Math 380: Creating Mathematical Visuals & Interactive Animations

Andy Loveless

Sample Projects, Instructor Models, and Portfolio Outcomes

In addition to student-created work, the course draws heavily on instructor-built models that demonstrate the level of clarity, mathematical correctness, and visual design expected in major projects. These models also serve as starting points for student extensions and redesigns.

Instructor Model Examples (Desmos)

- Moon Phases in 2D — Modeling angular motion, relative position, and illumination geometry. https://www.desmos.com/calculator/r2irk2flui
- Sun–Earth System in 3D — Parametric orbits, vectors, and spatial reasoning. https://www.desmos.com/3d/e9fitb1xcg
- Candy Cane Geometry (TNB Frame) — Curvature, torsion, and moving frames along a space curve. https://www.desmos.com/3d/qfvvbzkkva
- Lights on a Christmas Tree — A curve constrained to lie on a surface, with arc length and spacing. https://www.desmos.com/3d/vxtxouumat
- Additional examples available in the instructor's Desmos gallery: https://sites.math.washington.edu/~aloveles/CalcVisuals/

Student Project Expectations

Student projects build on these models by modifying parameters, introducing new motion, adding vectors or surfaces, improving labeling, or redesigning the visual narrative for a specific audience. Final portfolios emphasize mathematical accuracy, visual clarity, and thoughtful explanation.