



**Karolinska
Institutet**

Course syllabus for

Biomedical Research Literacy, 6 credits

Biomedicinsk forskningslitteracitet, 6 hp

This course syllabus is valid from autumn 2022.

Please note that the course syllabus is available in the following versions:

Autumn2022 , Autumn2024

Course code	4BI117
Course name	Biomedical Research Literacy
Credits	6 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	AV - Second cycle
Grading scale	Fail (U), pass (G) or pass with distinction (VG)
Department	Department of Biosciences and Nutrition
Participating institutions	<ul style="list-style-type: none">• Department of Learning, Informatics, Management and Ethics
Decided by	Programme committee for study programmes in biomedicine
Decision date	2022-03-23
Course syllabus valid from	Autumn 2022

Specific entry requirements

At least the grade G (Pass) for the courses Frontiers in Biomedicine, Applied Biostatistics, Bioinformatics, semester 1 elective course, Bioethics and Laboratory Animal Science, Applied Biomedical Communication and Professional Development, and registration for the course Frontiers in Biomedicine: Research Project 1, within the Master's Programme in Biomedicine.

Objectives

The aim of the course is to educate the student in different aspects of the scientific research process used within biomedicine.

On completion of the course, the student should be able to:

Regarding knowledge and understanding

- Demonstrate an understanding of scientific method and design used within biomedicine,
- Explain and discuss the role of peer review in the scientific publication process,

Regarding competence and skills

- Formulate a research plan including experimental procedures appropriate to test a stated hypothesis,
- Critically evaluate manuscripts in the field of biomedicine according to standard praxis for peer review,

Regarding judgement and approach

- Reflect on research design used in biomedicine as well as the benefits and limitations of the publication process,
- Reflect on the design of biomedical research from a global health perspective.

Content

The course covers the scientific research process used within biomedicine. It includes study design according to scientific method, from the formulation of a hypothesis to the selection of methods and the experimental design required to address the hypothesis, including core concepts such as controls and replication. The course also covers the peer review process used in scientific publishing.

The course is divided into two parts.

Scientific method and design, 4.0 hp

Grading scale: VU

Concepts of scientific method and their implications for scientific practice within biomedicine. Different stages of scientific design including framing a knowledge gap in a broader scientific setting, developing a hypothesis, formulating an experimental plan, documentation and handling of results, and drawing conclusions.

Peer review in the publication process, 2.0 hp

Grading scale: GU

The practice of peer review of biomedical manuscripts submitted to scientific journals, as a first step in the publication process.

Teaching methods

Learning activities include lectures, web-based learning, group discussions, written exercises, oral presentations and peer review.

Examination

Scientific method and design (4 credits). The examination consists of completion of a web-based learning module, a written research plan, oral presentation of the research plan and peer-to-peer oral opposition. Graded Fail/Pass/Pass with distinction.

Peer review in the publication process (2 credits). The examination consists of a written review of a scientific manuscript (consisting of both individual and group components), and discussion of the written review with peers. Graded Fail/Pass.

To pass the whole course (grade of "Pass" or above), a grade of at least "Pass" must have been obtained for both parts of the course. To obtain a final grade of "Pass with distinction", a grade of "Pass with

distinction" must be obtained for "Scientific method and design" and a grade of "Pass" for "Peer review in the publication process".

Compulsory participation

Group discussions, oral presentations, and peer review oppositions are compulsory. The course examiner assesses if and, in that case, how absence from compulsory components can be compensated for. A student's study results cannot be finalised/registered until the student has participated in the compulsory components or compensated for their absence in accordance with the examiner's instructions. Absence from a compulsory component may mean that the student cannot compensate for absence until the next time the course is given.

Limitations of the number of examinations or practical training sessions:

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be counted as an examination.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Other directives

The course language is English and examination is performed in English.

Course evaluation will be carried out in accordance with the guidelines established by the Board of Higher Education.

Oral evaluation in the form of course council meetings will be carried out during the course.

Literature and other teaching aids

Specific study material and reference articles will be provided during the course.