1.0 Module Overview: Basic Notions and Techniques

Module Overview

In this module we will talk about vector spaces and their internal and external operations. Using the external operation of the dot product (or inner product), we will define the notions of angle and length for vectors.

In addition, you will learn the notion of a matrix. Matrices will be used thoroughly in this course to organize, model, and solve practical problems. You will learn when matrix multiplication makes sense and how to multiply matrices.

Finally, the powerful notion of Gauss elimination will be introduced. We will firstly exemplify its power by solving systems of linear equations.

Module Outcomes

As a result of this module, you will be able to do the following:

1. **Calculate** the length of a vector and the angle at which two vectors meet.
2. **Multiply** matrices.
3. **Use** Gauss elimination to solve systems of linear equations.

Assigned Reading

- Chapter 1
- Chapter 2: Sections 2.1–2.2

Module Outline

In this module, we will cover the following:

Course Introduction

+ A. Lecture Videos

+ B. Live Session

+ C. Assessments