Math Pathways Course Descriptions for Educators

Course	Description
Algebra 2	Building on their work with linear, quadratic and exponential functions, Algebra 2 students extend their repertoire of functions to include polynomial, rational and radical functions. Students work closely with the expressions that define the functions and continue to expand and hone their abilities to model situations and solve equations, including solving quadratic equations over the set of complex numbers and exponential equations using the properties of logarithms. This course includes communication and analysis, modeling with functions, extending algebraic reasoning, polynomial and rational relationships and the trigonometry of general triangles. Like the other Algebra 2-equivalent courses, the Mathematical Practice Standards apply throughout each course and, together with the content standards, allow students to experience mathematics as a coherent, useful and logical subject that uses their abilities to make sense of problem situations.
Quantitative Reasoning	Quantitative Reasoning is the application of mathematics to the analysis and interpretation of real-world quantitative information, either in the context of a single discipline or interdisciplinary problems. In this course, students learn how to use mathematical tools to make decisions in real-world situations. The primary focus is on critical thinking and communication, along with the standards of mathematical practices. Highly refined traditional skills, such as intricate algebraic manipulations, are not emphasized.
Data Science Foundations	Data Science Foundations teaches students to reason with and think critically about data in all forms. It is a blend of statistics and probability, computer science and quantitative reasoning, with the goal to discover hidden patterns from raw data. Ohio's Learning Standards for Mathematics and Computer Science relevant to data science are taught along with the data demands of good citizenship in the 21st century. This course covers topics such as describing big data; usability and usefulness of data; structured vs. unstructured data; data extraction techniques; data storage; privacy issues; and data mining.
Statistics and Probability	Building on their experiences in previous grades, students in this course study probability, data analysis and statistics in greater depth. Students apply the concept of random variables to generate and interpret probability distributions, transform data to aid in interpretation and prediction and test hypotheses using appropriate statistics.
Discrete Math/Computer Science	Discrete mathematics is an area of mathematics that closely connects with the field of computer science. It is the study of mathematical structures that are countable or otherwise distinct and separable (as opposed to continuous quantities like in algebra or calculus). Discrete Math/Computer Science will explore a variety of discrete math topics through a mix of hands-on classroom activities, traditional mathematical and logical reasoning and interactive computer science activities designed for students with no prior coding experience. Topics include computational thinking, computer logic, game theory, counting/combinatorics, probability, connectivity, iteration and recursion and cryptography. All topics emphasize logical reasoning, proof and communication with precise mathematical and computer science language.