Math 116 : Syllabus proposal—open to change!

January 5, 2006

Week 1: Overview, fundamental solutions, Green's functions

Week 2: Potential Theory - building solutions from sources on the boundary. Boundary integral equations (BIE).

HW1 due

Week 3: Numerical discretization of integral equations. Compact operators, Fredholm Theory.

Week 4: BIE for interior Dirichlet problem, exterior Helmholtz (wave scattering)

HW2 due

Week 5: BIE for eigenvalue problems

Week 6: Method of Fundamental Solutions for eigenvalue problems.

HW3 due

Week 7: Quantum chaos: short wavelength asymptotics, quantization.

Choose projects, start work.

Week 8: Crash course on dynamical systems, ergodicity. Quantum ergodicity.

Week 9: optional topics; in-class presentations.

Projects due.