**Subjects included in the program, which are not taught by the instructor in the audience, but which are to be studied freely by the students:**

1. Sets. Ordered tuples. Cartesian Products. Relations, Functions, and Mappings. Real Functions. Operations on Functions. Counting and Induction. Binomial Coefficients. The Binomial Theorem.
2. Rational Numbers. Incompleteness of the Rational Number System. Decimals and Real Numbers. Completeness of the Real Number System. The Real Line: Coordinates and Intervals.
3. Rectangular Coordinates. Graphs in General. Graphs of Functions. Trigonometric Functions: Basic Properties. Trigonometric Functions: Graphs and Addition Formulas. Straight Lines and Their Functions.
4. Well-behaved Functions. Uniform Continuity. Inverse Functions. Exponentials and Logarithms. Hyperbolic Functions. Concavity and Inflection Points.
5. The Connection Between Definite and Indefinite Integrals. Evaluation of Definite Integrals. First-Order Differential Equations. Second-Order Differential Equations. Work and Energy.
6. L’Hopital’s Rule. Taylor’s Theorem. Integration of Rational Functions. Rationalizing Substitutions. Advanced Numerical Integration.
7. Determining Volumes by Slicing. Volumes of Revolution: Cylindrical Shells. Integrals, Exponential Functions, and Logarithms. Exponential Growth and Decay. Calculus of the Hyperbolic Functions.
8. Parametric Equations and Polar Coordinates. Parametric Equations. Calculus of Parametric Curves. Polar Coordinates. Area and Arc Length in Polar Coordinates. Conic Sections.