



**Karolinska
Institutet**

Course syllabus for

Basic Optometry 1 and Research Methodology, 10.5 credits

Refraktionsmetodik 1 och vetenskapsmetodik, 10.5 hp

This course syllabus is valid from autumn 2024.

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

Autumn2021 , Autumn2022 , Autumn2024

Course code	1OP083
Course name	Basic Optometry 1 and Research Methodology
Credits	10.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Optometry
Level	G1 - First cycle 1
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Clinical Neuroscience
Decided by	Education committee CNS
Decision date	2021-04-14
Revised by	Education committee CNS
Last revision	2024-02-07
Course syllabus valid from	Autumn 2024

Specific entry requirements

Matematik 2a, 2b eller 2c, Naturkunskap 2.

Objectives

After the course, the student should be able to

- 1) list and describe various types of visual defects (refractive errors/ametropia/emmetropia), and explain/describe how the eye can change refraction (accommodation)
- 2) describe/explain how lenses influences the retinal image
- 3) carry out visual acuity testing, relate the results to different refractive errors and visual acuity conversion, and describe how a vision board is structured
- 4) apply binocular refraction including binocular vision tests and cross cylinder (in test frame) based on objective start value and hygiene procedures in the vision clinic
- 5) apply instruments for corneal curvature measuring (keratometer), and relate results to the eyes astigmatism
- 6) apply communicative tools to find out, document and evaluate relevant information (medical history

taking) as a basis for the implementation of the vision screening

7) list various types of glass materials and list and handle frame materials, and describe their characteristics

8) apply instruments for measure the lens (focimeter) to verify single power lenses

9) show included understanding of aspects around confidentiality in a healthcare context and knowledge of relevant ordinances in relation to record keeping and ethical aspects within the care

10) reflect on issues of ethics, sustainable development and equal opportunities

11) reflect on her and other professions' role in contributing to sustainable eye health care development.

The student should also, in an appropriate level, based on optometry, care and scientific perspective, be able to

12) distinguish knowledge at the scientific level

13) demonstrate an understanding of scientific publications and of the disciplinary foundation of the field

Aim 12-13 should be seen in relation to the document "Vetenskaplig strimma Optikerprogrammet" (Scientific Thread in Study Programme of Optometry).

Content

The course contains of the following parts: emmetropia and ametropia (refractive errors) including astigmatism; accommodation; retinal image formation; visual acuity, testing and estimate of refractive errors; keratometry, PD-measurements and binocular vision tests refraction methods and objective refraction methodology (autorefractor) and subjective binocular refraction methodology (including cross cylinder) in test frame; level-suited medical history taking; medical records keeping; materials science (glass and arcs); measure the lens with focimeter and calculation of optical deviations in relation to PD and height; relevant statutes about e.g. confidentiality, medical records keeping and ethical aspects in the care; hygiene procedures in vision examination; and sustainable development in an optometric health care perspective.

In addition to this the course is part of the teaching of general scientific knowledge within the program. In connection with this, the students will be introduced to scholarship and best practice and scientific communication. They also develop their knowledge and understanding, skills and abilities, their judgement and scientific thought and attitude in relation to optometry and a lifelong learning. The teaching of general scientific knowledge is described in a separate document.

The course is divided in three modules as follows:

Clinical Work, 5.0 hp

Grading scale: GU

Module 1 includes portfolio, workshop, clinical work, practice of and reflection on screening methodology, as well as practical examination in refraction and so called preliminary vision tests.

Theoretical Understanding, 3.5 hp

Grading scale: VU

Module 2 includes theoretical understanding and renewal of the topic-specific contents of the course.

Scientific Development, 2.0 hp

Grading scale: GU

Module 3 includes assignments on KI's web-based learning platform, the scientific streak and seminar.

