Math Class Descriptions, 2022-2023

Algebra I, Level 2

Teacher: Claire Ritter
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Text: *Globe Fearon Pacemaker Algebra* (ISBN10: 0130236381)
Pacemaker Algebra I student Workbook (ISBN10: 0130236411)
Additional required materials: Calculator (cell phones are not permitted in class)
Homework time expectation: 1-2 hours weekly
Teaching format: lecture, homework, review assignments, tests, and in-class work
Description: This course will cover the basic concepts needed for an Algebra I credit and is geared to students who will not need higher level math for life/college or students who historically struggle with math. Students are encouraged to contact Mrs. Ritter by email, text, or FaceTime with homework questions. Tests are generally taken at home under parental oversight. Although Algebra I can be challenging for many students, the goal is to provide students with a positive, supportive environment in which to learn.

Algebra I, Level 3/4/5

Teacher: Kathy Martin
Level: 3, 4 or 5
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: A solid understanding of Pre-Algebra concepts. Students must also be able to perform basic math skills including addition, subtraction, multiplication, and division of whole numbers, negative numbers, fractions and decimals without the use of a calculator. Students must take a skills test over the summer. Failure to get at least 92% will require summer work to improve skills. Skills will be reassessed the first week of class. Students must work on any areas of weakness in addition to completing algebra assignments. Competency in these basic skills is required to continue in this class.
Materials Fee: $7.50 for level 4 and $15.00 for level 5 **PAYABLE DIRECTLY TO MRS. KATHY MARTIN** due once student has been approved for advancement to level 4 or 5
Text: *Prentice Hall Classics Edition: Algebra I (Expressions, Equations, & Applications)*, Paul Foerster, ISBN: 0-13-165708-9 Many used copies are available from former students. To purchase one of these, contact Mrs. Martin via Mt. Sophia email (ask for your email to be forwarded to her). Used copies are also available online. New copies are available online
Additional required materials: Scientific calculator (cell phones not allowed) that uses "press function then enter numbers" format (so the TI-30Xa is NOT acceptable, but the TI-30XIIS is acceptable), ruler, graph paper (4 or 5 squares per inch), 10 sealable business-sized envelopes to keep at home for take-home tests, two (2) colored pens or pencils, stapler
Homework time expectation: 3-4 hours weekly

Teaching format: Lecture, hands-on development of concepts, in-class problems, homework, tests

Description: Algebra is a necessary tool for success in many fields. Nonetheless, making the change from arithmetic to math which uses variables can be a difficult hurdle for many students. To ease the transition, as much as possible, this class will introduce new concepts using hands-on methods to develop intuitive understanding. Once a "gut-feel" for the concept is established, the concept will be explained with traditional mathematical language. In addition to providing a solid foundation for math and science courses, this course will instill problem solving skills that can be used in everyday applications. Topics introduced in this course comprise much of college entrance exam math sections, and include expressions and equations, axioms and properties, polynomials and radicals, solving and graphing linear equations and inequalities, quadratic equations, properties of exponents, factoring binomials and trinomials, and rational and radical algebraic expressions.

NOTE: Some homework will be assigned over breaks.

Algebra 2, Level 3/4

Teacher: Kathy Martin
Level: 3 or 4
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Successful completion of Algebra I. Students must also be able to perform basic math skills including addition, subtraction, multiplication, and division of whole numbers and fractions without the use of a calculator.
Text: *Algebra & Trigonometry, Classics Edition*; Author: Paul Foerster; Publisher: Pearson Hall ISBN 10: 0-13-165710-0 or ISBN 13: 9780131657106
Additional required materials: Scientific calculator for tests (cell phone calculators not allowed), ruler, graph paper, graphing calculator (TI 84 or 83) OR a graphing utility such as free DESMOS app, 10 sealable envelopes for take-home tests
Homework time expectation: 2-4 hours weekly
Description: This course will instill problem solving skills that will be useful in many math and science courses, and continue to build the math foundation that is necessary for success in many fields. The concepts introduced in this course will improve college entrance exam math scores and increase the potential for success in college. Topics include linear and quadratic functions and relations, systems of equations, introduction to matrices, complex numbers, exponents and logarithms, and conic sections. Trigonometry *is not covered* in this course. Please note that some homework will be assigned over breaks.

