

## **Course 08: Essential Math for Machine Learning: Python Edition**

**Modality:** Self-Paced Learning

**Duration:** 48 Hours

**SATV Value:**

**CLC:**

**NATU:**

**SUBSCRIPTION:** Learn, Master

### **About this course:**

Want to study machine learning or artificial intelligence, but worried that your math skills may not be up to it? Do words like “algebra” and “calculus” fill you with dread? Has it been so long since you studied math at school that you’ve forgotten much of what you learned in the first place?

You’re not alone. machine learning and AI are built on mathematical principles like Calculus, Linear Algebra, Probability, Statistics, and Optimization; and many would-be AI practitioners find this daunting. This course is not designed to make you a mathematician. Rather, it aims to help you learn some essential foundational concepts and the notation used to express them. The course provides a hands-on approach to working with data and applying the techniques you’ve learned.

This course is not a full math curriculum; it’s not designed to replace school or college math education. Instead, it focuses on the key mathematical concepts that you’ll encounter in studies of machine learning. It is designed to fill the gaps for students who missed these key concepts as part of their formal education, or who need to refresh their memories after a long break from studying math.

### **Course Objective:**

- Equations, Functions, and Graphs
- Differentiation and Optimization
- Vectors and Matrices
- Statistics and Probability

### **Audience:**

- Data Analyst
- Programmers

### **Prerequisite:**

- A basic knowledge of math
- Some programming experience – Python is preferred.
- A willingness to learn through self-paced study.

## **Course Outline:**

### **Equations, Graphs, and Functions**

- Lesson 1: Algebra Fundamentals
- Lesson 2: Quadratic Equations and Functions
- Module Assessment

### **Derivatives and Optimization**

- Lesson 1: Differential Calculus Foundations
- Lesson 2: Differentiation and Derivatives
- Module Assessment

### **Vectors and Matrices**

- Lesson 1: Vectors
- Lesson 2: Matrices
- Module Assessment

### **Statistics and Probability**

- Lesson 1: Statistics Fundamentals
- Lesson 2: Probability
- Module Assessment