Informal Mathematics *Department Course Descriptions*

Updated Fall 2025

MATH 105 – Mathematics of Personal Finance

This course focuses on applications of mathematics to personal finance and daily life. Topics may include budgets, investments, loans, credit cards, savings, retirement, insurance, taxes, depreciation and the time value of money. Students will have the opportunity to examine and reflect on the behaviors and beliefs that shape their approach to money management. The course is designed to build self-confidence in one's mathematics skills and learn where you can apply those skills when planning for your financial future.

Prerequisite: Eligibility based on PLU Math Placement Exam, or permission of instructor.

MATH 107 – Mathematical Explorations

This course explores the uses of mathematics in contemporary society. The themes and content of the course vary, and are selected by the instructor. Nonetheless, this course always has an emphasis on logical and numerical reasoning. The emphasis on quantitative literacy usually includes ratios, percents, and basic statistics, as well as financial literacy, including compound interest. Some past themes have included cryptography, voting methods, marketing, mathematics of money, probability and statistics, and applications to real-world issues such as housing justice or school discipline. The course is designed to increase awareness in the many ways that mathematics and statistics are used in everyday life and in society (including some that are misleading), to enhance the students' enjoyment of and self-confidence in math, and to sharpen students' critical thinking.

Prerequisite: Eligibility based on PLU Math Placement Exam, or permission of instructor.

MATH 115 – College Algebra and Trigonometry

In this course, you will review key concepts from algebra and trigonometry while strengthening your problem-solving and modeling skills. You'll explore many of the elementary functions used in applications across business, the natural sciences, and other fields. In particular, you'll consider polynomial, rational, exponential, logarithmic, and trigonometric functions which can be used to model a variety of patterns and relationships such as population growth, optimization, radioactive decay, ocean tides, and more. By plotting these functions in the coordinate plane, you'll connect algebra and geometry to develop visual cues for a better understanding. You'll also learn about trigonometric functions through right-triangle ratios. These ratios are used in applications to determine heights of objects, calculate angles of elevation and depression, and more.

This course provides preparation for Math 123, Math 128 and Math 140.

Prerequisite: PLU math placement exam and two years of high school algebra.

MATH 123 – Modern Elementary Mathematics I

This course is intended for preservice K-8 teachers. Elementary teachers need a strong conceptual understanding of mathematics, and knowledge of children's mathematical thinking strategies, to successfully teach children mathematics. This course gives future K-8 teachers an opportunity to explore elementary and some middle school mathematics in depth, through hands-on learning. This class focuses on two of the five recognized strands of school mathematics: number sense and algebraic sense. Students in this course will:

- Understand place value;
- Understand the common algorithms used for operations on whole numbers, integers and rational numbers;
- Understand fractions, percentages, and ratios.

Special emphasis is placed on the Standards for Mathematical Practice (part of the Common Core State Standards for Mathematics), with a focus on persevering in solving problems, constructing viable arguments, and critiquing the reasoning of others. In particular, students will learn to explain *Why* rather than just *How,* and consistently justify their reasoning to the instructor and their peers, thus developing the ability to explain mathematical concepts to their future students.

Prerequisites: A qualifying score on the math placement test or a grade of C or higher in MATH 115.

MATH 124 – Modern Elementary Mathematics II

This course is a continuation of MATH 123, and is intended for preservice K-8 teachers. Its focus is on enhancing students' conceptual understanding of the remaining three recognized strands of school mathematics: geometry, measurement, and probability and statistics. As in MATH 123, students will engage in hands-on learning, with an increased focus on real-world contexts and on supporting K-8 students in learning mathematics. Students will (re)learn about mathematical topics such as:

- Basic probability formulas;
- Statistical analysis of data including appropriate graphical representations of data
- Properties of polygons;
- Classification of triangles and quadrilaterals;
- Discovering area formulas for special quadrilaterals as well as surface area and volume formulas for special three-dimensional solids.

Special emphasis is placed on the Standards for Mathematical Practice (part of the Common Core State Standards for Mathematics), with a focus on persevering in solving problems, constructing viable arguments, and critiquing the reasoning of others. In particular, students will learn to explain *Why* rather than just *How,* and consistently justify their reasoning to the instructor and their peers, thus developing the ability to explain mathematical concepts to their future students.

Prerequisite: A grade of C or higher in MATH 123.

