AALBORG UNIVERSITET

Semester description - 1st semester, Master of Science in Medicine with Industrial Specialisation - Autumn 2026

Preface

The semester description is developed by the semester coordinator in collaboration with the course / profile coordinators

List of content

Semester details

Study board of Medicine
Curriculum of Master in Science in Medicine with Industrial Specialisation

Semester framework theme

This should include an elaborated description in a prose form of the focus of the semester, activities implemented to fulfil the competence objectives and the thematic(s) of the semester. In other words, the semester description includes the "framework theme" that the students will be exposed to during the semester. The role of the semester and its contribution to students' academic progression should also be described.

The 1st semester of MedIS master's education is organized into 3 profiles: 1) Biomedicine (BM), 2) Translational Medicine (TM), and 3) Medical Market Access (MMA). Biomedicine focuses on understanding causes and treatments of diseases at the molecular and cellular levels. It builds upon the understanding of whole-body functions. The students will learn how to perform hypothesis-driven experiments to understand human pathophysiology and to identify new targets for treatment. Therefore, a substantial part of the study time is devoted to experiments on cells or laboratory animals. Translational medicine is driven by the objective of improving clinical outcomes by efficiently moving results from basic science to clinical application. Medical Market Access is driven by the objective to improve market access of industry within the biotechnological, pharmaceutical, and medical devices markets.

The teaching is organized in research-based courses and projects. During the semester everybody is following the course: Quality improvement and quality assurance and. BM and TM have one profile-specific course and one common courses and the MMA profile has two profile-specific courses . The courses specific for each profile have their own general focus: the BM course focuses on understanding disease pathophysiology at the cellular and molecular levels; the TM course focuses on designing and evaluating pharmacological research; the MMA courses focus on the introduction to marketing and market access medical market and improvement of the markets for medical, pharmaceutical, and biotechnological equipment. The projects focus on the methodological approach, which is unique for each of the three profiles. The projects will be supported by a course on problem-based project work.

Semester organisation and time schedule

This must be a short description the of the different activities of the semester, their mutual connections and the way in which they support each other and also support students in reaching their goals; such activities may be study trips, internship periods, project modules course modules, including laboratory activities, cooperation with external stakeholders, possible cross-disciplinary cooperation relations, any guest lectures and other events.

During the semester, everybody will participate in three 5 ECTS courses, a 13.5 ECTS project and a 1.5 ECTS project-supporting activity

Semester coordinator and secretariat assistance

Names of anchorperson (teaching staff), course coordinator, semester coordinator (or similar title) and secretariat assistance provider(s).

Semester coordinator: Maj Schneider Thomsen, mst@hst.aau.dk , Department of Health, Science and Technology Department of Health, Science and Technology

Semester secretary: Emma Louise Nørgaard Reberholt <elnr@hst.aau.dk>
Student representatives: Please check semester details on Moodle.

BM profile coordinator: Maj Schneider Thomsen, mst@hst.aau.dk, Department of Health, Science and Technology Department of Health, Science and Technology

TM profile coordinator: Kristian Kjær-Staal Petersen kkp@hst.auu.dk, Department of Health Science and Technology

MMA profile coordinator: Anita Egholm Jensen, aeje@dcm.aau.dk, Department of Clinical Medicine & Flemming Witt Udsen, fwu@dcm.aau.dk, Department of Clinical Medicine

Kvalitetsforbedring og kvalitetsgaranti / Quality improvement and quality assurance – BM/TM/MMA

5 ECTS

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Søren Paaske Johnsen, spj@dcm.aau.dk; Department of Clinical Medicine

Type and language

Module type (e.g. study subject module, course module, project module etc.): Course module
Language of instruction: English

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

Knowledge
• Understand basic concepts and terminology in quality improvement, quality assurance and patient safety
• Explain the methods and theories used within quality and safety in healthcare
• Demonstrate knowledge of relevant law and regulations regarding quality and safety issues in healthcare
• Describe prerequisites for measuring quality and safety in healthcare
• Understand the relationship between quality and economics
• Demonstrate knowledge of medical, clinical and administrative databases
• Describe quality problems in healthcare
• Understand patients' rights and methods for patient involvement

Skills
• Identify and analyse quality problems in healthcare
• Conduct quality assurance procedures in GCP, GLP, GMP and GDP
• Suggest solutions for quality and safety issues in healthcare

Competences
• Contribute to development and evaluation of clinical quality improvement projects
• Evaluate data safety (e.g. GDPR) in research and practice

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

The course aims to provide the students with a solid introduction to the theoretical and practical aspects of the quality and patient safety activities in the health sector, including both daily care and clinical research. The course contains review of the most recent quality nomenclature and definitions, relevant legal aspects about quality and safety in the health sector, recent methods in quality supervision and improvement, like model for improvement, methods, and principles in avoiding unintended accidents, knowledge about the clinical quality databases, principles in involving patients and their families in the quality and safety work, as well as knowledge about relationship between quality and economy. In addition, key aspects of data safety, including the principles of GDPR, in relation to quality improvement, patient safety and clinical research will be addressed.

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

The course is 5 ECTS and the students can expect approx. 150 hours teaching including lectures/exercises, preparations, and exam. The course is offered as 8 sessions teaching consisting of lecture, discussion, and activating exercises that will train the students in the learning objectives. The 8 sessions are organised as 4 hours sessions. This gives 32 hours of teaching. The students are expected to prepare for each session by reading the course material posted on Moodle. This preparation is expected to last approximately 10 hours per session, a total of 80 hours. The exam will take 2 hours and it is expected that students will need 38 hours of preparation prior to the exam.

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

Obligatory course for MedIS students

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

Bachelor in MedIS or Medicine or similar educations.

Obligatory course for MedIS students
Module activities (course sessions etc.)

