

Policy and Syllabus for ISCI 104 Sections 17&18: Intro to 3D Printing and Design, a Science Lab

JMU 3-SPACE Classroom (Carrier 101)

Instructor: Rebecca Field, Associate Professor in the Department of Math and Stats
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Class sites: <https://sites.lib.jmu.edu/isci104-spring2020/> and
<http://educ.jmu.edu/~fieldre/isci104.html>
Meetings: Wed 3:35-5:30pm or Fri 1:25-3:20pm in 3-SPACE (Carrier 101)

Course description

3D printing is an additive manufacturing process whereby objects are built up from plastic filament, liquid resin, layers of powder, or even bio-compatible and edible materials. Desktop 3D printing is today's printing press, putting rapid prototyping, customizable products, and individualized medical appliances in reach of the general public. Literacy in basic 3D modeling and manufacturing is an essential skill for future STEM success in this country. In this course students will learn how to be "makers" by using various types of 3D modeling software and imaging equipment, printing actual physical objects that they have designed and modeled themselves, and participating in educational outreach in the university and the community.

For a description of how this course meets both JMU GSCI Guidelines and JMU Cluster Three Learning Objectives, please see <https://sites.lib.jmu.edu/isci104-spring2020/jmu-gened/>

Grades

Grades in this one-credit course will be based on attendance, participation, a portfolio of 3D prints, 3D design and modeling, class challenges, presentations, outreach activities, and a final project. You will have weekly homework that will be due *an hour and a half before class* which will be graded before class and will be a significant portion of your grade. Your printed projects will require a significant amount of time in the JMU 3-SPACE classroom outside of the scheduled class times.

Schedule

Week 1	Intro, first prints, starting Tinkercad, initial grab bag nouns and tutorials assigned
Week 2	Grab bag noun blog post due, Tinkercad moving parts and 20 objects assigned
Week 3	Moving parts/20 obj post due, Thingiverse final project assigned, equipment quiz
Week 4	Tinkercad final project draft post, Class Challenge (silly/serious)
Week 5	Fusion 360 ring project, 20 objects assigned, outreach proposals due
Week 6	Fusion 360 ring and 20 obj post due, Fusion project proposals assigned
Week 7	Fusion 360 final draft due, final projects introduced, Class Challenge (various)
Week 8	Fusion 360 final project due, Science behind 3D Printing: G-Code&Applications
Week 9	OpenSCAD tutorials, Chaos for loop and 20 objects assigned
Week 10	Chaos and 20 objects post due, OpenSCAD final and final projects proposals
Week 11	Open SCAD ambitious design/trouble shooting, equipment quiz (second chance)

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Week 12	Open SCAD final print due Class Challenge (fix it)
Week 13	Class Challenge, mystery assignment introduced
Week 14	Mystery assignment
Week 15	First round of final presentations, all final prints are due if you are presenting
Finals Week	Second round of final presentations, Portfolio, all blog posts due

I reserve the right to change policies or schedules via an announcement in class.

First Week Attendance Policy

At the instructor's discretion, any student registered for a class in the Department of Mathematics and Statistics who does not attend at least one of the first two scheduled meetings of the class (or does not attend the first scheduled meeting of a class that meets once a week) **MAY** be administratively dropped from the class. Students will be notified by e-mail if they will be dropped. Students who fail to attend should not assume they will be administratively dropped by their instructor; it is the student's responsibility to drop the course on their own or they will receive a grade at the end of the semester. All students are responsible for verifying the accuracy of their schedules and changes made in their schedules.