ÖREBRO UNIVERSITET

Course syllabus
Third-cycle courses and study programmes

This is a translation of a Swedish document. In the event of a discrepancy, the Swedish-language version shall prevail.

General Scientific Methods in Medical Science, 15 credits

Allmänvetenskaplig forskningsmetodik i medicinsk vetenskap (15 högskolepoäng)

Course Code/Codes	70ME075
Subject Area	Medical Science
School/equivalent	School of Health Sciences
Valid from	2025-06-10
Approved	2014-06-27
Revised	2025-06-10
Approved by	Head of School
Translation to English, date and signature	2022-06-01 MP & IR

1 Course content

The following topics are discussed on the course:
- Scientific writing and research communication
- Scientific conduct and research ethics
- Research design, quantitative and qualitative research methods
- Theory of science
- Sustainability in research
- Gender equality and equality in research.

2 Outcomes

2.1 The course in relation to the doctoral programme

The course shall primarily refer to the following intended learning outcomes for third-cycle courses and study programmes as described in the Higher Education Ordinance, i.e. the doctoral student shall demonstrate:

Knowledge and understanding
- familiarity with research methodology in general (part of outcome 2)

Competence and skills
- the capacity for scholarly analysis and synthesis (part of outcome 3)
- the capacity to review and assess new and complex phenomena, issues and situations autonomously and critically (part of outcome 3)
- the ability to review and evaluate research and other qualified tasks (part of outcome 4)
- the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general (outcome 6)

- the capacity to contribute to social development both through research and education and in some other qualified professional capacity (part of outcome 8)
- the capacity to support the learning of others (part of outcome 8)

Judgement and approach
- intellectual autonomy and disciplinary rectitude (part of outcome 9)
- specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used (outcome 10)

The intended learning outcomes are listed in the same order as in the general syllabus for the programme.

2.2 Intended course learning outcomes

To obtain a passing grade, the doctoral student shall demonstrate:

Knowledge and understanding
- the ability to recognize the doctoral student's role in academia and how she/he can contribute to development of the interaction between academia and other sectors (C1)
- the ability to explain, analyse and discuss fundamental descriptive biostatistics, epidemiology as well as qualitative methods for data collection and analysis (C2)
- the ability to analyse and argue in favour of different types of study design as well as understanding the research process, from design to analysis and the interpretation of findings (C3)

Competence and skills
- the ability to communicate research, clearly and expediently (C4)
- the ability to argue in favour of and assess aspects of theory of science and sustainability in relation to their own area of research (C5)
- the ability to retrieve and use relevant literature, autonomously (C6)

Judgement and approach
- the ability to formulate scientific questions and integrate knowledge of theory of science and aspects of sustainability into a written report, in relation to their own area of research and relevant literature and ability to summarize, reflect on and discuss their own and fellow students' reports, based on a scientific approach (C7).

3 Reading list and other teaching material

The following course readings and teaching material will be used on the course:

Each item on the following reading list refers to the latest edition.

Bland, Martin. *An Introduction to Medical Statistics*. Oxford University Press.

Greenhalgh, Trisha. *How to Read a Paper. The Basics of Evidence Based Medicine*. BMJ Books.

Ludvigsson, Jonas F. *Att börja forska - inom medicin och vårdvetenskap*. Studentlitteratur. Lund.

Patton, Michael Quinn. *Qualitative Research & Evaluation Methods*. Sage Publication, Inc.

Rothman, Kenneth. *Epidemiology. An Introduction*. Oxford University Press.

Sohlberg, Peter & Sohlberg Britt-Marie. *Kunskapens former. Vetenskapsteori och forskningsmetod*. Liber.

Swedish Research Council. Good Research Practice.

