MATHEMATICS DEPARTMENT

Related Careers: Mathematics is the basis of all science. Also, the average citizen must use his knowledge of basic math many times each day. Occupations related to mathematics include the farmer, math teacher, statistician, actuary, construction tradesmen, clerk and cashiers, accountants, chemists and physicists, engineers and their aides, economists, computer operators, tax and band experts, draftsmen, machinists, salesmen, etc.

REQUIRED COURSES:

GRADE 9	GRADE 10	GRADE 11	GRADE 12
Non-Linear Algebra or Advanced Geometry	Advanced Geometry Geometry Advanced Algebra II	Advanced Geometry Geometry Algebra II Adv. Algebra II Elementary Probability & Statistics	

Students must graduate with 3.5 credits of math, of which must be a Geometry, Algebra II and a Statistics class.
*University of Minnesota's high school math course requirement**: effective fall semester 2015 and later,** four years of math will be required for admission to the U of M Twin Cities, Duluth, Morris, and Rochester campuses.*

ELECTIVE COURSES:

Advanced Algebra II	Non-Linear Algebra I Advanced Geometry Geometry Adv. Algebra II Elementary Probability & Statistics Trigonometry College Trigonometry College Intro to Statistics	Advanced Geometry Geometry Algebra II Adv. Algebra II Trigonometry College Trigonometry College Intro to Statistics College Algebra College Short Course Calc Consumer Math	Advanced Geometry Geometry Algebra II Adv. Algebra II Trigonometry College Trigonometry College Intro to Statistics College Algebra College Short Course Calc College Calculus I College Calculus II Consumer Math

206 Non-Linear Algebra
4 terms 1 credit
Pre: Recommendation of 8th grade math instructors
Grade Level: 9
Course Summary: In Non-Linear Algebra, students will continue to use problem solving and reasoning skills to solve real-life algebraic concepts that align with the graduation performance standards. Topics covered throughout the course will consist of non-linear functions such as exponential and quadratic equations, radicals, polynomials, factoring, rational numbers, Trigonometry, and Geometry. A graphing calculator will also be needed to do many complex calculations throughout the course, and to assist with higher learning skills.

218 Advanced Geometry
4 terms 1 credit
Pre: 8th grade Alg. I or Non Linear Algebra with a B+ or better
Grade Level: 9 - 12
Course Summary: This course is designed for the above average student who has already passed Algebra I with a **B+** or better. Ninth graders need to have maintained a minimum of a "B+" average in Algebra as 8th graders. If the conditions are not met the student should take Algebra I again as a 9th grader before attempting Geometry. Your current math teacher can give you the necessary recommendation. This class introduces the student to all of the geometric topics and proofs at a faster pace than Geometry #221.

221 Geometry
4 terms 1 credit
Pre: For the student who has passed Non Linear Algebra.
Grade Level: 10 - 12
Course Summary: Develop mathematical concepts of arithmetic and Algebra while studying two and three-dimensional relationships. An introduction to the meaning and nature of deductive proof. The same materials are covered as in Adv. Geometry but the Algebra used to solve the problems is not as intense.

224 Advanced Algebra II
4 terms 1 credit
Pre: 7th or 8th grade Algebra I or Non Linear Algebra with a B+ or better
Grade Level:10- 12
Course Summary: This course is designed for the above average student who excelled in Algebra I with a **B+** or better grade. This course moves at a faster pace and is more rigorous than Algebra II #227. This course will emphasize graphical solutions to algebraic problems. Students will explore functions using graphing calculators to develop an appreciation for the dynamic nature of the equations. Data collection, analysis and mathematical modeling will compose the bulk of the work. Recommended for college bound students and students planning to take the ACT. Adv Algebra II and Algebra II use the same book.

226 Algebra II
4 terms 1 credit
Pre: 7th or 8th gr AlgAlgebra I**,** Basic Algebra I, Non-Linear Algebra
Grade Level: 10 – 12
Course Summary: This course will emphasize graphical solutions to algebraic problems. Students will explore functions using graphing calculators to develop an appreciation for the dynamic nature of the equations. Data collection, analysis and mathematical modeling will compose the bulk of the work. Recommended for college bound students and students planning to take the ACT. Algebra II uses the same book as Advanced Algebra II. Algebra II goes at a little slower pace.

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229 College Algebra (CITHS)
2 terms 1/2 credit RHS 3 college credits
Pre: Algebra II & Geometry & CITHS requirements
Grade Level: 11 - 12
Course Summary: A review of real numbers, first degree equations and inequalities with graphing and word problem applications. Second degree equations and inequalities in one and two variables with graphs, the quadratic formula and factoring. Relations, functions, absolute value and conics with applications, exponential and logarithmic functions with applications. Polynomial equations and complex numbers. Systems of equations and inequalities. This course is an excellent prep course for the ACT and all other higher math classes available at ROCORI.