MATH 128 – Linear Models

This is the required mathematics course for business majors, and as such, most of the applications in the course are taken from business, broadly interpreted. The business applications typically involve business functions like cost, revenue, profit, and optimization. The course typically covers several distinct subjects:

- Systems of linear equations – formulation and solution;
- Systems of linear inequalities in two variables and applied optimization;
- An introduction to matrices and vectors;
- Logarithms and Exponentials;
- Basic Time Value of Money;
- Applied differential calculus of a single variable.

Since this course is not intended for mathematics majors, there is a strong focus on techniques and applications, and only a minimal focus on theoretical justifications. Consequently, this course cannot substitute for Math 151, the first calculus course intended for students majoring in mathematics, economics and the physical sciences. Students who intend to emphasize the finance or economics aspects of business are *strongly* encouraged to take Math 151 rather than Math 128.

Prerequisites: Two years of high school algebra or MATH 115. Cannot be taken for credit if MATH 151 (or the equivalent) has been previously taken with a grade of C or higher.

MATH 140 — Precalculus

Precalculus is the mathematical equivalent of warming up and stretching before you workout–skipping it isn't a good idea. In this course, you will solidify your understanding of various functions that play important roles in calculus and other areas of higher mathematics. You will study properties of functions (such as their domains and ranges), combinations of functions (including composition of functions and transformations of graphs), and inverse functions (which only sometimes exist!). You'll also learn about elementary functions (such as polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions), and how to use these functions in applications (such as population growth or radioactive decay). Finally, you'll explore trigonometric identities in detail, learn how to solve trigonometric equations, and apply trigonometric models to describe and understand periodic phenomena.

Prerequisites: The completion of Math 115 with a grade of C or better, or math placement into Math 140.

MATH 145 – Introduction to Biostatistics

This course focuses on inferential statistics (namely, hypothesis testing and confidence intervals) as it applies to the health sciences. The emphasis is on statistical thinking rather than tests and procedures. As such, there is little computation using mathematical formulas, and students use software (including R Statistical Software) to compute results. At least one course project involves application to a research question of the student's choice.

Topics covered include:

- Hypothesis tests – using a sampling distribution to evaluate the strength of evidence against a hypothesized model, interpreting the p-value, determining a correct decision, and recognizing the assumptions, nuances, implications of, and limitations of hypothesis testing;
- Confidence intervals – using a statistic to make estimates about parameters, as well as the interpretation and limitations of such intervals;
- Introduction to R statistical software, including (briefly) basic data visualization and descriptive statistics.
- Differentiating between relative risk vs. absolute risk, and implications thereof,
- Linking the (often limited) scope of appropriate conclusions to the study design.

Biostatistics is an entire major in its own right; rather than attempting to provide a cookbook introduction to all of the statistical techniques and tests that a biologist might need, this course is intended to help students understand the principal threads of statistical thinking.

This course is cross-listed under both mathematics and statistics, and the STAT prefix is recommended for students interested in graduate school in a field related to statistics or data science.

Prerequisites: The completion of Math 140 with a grade of C or better, or math placement into Math 151 or a more advanced course.

MATH 151 – Intro to Calculus

Differential calculus is all about understanding change. We look at how things vary–like how fast a car speeds up or how quickly a population grows. Instead of just comparing two points, we zoom in infinitely close to see what's happening *right now*. The main focus is called the derivative, which measures the rate of change (basically, how one quantity responds when another shifts a tiny bit). We also look at limits of what happens when patterns continue on to infinity or when patterns do surprising things when we look infinitely closely. Of course, we look at interesting uses for the derivative, and we introduce the opposite behavior of derivatives, called anti-derivatives.

Prerequisites: MATH 140 or PLU Math Placement into MATH 151.

MATH 152 – Calculus 2

Calculus 2 is about the process of accumulation: if we know a rate of change (a derivative), we can talk about its accumulation (an anti-derivative, or integral). We study how to add infinitely many pieces: to find areas by adding up infinitely thin rectangles, or to understand transcendental functions (like logarithms) by adding up an infinitely long “polynomial.” Ever wondered how your calculator knows that $\sin(0.8) \approx 0.717$? These questions are related to *Taylor series,* which are discussed in the second half of the course.

Prerequisites: Math 151 or placement into Math 152.

STAT 231—Introductory Statistics

This course briefly introduces sampling methods, basics of experimental design and descriptive statistics before shifting to focus on inferential statistics. Students are taught a mix of parametric and nonparametric methods with an emphasis on statistical thinking. At least one course project involves application to a research question of the student’s choice.

