3.0 Module Overview: The Null-Space and Column Space of a Matrix

Module Overview

In this module we will talk about subspaces of vector spaces. Two of the four fundamental spaces of a matrix will be introduced: the null-space and the column space.

In addition, you will learn how to bring a (rectangular) matrix in row reduced echelon form and calculate the rank of a matrix. We will connect the RRE form with the computation of the null-space and column space of a matrix.

Finally, in this module you will learn to calculate and express in a vector space form the full set of solutions of a system of linear equations.

Module Outcomes

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

1. **Bring** a matrix in row reduced echelon form.
2. **Calculate** the column space and nullspace of a matrix.
3. **Compute** all solutions of an Ax = b system of equations.

Assigned Reading

- Chapter 3: Sections 3.1-3.3

Module Outline

In this module, we will cover the following:

+ A. Lecture Videos

+ B. Live Session

+ C. Assessments