Level 1		
Activity - type and title	**Lecturer including department affiliation***	**Learning goals from curriculum**
Introducing quality improvement in health care (lecture/excercises, 4 hours)	Søren Paaske Johnsen Department of Clinical Medicine	• Understand basic concepts and terminology in quality improvement, quality assurance and patient safety • Describe quality problems in healthcare
Understanding management theory and the use of incentives in the public health care sector (lecture/exercises, 4 hours)	Kjeld Møller Pedersen Jensen Department of Clinical Medicine	• Explain the methods and theories used within quality and safety in healthcare • Demonstrate knowledge of about the association between quality of care, patient safety and health economics.
Data sources in the health care system (lecture, 4 hours)	Søren Paaske Johnsen Department of Clinical Medicine	• Demonstrate knowledge of medical, clinical and administrative databases • Demonstrate knowledge of relevant law and regulations regarding quality and safety issues in healthcare (including GDPR).
Patient and public involvement in health care improvement (lecture, 4 hours)	Søren Paaske Johnsen Klaudia Kristensen Department of Clinical Medicine	• Demonstrate knowledge of the possibilities and methods for involving patients and families in the development of quality and safety
Patient safety (lecture, 4 hours)	Kathrine Hald Department of Clinical Medicine	• Demonstrate knowledge of healthcare law regulations on quality and safety, such as reporting adverse events • Demonstrate knowledge of major patient safety initiatives in Denmark and internationally.
Quality improvement in practice: How to do it? (lecture/exercises, 4 hours)	Søren Paaske Johnsen Department of Clinical Medicine	• Describe quality problems in healthcare • Identify and analyse quality problems in healthcare • Suggest solutions for quality and safety issues in healthcare • Use the Model for Improvement for a specific issue in the health care system • Use the basic tools for statistical quality development, such as series charts and Pareto charts, for presentation and

		analysis of clinical indicator measurements • Contribute to planning, implementation and reporting of clinical quality development projects
Systematic quality assurance: from regulatory principles to daily practice (lecture/exercises, 4 hours)	Niklas Vinter Department of Clinical Medicine	• Understand the need for quality assurance procedures in clinical research, laboratory analyses, production of medical products, and handling of data • Conduct quality assurance procedures in GCP, GLP, GMP and GDP
Research in Quality Development and Patient Safety (lecture, 2 hours)	Søren Paaske Johnsen Department of Clinical Medicine	• Describe quality problems in healthcare • Identify and analyse quality problems in healthcare • Suggest solutions for quality and safety issues in healthcare
Presentations from students (lectures/excerises, 2 hours)	Søren Paaske Johnsen Department of Clinical Medicine	Presentation by students followed by feedback and discussion with peers and lecturer
Exercises (exercises, 2 hours)	Søren Paaske Johnsen Department of Clinical Medicine	• Exercises in course curriculum

** All rights reserved for changes during the semester due to e.g. illness, cancellations etc.*

Examination
The exam will be a two-hour written exam, carried out using Digital Exam (DE). The student is not allowed to bring any aids or, in any way, communicate with others. The exam will be graded as passed/not passed. With internal censorship.

For further information about examination, we refer to:
Digital Eksamen (DE)

Molekylær Patogenese / Molecular pathogenesis - BM

Profile: Biomedicine (BM)

5 ECTS course module

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Annette Burkhart Larsen, abl@hst.aau.dk, Department of Health Science and Technology.

Type and language

Module type (e.g. study subject module, course module, project module etc.)
Language of instruction.

It is a course module, and the course will be taught in English.

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

After attending this course, the student is expected to:

Knowledge
- Explain the molecular pathogenesis of common diseases
- Describe how disease processes can originate

Skills
- Obtain a deeper knowledge into the molecular pathogenesis of common diseases arising in man through relevant scientific literature, compared to that previously obtained through classical textbook material
- Find new hypothesis' of molecular pathogenesis in common diseases

- Work with scientific literature in-depth and get an insight into what qualifies as high-quality research
- Apply knowledge of molecular methods, and how these are used in scientific research to obtain new knowledge and hypothesis' of disease pathogenesis

Competences

- Synthesize a deeper knowledge about how common diseases arise and be able to suggest likely targets for therapy based on current research hypothesis within disease pathogenesis
- Be able to reflect critically on research literature
- Be able to facilitate a scientific discussion based on presentations and scientific literature
- Be able to find relevant scientific literature and present current and new hypothesis of molecular pathogenesis leading to disease progression

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

Disease development in the whole human body will be examined in this module. This will be based on the skills acquired during the bachelor's MedIS education or a similar bachelor's education, but at a higher level. Teaching will provide an understanding of how disease processes can be utilized as targets for future drugs. The students will set up realistic research programs to investigate different hypotheses in the course of teaching. Moreover, there will be a focus on strengthening students' oral communication skills within research dissemination and the ability to discuss disease processes in a bigger forum. The course also focuses on the use of research literature rather than teaching books. This course will take a general understanding of disease to a research level. There will therefore also be a focus on searching for relevant research literature, reading articles, but also learning to be critical towards research literature through a journal club session.

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

The course consists of 9 sessions over approximately 10 weeks, each with a different theme. In general, each session includes a 90-minute lecture by an invited speaker. The lecture will be based on the molecular pathogenesis of different diseases or topics within the session's topic. Through the lectures, students will learn more about disease development and potential drug targets. Following the lecture, there will be a seminar divided into three parts. In the first part, a group of students gives a presentation on the session topic, followed by a discussion facilitated by another group of students. Each session ends with a journal club arranged by a third group of students.
During the course, the students are expected to prepare a presentation and a written assignment based on articles that the students have chosen themselves within the session topic. The students are expected to search the literature on the given topic and find relevant articles to include in their presentation. The main workload for the students is therefore in preparing for this presentation. The presentation will be followed by a discussion of the presented literature. This session is prepared by another set of students based on the literature provided by the presenting group and their written assignment.
Finally, the last part of each session will be allocated to discussing an article (journal club) within the session's topic, with the aim of deepening understanding of the molecular pathogenesis and to learn the

art of reading research articles and being critical of the presented results. This session will be prepared by a third group of students.

The expected workload of 150 hours for this 5 ECTS module is:
Actual teaching hours: 4 hours pr. session = 36 hours
General preparation for each session: 4-hour pr. session = 36 hours
Student presentation and writing an assignment (once during the module): 26 hours
Student discussion (once during the module): 6 hours
Journal club presentation (once during the module): 15 hours
Exam: 31 hours

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

Obligatory course for MedIS students who have chosen the BM track.

