

# MATH 391 MATH & MAGIC SPRING 2025<sup>1</sup>

PROFESSOR MARGARET READDY  
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LECTURES: MWF noon Lafferty 201C  
OFFICE HOURS: To be announced and by appointment  
MATH DEPT. STAFF: 859-257-3336

<http://www.math.uky.edu/~readdy/391>



TEXTS:               Persi Diaconis and Ron Graham, *Magical Mathematics: The mathematical ideas that animate great magic tricks*, Princeton University Press.

Martin Gardner, *Mathematics: Magic and Mystery*, Dover.

William Strunk Jr. and E.B. White, *The Elements of Style*, 4th Edition.

PREREQUISITES:   Math 213 Calculus III\*  
                      Math 322 Matrix Algebra\*  
                      Math 261 Number Theory or Math/Stats 320 Probability\*  
                      Complete one of any MA 400+ level course\*

\*All prerequisites must be completed prior to course enrollment.

COURSE MATERIAL:       This course will focus on mathematical ideas behind recreational mathematics and magic tricks, including combinatorics, graph theory, knot theory, number theory, group theory, topology and coding theory. The course will also stress mathematical writing for both general and specialized audiences, as well mathematical communication to an audience.

MAGIC MATERIALS:       ♦ ♠ ♥ ♣ One (1) deck of cards. Available at Kroger, Meijers, your favorite Dollar store...  
                              Magic rope. Pick your favorite color (green, blue, red, ...). Available at magic stores.  
                              You can also substitute **cotton** clothesline.

GRADING:           Class Participation 15%  
                      Quizzes 15%  
                      Weekly/Biweekly Writing Samples 50%  
                      Class Final Magic Show 20%

FINAL EXAM:       In lieu of a Final Exam, we will have a Class Final Magic Show the last week of classes, formerly known as Prep Week and now known as Magic Week.

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<sup>1</sup>Boring title: Math Composition and Communication

GRADING SCALE:	<p>Each component of your coursework (class participation, quizzes, written assignments, final magic show) will be curved using the scale:</p> <p>A 90-100%, B 80-89%, C 70 - 79%, D 60-69%, E Below 60%.</p> <p>Pluses will be awarded if you are at the upper end of a particular grade, while minuses for being at the lower end.</p>
CLASS PARTICIPATION:	<p>You are expected to attend every class and be engaged during class – by being prepared for class (reading, bringing magic cards, etc.), asking questions, answering questions, giving constructive advice, teaching the class a new magic trick, etc.</p> <p>You are allowed two unexcused absences with no penalty. Each additional unexcused absence will result in losing 1/5 of your Class Participation grade.</p>
DIGITAL DEVICE DISTRACTION	<p>Digital device distraction (DDD) leads to “decreased productivity, negative impacts on our mental and emotional health, and even has physical consequences”.</p> <p><i>Massachusetts General Hospital, September 27, 2023</i></p> <p><b>Digital devices are not allowed in our classroom.</b> If you insist on using one, you will be asked to leave and you will be counted as absent for that day’s class participation/ attendance.</p>
QUIZZES:	<p>A short quiz will be given during the last fifteen minutes of each Friday lecture. This will cover material from the previous week’s Monday, Wednesday and Friday lectures.</p> <p>The lowest two quiz grades will be dropped. If you miss a quiz due to an absence (excused or not), this will be one of the two quiz grades which will be dropped.</p>
WEEKLY WRITING:	<p>Each week you will be given something to write about. It will usually be due on Monday at the start of class.</p>
CLASS FINAL MAGIC SHOW:	<p>The class will put on a magic show. More details to follow.</p>
ABSENCES:	<p>Administrative Regulation - Academic and Student Rule AR-ASA 5.2.5.2. See the 192 page document <a href="#">link</a>.</p> <p>The current rules defines acceptable reasons for excused absences to include:</p> <ul style="list-style-type: none"> <li>(a) significant illness of student or serious illness of member of student’s household/ immediate family,</li> <li>(b) death of immediate family member, (c) University-related trips, (d) major religious holidays, and</li> <li>(e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.</li> </ul> <p>You must present full documentation in order to request makeup work for a valid absence. The instructor will require “appropriate verification” when students claim an excused absence of any kind. Appropriate notification of absences due to University-related trips or a major religious holiday is required no later than 7 days prior to the absence.</p>

If you miss more than one-fifth of the scheduled lectures due to *unexcused* or *excused* absences, the instructor will request that you withdraw from the course.

