

SYLLABUS

FYF 101 M – Fall 2021

Math is Fun: Patterns and Problem Solving

Instructors:

- **Dr. Sofya Chepushtanova**

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- **Dr. Del Lucent**

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- Office: Stark Learning Center (SLC) 231. Phone: (570) 408-4834
- Office Hours: MW 10:00 am - 12:00 pm, online or in person by appointment (meet.google.com/htx-icgz-fp)

Meetings Times: MW 03:00-04:15 pm in SLC 223.

FYF Program (From Wilkes Bulletin): The mission of the First-Year Foundations Program is to provide rigorous learning experiences that challenge first-year students to develop the strategies essential for a successful transition into the campus community. Each section of FYF is unique in content and constitutes a special topics course in which faculty members are encouraged to explore topics that are of special interest to them. All sections of FYF, regardless of specific topic, share a common core of objectives that facilitate significant learning experiences (inside and beyond the classroom) by which first-year students develop self-knowledge as learners and members of an academic community, intellectual curiosity, openness to diversity, and a capacity for lifelong learning and civic responsibility. Activities designed to foster and develop effective writing, critical thinking, and information literacy skills are integral components of all FYF courses.

Our Section of FYF 101: Mathematics is the science of patterns. You can find them in numbers, sequences, sets, shapes, and symmetries. We will talk about integers and prime numbers, rational and irrational numbers, complex numbers and fractals, coffee mugs and doughnuts, data shape and dimension. We will learn some tricks, tips, and shortcuts that can make difficult sounding concepts like prime factorization, counting, sequences, and pattern recognition easy and fun. By seeing how numbers relate and interact, you will gain confidence in your ability to solve problems.

Textbook and Materials: There are no required texts for this course. All readings and materials will be posted through the LIVE site for this course. Make sure you have selected to receive notifications of course uploads, changes, and communications.

You are expected to come prepared to class with pencils/pens, a notebook, and an electronic device

that can download apps, such as a smartphone or laptop; however, the use of such technology will be strictly monitored.

COVID-19 Safety Rules: *Always wear a mask. Wash your hands or use hand sanitizer. You may want to sanitize your desk before class. Use the same seat in the classroom (for contact tracing purposes). No eating or drinking allowed in the classroom (bottled water only). If you are sick, stay at home, and let the instructors and student health services know.*

Grading: Your grade in this course is calculated from the following components:

Item	Percentage	Common Core Objectives
<i>Homework Assignments</i>	40%	CT1-CT4, QR1-QR4, WC1, WC3
<i>Attendance</i>	5%	
<i>Participation</i>	5%	CT1-CT4, DA1, DA3, OC1, OC2, OC5
<i>Common LIVE Assignments</i>	10%	CL3, DA3
<i>Final Project: Poster</i>	30%	CT1-CT4, QR1-QR4, WC1, WC3
<i>Final Project: Presentation</i>	10%	CT1-CT4, DA3, OC5, QR1, QR4

Common Core Objectives (Key):

- CL3: Know intellectual property laws with respect to software, music, and video, and understand the ethical use of information for academic and personal purposes.
- CT1: Use critical thinking to recall relevant information and structure verbal/written messages.
- CT2: Paraphrase, synthesize, and analyze information.
- CT3: Analyze information and apply it to new contexts.
- CT4: Utilize information to formulate and support a position.
- DA1: Demonstrate knowledge and understanding of the diversity of the local and global communities, including cultural, social, political, and economic differences.
- DA3: Utilize perspectives of diverse groups when conducting analyses, drawing conclusions, and making decisions.
- OC1: Construct a relevant message supported by scholarly and sufficient research.
- OC2: Organize message content based on an accepted and coherent organizational pattern.
- OC5: Effectively deliver, in an extemporaneous manner, informative, persuasive and special occasion speeches.
- QR1: Represent mathematical information symbolically, visually, numerically, and verbally, and interpret and draw inferences from mathematical models such as formulas, graphs, tables, and schematics.

- QR2: Apply arithmetical, algebraic, geometric and statistical methods with appropriate technological tools to solve problems.
- QR3: Think critically and apply common sense in estimating and checking answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results, judging the soundness and accuracy of conclusions derived from quantitative information.
- QR4: Communicate mathematical information effectively using symbols, visual, numerical, or verbal representations.
- WC1: Produce a written text that sustains a unifying focus with coherently-structured and logically-ordered sentences and paragraphs.
- WC3: Present an argument in writing, with use of evidentiary examples.

