

# Math 391: Mathematics: Composition and Communication

Fall 2021  
CB 335  
MWF 12-12:50

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Course website: [www.ms.uky.edu/~kate/teaching/f21\\_391.html](http://www.ms.uky.edu/~kate/teaching/f21_391.html)

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One of the biggest challenges in doing math is explaining your ideas to other people. We will practice that skill this semester through a range of topics inspired by calculus and topology/geometry. (Only calculus knowledge will be assumed!)

For each project you will:

- design a model to illustrate the ideas you find most important,
- 3d print the model (at the College of Engineering Innovation Center /[www.engr.uky.edu/students/student-success/maker-spaces](http://www.engr.uky.edu/students/student-success/maker-spaces)),
- write a blog post describing your object (at least 500 words),
- write a short display card (at least 50 words), and
- participate in the class show and tell of all the models.

*Prerequisites:* The prerequisites for this class are

- Math 213 Calculus III
- Math 261 Number Theory or Math 214 Differential Equations
- Math 322 Matrix Algebra

And one of:

- Math 321 Introduction to Numerical Methods
- Math 351 Topology I
- Math 361 Modern Algebra I
- Math 471 Advanced Calculus

*Software:* We will use several free software packages this semester

- Onshape <https://www.onshape.com/en/education/> We will start with this CAD program. It can be accessed through a browser.
- Openscad <https://openscad.org/> Later in the semester we will need a CAD program with different tools. This program will need to be downloaded onto a computer.
- Blogger [www.blogger.com](http://www.blogger.com) This is where we will make our collaborative blog. Send me your g.uky email address and I will add you as a contributor.
- LaTeX [www.overleaf.com](http://www.overleaf.com) This is a program to type math. You may want to use this for your display cards. It can be accessed from a browser. (This syllabus was typed in LaTeX!)

*Covid:* This is probably going to be a weird semester and changes might need to be made to this syllabus. If that happens, a new syllabus will be on the website and I will announce changes in class.

We will follow university policy on masks. They are required for all students (and faculty) and anyone not wearing a mask will need to leave class.

*Assessment:* Assessment in this class will be based on projects. The general rubric for the projects is on the last page of the syllabus and for some projects there will be further specifics. I expect that there will be 10 projects over the semester and the last will be due the last week of the semester.

Each project will have multiple parts with different due dates. These will be posted on the course website so be sure to check it frequently.

- Due dates are firm!

Final grades will be determined using the standard grading scale.

Course Grade	Percentage
A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
E	below 60%

*Texts:* There is on required text for this class, but you may find it helpful to have a calculus book on hand for the first part of the semester.

*Attendance:* Class attendance is expected of all students, but do not come to our physical classroom if you are sick! Please send me an email letting me know what is going on. If we are remote/hybrid - who knows what this semester is going to be like! - and you feel well enough please do participate in class.

*Classroom Demeanor:* Turn off all cell phones or other electronic devices prior to entering the classroom. An attitude of respect for and civility towards other students in the class and the instructor is expected at all times.

*Academic Policy:* For policy regarding attendance, accommodation due to disability, and nondiscrimination statement please see <https://www.uky.edu/universitysenate/acadpolicy>.

*Academic Integrity:* Please see <https://www.uky.edu/universitysenate/ao> for expectations for academic integrity.

*Accommodations due to disability:* If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at [drc@uky.edu](mailto:drc@uky.edu). Their web address is <https://www.uky.edu/DisabilityResourceCenter/>.

*Diversity, Equity, and Inclusion* The University of Kentucky is committed to our core values of diversity and inclusion, mutual respect and human dignity, and a sense of community (Governing Regulations XIV <https://www.uky.edu/regs/gr14>). We acknowledge and respect the seen and unseen diverse identities and experiences of all members of the university community (<https://www.uky.edu/regs/gr14>). These identities include but are not limited to those based on race, ethnicity, gender identity and expressions, ideas and perspectives, religious and cultural beliefs, sexual orientation, national origin, age, ability, and socioeconomic status. We are committed to equity and justice and providing a learning and engaging community in which every member is engaged, heard, and valued.

We strive to rectify and change behavior that is inconsistent with our principles and commitment to creating a safe, equitable, and anti-racist environment. If students encounter such behavior

in a course, they are encouraged to speak with the instructor of record or the colleges diversity officer (<https://www.uky.edu/inclusiveexcellence/college-diversity-inclusion-officers/>), who is charged with addressing concerns about diversity, equity, and inclusiveness. Students may also contact a faculty member within the department, program director, the director of undergraduate or graduate studies, the department chair, or the dean. To submit an official report of bias, hatred, racism, or identity-based violence, visit the Bias Incident Support Services website (<https://www.uky.edu/biss/report-bias-incident>).

Scale/Materials (out of 25 points)	Exceptional	Competent	Less than competent
STL Files (4 points)	Turned in working STL file	Turned in partially working STL file	No STL file
Code (3 points)	Turned in working code. The code produces object.  If no code is needed these points will be given to the stl file.	Turned in some part of code	Turned in no code
3D printed object (3 points)	Eyecatching. Enhances understanding beyond what could be conveyed on the written page.	Visually appealing. Captures the idea and conveys it, but does not go beyond what could be described in writing.	Does not show artistic choices. Does not capture the scientific concept.
Blog post (7 points)	Gives a full explanation of the created object. Demonstrates a deep understanding. Discusses concepts beyond what is discussed in class. Brings to light subject matter in a relevant discipline.	Leave some details out on the creation of the object. Demonstrates some understanding. Discusses concepts but only slightly beyond what is discussed in class. Mentions only in passing subject matter in a relevant discipline.	Does not explain the creation of the object. Does not demonstrate understanding of concepts. Discusses only concepts already discussed in class. Does not mention subject matter in a relevant discipline.
Display card (4 points)	Display card is neat, readable, and contains all needed information.	Display card is not neat or not readable, or misses some information	Display card cannot be used for display in the form turned in.
Show and tell (2 points)	Present for all show and tells for this project.	Present for own show and tell for this project	Not present
Feedback (2points)	Gives insightful feedback that helps strengthen the blog post	Gives some feedback	Gives no feedback