CHEATING: Don't do it. It is an extremely serious offense. As a minimum response, I will give a zero to the offender.

DEVICES: No digital devices (cellphones, computers, calculators, etc), books, notes or outside assistance of any kind including online software/calculator/assistance tools, are allowed during quizzes. By University policy the use of such constitutes cheating.

PLAGIARISM: Plagiarism includes copying from outside sources, including internet sources. If charged, at minimum you will receive a zero. Maximum penalties include being suspended, dismissed or expelled from the University. For further information, consult the UK Administrative Rules.

CLASSROOM  
DECORUM: Code of Student Conduct (AR 4.10), Section V, Letter J, Instructional Setting Behavior:

*"Students who engage in conduct that results in disruption of an instructional setting may be directed by the instructor to leave the class for the remainder of the instructional setting period."*

Examples include but are not limited to texting, doing homework in class, taking phone calls, updating your favorite social media page, using a fidget spinner, surfing the web on your digital device, reading the newspaper, interrupting classmates, and speaking aloud without being called upon. An attitude of respect for and civility towards other students in the class and the instructor is expected at all times. If what you are doing would be inappropriate behavior on a job interview, then it is very likely inappropriate behavior in the classroom.

INTELLECTUAL  
PROPERTY **All course content, including, but not limited to handouts, assignments, live and recorded lectures, lecture notes, syllabus, review materials, quizzes, exams, and webpages, is the intellectual property of the instructor.**  
The instructor is the exclusive owner of all course materials. Course content cannot be shared in any way with anyone or with anything. Course content also cannot be uploaded, reproduced in any medium or sold without prior permission from the instructor.

Course meetings and lectures may be recorded by the instructor. All video and audio recordings of lecturers and class meetings, provided by the instructor, are for educational use by students in this class only. They are not to be copied, shared, uploaded to other online environments or redistributed in any manner.

PHOTOGRAPHY  
& RECORDING  
POLICY Video and/or audio recordings are not permitted unless a student has received prior permission from the instructor. Recording of other students by student(s) is prohibited per the UK Code of Student Conduct. Any distribution of recordings is also prohibited. Students with specific recording accommodations approved by the Disability Resource Center should present their official documentation to the instructor.

Any violation of the class photography & recording policies will result in your final course grade being reduced by one letter grade as a minimum penalty.

STUDENTS WITH DISABILITIES: Students with disabilities should provide your instructor with a Letter of Accommodation from the Disability Resource Center. The DRC can be reached via phone (859-257-2754) or email (drc@uky.edu).

#### TITLE IX, DISCRIMINATION AND HARASSMENT:

Title IX is a Federal law that prohibits discrimination and harassment on the basis of sex. In accordance with this law, the University of Kentucky is committed to providing a safe learning, living, and working environment for all members of the University community. The University maintains a comprehensive program which protects all members from discrimination, harassment, and sexual misconduct.

For complete information about the University of Kentucky's prohibition on discrimination and harassment on aspects such as race, color, ethnic origin, national origin, creed, religion, political belief, sex, and sexual orientation, see Administrative Regulation 6: Policy on Discrimination and Harassment <https://regs.uky.edu/administrative-regulation/ar-61>

#### OTHER MISCELLANEOUS ITEMS FROM THE PROVOST CHECKLIST:

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Unless noted, office hours will be held in Prof. Readdy's office.

Course description:

Undergraduate topics course. The mathematical content will be selected at the discretion of the instructor. The course satisfies the Graduation Composition and Communication Requirement for mathematics majors. This course is a Graduation Composition and Communication Requirement (GCCR) course in certain programs, and hence is not likely to be eligible for automatic transfer credit to UK.

