

## TMA4195 Mathematical Modeling. Grades and Comments on the 2012 project.

Group	Studentno.	Comments	Grades
1	708117, 715750, 715752, 676477, 715805	Worked on 2D xy-model, numerical FEM solution including streamline diffusion method, some problems with the numerical heat solution, analytic heat solution by method of characteristics in polar coordinates, analytic water flow solution by method of image charges. Very nice work, report, and presentation.	90
2	715748, 715763, 717389, 708179, 708147	Numerical FEM solutions in 2D and 3D, some problems with the numerical heat solution, analytic water flow solution in 2D by method of image charges, nice modeling and discussion.  Nice work, report and very nice presentation.	85
3	690179, 699064, 708657, 715771, 724014.	Considers various 2D and 1D models, numerical FDM solution, analytic water flow solutions by method of image charges, analytic 1D heat solution by method of characteristics and separation of variables (with some mistakes).  Nice work, report, very nice presentation with animations, but report was 4 pages too long.	80
4	707476, 715761, 705743, 697713, 705745	Worked on 2D model, mistake in temperature model, tried many FDM methods to solve for heat including upwinding, incorrect discretization of delta, analytical solution of water flow by method of image charges. Some mistakes, also in the modeling.  Nice work, report and very nice presentation.	75
5	697210, 736925, 715786, 715734, 715730	2D (xz-model) FEM and FDM numerical solution, and attempted 3D FEM solutions, analytical water flow solution via fundamental solutions, 1D method of characteristics solution for heat. Some mistakes in the modeling.  Nice work, report, and very nice presentation.	75
6	715749, 708178, 715753, 705714, 707779	Extremely impressive 2D and 3D FEM solver for the full problem with a moving boundary!! Several analytic solutions, Dupuit-Forchheimer, separation of variables, and method of characteristics, but does the separation of variables solution satisfy all boundary conditions? Impressive work, report, and presentation with animations. Voted best presentation.	98
7	708134, 708096, 708112, 708084, 715008	Fixed domain: 2D xy model, water flow solution via fundamental solutions and FEM solver, analytic heat solution in no flow case via ODE (Newton's law of cooling). Moving domain: Dupuit-Forchheimer approximation, derivation, analytic stationary solution, numerical FDM solution. Discussion of many issues. Very nice work and presentation, nice report.	90
8	708194, 708684, 708685, 738515, 708105	Considered 2D xy-model, analytical solution via fundamental solutions and numerical FEM solution for water flow, tried to consider Dupuit-Forchheimer approximation, some mistakes.  Nice work, report and very nice presentation.	80
9	715068, 722297, 707767, 713288, 704729	Considered 2D xz-model, tried to solve for water flow using separation of variables, numerical FDM solution of water flow, FDM solution of Heat under assumption of no transport in z-direction. Report 12 pages.  Nice work, report and presentation.	70
10	692611, 708132, 708154, 705734, 715082	Water flow: 1D and 2D (fundamental solutions in 2D) analytic solutions, 2D xy and xz FDM solutions. Heat flow: 1D analytic solution, attempt on numerical solution. Strange dimensional analysis, some mistakes in heat model and its numerical discretization.  Nice work, report, and very nice presentation.	75
11	697421 710067 715731 722398 736963	2D (xy) water flow solution via fundamental solutions and via FEM solver, trace water bubble and compute time from well to well. Some mistakes and nice ideas.  Nice work, report, and presentation.	80
12	716467, 730855, 715797, 715809, 708905	Very solid modeling and scaling, analytic solutions in 1D, numerical solutions in 1D for heat, and using FVM in 2D (xy) and 3D for water flow. Nice discussions of many issues.  Very nice work, presentation, and report.	90