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

Bachelor in MedIS, Medicine or similar education

Module activities (course sessions etc.)

The students must participate actively during the course and a prerequisite for enrolment for the exam requires active participation and approval of presentation during the course, meaning that each students should participate in the following three obligatory activities: 1) prepare and facilitate a presentation including a written assignment, 2) facilitate a discussion session, and 3) facilitate a journal club session

Level 1		
Activity - type and title	**Lecturer including department affiliation***	**Learning goals from curriculum**
Session 1: **Introduction to the course and selection of topic** Lecture, Topic selection, and Journal club seminar	Annette Burkhart Larsen, HST	• Work with scientific literature in-depth and get an insight into what qualifies as high-quality research. • Apply knowledge of molecular methods, and how these are used in scientific research to obtain new knowledge and hypotheses of disease pathogenesis • Be able to reflect critically on research literature. • Be able to facilitate a scientific discussion based on presentations and scientific literature.
Session 2: **Immune Pathogenesis part I** Lecture	Ying Jie Ma, HST	• Explain the molecular pathogenesis of common diseases. • Describe how disease processes can originate.

Workshop: Writing and reviewing scientific	Annette Burkhart Larsen, HST	• Obtain a deeper knowledge into the molecular pathogenesis of common diseases arising in man through relevant scientific literature, compared to that previously obtained through classical textbook material. • Find new hypothesis' of molecular pathogenesis in common diseases • Work with scientific literature in-depth and get an insight into what qualifies as high-quality research. • Be able to reflect critically on research literature. • Be able to facilitate a scientific discussion based on presentations and scientific literature
Session 3: **Immune Pathogenesis part II** Lectures Seminar (Student presentation, Discussion and Journal club)	Tue Bjerg Bennike, HST Emil Kofoed-Olsen, HST Annette Burkhart Larsen, HST	• All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session
Session 4: **Molecular Pathogenesis of Tissue Injury, Inflammation, and Repair** Lecture Seminar (Student presentation, Discussion and Journal club)	Simone Riis Porsborg, HST Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session
Session 5: **CNS Pathogenesis I** Lecture Seminar (Student presentation, Discussion and Journal club)	John Nieland, HST Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session
Session 6: **CNS Pathogenesis II** Lecture Seminar (Student presentation, Discussion and Journal club)	Maj Scheider Thomsen, HST Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session

Session 7: **Epigenetic Dysregulation in Human Disease** Lecture Seminar (Student presentation, Discussion and Journal club)	 Jacek Lichota, HST Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2 will be addressed in this session
Session 8: **Metabolic and Endocrine Dysregulation in Human Disease** Lecture Seminar (Student presentation, Discussion and Journal Club)	 Peter Vestergaard, KI Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session
Session 9: **Genetic Dysregulation in Human Disease** Lecture Seminar (Student presentation, Discussion and Journal club)	 Palle Duun Rohde, HST Annette Burkhart Larsen, HST	All learning outcomes from the curriculum, as also stated in session 2, will be addressed in this session

** All rights reserved for changes during the semester due to e.g. illness, cancellations etc.*

Examination

1) The prerequisite for enrollment in the exam requires active participation and approval of a presentation during the course. This means that each student must participate in the following three obligatory activities: 1) prepare and facilitate a presentation that includes a written assignment, facilitate a discussion session, and participate in a journal club session.
2) The exam will be a written exam based on all elements taught in the module. The course will be graded Passed/Not Passed. The module coordinator is available during the first 30 minutes of the exam to help with interpretation issues students may have.
3) The final exam is delivered through the Digital Exam platform.
4) Duration is 2 hours
5) Aids are not allowed.

AI tools are permitted during the course, for example, preparing obligatory elements, in accordance with AAU's official rules on the use of AI: Rules for the use of generative AI - Aalborg University. Generating text for the assignment directly is not allowed; however, AI can be used to reformulate sentences and check for grammar and spelling. Students should, in their assignments and presentations, declare how, which, and to what extent they have utilized AI tools. Uploading other groups' written assignments into AI tools is not permitted, since these assignments are the property of others. AI tools are not allowed during the exam.

Molekylære og cellulære metoder i biomedicin / Molecular and Cellular Methods in Biomedicine – BM/TM

Profile: Biomedicine (BM) and Translational Medicine (TM)

5 ECTS course module

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Cristian Pablo Pennisi, cpennisi@hst.aau.dk, Department of Health, Science and Technology.

Type and language

Module type (e.g. study subject module, course module, project module etc.)
Language of instruction.

It is a course module and the course will be taught in English.

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

Students who complete this module will be able to:

Knowledge
- Describe the terminology, concepts and theories in molecular and cellular biology associated to the methods discussed in the module, both under normal conditions and in disease
- Identify the key technologies and methods used in a biomedical laboratory and recognise their advantages and limitations
- Understand the principles behind the different methods and the type of data generated
- Identify the current challenges and perspectives in cell and molecular-based assays

Skills
- Investigate and critically assess the methodological aspects from scientific literature
- Devise experimental workflows that incorporate the relevant controls, following quality control guidelines when appropriate
- Analyse experimental data qualitatively and quantitatively and interpret the results

Competences
- Apply the theory to design experimental protocols and identify the appropriate sources of materials
- Select the most appropriate methods to answer a biomedical and/or translational research question
- Integrate the obtained knowledge and skills within new areas to design and plan advanced tasks and projects

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

The goal of this module is to introduce students to modern methods used in a biomedical laboratory to investigate and diagnose disease processes, with a focus on methods used to study the diseases at molecular and cellular levels. The topics include methods for advanced biochemical and molecular-biological studies, such as real-time RT-PCR, western blotting, ELISA, fluorescence imaging, widefield and confocal microscopy, flow cytometry, histology, and mass spectrometry. The students are expected to understand the principles behind the different diagnostic methods, using the theories in molecular and cellular biology learned during the bachelor education.
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Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

Activity	Confrontation sessions (with teacher)	ECTS	Preparation/ self-study sessions (without teacher)	ECTS	Total
Lectures and problem solving	9 x 4 = 36 h	1.2	9 x 4 = 36 h	1.2	**2.4**
Final assignment	1 x 4 = 4 h	0.13	32 h	1.07	**1.2**
Exam			42 h	1.4	**1.4**
Total		1.33		3.67	**5.0**

The course consists of activities with teachers (confrontation sessions for lectures and problem solving, a workshop, and a seminar dedicated to the final group assignment) and activities where students are expected to work independently (preparation of lectures and solving of assignments in groups). The lectures provide a general insight into the various topics and introduce the students to the assignments. Problem solving/discussion sessions are aimed to solve and discuss the assignments delivered at the lectures. Students are expected to prepare for the lectures by reading the materials available in Moodle.