Teaching methods

The course includes self-study, demonstrations, test, laboratory sessions, theoretical overviews (in the form of e.g. lectures, seminars, flipped-classroom, case methods), practical/clinical exercises, portfolio and written assignments. The students are given a possibility to train practical skills but must take a great responsibility themselves.

Some course elements are compulsory, see heading "Examination".

Examination

The course is examined in the following way:

Module 1, Clinical Work

- a) practical examination in refraction and so called preliminary vision tests, is graded U (Fail) or G (Pass)
- b) compulsory portfolio according to instructions
- c) compulsory seminars and demonstrations according to schedule

The module is graded U or G. The grade G requires G on examination a) as well as fulfillment of compulsory course elements.

Module 2, Theoretical Understanding

- a) written exam, is graded U, G or VG (Pass with distinction)
- b) compulsory seminars and demonstrations according to schedule

The module is graded U, G or VG. The grade G requires G on written exam, as well as fulfillment of compulsory course elements. The grade VG requires VG on written exam, as well as fulfillment of compulsory course elements.

Module 3, Scientific Development

- a) compulsory assignments on KI's web-based learning platform
- b) written assignments, is graded U or G
- c) compulsory seminars and demonstrations according to schedule, a part of the programme's scientific streak

The module is graded U or G. The grade G requires G on *all* written assignments b) and fulfillment of compulsory course elements.

Course grade

The course is graded U, G or VG.

The grade G on the entire course requires G on all modules 1-3. The grade VG requires G on module 1 and 3, and VG on module 2.

Absence from or unfulfillment of compulsory course elements

The examiner decides whether, and if so how, absence from or unfulfillment of compulsory course elements can be made up for. Study results cannot be reported until the student has participated in or fulfilled compulsory course elements, or compensated for any absence/ failure to fulfill in accordance with instructions from the examiner. Absence from or unfulfillment of a compulsory course element may imply that the student can not retake the element until the next time the course is offered.

Possibility of exception from the course syllabus' regulations on 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' 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 attitudes may not be changed, removed or reduced.

Transitional provisions

If the course is cancelled or goes through substantial changes, information about interim regulations will be stated here.

Other directives

Course evaluation takes place according to guidelines established by Karolinska Institutet.

The course may be given in parallel with the course Optics 1 (KTH) and is based on knowledge acquired at the course.

Teaching in English may occur.

Literature and other teaching aids

Mandatory literature

Benjamin, William J.; Borish, Irvin M.

Borish's clinical refraction

2nd ed. : St. Louis, Mo. : Butterworth-Heinemann/Elsevier, c2006. - xviii, 1694 p.

ISBN:0-7506-7524-1 LIBRIS-ID:10580274

[Library search](#)

Recommended literature

Rabbetts, R. B.

Clinical Visual Optics

4:e upplaga : Oxford: Butterworths - 488s. : 2007

ISBN:0-7506-8874-2

[Library search](#)

Clinical procedures in primary eye care

Elliott, David B.

3rd ed. : Edinburgh ;a New York : Elsevier/Butterworth Heinemann, 2007 - xii, 342 p.

ISBN:978-0-7506-8896-3 LIBRIS-ID:11008167

[Library search](#)

Grosvenor, Theodore P.

Primary care optometry

5th ed. : St. Louis, Mo. : Butterworth-Heinemann/Elsevier, c2007 - xiii, 510 p.

ISBN:0-7506-7575-6 LIBRIS-ID:10438993

[Library search](#)

Millodot, Michel

Dictionary of optometry and visual science

7. ed. : Oxford : Butterworth-Heinemann, 2009 - 409 p

ISBN:978-0-7020-2958-5

[Library search](#)

Steinman, Scott B.; Steinman, Barbara A.; Garzia, Ralph P.

Foundations of binocular vision : a clinical perspective

New York : McGraw-Hill Co., c2000. - xi, 345 p.

ISBN:978-0-8385-2670-5 (alk. paper) LIBRIS-ID:11950260

[Library search](#)