Algebra 2, Level 2

Teacher: Bobbie Brickner
Level: 2
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisite: Successful completion of Algebra I
Required textbook: AGS Algebra 2 ISBN: 0-7854-3543-3

Additional required materials: Access to a home computer and WIFI. We may use Kahn Academy or YouTube videos
Homework time expectation: 1-2 hours weekly
Teaching format: Lecture, homework, review assignments, tests, in-class work
Description: Topics covered include: data and linear representation, numbers and functions, systems of linear equations, matrices, quadratic functions, exponential and logarithmic functions, polynomial functions.

Calculus I, Level 5
Teacher: Barb Varnell
Level: 5
Credit: 1
Meets: Fall semester only, Monday & Thursday (see grid)
Prerequisites: Strong mastery of Pre-Calculus concepts
Text: *Calculus*, Stewart, ISBN: 978-0-495-01160-6
Study and Solutions Guide, ISBN: 978-0495012344
(you should be able to find these used)
Description: This is a rigorous calculus class. The University of Delaware website states, "Prospective majors in mathematics, engineering, business, computer science, and natural science should complete four years of mathematics, including trigonometry, pre-calculus, and/or calculus." This class will fulfill these requirements and is ideal for those students who are planning on majoring in these areas or those who wish to have a level 5 mathematics course to enrich their transcript. This class uses the same textbook used in UD's Math 241 and 242 Calculus courses.

Calculus II, Level 5
Teacher: Barb Varnell
Level: 5
Credit: 1
Meets: Spring semester only, Monday & Thursday (see grid)
Prerequisites: Calculus I, Level 5 in the fall
Text: *Calculus*, Stewart, ISBN: 978-0-495-01160-6
Study and Solutions Guide, ISBN: 978-0495012344
(you should be able to find these used)
Description: This is a rigorous calculus class. The University of Delaware website states, "Prospective majors in mathematics, engineering, business, computer science, and natural science should complete four years of mathematics, including trigonometry, pre-calculus, and/or calculus." This course along with its Calculus I prerequisite will cover most of the concepts in University of Delaware's Math 241 and 242 courses.

Discrete Math/Linear Algebra, Level 5
Teacher: Barb Varnell
Level: 5
Credit: 1
Meets: Full year, Monday & Thursday
Prerequisites: Strong mastery of Pre-Calculus concepts (Completion of Level 5 Pre-Calculus)

Text: *Discrete Math with Applications*, Susanna Epp, ISBN 978-0534359454
Solutions Manual, ISBN 978-0534360283
Linear Algebra, A Modern Introduction, David Poole, ISBN 978-0538735452
Solutions Manual, ISBN 978-0538737715
(You should be able to find these used.)
Description: This course is for students who have completed a Level 5 Pre-Calculus course. It will cover the following topics in Discrete Math: Logic of Compound Statements, Logic of Qualified Statements, Elementary Number Theory & Methods of Proof, Sequences and Mathematical Induction, Set Theory, Counting & Probability, and Functions. In the Linear Algebra portion of the course we will cover Vectors, Linear Equations, Matrices, and Eigenvalues & Eigenvectors. It is a great course for those going in to any physics, engineering and computer science fields (or those who just want to have an impressive math course on their transcript)

Financial Literacy, Fall semester
Teacher: Will Hahn
Level: 3
Credit: .5 (Student may also take Spring Semester for a full credit)
Meets: **Fall semester**, Monday & Thursday (see grid)
Text: *Financial Literacy from a Christian Perspective (Provided by teacher)*
Curriculum Fee: $27 due by August 23, 2021
Additional required materials: Calculator
Homework time expectation: 2-4 hours weekly
Teaching format: Lecture, homework, tests, in-class problems, discussion, project/presentation
Description: This class is offered as a one-semester course for .5 credit. The course will cover chapters 1-5 of the text, Money: The Basics, Setting Financial Goals, Budgeting, Saving & Investing, & Credit. If a student also takes the Spring Semester, the last 4 chapters of the text will be covered.