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

1st semester students of the Master of Science in Medicine with Industrial Specialisation, both BM and TM profiles.

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

There is no explicit prerequisite in the curriculum. However, it is expected that the students possess a background on biochemistry and molecular biology of the cell (for example, module "Advanced Biochemistry and genetics" of the AAU MedIS bachelor programme or equivalent).

Module activities (course sessions etc.)

Activity - type and title	**Planned instructor***	**Learning goals from curriculum**
Session 1 (lecture and problem solving, 4 x 45 min) • Introduction. • Quantitative and qualitative analysis tools	Cristian Pablo Pennisi (HST)	• Describe the terminology, concepts and theories in molecular and cellular biology associated to the methods discussed in the module, both under normal conditions and in disease • Identify the key technologies and methods used in a biomedical laboratory and recognise their advantages and limitations • Identify the current challenges and perspectives in cell and molecular-based assays
Session 2 (lecture and problem solving, 4 x 45 min) • Microscopy and digital image processing	Cristian Pablo Pennisi (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Session 3 (lecture and problem solving, 4 x 45 min) • Histochemistry and Immunohistochemistry	Sara Aghazadeh (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Sessions 4 & 5 (lecture and problem solving, 4 x 45 min each) Immunological methods I and II	Emil Kofod-Olsen(HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question

Session 6 (lecture and problem solving, 4 x 45 min) • Assisted reproductive techniques	Hiva Alipour (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Session 7 (lecture and problem solving 4 x 45 min) • Mass spectrometric methods	Tue Bennike (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Session 8 (lecture and problem solving 4 x 45 min) • Design and assessment of qPCR experiments	Simone Riis Porsborg (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Session 9 (lecture and problem solving 4 x 45 min) Methods in cell electrophysiology	Tong Tong (HST)	• Understand the principles behind the different methods and the type of data generated • Select the most appropriate methods to answer a biomedical and/or translational research question
Session 10Oral presentation of the group assignment (4 x 45min) (obligatory) Group assignment workshop (2 x 45 min) online	Cristian Pablo Pennisi (HST)	• Devise experimental workflows that incorporate the relevant controls, following quality control guidelines when appropriate • Select the most appropriate methods to answer a biomedical and/or translational research question • Integrate the obtained knowledge and skills within new areas to design and plan advanced tasks and projects

Examination

1) The pre-requisite for participation in the final exam is approval of the written group assignment and participation in the presentation workshop.
2) Written exam (internal assessment by 7-point grading scale).
3) The written exam is based on the assignments solved during the course. The exam allows for an individual assessment of the student's ability to explain, critically assess, and select the different methods studied in the course.
4) The module coordinator is available during the first 30 minutes of the exam to help with interpretation issues students may have.
5) The final exam is delivered through the Digital Exam platform. Re-examination may be implemented as an oral exam, depending on the number of students. In case of an oral re-exam, students will be given the assignment and have 20 min preparation time before the examination.
6) Duration is 2 hours
7) Aids are not allowed.

For further information, we refer to webpages concerning examination

- Digital Eksamen (DE)

Design og evaluering af farmakologisk forskning / Designing and evaluating pharmacological research - TM

Profile: Translational Medicine (TM)

5 ECTS

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Anne Estrup Olesen, aneso@dcm.aau.dk, Department of Clinical Medicine

Type and language

Course module
Language of instruction.

English. All written materials will be in English. In case all students and lecturer are speaking Danish, lectures and discussions may be carried out in Danish.

Objectives

From Curriculum:

Learning objectives

- Students who complete this module are expected to be able to:

Knowledge

- Describe the different phases of pharmacological research from drug development to clinical application.
- Define different study designs in evaluation of pharmacological effects.
- Identify scientific problems and challenges in pharmacological research
- Knowledge on placebo effects and the impact on clinical application
- Describe different tools for evaluation of clinical trials
- Explain the contribution of pharmacological research in relation to evidence-based medicine

Skills

- Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects.
- Use different tools to evaluate clinical trials
- Select appropriate study designs to answer specific research questions on pharmacological effect.

Competences

- Critically appraise and relate to pharmacological research
- To read a scientific publication on pharmacological effects, present main findings, discuss and evaluate study design, data collection, analysis, findings, and the major limitations.
- Formulate a research proposal to identify mechanisms of action or potential side-effects of new drugs for a certain disorder or condition.

Academic content and conjunction with other modules/semesters

Pharmacology is a research discipline in which a set of principles and methods are applied to study mode of action of drugs in biological systems. The goal of this course is to expose students to a variety of relevant topics in basic and clinical pharmacological research. Current topics and evidence within a number of different areas in pharmacology will be presented and discussed. Using pharmacology as an example, different study designs will be presented including e.g. animal studies, randomized controlled trials and pharmacoepidemiological studies followed by group discussions and knowledge dissemination through PBL exercises.

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

5 ECTS course (150 hours):

Lectures (including Q&A session): 15 lectures x 2 hours = 30 hours
Exercises: 20 hours (most lectures will include/be followed by an exercise) – 10 hours of confrontation and 10 hours of self-study
Preparation for lectures: 40 hours
Preparation of written assignment and oral presentation for exam: 54 hours

- It is expected that students work in groups on the written assignment during the module
- It is expected that the students prepare for the exam/"mini-conference" by preparing own group presentation and reviewing projects from other groups on which they will act as opponents for the exam. Thus, part of the 54 hours is allocated to this work.

