FSF3671 Semi-riemannian Geometry 2 7.5 credits

Semi-riemannsk geometri 2

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for FSF3671 valid from Autumn 2009

Grading scale

Education cycle

Third cycle

Specific prerequisites

Prerequisite for the course is strong knowledge of semi-Riemannian geometry corresponding for example to the gradute level course SF3670 "Semi-Riemannian geometry 1".

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course, the student should have a sufficiently deep knowledge of semi-riemannian geometry to be able to work on research projects in the areas of in the areas of mathematical general relativity, positive mass theorems, the Yamabe problem.

Course contents

- Basic general relativity corresponding to the last three chapters of the book "Semi-Riemannian Geometry" by Barrett O'Neill.
- Witten's as well as Schoen and Yau's proof of the positive mass theorem.
- The Yamabe problem.

Disposition

The course can be given a series of lectures (possibly with presentations given by the participants), or as a self-studies course with supervision.

Course literature

- O'Neill, B. "Semi-Riemannian Geometry With Applications to Relativity", Academic Press, Orlando 1983.
- Schoen, R; Yau, S.-T. "Lectures on differential geometry". Conference Proceedings and Lecture Notes in Geometry and Topology, I. International Press, Cambridge, MA, 1994.
- Chrúsciel, P. T. "Lectures on Mathematical Relativity Beijing, July 2006", lecture notes.

Examination

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Homework assignments and oral test or presentation.

Other requirements for final grade

Homework assignments completed, and satisfactory performance at oral test or presentation.

Ethical approach

- All members of a group are responsible for the group's work.

- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.