



## Syllabus

### MAT 110 - Mathematics of Money

#### General Information

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**Department** Mathematics

**Course Prefix** MAT

**Course Number** 110

**Course Title** Mathematics of Money

#### Course Information

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**Catalog Description** This course is directed toward the student who wishes to study mathematics with business and financial applications. The philosophy of the department is that this course is a mathematics course using business-related topics to enhance the student's abilities in and appreciation for mathematics. The course emphasizes the appropriate use of mathematical tools including formulas, algebra, calculators, estimation techniques, and spreadsheets. The course topics are chosen so as to be of interest to a broad range of students. Among the topics chosen are simple interest, simple discount, compound interest, present and future value of annuities, and other specific financial applications.

**Credit Hours** 3

**Lecture Contact Hours** 3

**Lab Contact Hours** 0

**Other Contact Hours** 0

**Grading Scheme** Letter

#### Prerequisites

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None

## Co-requisites

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None

## First Year Experience/Capstone Designation

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**This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.**

## SUNY General Education

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**This course is designated as satisfying a requirement in the following SUNY Gen Ed category**

Mathematics (and Quantitative Reasoning)

## FLCC Values

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### **Institutional Learning Outcomes Addressed by the Course**

Inquiry and Interconnectedness

## Course Learning Outcomes

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### **Course Learning Outcomes**

1. Use mathematics, including algebra and other techniques, to solve applied problems in the business world such as mortgages, car loans, credit cards, investments and financial planning.
2. Use technology, including scientific calculators and spreadsheet software, to perform financial calculations and solve applied problems.
3. Make decisions based on facts found through mathematical computations.
4. Analyze business and financial problem situations.
5. Evaluate reasonableness of results and draw appropriate conclusions.

## Outline of Topics Covered

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I. The following 4 topics are a mandatory part of the course.

1. Simple Interest
  - a. Working with Percents
  - b. Simple Interest and the Simple Interest Formula
  - c. Solving for Principals, Rates and Time
  - d. Promissory Notes and Secondary Sales

- e. Using Spreadsheets as a Tool
- f. Simple Discount

## 2. Compound Interest

- a. Compound Interest and Compound Growth
- b. The Compound Interest Formula
- c. Compounding Frequencies
- d. Estimation and the Rule of 72
- e. Effective Rates and CAGR

## 3. Annuities

- a. Annuity Future Values and Applications with Spreadsheets
- b. Annuity Future Values and Applications with Annuity Factors
- c. Annuity Present Values and Applications with Spreadsheets
- d. Annuity Present Values and Applications with Annuity Factors
- e. Solving Annuity Problems using Spreadsheets

## 4. Present and Future Values of Varying Payments

- a. Finding Future Values of Varying Payments Using Spreadsheets
- b. Finding Present Values of Varying Payments Using Spreadsheets
- c. Inflation and Building Inflation into Financial Projections
- d. Solving Problems Involving Varying Payments Using Spreadsheets

II. As time permits, topics selected from the following list. Selection may be made based on instructor preferences or student interest. There should be adequate time to cover, at minimum, three subtopics (i.e. lettered topics) from the list below. More can and should be covered if and only if time permits.

## 5. Investments

- a. Bonds
- b. Direct Business Investment
- c. Equities (Stocks)
- d. Real Estate Investment
- e. Alternative Investments (Commodities, Options, Currencies, Crypto, etc.)
- f. Investment Portfolios and Diversification.

## 6. Risk and Uncertainty

- a. Probability and the Law of Large Numbers

- b. Investment Risk
- c. Life Insurance and Annuities
- d. Casualty, Health, and Disability Insurance

## 7. Taxation

- a. Sales, Property and other Ad Valorem Taxes
- b. Income and Payroll Taxes

## 8. Personal Finance Topics

- a. Credit Cards
- b. Mortgages
- c. Leasing