MATH 7363, Fall 2021 Syllabus

Course Title: Introduction to Moduli Spaces

Time/Location: MWH, 10:30 – 11:35am, Ell Hall 408

Office Hours: TBD, Nightingale Hall 532 or via Zoom

Instructor: Vance Blankers, v.blankers@northeastern.edu

Content: Moduli spaces span a broad collection of topics, but we will rely on the concrete examples of projective spaces, Grassmannians, and moduli spaces of equivalence classes of rational marked curves to allow us to look at issues such as how to construct moduli spaces, their local/global coordinates, how to get meaningful compactifications, and their intersection theories.

Prerequisites: A basic understanding of varieties, including some familiarity with projective space.

References: You do not need a textbook, but here are the references I will be pulling from most. If you have difficulty finding any of them let me know, and I will be happy to help you get access to any of these.

- *Deformation theory and moduli spaces*, R. Vakil. Lecture notes.
- *Moduli of Curves*, J. Harris, I. Morrison. Vol. 187 of Graduate Texts in Mathematics, Springer, 1998.
- *Moduli Spaces of Pointed Rational Curves*, R. Cavalieri. Lecture notes.
- *An Invitation to Quantum Cohomology*, J. Kock, I. Vainsencher. No. 249 of Progress in Mathematics, Birkhäuser, 2007.

Grades: Your grade will largely be based on engagement during class. Though there will be a short assignment (1–3 problems) most weeks – which we will discuss in-class the following week – you will not be expected to turn these in unless you would like additional feedback. In lieu of a final exam, at the end of the semester you will choose three of the weekly assignments and submit clean, polished solutions to those three assignments.

Leftovers: Extra stuff that didn't fit any of the categories above:

- As the instructor, I reserve the right to alter this syllabus at any time. I'll announce any such changes in as timely a manner as possible.
- Every student is expected to complete the online TRACE survey at the end of the semester.
- If you have any issues at all, please do not hesitate to contact me. Most problems can be resolved via communication.
- I know you have plenty of things competing for your time and energy this semester. You're human – and so am I – so please let me know when things are getting overly busy or stressful.