MATHEMATICAL METHODS IN ECONOMICS—I

---

1. Knowledge:
- Define and differentiate between different sets and set operations
- Identify and apply different proof techniques in mathematical economics
- Explain the properties of relations and functions in mathematical economics
- Describe the different number systems and their applications in economics

2. Comprehension:
- Interpret and analyze graphs of various functions in economics
- Explain the concepts of sequences, series, and limits in economics
- Classify different types of functions and their algebraic properties
- Compare and contrast continuous and differentiable functions in terms of their properties and applications

3. Application:
- Apply logic and proof techniques to solve problems in mathematical economics
- Utilize various function properties in optimization problems in economics
- Solve single-variable optimization problems using geometric and calculus-based characterizations
- Apply second and higher order derivatives in economic analysis and optimization

4. Analysis:
- Analyze and evaluate the geometric properties of functions such as concave and convex functions
- Evaluate and interpret local and global optima in economic contexts
- Analyze and interpret the applications of differentiable functions in economics
- Evaluate the properties and applications of second and higher-order derivatives in economic analysis

5. Synthesis:
- Combine different methods of integration to solve problems in economics
- Integrate definite integrals to find areas under curves in economic analysis
- Synthesize knowledge of difference equations with economic applications to solve real-world problems
- Develop economic models using the concepts learned in the course

6. Evaluation:
- Critically evaluate the effectiveness of different proof techniques in mathematical economics
- Assess the applicability of various function properties in economic analysis
- Evaluate the accuracy of optimization solutions in economic contexts
- Critically analyze the impact of second and higher-order derivatives on economic decision-making.