230 Trigonometry
2 terms 1/2 credit
Pre: Completion of Algebra II AND Geometry
Grade Level: 10 - 12
Course Summary: The course will be a thorough study of trigonometric functions, properties of trigonometric and circular functions, composition of ordinates, rotary motion, inverse functions and applications of trigonometric and circular functions. This course should be taken before taking the college entrance ACT exam.

230C College Trigonometry (CITHS)
2 terms 1/2 credit RHS 2 College Credits
Pre: Completion of Algebra II, Geometry and accuplacer AAF score of 250
Grade Level: 10 - 12
Course Summary: Same description as #230 Trigonometry.

231 College Introduction to Statistics (CITHS)
4 terms 1 credit RHS 3 College Credit
Pre: 7th or 8th gr Algebra I or Non Linear Algebra, instructor's approval and accuplacer QAS score of 250
Grade Level: 10 – 12
Course Summary: Topics include statistical theory and experimental design, descriptive statistics, probability distribution models, regression analysis and correlation, interfence, and sampling methods.

233 Elementary Probability & Statistics
2 terms 1/2 credit
Pre: Algebra I, Non Linear Algebra or Geometry
Grade Level: 10 - 12
Course Summary: Course will include the study and Statistics and Probability. The Probability portion of the class will emphasize counting techniques, permutations, combinations, probability, and expectation. The Statistics portion of the class will emphasize the collection, interpretation, and manipulation of raw data. The class is a requirement for all students and has been designed to prepare students for success on the MCA and ACT standardized tests. This class is geared towards the average math student.

235 College Short Course Calculus (CITHS)
2 terms 1/2 credit RHS 3 college credits
Pre: Algebra II, Geometry & accuplacer AAF score of 250 or College Algebra
Grade Level: 11 & 12
Course Summary: A brief survey of calculus including some integration. Review of real numbers, graphing, functions, and inequalities, derivatives, limits, and continuity. Differentiation techniques including chain rule and implicit differentiation. Applications of the derivative to maximum and minimum including cost, revenue, and profit functions. The definite and indefinite integral with applications to the physical, social, and behavioral sciences. Logarithmic and exponential functions with applications of growth, decay, and populations. Students planning to enroll in more than one semester of college calculus (either here or in college) should consider taking this class.

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236 College Calculus I (CITHS)
4 terms 1 credits RHS 5 college credit
Pre: Suggest Short Course Calculus or permission of instructor & Accuplacer AAF score of 260 (or completion of College Algebra & College Trig)
Grade Level: 12
Course Summary: The two semester calculus sequence is designed for those interested in mathematics, computer science, engineering, and natural science. An introduction to basic differential and integral calculus: limits, derivatives and applications, integration and applications.

237 College Calculus II (CITHS)
2 terms 1/2 credit RHS 5 college credit
Pre: College Calculus I
Grade Level: 12
Course Summary: Continuation of topics from Calculus I: Integration techniques, infinite series, conic sections, parameterized curves, polar equations, multivariable functions and partial derivatives.

240 Consumer Math
2 terms 1/2 credit
Pre: none
Grade Level: 11-12
Course Summary: This course will reinforce general math topics, such as arithmetic, using rational numbers, measurement, ratio and proportion, and basic statistics. Students apply skills to consumer problems and situations such as budgeting, taxation, credit, banking services, insurance, buying and selling products and services, home and/or car ownership and rental, managing personal income, and investment.

*Students are encouraged to purchase their own calculator, however, the school district will have calculators available to be rented by students who do not wish to purchase their own. The rental fee will be approximately one fourth of the purchase price. It is recommended that students have a **TI-83 Plus** or **TI-84 Plus** Graphing Calculator but any calculator with graphing capability will be sufficient.

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		ROCORI High School Mathematics Progression	
Level	**Regular**	**Advanced Math**	**Qualify for College Level Math gr 10**
Grade			
6	Math 6 Pre-Algebra		
7	Pre-Algebra Algebra I		
8	Algebra I	Algebra I	Geometry
9	Non-Linear Algebra	Advanced Geometry	Advanced Algebra II
10	Geometry	Algebra II or Advanced Algebra II	Introduction to Statistics (CEP) and Trigonometry*
11	Algebra II and Elementary Probability and Statistics	Trigonometry and/or Elem Prob & Stats **OR** College Trig and/or College Prob & Stats	College Algebra and/or Short Course Calculus
12	Trigonometry or Consumer Math	College Short Course Calc. or College Algebra	College Algebra or Short Course Calculus or Calculus I*

As recommended

As recommended for 9th gr

* Class selection depends on Accuplacer test score achieved

Note: All students are required to take either Elementary Probability and Statistics or College Introduction to Statistics (CEP).

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