Topics covered include:

- Least squares regression - building a linear model to predict a numeric outcome while minimizing the prediction error;
- Parametric methods - statistical techniques that rely on assumptions about the underlying population distribution;
- Nonparametric methods - statistical techniques that do not make assumptions about the underlying population distribution;
- Hypothesis tests - using a sampling distribution to evaluate the strength of evidence against a hypothesized model; testing is covered in both parametric and nonparametric methods;
- Confidence intervals - using sample data to estimate a plausible range of values for a parameter; covered in parametric methods;
- Statistical computing - an introduction to R programming for each of the main course topics.

MATH/STAT 242—Introduction to Mathematical Statistics

In an era when data are everywhere, this course will help you grow as responsible consumer and producer of statistical results. Students develop statistical thinking expertise associated with basic statistical inference, along with understanding of the limited scope and implications of these techniques. Students will be able to go beyond discerning and computing appropriate tests to recognize assumptions, interpret implications, and identify limitations and common pitfalls and misuses of the results. In short, students will grow as responsible producers and consumers of data-based claims that permeate our society.

The emphasis is on statistical thinking rather than tests and procedures. As such, there is little computation using mathematical formulas, and students use software (including R Statistical Software) to compute results. At least one course project involves application to a research question of the student's choice. This course may have a stronger emphasis on coding in R, as compared to other introductory statistics courses offered by the mathematics department.

This course is cross-listed under both mathematics and statistics, and the STAT prefix is recommended for students potentially interested in graduate school in a field related to statistics, applied mathematics, or data science.

Prerequisite: MATH 151.

MATH 245—Discrete Structures

Anyone interested in computer science must possess logical reasoning skills. In this class, students enhance these skills by studying a variety of mathematical topics related to the study of computer science, which may include, but is not limited to, propositional logic, set theory, relations, functions, combinatorics, and graph theory, as well as applications of these topics. Students also learn proof techniques such as induction (a "domino" technique that allows one to prove that a statement relating to a variable n is true for all positive integers n) and proof by contradiction (in which one proves a desired result by showing that if it isn't true, nonsensical things happen). This increases students' mathematical maturity and their ability to make reasoned arguments, both of which are essential for successful programming. The math topics covered will likely include computer science topics within them. Students will see different uses of algorithms already learned, such as breadth-first and depth-first searches, and look at new algorithms which will be expanded on in future computer classes. Topics vary from term to term, and may depend on student interest. Here is a sample of things students might learn in this class:

(1) The logical difference between the statements, *Not all people have red hair,* and *All people do not have red hair*;

(2) How to show that $1 + 2 + 3 + \cdots + n = n(n+1)/2$, for everypositive integer n;

(3) How to use induction to prove the correctness of a loop in a computer algorithm;
(4) How to show that the set of integers and the set of rational numbers have the same cardinality ("size"), but that the set of real numbers is "bigger" (uncountably versus countably infinite)

(5) How to compute the probability of getting a royal flush in poker.

The course is intended primarily for computer science majors and math majors.

Prerequisite: MATH 151 or placement into MATH 152.

MATH 253 – Multivariate Calculus

Multivariable calculus is the math behind weather models, electric fields, and motion through space. It takes ideas from Calculus 1 and 2—for instance, slopes, rates of change, and areas under curves—and extends them to higher dimensions (e.g., 3, 4, or even *n* dimensions). In this class, you will work with multiple independent variables, instead of just one, and explore how things change in higher-dimensional space, rather than just along a line, studying surfaces, gradients, and how quantities flow and accumulate in 3-dimensional space. Prerequisite: MATH 152.

MATH 317 – Introduction to Proofs: Number Theory

Have you ever wondered how we know a mathematical theorem is true – not just that it works a few times, but that it must always work? This course may be your first entry into that world. Using the world of **number theory** – the study of integers, primes, and their hidden patterns – you will learn how to think and write like a mathematician.

We explore logical equivalences, direct and indirect proofs, and proof by induction as we examine prime numbers, “clock” arithmetic, divisibility, and the mathematics of infinite sets.

Prerequisites: Math 152.