Trefil James. *Science in World History*. Routledge

4 Teaching formats

Teaching on the course takes the following format:

Lectures
Seminars
Group discussions
Oral presentations
Independent study

5 Examination

The course is assessed through the following examinations which will be graded separately:

1. Code: 0100: The doctoral student's role in academia and development, 1 credit
The examination consists of two examination components:
a) participation in lectures on the doctoral student's role in academia and development.
b) active participation in a seminar on the doctoral student's role in academia and development.
Assesses intended course learning outcome C1 and consequently parts of the following intended learning outcomes as specified in the Higher Education Ordinance: D8.

2. Code 0200: Scientific poster, 2,5 credits
The examination consists of two examination components:
a) research poster intended for an international target group.
b) active participation in a seminar on research posters.
Assesses intended course learning outcome C4 and consequently parts of the following intended learning outcomes as specified in the Higher Education Ordinance: D2, D3, D4, D6.

3. Code 0300: Report, 6,5 credits
The examination consists of two examination components:
a) written report including a popular scientific summary, aspects of theory of science and sustainability, in relation to their own area of research.
b) active participation in a seminar on the scientific report.
Assesses the intended course learning outcomes C3, C4, C5, C6, C7 and consequently parts of the following intended learning outcomes as specified in the Higher Education Ordinance: D2, D3, D4, D6, D9, and D10.

4. Code 0400: Individual exam, 5 credits
The exam is designed for the doctoral student to demonstrate his/her knowledge of qualitative and quantitative research methods, study design and epidemiology.
Assesses intended course learning outcomes C2, C3 and consequently parts of the following intended learning outcomes as specified in the Higher Education Ordinance: D2, D3, D9, D10.

For examinations consisting of several examination components, the following applies: If during the course it is concluded that a doctoral student is unable to complete a certain examination component, the examiner may set a substitute assignment provided that circumstances do not reasonably allow for the course component to be completed at a later date during the run of the course.

6 Grades

Examinations on third-cycle courses and study programmes are to be assessed according to a two-grade scale with either of the grades 'fail' or 'pass' (local regulations).

The grade shall be determined by a teacher specifically nominated by the higher education institution (the examiner) (Higher Education Ordinance).

To obtain a passing grade on examinations included in the course, the doctoral student is required to demonstrate that he/she attains the intended course learning outcomes as described in section 2.2. Alternatively, if the course consists of multiple examinations generating credit, the doctoral

student is required to demonstrate that he/she attains the outcomes that the examination in question refers to in accordance with section 5.

A student who has failed an examination is entitled to a retake.

If an examination consists of several examination components, and a student fails an examination component, the examiner may, as an alternative to a retake, set a make-up assignment with regard to the examination component in question.

A doctoral student who has failed an examination twice for a specific course or course element is entitled, upon his/her request, to have another examiner appointed to determine the grade.

7 Admission to the course

7.1 Admission requirements

To gain access to the course and complete the examinations included in the course, the applicant must be admitted to a doctoral programme at Örebro University.

7.2 Selection

Selection between applicants who have been admitted to doctoral programmes at Örebro University and who otherwise meet the admission requirements as listed above is made according to the following order of precedence:

1. Applicants from the subject of Medical Science at Örebro University

If no other selection criteria are specified in this section, priority shall be given to applicants with a lower number of course credits left before the award of their degree over applicants with a higher number of remaining course credits. Should two or more students have equal number of credits, selection will be done through the drawing of lots. This also applies within any selection groups listed unless otherwise stated.

7.3 Other applicants than doctoral students admitted at Örebro University

Other applicants than doctoral students admitted at Örebro University may be given access to the course on the grounds of provisions for and/or agreements regarding contracted courses, joint degrees, national graduate schools or cooperation in other respects with other universities.

Any decisions on what such other applicants may be given access to the course are made separately and on the basis of the provisions and/or agreements that occasion the student to apply for the course.

For participation in the course in other respects, the same provisions shall apply as for doctoral students admitted to Örebro University.

8 Transfer of credits for courses, study programmes and other experience

Provisions on the transfer of credits can be found in the Higher Education Ordinance and on the university's webpage.

9 Other information

The course language will be English.

The course is given as intensive weeks during a semester and in between the students are expected to complete self-study.

Transitional provisions