

Riemannian geometry, spring 2016

Riemannian geometry, spring 2016

Teacher: [Ilkka Holopainen](#)

Scope: 10 cr

Type: Advanced studies

Teaching: Weeks 3-9 and 11-18, Wednesday 10-12 and Thursday 10-12 in room C123.

Topics:

- Differentiable manifolds (brief review if needed)
- Riemannian metrics
- Connections
- Geodesics
- Curvature
- Jacobi fields
- Curvature and topology
- Comparison geometry
- The sphere theorem (optional)

Prerequisites: Vector analysis, topology, linear algebra, some knowledge on smooth manifolds (like the course "[Introduction to differential geometry](#)") and on differential equations.

•

[News](#)

[Teaching schedule](#)

[Exams](#)

[Course material](#)

[Registration](#)

[Exercises](#)

- [Assignments and solutions](#)
- [Exercise classes](#)

[Course feedback](#)

News

•

Teaching schedule

Weeks 3-9 and 11-18, Wednesday 10-12 and Thursday 10-12 in room C123.

First lecture on Wednesday, January 20.

Last lecture on Thursday, May 5.

Easter holiday 24.3.-30.3.

Exams

The course can be passed by an [exam](#). First possibilities are on May 18 or May 24.

Course material

- DoCarmo: Riemannian geometry, Birkhäuser, 1992
- Lee: Riemannian manifolds, An Introduction to Curvature, Springer, 1997

Lecture notes (first 101 pages):

Ilkka Holopainen and Tuomas Sahlsten: [Riemannian Geometry](#)

Registration

Did you forget to register? [What to do?](#)

Exercises

Assignments and solutions

[Exercise 1](#) [Solutions 1](#)

[Exercise 2](#) [Solutions 2](#)

[Exercise 3](#) [Solutions 3](#)

[Exercise 4](#) [Solutions 4](#)

[Exercise 5](#) [Solutions 5](#)

[Exercise 6](#) [Solutions 6](#)

[Exercise 7](#) [Solutions 7](#)

[Exercise 8](#) [Solutions 8](#)

[Exercise 9](#) [Solutions 9](#)

[Exercise 10](#) [Solutions 10](#)

[Exercise 11](#) [Solutions 11](#)

Exercise classes

Group	Day	Time	Room	Instructor
1.	Tuesday	12-14	B321	Esko Heinonen

You will get extra credit points by solving the home work exercises:

25% = +1p, 35% = +2p, 45% = +3p, 55% = +4p, 65% = +5p ja 75% = +6p.

Course feedback

Course feedback can be given at any point during the course. Click [here](#).