MATH 318—Introduction to Proofs: Combinatorics

Counting seems so simple: you learned to count when you were young. How hard can it be? But many simple problems can involve ideas that are quite difficult to count. “How many handshakes take place in a room with *n* people?”, “How many different committees of size k can be made up out of n total possible members?”, “How many people have to be at a party before we are certain that three all know each other?”, “How many subsets does a set have?” Combinatorics, the study of counting in mathematics, is the main topic of this course and is useful in many fields of study (particular those involving probability and risk),

But it goes farther than that. Have you ever wondered how we know a mathematical theorem is true–not just that it works a few times, but that it must always work? This course is also a first entry into that world, the world of proofs. We explore logical equivalences, direct and indirect proofs, combinatorial proof, and proof by induction as we answer combinatorics questions.

In short: you will learn how to think and write like a mathematician.

Prerequisites: Math 152.

MATH 319 – Introduction to Proofs: Geometry

Although this course focuses on Euclidean geometry, it also opens a window to other geometries that challenge its assumptions. Euclidean geometry begins with a few simple rules, called *postulates* or *axioms*, and uses those to answer questions about what else must be true. It turns out that we can also change the axioms themselves! By altering one axiom in particular—the *parallel postulate*—mathematicians created entirely new geometries. Though these systems began as abstract thought experiments, hyperbolic geometry later proved essential in Einstein's relativity theory, which describes how space and time bend under gravity.

Prerequisites: Math 152.

MATH 331—Linear Algebra

Step into the world of multiple dimensions, and unlock the mathematical machinery behind computer graphics, data science, and machine learning! In this class, you'll generalize the idea of points in the Cartesesian plane ($\mathbf{R}^2$) and in 3-dimensional space ($\mathbf{R}^3$) to points, called *vectors*, in higher-dimensional spaces (e.g., $\mathbf{R}^7$), and master the arts of

- solving systems of linear equations;
- finding the intersections of hyperplanes (e.g., lines in $\mathbf{R}^2$ or planes in $\mathbf{R}^3$);
- performing operations on matrices and vectors;
- discovering properties of algebraic structures;
- working with algebraic-structure preserving functions called *linear transformations*;
- understanding geometric transformations like rotations and scaling (important for computer graphics);
- working with eigenvectors and eigenvalues (important for data science).

This course will provide you with a powerful toolkit essential for STEM fields! Moreover, while you will certainly perform computations in this course, much of the course content is conceptual, focused on why certain relationships between ideas are true or why certain objects have specified properties. Proofs (logical arguments that show why given statements are true) are not the main focus of this course, but will feature in it more than they do in, say, calculus. Thus, this course helps prepare you for courses such as Abstract Algebra (MATH 433) and Real Analysis (MATH 455).

Prerequisites: MATH 253 or one of 317/318/319 or both MATH 245 and CSCI 270.

MATH/STAT 342—Probability and Statistical Theory

The main learning goal of this course is that students will be able to develop expertise working with, interpreting and applying the tools of mathematical probability. These are the basic foundations of the actuarial exams, as well as the toughest courses in most statistics or data science graduate programs. But this course is for anyone who wants to learn to think rationally in a very uncertain world.

More specifically, students will:

- Learn basic probability notation and concepts (independence, conditional probability, etc.);
- Interpret and create a probability distribution function (pdf) or cumulative distribution function (cdf) and relate these to one another;
- Develop expertise with a repertoire of classic discrete and continuous probability distributions. These are useful for the more sophisticated statistical modeling applications;
- Work with introductory bivariate distributions and their properties;
- Develop expertise with a variety of important tools and techniques, such as Bayes' Theorem, and other counting methods that lend themselves to probability problems.

Prerequisites: Students are required to complete STAT 231 or MATH/STAT 242 with a grade of C or better prior to enrolling in this class, or have consent of the instructor. MATH/STAT 342 is cross-listed under mathematics and statistics, and either MATH 342 or STAT 342 is a great choice.

MATH/STAT 348—Statistical Computing and Consulting

Once you've learned the basic ideas of introductory statistics, now it is time to dive into real problems with real data (and it might not be pretty!). The main learning goal of this course is that students will be able to develop expertise working with, interpreting and ethically communicating the stories of data. Students will develop expertise with statistical computing so as to be able to prepare and analyze data, apply principles of data visualization to tell a data story, draw appropriate conclusions, and hold these conclusions to the light of ethical implications.

Students will also dabble with qualitative data analysis. This course relies heavily on projects where you work together to incorporate techniques and principles in a focus of your choice.

MATH/STAT 348 is cross-listed under mathematics and statistics, and STAT 348 is recommended for students interested in graduate work in statistics, data science, or a related applied field.