Exam (mini-conference): 6 hours (all students attend the 6 hours mini-conference)

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.
MedIS students with a bachelor degree or other relevant bachelor degrees with basic knowledge in pharmacology.

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

It is expected that the participants have passed a basic pharmacology course and are familiar with principles of pharmacology and pharmacotherapy of diseases and disorders in general.

Module activities (course sessions etc.)

Lectures: 90 min (2x45 min) presentation by lecturer with theory and case presentations

Exercises: 90 min (2x45 min) where the students work in small groups on different thematic assignments provided by the individual lecturers.

Project: During the module the students will work in groups on a project "research proposal for the evaluation of a pharmacological agent".

Exam will be held as a "mini-conference": 240 min (6x45 min). The students will present and discuss their project and receive group-based feed-back and questions from peers and at least two lecturers (including module coordinator).

Course modules:

Activity - type and title	Lecturer including department affiliation*	Learning goals from curriculum
Lecture 1a. Introduction to the course – assignment information & learning outcomes of the course	Anne Estrup Olesen, Department of Clinical Medicine	• Critically appraise and relate to pharmacological research • To read a scientific publication on pharmacological effects, present main findings, discuss and evaluate study design, data collection, analysis, findings, and the major limitations. • Formulate a research proposal to identify mechanisms of action or potential side-effects of new drugs for a certain disorder or condition
Lecture1b. Research in Pharmacology from basic to clinic: role of PK I	Anne Estrup Olesen, Department of Clinical Medicine	• Identify scientific problems and challenges in pharmacological research • Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects. • Critically appraise and relate to pharmacological research

Lecture 2. Research in Pharmacology from basic to clinic: role of PK II	Anne Estrup Olesen, Department of Clinical Medicine Samuel Azuz, Department of Clinical Pharmacology, Aalborg University Hospital	• Identify scientific problems and challenges in pharmacological research • Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects. • Critically appraise and relate to pharmacological research
Lecture 3a. Project design	Anne Estrup Olesen, Department of Clinical Medicine Peter Brønnum Nielsen, Department of Clinical Medicine	• Identify scientific problems and challenges in pharmacological research • Select appropriate study designs to answer specific research questions on pharmacological effect
Lecture 3b. Evidence-based medicine and pharmacological research. The evaluation of clinical trials – how do we ensure the quality of the available evidence?	Anne Estrup Olesen, Department of Clinical Medicine	• Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects • Describe different tools for evaluation of clinical trials • Identify scientific problems and challenges in pharmacological research • Explain the contribution of pharmacological research in relation to evidence-based medicine • Use different tools to evaluate clinical trials • Critically appraise and relate to pharmacological research
Lecture 4. Project kick-off	Anne Estrup Olesen, Department of Clinical Medicine Dennis Boye Larsen, Department of Health Science and Technology	• Select appropriate study designs to answer specific research questions on pharmacological effect • Formulate a research proposal to identify mechanisms of action or potential side-effects of new drugs for a certain disorder or condition.
Lecture 5. Drug discovery part I	John Dirk Nieland, Department of Health Science and Technology	• Describe the different phases of pharmaco-logical research from drug development to clinical application. • Define different study designs in evaluation of pharmacological effects.
Lecture 6. Drug discovery part II	John Dirk Nieland, Department of Health Science and Technology	• Describe the different phases of pharmaco-logical research from drug development to clinical application.

		• Define different study designs in evaluation of pharmacological effects.
Lecture 7. Clinical trial designs – what do you want to test?	Dennis Boye Larsen, Department of Health Science and Technology	• Define different study designs in evaluation of pharmacological effects. • Identify scientific problems and challenges in pharmacological research • Able to discuss advantages and limitations of different study de-signs for evaluation of pharmacological effects. • Select appropriate study designs to answer specific research questions on pharmacological effect.
Lecture 8. Clinical trials – Phase I & II studies	Dennis Boye Larsen, Department of Health Science and Technology	• Describe the different phases of pharmacological research from drug development to clinical application. • Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects • Critically appraise and relate to pharmacological research • To read a scientific publication on pharmacological effects, present main findings, discuss and evaluate study design, data collection, analysis, findings, and the major limitations.
Lecture 9. Clinical trials – Workshop	Dennis Boye Larsen, Department of Health Science and Technology Anne Estrup Olesen, Department of Clinical Medicine	• Describe the different phases of pharmacological research from drug development to clinical application.
Lecture 10. Placebo effects – how does it affect the development and implementation of new pharmaceutical agents in the clinic?	Laura Petrini, Department of Health Science and Technology	• Identify scientific problems and challenges in pharmacological research • Knowledge on placebo effects and the impact on clinical application • Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects.
Lecture 11. Pharmacoepidemiology part I	Peter Brønnum Nielsen, Department of Clinical Medicine	• Describe the different phases of pharmacological research from drug development to clinical application. • Identify scientific problems and challenges in pharmacological research

		• Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects. • Select appropriate study designs to answer specific research questions on pharmacological effect.
Lecture 12. Pharmacoepidemiology part II	Peter Brønnum Nielsen, Department of Clinical Medicine	• Describe the different phases of pharmacological research from drug development to clinical application. • Identify scientific problems and challenges in pharmacological research • Able to discuss advantages and limitations of different study designs for evaluation of pharmacological effects. • Select appropriate study designs to answer specific research questions on pharmacological effect.
Lecture 13.Q&A for mini-conference Summary of module and questions related to the exam.	Anne Estrup Olesen, Department of Clinical Medicine	• Questions on the expected criteria for passing the exam workshop
Exam/mini-conference– full day	Peter Brønnum Nielsen, Department of Clinical Medicine Dennis Boye Larsen, Department of Health Science and Technology Anne Estrup Olesen, Department of Clinical Medicine	Examination where all learning objectives will be covered

