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TEICHMÜLLER AND MODULI SPACES OF SURFACES

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The Teichmüller space of geometric structures on a surface has its own natural geometric structure and group of symmetries. The study of these spaces and symmetries is rich and fascinating, and we will spend time in this minicourse getting to know them. After discussing coordinates and metrics for the Teichmüller space we will discuss Thurston's boundary at infinity, which relates measured laminations and foliations to the degeneration of metrics on the surface. We will then discuss the complex of curves, which gives a way to study relative hyperbolicity properties of the space in spite of the fact that Teichmüller space is not itself hyperbolic. The mapping class group of (isotopy classes of) self-homeomorphisms of the surface acts naturally on Teichmüller space, and the quotient is Riemann's moduli space. We will discuss the geometric properties of this group, and consequences of the relative hyperbolicity structure including quasi-isometric rigidity.