



**Karolinska  
Institutet**

Course syllabus for

## **Refraction 1, 12 credits**

Optimetrisk refraktion 1, 12 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

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

Autumn2013 , Autumn2015 , Spring2017

Course code	1OP045
Course name	Refraction 1
Credits	12 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	Programnämnd 8
Decision date	2012-05-08
Revised by	Education committee CNS
Last revision	2020-04-01
Course syllabus valid from	Spring 2017

## **Specific entry requirements**

Passed results of at least 45 higher education credits from the Optometry program semester 1 and 2.

## **Objectives**

After the course, the student should be able to:

- 1) describe and apply methods for examination of binocular functions, and be able to analyse the results
- 2) describe and apply methods for study of phorias and vergences and be able to analyse the results
- 3) apply communicative tools for medical history taking
- 4) list, describe, measure and analyse the myopia in relation to the patient's age and expected ability
- 5) carry out and analyse the results then from a complete refractioning in trial frame and foropter with routine adapted to the patient's visual defect, visual- and mental ability, and interpret and evaluate the results and
- 6) describe and analyse different physiological aspects related to different visual defects,
- 7) describe and apply methods for keratometry and retinoscopy for the determination of different visual defects



8) to understand and evaluate the prevalence and differences in refractive development among individuals from a global health perspective.

And that the student in a scientific content should be able to show:

- 9) ability to discuss and evaluate knowledge at the scientific level
- 10) understanding about different scientific types of publication and about the disciplinary foundation of the field,
- 11) ability to identify his need of additional knowledge and that continuous develop his skills
- 12) ability to compare and reflect on relevant information from scientific literature and to discuss new facts, phenomena and issues and
- 13) ability to formulate scientific text in writing.

Aim 9-13 should be seen in relation to the document "Vetenskaplig strimma Optikerprogrammen".

## Content

The course contains the following parts: binocular vision, clinical methodology for phoria measurements and keratometry, vergence measurement, AC/A ratio, myopia and refraction in phoropter and trial frame, binocular refractioning methodology and patient routines. In the course, physiological aspects are also included related to refractive errors. In addition to this the course is part of the education in general scientific knowledge within the program. In connection with this the students will continue to specialize within scholarship, scholarship and best practice samtvetenskaplig communication. They will also develop his knowledge and understanding, his skills and abilities his judgement and his scientific thought- and attitude in relation to optometry and a lifelong learning. The education in general scientific knowledge is described in separate.

The course is divided into three (3) parts:

### Clinical work, 4.0 hp

Grading scale: VU

Part 1 includes written assignments and group assignment and clinical work.

### Theoretical understanding, 4.0 hp

Grading scale: VU

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

### Practical work, 4.0 hp

Grading scale: VU

Part 3 includes the ability to carry out and reflect around practical examination methodology.

## Teaching methods

The course comprises self-study, demonstrations, laboratory sessions, theoretical overviews (in the form of lectures, seminars, Case methods, practical exercises), auscultations and written assignments. The students are given a possibility to train practical skills but must take a great responsibility themselves.

## Examination

The course be examined against the following aims and on the following way:

*Part 1, Clinical work*, examines the learning outcomes 1-13. Compulsory participation applies at demonstrations, test, laboratory sessions, seminars, study visits and at practical/clinical exercises. in case



of absence, measures to be taken are discussed with the course director. The part is examined through written assignments, workshops and a practical test in refractioning. The part is graded according to the scale Fail (U)/Pass (G).

*Part 2, Theoretical understanding* examines the aims 1-13. The part is examined with a written test. Re examination may be oral. The part is graded according to the scale Fail/Pass/Pass with distinction.

*Part 3, Investigative Techniques* examine the aims 1 up to 5. Be examined through a practical test in refractioning and ophthalmological instruments. The part is graded according to the scale Fail/Pass.

The whole course is graded according to the scale Fail/Pass/Pass with distinction. For a Pass grade in the course, a Pass grade is required for all its parts. For a Pass with distinction, a Pass grade in parts 1 and 3, and Pass with distinction in part 2 are required.

Criteria for assessing practical tests are established in separate documents.

A student who fails the regular examination has the right to participate at additional five examinations. If the student fails six examinations/test there will be no additional examination. As an examination, the times that the student has participated the same test are counted. Submission of blank exam is counted as an examination. Examination to which the student has registered but not participated in is not counted as an examination.

## Transitional provisions

The course has been cancelled and was offered for the last time in the fall semester of 2019. Last examination according to this syllabus will be provided the fall semester of 2021 for students who have not completed the course.

## Other directives

The course is based on knowledge acquired in previous courses in the program. Teaching in English can occur.

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

## Literature and other teaching aids

*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](#)

*Rutstein, Robert P.*

### **Anomalies of binocular vision : diagnosis & management**

*Daum, Kent Michael*

St. Louis ; b Mosby, c cop. 1998 : Mosby, cop. 1998 - xv, 368 s.

ISBN:0-8016-6916-2 LIBRIS-ID:5674465

[Library search](#)

*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 : Butterworth-Heinemann/Elsevier, 2007 - 510 p.

ISBN:978-0-7506-7575-6

[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](#)

*Evans, Bruce J. W.; Pickwell, David.t Binocular vision anomalies*

**Pickwell's binocular vision anomalies**

5. ed. /b Bruce J.W. Evans : Edinburgh ;a New York : Elsevier Butterworth Heinemann, 2007 - 454 s.

ISBN:978-0-7506-8897-0 LIBRIS-ID:10659509

[Library search](#)

*Steinman, S.; Garzia, B.*

**Foundations of Binocular Vision - A Clinical Perspective.**