** All rights reserved for changes during the semester due to e.g. illness, cancellations etc.*

Examination

- Exam form: The exam will include four parts: a) the written project proposal (made in groups), b) oral presentation by the group of the project proposal, 3) one group will act as oral opponent on another project and 4) participation in the full workshop.
- A short description on how the exam form is connected to the learning objectives and teaching activities: This exam form will elucidate if student acquired all the achieved skills and competences.
- Who will participate in the exam: Module coordinator and at least one other lecturer (internal examiner AAU) will participate in the exam. All students will participate in all examinations (the full ”mini-conference”).
- The practical holding of the exam/mini-conference”:

a. A written project proposal should be made in groups and submitted (Digital Exam) in due time before the exam.
b. Each group will give an oral presentation at the examination.
c. Each group will act as opponents on another project proposal
d. Each group will receive feedback from examiners (only on a group-based level, not individual)

- Duration of the exam: a full day (6x45 min) will be allocated for the ”mini-conference”
  The course will be evaluated as passed/not passed

Metoder til økonomisk evaluering i sundhedsvæsenet / Methods of Economic Evaluation in Healthcare - MMA

Profile: Medical Market access (MMA)

5 ECTS course module

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Sabrina Storgaard Sørensen, ssso@dcm.aau.dk, Department of Clinical Medicine

Type and language

Module type (e.g. study subject module, course module, project module etc.)
Language of instruction.

It is a course module and the course will be taught in English.

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

After attending this course, the student is expected to:

KNOWLEDGE

- Demonstrate knowledge of normative and positive health economics
- Understand the different methods for economic evaluation and economic analysis in health care and their application
- Demonstrate knowledge of health technology assessment
- Understanding of costs, including the difference between expenses and disbursements, as well as fixed, variable,direct costs, overhead costs and productivity loss
- Understanding outcome measures applied in health economic evaluations, including both patient-reported outcomes and monetary valuation of health outcomes

- Demonstrate knowledge of Quality-Adjusted Life Years and understanding of applications and limitations in health care decision-making
- Demonstrate knowledge of prioritisation in health care systems and understanding of the associated ethical dilemmas

SKILLS
- Produce a simple economic evaluation of a new health care intervention
- Produce a deterministic sensitivity analysis (e.g. one-way, two-way, scenario analysis)

COMPETENCES
- Differentiate between normative and positive health economics
- Assess whether new health care interventions represent “good value for money”
- Critically assess the appropriateness of pre-developed questionnaires
- Critically assess the methodological quality of existing economic evaluations and interpret the validity and transferability of the results

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

The point of departure for this course is asking; can you put a price on health? Scarce resources in the public health care sector mean that decisions must be made regarding which interventions (drugs, medical devices, medical technologies, etc) to reimburse and to which to deny.

The course gives a basic introduction to health economics and has a special focus on economic evaluation (e.g. cost-effectiveness analysis). The aim is to give students an understanding of why and how decisions in the health care system are made when costs are borne solely, or in part, by one part, but the effects accrue to another part. The course will provide students with a theoretical, methodological, and practical toolkit to support decision-making in the health care system.

This course is a basic course in health economics, which builds on elements first presented in the course Pharmacology in pre-clinical & economic perspectives from the bachelor in Medicine with Industrial Specialization, and ties together with the course in Organisation and Financing in the second semester of the Master’s programme. Moreover, the course is a precursor for the course in Decision-Analytical Modelling and Trial-Based Evaluations in Health Economics in the second semester of the Master’s Programme in Medical Market Access.

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

The course is 5 ECTS and the students can expect approximately 150 hours of teaching including lectures/exercises, preparation for the lectures and the exam. The course is offered as 10 sessions of 3-4 hours consisting of lectures and exercises.

Lectures: 9 lectures x 4 hours = 36 hours

Exercises: 1 session x 4 hours = 4 hours
Preparation for the lectures: 10 sessions x 8.5 h = 85 hours
Preparation for the exam: 25 hours

Total: 150 hours

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

The course is part of the Master's programme in Medical Market Access.

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

The course builds on elements from module 5.4 (Pharmacology in pre-clinical& economic perspectives) from the bachelor in Medicine with Industrial Specialization, but this is not a requirement.

Module activities (course sessions etc.)

Activity - type and title	**Lecturer including department affiliation***	**Learning goals from curriculum**
Introduction to health economics (lecture, 4 hours)	Sabrina Storgaard Sørensen, Department of Clinical Medicine	Demonstrate knowledge of normative and positive health economics Understand the different methods for economic evaluation and economic analysis in health care and their application Demonstrate knowledge of prioritisation in health care systems and understanding of the associated ethical dilemmas Differentiate between normative and positive health economics
Understanding costs and cost analysis – introduction (lecture, exercises, 4 hours)	**Lars Børty Nielsen**, Department of Clinical Medicine	Understanding of costs, including the difference between expenses and disbursements, as well as fixed, variable, direct costs, overhead costs and productivity loss
Understanding costs and cost analysis – continued (lecture, exercises, 4 hours)	**Lars Børty Nielsen**, Department of Clinical Medicine	Understanding of costs, including the difference between expenses and disbursements, as well as fixed, variable, direct costs, overhead costs and productivity loss

