



**NEW JERSEY INSTITUTE OF TECHNOLOGY  
COLLEGE OF ARCHITECTURE AND DESIGN**

### ***ALGORITHMIC GROWTH***

**COURSE:** DD 363 – Digital Design Studio I (5 credits)  
**PROGRAM:** Digital Design/School of Art + Design  
**LOCATION:** Third year; fall term studio course (undergraduate)  
**INSTRUCTOR:** Polina Zaitseva

**DESCRIPTION:** The course focuses on three-dimensional design in a digital milieu. The course includes project-based applications focusing on the design and digital representation of a combination of architectural or environmental settings for games, theater, advertisements, books, or similar contexts as well as assets/objects that populate the spaces. The course includes modeling with different geometries (e.g. NURBS, polygonal) and advanced techniques in rendering with lighting and materials as well as issues of production design. As a general design program, various aspects of digital design and entertainment are included. Overall, the semester focuses on narrative and graphic design with still images.

**PROJECT:** The third project of five during the fall semester is an experiment with expression, tooling, and topological studies of natural systems (e.g. growth).

**REQUIREMENTS:** Students are to rigorously study in relation to formal expression the topics of systematic construction/tooling/scripting and 3D topology, especially joints and connections. Generating algorithms defining growth that include bloom, blooming branch, and branching are studied. Students are specifically encouraged to incorporate abstract studies along with numerous physical examples in their explorations and experiments. A variety of high resolution images/compositions are required to formally express the nature of the growth.

**OBJECTIVES:** (1) Provide an initial exercise for the use of scripting as a method to define growth. (2) Learn and attain facility in the use of 3D modeling software to create high-detail and visually evocative models expressing growth and development. (3) Continue the study of the impact of color, object location, camera lens choice, and camera location on image composition. (4) Continue to practice and gain facility with software tools of *Autodesk 3DS Max*, *Autodesk Maya*, *Adobe Photoshop*, *Corel PaintShop Pro*, and *Adobe After Effects* in a design context. (6) Begin the study of creative art direction and styles through research of precedents for biomechanical models and steampunk.

**RESOURCES:** A subscription to *Digital Tutors* provides students with software tutorials that they may access within the studio on campus.