

MAST 680 (MAST 856), Sec. A
Topics in Applied Mathematics
Winter 2020

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Riemann surfaces and Integrable systems

The goal of the course is to give an introduction to the theory of Riemann surfaces (homologies, cohomologies, Abel's and Riemann-Roch theorems, period matrix, theta-functions, Fay's identities etc), and to apply it to the theory of integrable systems. The topics will include; KdV and KP equations, Schlesinger system and isomonodromy deformations, self-dual Yang-Mills equations and Hitchin's systems, tau-functions.

- Literature:**
1. B. Dubrovin, theta-functions and Non-linear equations, https://people.sissa.it/~dubrovin/rsnleq_web.pdf
 2. D. Mumford, Tata lectures on Theta
 3. O. Babelon, D. Bernard, M. Talon, Introduction to classical integrable systems, Cambridge, 2003

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [*Undergraduate Calendar, Sec 17.10.2*]