Measuring and valuing health effects (lecture, exercises, 4 hours)	Allan Riis, Department of Clinical Medicine	Understanding outcome measures applied in health economic evaluations, including both patient-reported outcomes and monetary valuation of health outcomes Critically assess the appropriateness of pre-developed questionnaires Demonstrate knowledge of health technology assessment
Measuring and valuing health effects - continued (lecture, exercises, 4 hours)	**Sabrina Storgaard Sørensen**, Department of Clinical Medicine	Understanding outcome measures applied in health economic evaluations, including both patient-reported outcomes and monetary valuation of health outcomes Demonstrate knowledge of Quality-Adjusted Life Years and understanding of applications and limitations in health care decision-making
Economic evaluation (lecture, exercises,4 hours)	**Cathrine Elgaard Jensen**, Department of Clinical Medicine	Understand the different methods for economic evaluation and economic analysis in health care and their application Produce a simple economic evaluation of a new health care intervention Assess whether new health care interventions represent “good value for money”
Sensitivity analysis (lecture, exercises, 4 hours)	**Cathrine Elgaard Jensen** , Department of Clinical Medicine	Produce a deterministic sensitivity analysis (e.g. one-way, two-way, scenario analysis)
Assessment, reporting, and transferability of economic evaluations (lecture, exercises, 4 hours)	Sabrina Storgaard Sørensen, Department of Clinical Medicine	Critically assess the methodological quality of existing economic evaluations and interpret the validity and transferability of the results
Assessment, reporting, and transferability of economic evaluations - continued (lecture, exercises, 4 hours)	Sabrina Storgaard Sørensen, Department of Clinical Medicine	Critically assess the methodological quality of existing economic evaluations and interpret the validity and transferability of the results
Exercises (exercises, 4 hours)	Sabrina Storgaard Sørensen, Department of Clinical Medicine	Use the models and methods of the field to analyse selected issues

Examination

- The exam will be conducted as an individual oral on-site examination lasting 20 minutes, including deliberation and grading.
- The student's performance will be assessed according to the 7-point grading scale.
- The course coordinator and an internal co-examiner will attend the exam.

For further information about the examination, we refer to:
Digital Eksamen (DE)

Metoder til økonomisk evaluering i sundhedsvæsenet / Methods of Economic Evaluation in Healthcare - MMA

Profile: Medical Market access (MMA)

5 ECTS

Location

Master of Science in Medicine with Industrial Specialisation
1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Navn: Flemming Witt Udsen
Email: fwu@dcm.aau.dk
Institut: Department of Clinical Medicine

Type and language

Module type (e.g. study subject module, course module, project module etc.)
Language of instruction.

It is a course module and the course will be taught in English.

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

After attending this course, the student is expected to:

Knowledge

- Demonstrate knowledge of microeconomics, including imperfect market conditions
- Demonstrate knowledge of welfare economics, including the role of regulation in medical market access
- Explain the concept of value of products and services and its relation to costs
- Describe the business-to-business buying process within the health care sector including the regulatory and ethical pathways

Skills

- Collect data relevant for conducting a market analysis
- Apply game theory for pricing within oligopolistic conditions
- Apply the segmentation, targeting and positioning approach for different health care products and services
- Analyse the impact of major market errors in healthcare

Competences
- Select the most appropriate design for a specific market-related analysis
- Discuss the impact of different pricing strategies for decision making
- Assess the impact of classification systems for pharmaceuticals and medical devices

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

This course will introduce the students to the role of marketing and strategic thinking in healthcare organizations. It begins with the microeconomic foundation of market access (e.g. welfare economics and imperfect market conditions) and the role of regulation that characterizes the heathcare industry. It then moves on to address value and how companies can deliberately work with marketing strategy in particularly the business-to-business market. It includes models for analyzing the external and internal marketing environment and conducting segmentation, targeting and positioning to tailor a marketing mix offer that is meant to deliver the promised value. The course will also introduce pricing strategies, how to design and manage distribution and communication channels and how to include a research design that applies various marketing research methods.

There will be one central book for the course (that can be supplemented with additional extracts from textbooks or scientific articles depending on the lecture topic).
Main textbook: Dimitris Dogramatzis 2002: “Pharmaceutical Marketing – A Practical Guide”. Tayor & Francis

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

The course is 5 ECTS and the students can expect approx. 150 hours teaching including lectures, exercises, preparations and exam. The course is offered as 10 lectures and includes both lecture and exercise sessions.
Teaching hours (lectures): 2h x 10 lectures = 20h (0,7 ECTS)
Exercise hours (lectures): 2h x 10 exercises = 20h (0,7 ECTS)
Preparation for the lectures: 6h x 10 lectures = 60h (2 ECTS)
Preparation for exercises: 2h x 10 exercises = 20h (0,7 ECTS)
Preparation and completion of exam: 30 h (1 ECTS)
Some of the teaching and exercises can be replaced with online sessions or self-study.

Participants

Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

The course is part of the Medical Market Access master programme.

Prerequisites for participation

Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

No prerequisites as this is an introductory course.

Lecture with exercises	Introduction to the course and microeconomic foundation	Flemming Witt Udsen, Department of Clinical Medicine	Demonstrate knowledge of microeconomics, including imperfect market conditions Demonstrate knowledge of welfare economics, including the role of regulation in medical market access Analyse the impact of major market errors in healthcare
Lecture with exercises	Pharmaceutical marketing in general and segmentation/targeting in particular	Flemming Witt Udsen, Department of Clinical Medicine	Explain the concept of value of products and services and its relation to costs Describe the business-to-business buying process within the health care sector including the regulatory and ethical pathways Apply the segmentation, targeting and positioning approach for different health care products and services
Lecture with exercises	Situational analysis 1. External analysis	Louise Hansen, Department of Clinical Medicine	Select the most appropriate design for a specific market-related analysis
Lecture with exercises	Situational analysis 2. Internal analysis and models integrating external and internal analyses	Louise Hansen, Department of Clinical Medicine	Select the most appropriate design for a specific market-related analysis
Lecture with exercises	Marketing mix 1: Product positioning	Louise Hansen, Department of Clinical Medicine	Apply the segmentation, targeting and positioning approach for different health care products and services

	and communication tactics		
Lecture with exercises	Marketing mix 2: Pricing and distribution tactics	Louise Hansen, Department of Clinical Medicine	Apply game theory for pricing within oligopolistic conditions Analyse the impact of major market errors in healthcare Discuss the impact of different pricing strategies for decision making
Lecture with exercises	Industry visit – device industry	TBA possibly: Amanda Faust Spies, Boston Scientific	Describe the business-to-business buying process within the health care sector including the regulatory and ethical pathways Assess the impact of classification systems for pharmaceuticals and medical devices
Lecture with exercises	Research designs	Anette Arbjerg Højen, Department of Clinical Medicine	Select the most appropriate design for a specific market-related analysis
Lecture with exercises	Interviews	Anette Arbjerg Højen, Department of Clinical Medicine	Select the most appropriate design for a specific market-related analysis Collect data relevant for conducting a market analysis
Lecture with exercises	Questionnaires and grey search	TBA Flemming Witt Udsen, Department of Clinical Medicine	Select the most appropriate design for a specific market-related analysis Collect data relevant for conducting a market analysis

Examination

- The exam format will be an individual written exam of 2 hour duration.
- The exam will contain both short answer questions and essay questions.
- This format was chosen to ensure that both knowledge, skills and competencies are tested.
- The exam assignment will be assessed according to the 7-point grading scale by an internal examiner..
- The exam will be distributed and should be handed in using Digital Exam
- During the exam it will be allowed to use the following aids: books, slides and notes. The use of internet is only allowed for down- and upload of the exam.
- If the exam format is changed before the re-examination, this will be announced no later than 14 days before.