Financial Literacy, Spring semester
Teacher: Will Hahn
Level: 3
Credit: .5 (Student may also take Fall Semester for a full credit)
Meets: **Spring semester**, Monday & Thursday (see grid)
Text: *Financial Literacy from a Christian Perspective (Provided by teacher)*
Curriculum Fee: $27 due by January 10, 2022 (only if you have not already bought the book)

Additional required materials: Calculator
Homework time expectation: 2-4 hours weekly
Teaching format: Lecture, homework, tests, in-class problems, discussion, project/presentation
Description: This class is offered as a one-semester course for .5 credit. The course will cover chapters 6-9 of the text, Financial Institutions and the Services They Provide, Insurance, Your Career, and Taxes. If the student takes the Fall semester, they will cover the first 5 chapters of the text.

Geometry, Level 2, 3, 4
Teacher: Bobbie Brickner
Level: 2, 3, 4
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Successful completion of Algebra I
No Text: ***Geometry*** by Holt, Rinehart, and Winston, ISBN - 10: 0030700523
Several copies of the book are available in Mt. Sophia's library. Alternately, you can purchase an inexpensive copy on Amazon here:
https://www.amazon.com/Holt-Geometry-Textbook-RINEHART-WINSTON/dp/0030700523/ref=sr_1_8?crid=38PZDR3CV3O43&keywords=holt+geometry+third+edition&qid=1657199902&sprefix=holt+geometry+third+edition%2Caps%2C62&sr=8-8
Additional materials: Calculator (TI 84 or 83 is recommended because it will be used throughout college, but it is not required), compass, protractor, and 3 hole punch binder.
Homework time expectation: 2-3 hours weekly, depending on level
Description: This course is designed to be pain-free for students who may not like math, but students who enjoy math should also take this course. During class we will explore geometry lab activities and practical real-life uses of geometry. Students will have the option to work together or independently according to their preference. Level 2 students will complete activities instead of "tests" and will have less homework, which may include watching short videos. Level 3 and 4 students will do formal proofs in addition to the activities. All levels will cover the basics of geometry while providing a sound foundation for future geometric concepts or endeavors. Calculators will be used to save time where applicable. This course (especially Level 3 and 4) will help your students with SAT/ACT geometry and lay a foundation that will be helpful in their future.

Pre-Algebra, Level 3
Teacher: Anna Hight
Level: 3
Credit: 1 (for high school students)
Meet: Full year, Monday & Thursday (see grid)
Text: *Pre-Algebra*, D. C. Heath & Co. ISBN: 0669250449 – or see link to amazon below
https://www.amazon.com/Heath-Pre-Algebra-Spaulding/dp/0669250449/ref=sr_1_5?crid=2FEU9SBL0TN8R&keywords=heath+pre-algebra&qid=1655867156&sprefix=heath+pre-algebra+%2Caps%2C91&sr=8-5
Additional required materials: Lined paper, graph paper, and a ruler.
Homework time expectation: 3-4 hours weekly

Teaching format: Lecture with in-class examples and exploration of topics; homework, quizzes, and tests.
Description: This course will introduce students to using variables and topics in algebra. It will prepare a student for a standard Algebra 1 course. It serves as a bridge between elementary mathematics and Algebra. Topics will include: Expressions; one and two step equations; order of operations; exponents; square roots; prime and composite numbers; operations with integers, fractions, and decimals; ratio and proportion; percent; geometry; graphing points and linear equations; probability and statistics; polynomials; the Pythagorean Theorem; and more.