MATH 351—Differential Equations

Differential equations are a powerful tool in constructing mathematical models for the physical world. Their use in industry and engineering is so widespread and they perform so well that they are among the most successful of modeling tools.

For example, a cup of hot coffee is initially at 170° F and is left in a room with an ambient temperature of 170° F . Suppose that initially it is cooling at a rate of 20° F per minute. Then the model for the cup's temperature is $\frac{dT}{dt} =- 0.2(T - 70)$. This is an example of a differential equation. We are interested in predicting the temperature, T, of the coffee at any time t. We can also ask, "How long does it take the coffee to cool to a temperature of, say, 110° F?"

Prerequisite: Completion of Math 253 with a grade of C or better, or have consent of the instructor.

MATH 356—Numerical Analysis

When you ask your calculator or your computer for the decimal values of π and $\sqrt{3}$, how does the device find them, and does the device actually have all of their infinitely many decimal places stored?

When you study the vibration of a string on a violin, you might need to compute a value such as sin(4.778)—that is, the sine function evaluated at an angle measuring 4.778 radians.. This angle measure is not the measure of an angle in a special triangle such as the 30-60-90 or 45-45-90 right triangle. So how does the computer or the calculator find a decimal value for the desired number?

A colleague is studying the vibration function for the head of a tympany drum used in orchestras, and your physics book tells you to use one of the Bessel functions. If there is no Bessel function button or menu item on your fancy calculator (and there isn't!), how would you compute values?

Suppose you realize that your answer to a finance problem should be the largest positive root of $400x^5 + 800x^2 - 200x^5 - 950 = 0$. How do you find that value?

How do you solve the differential equation $w'' + 64\sin(w) = 0$ to find the angle $w(t)$ of a pendulum?

In probability, why are standard normal probability function values always printed in tables, rather than given by a function formula, and how were those tabular values computed? And if your calculator has a normal probability button, how is it computing those values? Are the values correct?

The branch of mathematics that answers these kinds of questions is called *numerical analysis*. Numerical analysis answers questions about how we solve equations to get numerical answers, how we approximate functions to get numerical values, and how we find numerical solutions to integrals and differential equations when we cannot find useful formulas to solve them. Answering some of these questions uses techniques that date back to Newton, while answering others uses results that are less than fifty years old.

Prerequisites: Completion of Math 152 with a grade of C or better, and completion of CSCE 144 with a passing grade; or consent of the instructor.

MATH 381 – Seminar in Problem Solving

This 1 credit course is offered during J-term to prepare students for participation in the international Mathematical Competition in Modeling, a multiday, team competition based on solving an open-ended question in applied mathematics that is held in late January or early February each year. In the course, students learn about common modeling techniques in various mathematical and statistical fields, and receive guidance on writing the competition paper and working as a team. The competition is a great activity to put on a resume, a great learning experience, and also a lot of fun! Students may repeat this course more than once for credit.

Prerequisites: Consent of the instructor.

MATH 422—Mathematical Modeling

By now you've got some great mathematical tools in your belt, and it's time to put them to good use solving open, real problems in the world. Mathematical modeling is the iterative process in which you make assumptions, formulate and evaluate models, interpret the results, and repeat as needed. In a sense, every authentic open-ended mathematical problem that requires making assumptions and drawing conclusions is a modeling problem, but this course particularly focuses on various problems in biology, environmental science, physics, and/or social sciences using tools including curve fitting, difference and differential equations, linear programming, Markov chains, simulations, and discrete probabilistic models. We might solve problems related to population models, spread of diseases, drawing voting districts, finding optimal scheduling or resource allocations, and many others. Students will have a chance to work on projects of their choosing and to build skills for communicating your results to your intended audience.

Prerequisites: MATH 245 or 253 and one of MATH 331, 351, or PHYS 354. (4)

MATH 433—Abstract Algebra

If you can tell time, you already know some abstract algebra: you just don't know you know it! Suppose you have lunch every day at 1:00pm. Then you'll have lunch at 1:00pm today and at 1:00pm tomorrow. We just called both of those times "1:00pm," but they're not really the same moment in time, since they're occurring on different days. It turns out they both can be thought of as representatives of a coset of $24\mathbf{Z}$ in $\mathbf{R}$; this coset, in turn, is an element of the factor group $\mathbf{R}/24\mathbf{Z}$.

