship is aimed at fostering the development of the less experienced person.” (Jackson et al. 2003)

According to Berk (2005), ideal mentoring relationships should be personal in nature and long-term, and should involve direct interaction.

The mentoring program is the answer to the desire of many students, as expressed in a survey, to have more personal support throughout the course of studies from the school of medicine. Thus, in the future, each student at the medical school should be integrated into an organized support network and always have a qualified contact person for his or her concerns. The project consists of two components:

1.1. Mentoring
The goal is to provide all students in the clinical section with access to a member of the medical school as a mentor. Ideally, mentoring relationships should develop spontaneously. Yet due to the lack of an established mentoring culture at our school, this has unfortunately been rare. In order for this to change, we want to initiate a minimal, yet required, interaction between students and potential mentors once a semester.

A partially-structured meeting at the beginning of the semester with the mentor is envisioned. During this meeting, students should defined short-term, intermediary, and long-term goals, and discuss them with their mentors. Otherwise, students are free to address further topics during the mentoring discussion. These could be, for example, the doctoral thesis, additional employment, clinical traineeship, the practical year, career planning, stipends, studying abroad, personal issues, or something similar.

Thereby a spontaneously created mentoring relationship is always given priority; students and mentor should primarily find each other. In order to make this process easier, especially for students who have not yet spontaneously found a fitting mentor, we have created the website http://www.mecum-mentor.de. Here students, as well as participating mentors, can create a profile. By comparing interests and specialty areas, students can choose from among the offering of potential mentors.

In the case that the mentoring relationship flourishes, the medical school member may remain the mentor and contact person for the students, if both parties so desire. If the relationship is not successful, the student can initiate another match with a new mentor. Thus, the chance of a fruitful mentoring relationship is maximized with reasonable effort.
1.2. **Peer-Mentoring: The ring-model**

We divide all students into five, more manageable so-called rings at the beginning of their studies. By so doing, the “natural” division of students into the five apsides of the preparatory course is being taken over. The ring model is hierarchically organized in the form of a pyramid. The foundation is built of pre-clinical students, followed by their fellow students in the clinical section. The next level should contain some committed LMU doctors, and on the top is one honorary patron for each ring:

- **Ring:** Adele Caroline Auguste Hartmann  
  **Patron:** Prof. Dr. Dr. Reinhard Putz
- **Ring:** Alfred Marchionini  
  **Patron:** Prof. Dr. Klaus Peter
- **Ring:** Johann Nepomuk Ritter von Nussbaum  
  **Patron:** Prof. Dr. Wolfgang Eisenmenger
- **Ring:** Max Josef von Pettenkofer  
  **Patron:** Prof. Dr. Dr. Ulrich Welsch
- **Ring:** Hugo Wilhelm von Ziemssen  
  **Patron:** Prof. Dr. Udo Löhrs

In the clinical section, dedicated students may apply to become a “junior mentor”. These are then primarily responsible for questions placed by “younger” members of the same ring. To make contact easy, each member receives access to a ring-portal at which, for example, junior mentors or “experts” in the body of students can be found (for example in the areas of study abroad, social engagement, or doctoral thesis).

Students should receive access to the members “one level higher” in the ring. Only after these initial contact people are overwhelmed by a question or problem will they be forwarded to higher levels in the hierarchy. Therefore, the higher levels of the pyramid, that are weaker in number, can be effectively relieved of their advisory load.

As a further step, rings should increasingly organize their own events, such as guest lectures, occupational exploration in the form of job fairs, or other social events like sporting events.

All of this, in addition to the website and the “feeling of belonging” in the ring, should create a network in which no medical student must feel the need to complain about the lack of access to contact persons.
ZeUS

Zentrum für Unterricht und Studium

The three centers for teaching and study (ZeUS) at the inner city, Grosshadern, and outpatient clinics are training centers of the LMU medical school, financed solely from tuition fees. They offer students the opportunity to learn practical skills and techniques for their daily medical tasks, and therefore make a practically relevant education possible. This occurs in seminar groups under the direction of tutors as well as in individual study.

1. ZeUS Inner City

1.1. Contact
Zentrum für Unterricht und Studium (Center for Teaching and Study)
LMU School of Medicine
Lindwurmstraße 23
80337 Munich
Tel: +49 (0) 89 / 599 88 17-10

1.2. Opening hours
Semester:
Mon.-Fr. 08:00-20:00, Sat. 10:00-18:00
Semester break:
Mon.-Fr. 09:00-18:00

1.3. Team
Coordinator
Kirsten Eghardt, M.A.
Clinical instructing dean
Dr. med. Bernadette Aulinger
Andrea Meyer, Dipl.-Päd.

