Examination:

- Four labs (MPI, Pthreads, OpenMP, GPU)
- Three programming assignments
  Can be done in groups of 2-3 students

Then chose:

- Project work (grade 3)
- Written exam (grade 3, 4 or 5)

- Project work + written exam (3, 4 or 5)
  Project work can raise your exam grade

Project work:

- Individual assignment

- *You* formulate a problem that you want to parallelize, write a project proposal

- Hand in project proposal to us

- If approved you get an account on Uppmax systems, e.g., Tintin.

- Perform the project and write a full report

- **Strict deadline Friday 1/4** if you want to combine exam+project for your grade! (can only combine with exam 2016-03-14)

Example Projects:

- Quick-sort (MPI, power of 2 number of processors)
- Compare Fox, Cannon and 1D partitioning for MxM (MPI)
- MxM with Strassens algorithm (MPI, Pthreads, OpenMP)
- Compare different algorithms for MxV (MPI)
- LU-factorization (MPI or Pthreads optimized with locks)
- Gram-Schmidt (MPI, OpenMP optimized with locks)
- QR-factorization (MPI, Pthreads, OpenMP)
- 3D FFT (MPI, 1D FFT in each direction, Transpose data)
- Power method for eigenvalues (MPI, Pthreads, OpenMP optimized)
- Conjugate gradient (MPI, Pthreads, OpenMP optimized)
- Large Sudoko solver, e.g. 36 numbers (Pthreads)
- Game of life (MPI, Pthreads)
- Mandelbrot set with data partitioning (Any programming model)
- N-body simulation (MPI, OpenMP)
- Application of GPU (CUDA/OpenCL)
- Application of Matlab Parallel Toolbox
- Application of UPC (e.g. Gram-Schmidt)