Huh, you ask? What's a coset? What's $\mathbf{Z}$? What's $\mathbf{R}$? What's a factor group?! Take this class and find out! Abstract algebra is the study of algebraic structures such as groups, rings and fields. (You don't know what these objects are yet, but if you take this class you will!) In this class, we will focus on mathematical groups. You encounter groups everywhere: examples include $\mathbf{R}^n$, the set of all invertible 2×2 matrices over the real numbers, and the group of permutations of a set. Even the moves on a

Rubik's Cube form a group! By studying these structures abstractly, we can prove results that hold for seeming wildly different structures.

Abstract algebra is a beautiful and powerful area of mathematics and it is an essential part of any mathematics curriculum. It has applications in many sciences, from physics to chemistry, in addition to having extremely important uses in areas such as cryptography.

While the concepts in this class require minimal prerequisite knowledge of topics such as calculus, the class is heavily proof-based and requires a large amount of mathematical maturity. The ability to write grammatically and to make logical arguments is extremely important, while the ability to differentiate will be of little, if any, use. Conceptual understanding, not a calculator, is at the heart of this course!

Prerequisites: The completion of Math 317 or 318 or 318 and Math 331, both with grades of C or better.

MATH 442—Statistical Modeling

By now you've got some great statistical tools in your belt, and it's time to put them to good use solving open, real problems in the world. The main learning goal of this course is that students will be able to build, interpret, evaluate, and critique statistical models. Topics include:

- Partitioning of variance into that explained by model and residuals
- The structure and meaning of measures to evaluate models (coefficient of determination, F-statistic);
- Relating anova results to variable characteristics (e.g., centered, uncentered, orthogonal, indicator variables, co-linear predictors, etc.);
- Connecting regression output to model features, with particular emphasis on nuances, decisions (whether implied by software or not), and common errors interpreting multiple regression results.
- Critiquing and evaluating different measures for selecting models;
- Developing fluency using R Statistical Software to do all of the above, including data preparation and management, transformations of variables to satisfy conditions for linear regression, model diagnostics, and communication of results using a tool that weaves results with exposition (e.g., Quarto).

The emphasis is on multivariable linear models, but as time allows, Bayesian or other techniques may be explored.

Prerequisite: MATH/STAT 331 and an introductory statistics course that covers statistical inference: STAT 231, 232, SOCI 301, or MATH/STAT 242.

MATH/EDUC 446—Mathematics in the Secondary School

This course is designed for prospective teachers of middle school and high school mathematics, but is open to anyone interested in teaching or mentoring in the STEM disciplines.

Our main question in this class is: *What does it mean to be an effective teacher of all students, and what will it take for me to become such a teacher?*

The primary goals of this class are to:

- Provide you with tools that will be useful to your future teaching (e.g., lesson and unit planning, questioning techniques, cooperative learning, assessment, manipulatives, technology);
- Provide you with information about the history of and current issues in mathematics education (e.g., racial opportunity gap, national and state standards, teaching emergent bilingual students, standardized testing, culturally responsive teaching);
- Begin to prepare you to attend to equity and justice in your teaching.

The course illuminates the art of teaching via a series of motivational ideas suitable for various grade levels, mathematical topics, and student backgrounds, and includes a discussion of activities, materials and manipulatives suitable for classroom use. Students will spend 20 hours in a secondary mathematics classroom, observing and assisting the teacher.

Prerequisites: The completion of either MATH 253 or Math 331 with a grade of C or better.

MATH 455 – Real Analysis

In the calculus sequence you learned how to evaluate limits, derivatives, integrals, and Taylor series. Real analysis is about understanding *why* calculus techniques work. We look at the familiar tools of calculus and rebuild them using the tools we learned in our introduction to proofs classes. We will explore questions like, "What is a limit, really?" Along the way, we'll get a deeper appreciation for rigor and structure in mathematics, and maybe learn a few Greek letters.

Prerequisites: Math 253, one of 317, 318, and 319, and 331.

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MATH 499A & B—Capstone: Senior Seminars I & II

You will soon leave PLU as a mathematician, and it is time to put your learning to good use! Here is a chance to show you can learn mathematics, speak about mathematics, and write about mathematics. To this end, in your capstone you will practice presenting and writing about mathematics that you have learned on your own. This course will culminate in a public presentation of and writing about a topic in mathematics that you have chosen and explored on your own, usually with the assistance of the instructor.

This course is normally taken during the student's last two semesters at PLU.

Prerequisites: Consent of the instructor