15 student assistants

1.4. Facilities
Teaching spaces
Currently eight rooms with 500 m² are available to students for lessons, study groups, and individual study. Each room is set-up with chairs, tables, examination tables, white boards, computers, and projectors.

PC-room:
The PC-room contains 20 working stations with the same set-up:
Operating system Windows Vista, internet access, USB-port, headphones.

For individual study, scientific papers, and internet research, the following programs are available:
- SPSS (on five computers)
- In the crosshairs: suture techniques (CD at reception)
- Microsoft Office 2007
- Irfan View
- VLC Media Player
- Mozilla Firefox
- Microsoft Internet-Explorer
- Adobe Reader
- ICA Client

WLAN:
The Center for Teaching and Study (ZeUS) inner city offers its visitors wireless internet access. Access is gained by the VPN of the LRZ, login and password are the campus id. The necessary VPN-client as well as further information is available on the webpage of the Leibniz computer center.

1.5. **ZentraleScheinausgabe**

The certificates for the clinical sections can be picked up every Tuesday and Wednesday from 10:00 to 12:00 in ZeUS, room 213.

Contact
Tina Müller
Lindwurmstraße 23, 2nd floor (ZeUS)
80337 Munich

E-Mail: Tina.Mueller@med.uni-muenchen.de
Tel.: +49 (0)89 5998817-14
Fax: +49 (0)89 5998817-99

1.6. **Equipment**

1.6.1. **Phantoms and models**

ZeUS provides a wide offering of anatomical models and medical phantoms that can be loaned out for individual study.

- Pelvis for a birthing demonstration
- Arms from which to take blood
- Chest touching models
- Surgical suture tools
- Fundoscopy trainer
- Auscultation trainer
- Knot trainer
- Lumbar puncture trainer
- Feeding tube practice pump
- Model: eye
- Model: fetus set
- Model: brain
- Model: spinal chord cross section
- Rectal model
- Table: Nervous system
- Table: spinal chord and spinal nerves
- Training arm for suture techniques

1.6.2. **Devices**

In ZeUS are various medical devices available, with which students may optimally prepare to become doctors.

- Blood sugar measuring device
- Electrocardiogram (EKG)
- Vascular Doppler
- Otoscope and opthalmoscope
- Ultrasound device

1.6.3. **Diagnostics**

For the physical exam, there are various instruments and materials in ZeUS available.

- Bedside-Test
- Blood pressure cuffs
• Neurological kit
• Nystagmus spectacles
• Pupil light
• Reflex hammer
• Stethoscope
• Vibration forks

2. ZeUSGroßhadern

2.1. Contact
Zentrum für Unterricht und Studium (Center for Teaching and Study)
Campus Großhadern (ZeUS GH)
LMU School of Medicine
Marchioninistr. 15
81377 Munich

Tel.: +49 (0) 89 4400-77850 /-77851
Fax: 089 4400-78738

2.2. Opening hours
Semester:
Mon.-Fr. 08:00 – 20:00
Sat. 10:00 – 15:00
Semester break:
Mon.-Fr. 10:00 – 18:00
Office is occupied beginning at 09:45

2.3. Team
Contact person Dominika Fuchs, Dipl.-Päd.
16 student assistants

2.4. Facilities
There are 17 seminar rooms available, all set up with computers, internet access, whiteboard, projector screen, and flip chart. There is a media trolley with projector and laptop for presentations.

2.5. Equipment
2.5.1. Phantoms and models
ZeUSGroßhadern offers the opportunity to train and perfect practical skills on many simulators and models. This overview is a short summary of what exists:

• Airway-Management-Trainer
• Resusci Anne Simulators
• Surgical suture and knot trainer
• I.V. injection arm
• Arm from which to take blood
• Arm for artery puncture
• Gastric tube trainer
• Digital rectal examination
• Catheterization
• Lumbar puncture training
• Heart model
• Skeleton
2.5.2. Devices
Important practical skills for the professional medical career can be developed using various medical devices.