Administrative Regulation - Academic and Student Affairs

AR-ASA 5.25 Academic Standards

This 192 page document is posted on canvas.

Helpful resources at the Office of Student Success: <https://studentsuccess.uky.edu/get-help>

What is Plagiarism? <https://ombud.uky.edu/students/what-plagiarism>

What is Cheating? <https://ombud.uky.edu/students/what-cheating>

Classroom Emergency Preparedness and Response Information: See canvas for this document.

The instructor reserves the right to modify this syllabus at any time.  
Last updated January 12, 2025.

# PROF. READDY'S ADDENDUM PROHIBITING THE USE OF GENERATIVE AI (GENAI)

EFFECTIVE DATE: JANUARY 13, 2025

READ THIS! IT IS IMPORTANT!

A major focus of this course is to develop your skills and foster creativity in writing and broader aspects of communication. All assignments for this course, unless otherwise indicated, must be completed for this course entirely on your own.

This policy is to ensure academic integrity, fairness and learning outcomes of the course.

Prohibitions include:

- You may not copy from any online sites (Examples: Course Hero, Chegg.)
- You must not utilize composition technologies (Examples: Chat GPT or other GenAI software)
- Work submitted, including drafts, final versions, and all other submissions, must be written by the student themselves.
- Any use of these sites or tools will be considered academic misconduct. You will be charged and penalized per the course's Plagiarism rules.

Please contact your instructor if you have any questions or concerns regarding this policy.

*By signing below, I acknowledge that I have read, understood and will abide by the terms of this addendum.*

Signed \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Last 4 digits of student id \_\_\_\_\_

## Olivia Stowell's AI/ChatGPT Policy (an abbreviated version)

The use of ChatGPT or any other AI platform or tool to generate ideas, solutions (not including spell check), or to produce any material is **prohibited** in this course.

Why this policy?

- **Using AI opens up academic honesty issues.** It raises the question of whether the work is your work. Tools like ChatGPT rely on taking uncredited material from scholars and writers. See Matilda Battersby, Academic authors 'shocked' after Taylor & Francis sells access to their research to Microsoft AI The Bookseller News, July 19 2024. <https://www.thebookseller.com/news/>
- **Using AI does not produce reliably accurate results.** See

Michael Townsen Hicks, James Humphries and Joe Slater, ChatGPT is bullshit, Ethics and Information Technology, volume 25, article 38 2024. <https://link.springer.com/article/10.1007/s10676-024-09775-5>

Alkaissi H, McFarlane S I (February 19, 2023) Artificial Hallucinations in ChatGPT: Implications in Scientific Writing. Cureus 15(2): e35179. <https://pubmed.ncbi.nlm.nih.gov/36811129/>

Benjamin Weiser, Here's what happens when your lawyer uses ChatGPT, The New York Times, May 27, 2023.

- **ChatGPT has serious negative environmental impacts, particularly in relation to water usage.** See

Molly Flanagan, AI and environmental challengers, University of Pennsylvania Environmental Innovations Initiative

Matt O'Brien and Hannah Fingerhut, Artificial intelligence technology behind ChatGPT was guilt in Iowa – with a lot of water, September 9, 2023, AP News.

John Naughton, Why AI is a disaster for the climate, The Guardian.

Craig Hale, ChatGPT is having a really bad impact on the environment, techradar Pro.

- **OpenAI and other AI companies have exploited workers from the global south, especiall workers in prisons and refugee camps, and workers in Kenya, the Philip-pines, Columbia and elsewhere.**  
See Billy Perrigo, OpenAI used Kenyan workers on less than \$2 per hour to make Chat-GPT less toxic, time, January 18, 2023. <https://time.com/6247678/openai-chatgpt-kenya-workers/>.

Also:

<https://www.wired.com/story/millions-of-workers-are-training-ai-models-for-pennies/>

<https://theconversation.com/long-hours-and-low-wages-the-human-labour-powering-ais-development-217038>

<https://www.washingtonpost.com/world/2023/08/28/scale-ai-remotasks-philippines-artificial-intelligence/>

<https://www.noemamag.com/the-exploited-labor-behind-artificial-intelligence/>