For further information about examination, we refer to:

- Digital Eksamen (DE)

Projekt med fokus på den metodiske tilgang / Project with focus on the methodological approach – BM/TM/MMA

Profile: BM, TM, MMA

15 ECTS

Location

Master of Science in Medicine with Industrial Specialisation, 1st semester
Study board for medicine

Module coordinator

The academic staff member responsible for the organisation and execution of the module.
The module leader may be the same person as the semester coordinator. If a person responsible for exam is pointed out, please state name and e-mail address here.

Profile coordinator BM: Maj Schneider Thomsen, Department of Health Science and Technology
Profile coordinator TM: Kristian Kjær-Staal Petersen kkp@hst.auu.dk, Department of Health Science and Technology
Profile coordinator MMA: Anita Egholm Jensen, aeje@dcm.aau.dk, Department of Clinical Medicine and Flemming Witt Udsen, fwu@dcm.aau.dk, Department of Clinical Medicine

Project supporting activity: Patrik Kjærsdam Telléus, pkt@hst.aau.dk, Department of Health Science and Technology

Type and language

Module type (e.g. study subject module, course module, project module etc.)
Language of instruction.

Project module and the
Language-: English*

* Some parts of the projects will be conducted in Danish if the projects have elements of contact with patients in the Danish health care system.

Objectives

Description of the content and objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum. Reference can be made to elaborations on semester Moodle site and/or to curriculum on Study Board website (applicable for MedIS and Medicine).

From Curriculum:

Knowledge

- Understand the principles for conducting information search relevant for the problem
- Understand the methods used to address the problem

Skills
- Identify and frame a medically relevant problem
- Identify scientific literature relevant to the problem
- Use the selected scientific methods
- Generate empiric data relevant to the problem and interpret and discuss results
- Compare empiric data to scientific literature relevant to the problem
- Accommodate project group participants' diverse background and knowledge in relation to the project

Academic content and conjunction with other modules/semesters

A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.
The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.

Overall, the project will enable the students to identify a medically relevant problem, find relevant scientific literature and methods to address the problem, apply the selected methods, and analyze the outcome. The subject of the projects will vary since there are different research topics represented in the sections of BM, TM, and MMA.

Scope and expected performance

The expected scope of the module in terms of ECTS load. This comprises number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.

15 ECTS project (450 hours):

Project supporting activity: 45 hours
- Confrontation hours: 5 hours

Project work: 380 hours in total
- Confrontation hours for a group of four: 0.8x(13.5*4 students)/2=21.5 hours
- Preparation including exam: 25 hours

Participants
Indication of the participants in the module, particularly if they include several year groups, programmes or another type of co-teaching.

1st semester students of the Master of Science in Medicine with Industrial Specialisation with the BM, TM, and MMA profile.

Prerequisites for participation
Description of the prerequisites for students' participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

None

Module activities (course sessions etc.)

Project supporting activity (1.5 ECTS):

As part of the project, the students will take part in a project supporting activity (1.5 ECTS) that can aid the learning of the following skill from the curriculum "Accommodate project group participants' diverse background and knowledge in relation to the project" and increase the student's general Problem-based learning (PBL) competences in relation to the projects. The focus for this activity will be the progressive PBL competences: problem-orientation, interpersonal, structural and meta-cognitive competencies.

Teacher: Patrik Kjærsdam Telléus

Part 1: 2 x teaching sessions of 3 hours each (2 x 45 min lectures followed by exercises). The first specifically targeted students that are new to AAU and the PBL model.

Part 2: Written assignment. Each project group will hand in a written assignment to the activity facilitator, which subsequently will have a dialogue meeting with each project group of 50 min. During this session, the students will receive feedback on the assignment and based on the feedback, the groups should revise the assignment and hand it in for final approval.

Project (13.5 ECTS):

As part of the project, the students will actively participate in establishing the project group and will be responsible for accommodating the project group participants' diverse backgrounds and knowledge. Depending on their profile, BM, TM, or MMA, the students are expected to complete a project proposed for their profile, as they are expected to be able to implement knowledge from the courses.

The supervisors are mainly affiliated to The Department of Health Science Technology (HST). External co-supervisors can be involved when relevant for the project.

Examination

A prerequisite for participating in the exam is participation in the project-supporting activity.

1. Oral group examination
2. During the exam, both the supervisor and maybe co-supervisor will be present together with an internal examiner
3. During the project period, the students will write a project report and hand it in using "Digital Eksamen". The exam is initiated by the students giving a scientific presentation of their project, followed by questioning by the examiners.
4. There are 45 min available in total for each student covering student presentations, questioning by examiners and grading. As an example, a group of 4 students will be examined for 4 x 45 min = 3 hours covering student presentations, questioning by examiners, and grading.
5. The project will be evaluated using the 7-point grading scale, and the grade will be given individually and based on an overall assessment of:

a) The written project
b) The individual student presentation of the project
c) The individual performance of the students during the oral examination

AI tools are permitted according to AAU's official rules on the use of AI: Rules for the use of generative AI - Aalborg University, and thus the use of AI in the project should be documented as determined by the Studyboard for Medicine.

For further information about examination, we refer to:

- Beskrivelse af gruppebaseret projekteksamen (Decription of group-exam)
- Digital Eksamen (DE)