- ECG (Electrocardiogram)
- Blood sugar measuring device
- Doppler sonography
- Sonography device

2.5.3. Diagnostics
The physical exam is one of the most important fundamental tasks of a doctor. Various tools to aid in this task are available at ZeUSGrosshadern.

- Blood pressure measurement
- Physical / neurological exam: reflex hammer, pupil lamp, and tuning forks
- Bedside-Test

3. ZeUSPoliklinik

3.1. Contact
Zentrum für Unterricht und Studium (Center for Teaching and Study)
LMU School of Medicine
Pettenkoferstr. 8a
80336 München

Tel.: +49 (0) 89 4400 53620/53621
Fax: +49 (0) 89 4400 53623

3.2. Opening hours
Semester:
Mon.-Fr. 08:00 – 20:00
Closed Saturdays
Semester break:
Mon.-Fr. 10:00 – 18:00
Closed Saturdays

3.3. Team
Contact person Kirsten Eghardt, M.A
Esther Beltermann, M.A.

3.4. Facilities
Our teaching clinic is one of the first in Germany and the first and only in Bavaria. The former pediatric outpatient clinic rooms were completely renovated into the ZeUS outpatient clinic. There are multiple seminar rooms with attached simulation rooms that are set up as standard patient rooms in hospitals. When necessary, it is also possible to turn the "patient room" into an ambulatory room / discussion room. This should allow students and their lecturers to learn and practice situations of the normal clinical day (e.g. rounds, pre-operation discussions, clinical examinations) in the most realistic simulations possible. For instance, average cases that occur frequently can be demonstrated using so-called standardized patients (actors who act as patients). One to two students work at the hospital bed, and the rest of the seminar group observes what happens through a double mirror. At the conclusion of the exercise, the performance is analyzed together and different solutions are discussed. The feedback the group gives to the student doctors regarding their performance and conduct plays just as big of a roll here as does finding the proper treatment approach.
In addition to the basic set-up, the seminar and simulation rooms will be outfitted with the most modern video and audio technology. Parallely to the live-lesson, the roll-play will be videotaped in order to watch it later as often as desired.

In total, ZeUS outpatient clinic has 5 seminar rooms and 2 simulation rooms.

3.5. **Equipment**
Contrary to the other locations, the focus at the ZeUS outpatient clinic is not on creating opportunities and offerings for the individual study of students, but rather it is on making special rooms available for the courses.

Therefore, we are limiting the equipment in the teaching clinic to only those that are necessary for the courses and case simulations.

Currently there are:

- Neurological kit according to Prof. Heinen with 11 different instruments: PETIT PE50, COLORIT, GLOBALIT GL90, SENSORIT, NEUROPATIT, EM 50 Ophthalmoskop, Penlight, Woodlight, measuring tape, retina plate, and orthopedic protractor
- Blood sugar measuring device
- Blood pressure measuring device
- Injection simulators
- Various medical supplies

**Office of the Dean of Student Affairs**

1. **Contact**

Dekanat der Medizinischen Fakultät (Office of the Dean of Student Affairs)
LMU School of Medicine
Bavariaring 19
80336 München

Tel.: +49 (0) 89 4400 58916 / 58915
Fax: +49 (0) 89 4400 58914

2. **Opening hours**

Daily:
Mon.-Fr. 09:00 – 12:00
(except for national holidays)
Tuesday afternoon 13:00-16:00

3. **Team**

<table>
<thead>
<tr>
<th>Head of Department of Medical Studies</th>
<th>Karen Sansom B.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeCuM Manager</td>
<td>Ines Joos</td>
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<tr>
<td>Team Assistant</td>
<td>Karin Feichtmaier</td>
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<tr>
<td>Team Assistant</td>
<td>Monika Stenger</td>
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<td>Team Assistant</td>
<td>Elke Hölscher</td>
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<tr>
<td>Team Assistant</td>
<td>Practical Training Year</td>
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<td>Friederike Mutz</td>
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4. **Student Services**

The Office of the Dean of Student Affairs is the central administrative office where all the logistical information for the medical studies (student timetables, online-booking of particular lessons, examination dates, examination results, placements in the year of practical training etc.) is organized. This takes place in close work with all the Module already mentioned. All organizational information for the students is then provided on the platform [www.mecum-online.de](http://www.mecum-online.de).

It is open daily from 09:00-12:00 so that the students can come by and discuss any problems they may be having with their studies. During the semester the students can also visit the weekly meetings with the respective Dean of Studies.