Precalculus, Level 3,4
Teacher: Bobbie Brickner
Level: 3 or 4
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Successful completion of Algebra II and Geometry
Text: *Precalculus Mathematics for Calculus Fifth edition*, by Stewart, Redlin and Watson. ISBN-13: 978-0534492779 or ISBN-10: 0534492770
Additional required materials: TI 84 or 83 graphing calculator, ruler, graph paper, 10 sealable envelopes for take-home tests
Homework time expectation: 2-4 hours weekly
Description: In addition to laying the foundation for calculus, this course will present math skills that are necessary for success in multiple areas. Topics covered include functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions, analytic trigonometry, law of sines, law of cosines, polar coordinates and vectors, systems of linear equations, & introduction to matrices.

Precalculus, Level 5
Teacher: Kathy Martin
Level: 5
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Algebra II, Geometry, and teacher recommendation
Text:

- *Real Mathematics, Real People 6th edition*, Ron Larson, ISBN-13: 978-1111427634
  There are many used copies are available from former students. To purchase one of these, contact Mrs. Martin via Mt. Sophia email and ask for your email to be forwarded to her. If you purchase one online, be sure to purchase **this** edition- front cover has reddish background color. (There are similar looking editions.)
  Student Study Solutions Manual for Precalculus: Real Mathematics, Real People 6th edition, Ron Larson, ISBN: 9781111572099 Used copies of these are also available. Contact Kathy Martin by emailing your request to Mt. Sophia.

Additional required materials: Scientific calculator capable of doing trigonometric functions (graphing calculator is optional); two (2) colored pens or pencils; graph paper; ruler; stapler; internet access
Homework time expectation: 4-6 hours weekly (Each lecture results in approx. 2-3 hours of homework EVEN FOR Thursday assignments)

Teaching format: Lecture, homework, in-class problems, quizzes, tests
Description: In addition to laying the foundation for calculus, this fast-paced course will present math skills that are necessary for success in multiple fields. Topics include functions and their graphs; polynomial and rational functions; exponential and logarithmic functions; trigonometric functions; analytic trigonometry; Law of Sines; Law of Cosines; vectors; matrices; sequences, series and probability; circles; parabolas; ellipses; hyperbolas; parametric equations; and polar coordinates. According to the University of Delaware, prospective majors in mathematics, engineering, business, computer science, and natural sciences should complete four years of mathematics, including trigonometry and precalculus. This class fulfills these requirements and is ideal for those students who are planning on majoring in these areas or for those who wish to have a level 5 mathematics course to enrich their transcript. Be aware that just as much homework is assigned after Thursday's lecture as is assigned after Monday's lecture (i.e., two "days" worth of homework is assigned per lecture).

Statistics, Level 5
Teacher: Barb Varnell
Level: 5
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Strong mastery of Algebra II concepts (Pre-Calculus useful, but not required)
Text: *Statistics in Action*, Watkins Scheaffer Cobb, ISBN: 978-1559539098
Solutions Manual Volume 1, ISBN: 978-1559539104
Solutions Manual Volume 2, ISBN: 978-1559539111
How to Lie with Statistics, Darrell Huff, ISBN: 978-0393310726
(all available used)
Description: This is a rigorous statistics class using a college level textbook. Many college majors require a course in statistics, and more people flunk a statistics course in college than a calculus course. This class will prepare you well for a college statistics course (many of my former students have ended up as statistics tutors for their college class). In addition, it is a great way to enrich your high school transcript, and statistics is one of the most practical math courses you will ever have in high school. The class will focus on the mathematical "why" of statistics, not just the "how". Students will need a strong mastery of Algebra II concepts.

Statistics, Level 3
Teacher: Anna Hight
Level: 3
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Successful completion of Algebra I & Algebra II
Text: *Elementary Statistics, A Brief Version, fourth edition* by Allan G. Bluman
ISBN: 9780073534961 (used on-line reasonably priced)
Additional required materials: TBD
Homework time expectation: 2 hours weekly

Description: Class will cover frequency distributions, several types of graphs, measures of central tendencies, normal distribution, standard deviations, probability and counting rules, writing surveys, bias, z scores. Math is fun!