



## Invitation to Courses

### Computational Geometry and Topology (Half Module Computer Science)

Instructors: Herbert Edelsbrunner & Michael Kerber

#### Course Description:

Geometry and Topology are old fields in mathematics which have been turned into computational disciplines relatively recently. In this course, we teach a small but important subset of topics in the new field of Computational Geometry and Topology that are connected to applications in science and engineering more than others.

- I. Voronoi diagrams and Delaunay triangulations.
- II. Alpha shapes.
- III. Applications in structural molecular biology.
- IV. Homology.
- V. Persistent Homology.

Literature. The main text used in this course is the recent book on the topic:

Edelsbrunner, Harer.  
Computational Topology. An Introduction.  
American Mathematical Society, Providence, Rhode Island, 2010.

**Coursework:** Grades will be based on classroom participation, solutions to homework questions, and performance in final exam.

**Course schedule:** 2 weekly 75 min lectures Mondays and Wednesdays, 1 weekly 50 min recitation

**Course Academic Credits:** 3 ECTS

**Course Website:** <http://pub.ist.ac.at/courses/2012/computationalgeometryandtopology>

**Courses start on Monday, May 7 2012 (1:45 – 3:00 pm)**

Seminar Room Mondi 3, IST Austria Central Building, 1st floor



2012-05-07

**Please register for the course a week in advance with Academic Affairs ([Marie.Trapp@ist.ac.at](mailto:Marie.Trapp@ist.ac.at))**

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage (note that the IST Shuttle times are highlighted in dark green):  
[http://www.ist.ac.at/fileadmin/user\\_upload/pdfs/IST\\_shuttle\\_2011.pdf](http://www.ist.ac.at/fileadmin/user_upload/pdfs/IST_shuttle_2011.pdf)

The IST Shuttle bus is marked IST Shuttle (# 242) and has the Institute Logo printed on the side.