Your final grade will be assigned from the total percentage you earn as follows:

Raw Score	0 to 59%	60 to 64%	65 to 69%	70 to 74%	75 to 79%	80 to 84%	85 to 89%	90 to 100%
Grade	0	1.0	1.5	2.0	2.5	3.0	3.5	4.0

Homework Assignments (40%): There will be weekly homework assignments which can include solving problems, writing reflections, and reading.

Attendance (5%): You are required to attend all classes, unless you are sick. You are responsible for everything that goes on in class (even if you are not there). Roll will be taken at each class. We will adhere to the Wilkes University Policy regarding class attendance policies (see the Wilkes Student Handbook). In particular, after 5 consecutive instructional hours of unexcused absences from a class, students may be readmitted to the class only by action of the Office of Student Affairs and the department chairperson concerned. *Remember that poor attendance is a major contributor to poor performance!*

Participation (5%): The format of the course will include discussions, surveys, and problem solving in class. You are expected to contribute to these class activities. You are also expected to be respectful and polite and to communicate your thoughts clearly using vocabulary appropriate to the course content.

Common LIVE Assignments (10%): All FYF sections share an FYF Community group on LIVE which will contain common assignments and information (like the Library pre- and post-tests, Bystander Awareness training, etc.) that you will be asked to do over the course of the semester, in addition to your other FYF 101 work. (This is separate from the other assignments and activities in this class.)

Final Project (40%): You will work in teams on an approved topic (from list) and create a poster. You will be graded on the content and organization of this poster (30%). You will also

be required to present this poster to the class and at the FYF poster symposium at the end of the semester (10%). The topics list will be published later in the semester and may include some items mentioned in class or things that we did not cover.

Academic Integrity: *Academic dishonesty will not be tolerated. The punishment for cheating or plagiarism can range from a 0% on an assignment, 0.0 for the course, or expulsion from school. The severity of punishment as it applies to your assignment or course grade will be decided by the instructor(s) based on the nature of the violation. Should the violation be severe, the instructors will involve University personnel outside of the classroom. **Put simply: do not cheat. We have no patience for academic dishonesty.***

Cell Phones: should be switched to silent mode (or turned off), and put out of sight during class time (unless we ask you to use them).

Email Communication: All electronic correspondence will be sent to the student's *Wilkes University e-mail account*. No other e-mail account will be used. You are responsible for obtaining all electronic correspondence that is sent via the university account. Please refer to the following tutorial on how to communicate with your instructor via email: <https://marktomforde.com/academic/undergraduates/Email-Etiquette.html>. View an email to a professor as a professional interaction. How you choose to interact conveys your level of seriousness and professionalism.

Read the syllabus carefully to be sure that you understand all of the requirements of this course!

Next page - tentative course schedule for Fall 2021

*Tentative Course Schedule*¹ for Fall 2021

	Week of	Monday (3:00-4:15 pm)	Wednesday (3:00-4:15 pm)
1	8/30	Syllabus Overview Math Is About Shortcuts and Patterns	Cool Examples and Problems Assignment 1
2	9/6	<i>Labor Day</i>	Sets, Subsets, Numbers Assignment 2
3	9/13	Natural Numbers and Integers	Rational and Irrational Numbers Assignment 3
4	9/20	Ratios and Proportions	Number Sequences; Special Sequences: Arithmetic and Geometric Sequences; Fibonacci Numbers, Golden Ratio Assignment 4
5	9/27	<i>Visit to Farley Library (3:15-4:15 pm)</i>	Sequences Continued Assignment 5
6	10/4	Exponential Notation and Exponent Rules; Important Number e	Different Number Bases Assignment 6
7	10/11	<i>Registrar's Visit (3:00-3:40 pm)</i>	Exciting Prime Numbers Assignment 7
8	10/18	Pythagorean Theorem, Sums of Powers and Fermat's Last Theorem	Functions Are Special Relations; Types of Functions Assignment 8
9	10/25	Graphing Functions: Tools and Examples	Functions in Data Science Assignment 9
10	11/1	Probability	More on Probability: Bayes's Theorem, Naive Bayes Assignment 10
11	11/8	Brief Intro to Graph Theory	Topology and Shape Assignment 11
12	11/15	More on Topology	Dimension and Dimensional Analysis Assignment 12
13	11/22	Wonderful Complex Numbers	<i>Thanksgiving Recess</i>
14	11/29	Fractals and Fractal Dimension	More on Fractals; Chaos Work on Project
15	12/6	Work on Project	Work on Project
16	12/13	<i>No class on Monday (Friday schedule) Final exams begin on 12/13</i>	
Final project presentations: Tuesday, 12/14, 4-6 PM in the MAC, at the Fall Academic Symposium			

¹Note that the schedule is subject to change. When changes occur, you will be notified via email/LIVE.