MATH - Mathematics | Undergrad

Global Citizenship Program Knowledge Areas **(....)**	
ARTS	Arts Appreciation
GLBL	Global Understanding
PNW	Physical & Natural World
QL	Quantitative Literacy
ROC	Roots of Cultures
SSHB	Social Systems & Human Behavior

Global Citizenship Program Skill Areas (....)	
CRI	Critical Thinking
ETH	Ethical Reasoning
INTC	Intercultural Competence
OCOM	Oral Communication
WCOM	Written Communication
** Course fulfills two skill areas	

MATH 1010 Fundamentals of Mathematics (3)

This course develops and strengthens the concepts and skills of elementary mathematics, particularly skills related to various disciplines of the college curriculum.

MATH 1050 Basic Algebra (3)

This course introduces the basic topics of algebra, including linear and quadratic equations.

MATH 1200 Topics in Mathematics (3)

This course is for students interested in applications of elementary mathematics to everyday life. May be repeated for credit if content differs. **Prerequisite**: Approval of the instructor.

MATH 1360 Business Mathematics (3)

This course provides the student with a variety of opportunities to strengthen math skills necessary for analyzing numerical information and solving practical business problems. Students will learn to translate business-related problems into simple equations. Topics include applications of ratio and proportion, computing taxes, commercial discounts, simple and compound interest, basic statistics, and graphs. Students are expected to be proficient in basic algebra. **GCP Coding**: **(QL).**

MATH 1410 Introductory College Mathematics (3)

This course covers various topics of mathematics that are both conceptual and practical. Course is designed to enable a student to appreciate mathematics and its application to numerous disciplines and professions. Students are expected to be proficient in basic algebra. **GCP Coding**: **(QL).**

MATH 1430 College Algebra (3)

This course covers algebraic topics which are utilized across many disciplines in which mathematics is encountered. Topics

ThSC 15805

covered in the course include sets, the real number system, functions, equations, inequalities, and logarithms. Student is expected to be proficient in algebra. **GCP Coding**: **(QL).**

MATH 1440 Trigonometry (3)

This course covers trigonometric functions, graphs, identities, equations, and inverse trigonometric functions. **Prerequisite**: MATH 1430 or equivalent competence.

MATH 1470 Survey of Calculus (3)

This course introduces the ideas of calculus without the rigor associated with the course in the standard calculus sequence. Topics include limits, derivatives, and integrals of algebraic, exponential, and logarithmic functions. Applications of calculus are also considered. **Prerequisite**: Proficiency in algebra.

MATH 1480 Precalculus (3)

This course covers topics including factoring, simplifying rational functions, functions and their graphs, solving linear and nonlinear equations, polynomial functions, inverse functions, the binomial theorem, logarithms, exponentials, solutions to systems of equations using matrices, solutions to nonlinear systems of equations, sequences and limits. Student will also study trigonometric and inverse trigonometric functions with emphasis on trigonometric identities and equations. **Prerequisite**: Proficiency in algebra.

MATH 1580 Formal Logic (3)

This course covers the fundamental topics in deductive logic and provides a thorough introduction to propositional and predicate logic. Cross-listed with COSC 1580 and PHIL 2020.

MATH 1610 Calculus I (5)

This course introduces differential and integral calculus of a single variable. Topics include limits, derivatives, integrals and applications. Introduces calculus of transcendental functions. Only offered in a 16-week format. May be repeated once for credit. **Prerequisite**: MATH 1430 and MATH 1440 (or equivalent) with grades of B- or better, or MATH 1480 (or equivalent) with a grade of B- or better. **GCP Coding**: **(QL).**

MATH 1620 Calculus II (5)

This course continues the study of calculus of a single variable. Topics include techniques of integration, parametric equations, polar coordinates, sequences and series, and applications. Only offered in a 16-week format. **Prerequisite**: MATH 1610 with a grade of B- or better.

MATH 2200 Statistics (3)

Statistics is the science of analyzing data and arriving at reasonable and intelligent conclusions based upon that analysis. This course will acquaint students with the mathematical concepts of statistical analysis. **Prerequisite**: Proficiency in algebra **GCP Coding**: **(QL).**

MATH 2410 Discrete Mathematics (3)

Discrete math deals with finite numbers and finite processes. This course uses the algorithmic approach to problem solving. Topics may include sets, relations, and functions;s equivalent) with a grade

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MATH 2440 Calculus III (5)

This course includes differential and integral calculus of several variables. Only offered in a 16-week format. **Prerequisite**: MATH 1620 with a grade of B- or better.

MATH 2450 Introduction to Abstract Mathematics (3)

This course serves as a transition course from calculus to abstract mathematics. The emphasis is on understanding and writing mathematical proofs. Topics include logic, set theory, relations, functions and elementary number theory. **Prerequisite**: MATH 1620.

MATH 2800 Differential Equations (3)

This course studies techniques for solving ordinary differential equations and considers a variety of applications. **Prerequisite**: MATH 2440.

MATH 2820 Numerical Analysis (3)

This course uses numerical methods to analyze a variety of problems. Emphasis is on understanding why these methods work and their limitations. **Prerequisite**: MATH 2440.

MATH 2850 History of Mathematics (3)

This course is a survey of the history of mathematics. Topics include the history of numbers, numeration systems, arithmetic, algebra, geometry, and calculus. **Prerequisite**: 2440..

MATH 3130 Real Number System (3)

Topics include rational and irrational numbers, algebraic and transcendental numbers, and sequences and their limits. Considers the real number system as a complete ordered field. **Prerequisite**: MATH 2450

MATH 3160 Linear Algebra (3)

This course covers matrices, systems of linear equations, vector spaces, and linear transformations. **Prerequisite**: MATH 2440.

MATH 3210 Data Mining Foundations (3)

This course explores the core concepts of data mining including the research methodology and process, data sources, messy data and data cleansing. It also examines algorithms in each of the main data mining groupings of classification, categorization and association rules. The course emphasizes the use of data mining concepts in real-world applications with database components. Students will present their findings and recommendations in written and oral project reports. **Prerequisite**: Junior standing.

MATH 3220 Data Mining Methods (3)

This course surveys the current techniques of problem solving using modern heuristics. It covers classic methods of optimization, including dynamic programming, the simplex method and gradient techniques, as well as recent innovations such as simulated annealing, tabu search and evolutionary computation. Besides exploring a compendium of specific techniques, this course also delves into the approaches of framing and attacking the issue of problem solving itself. Students will present their findings and recommendations in written and oral project reports. **Prerequisite**: Junior standing.

MATH 3300 Introduction to Number Theory (3)

This course studies elementary properties of integers, primes, congruencies and arithmetic functions. **Prerequisite**: MATH 2440 and MATH 2450.

MATH 3500 Introduction to Algebraic Structures (3)

This course presents concrete material designed to make the transition from college algebra to modern abstract algebra; includes an introduction to groups. **Prerequisite**: MATH 2450.

MATH 3530 Modern Geometry (3)

This course provides a review of Euclidean geometry and an introduction of non-Euclidean geometries; general axiomatic systems are considered. **Prerequisite**: MATH 2450.

MATH 3610 Probability (3)

This course focuses on mathematical models that have been developed to best deal with the phenomena of chance and random behavior. **Prerequisite**: MATH 2440.

MATH 4010 Introduction to Abstract Algebra (3)

This course presents an axiomatic study of groups, rings and fields. The emphasis is on **Prerequisite**: MATH 2450.