



## Mathematics III Course Specifications

**Faculty:** Computer and Informatics

**Department:** Computer Science

**Program(s) on which the course is given:** Bachelor in Computer and Information Sciences

**Major or Minor element of programs** : all majors

**Department offering the program** : Computer Science

**Department offering the course** : Basic Sciences

**Academic year / Level** : 2<sup>nd</sup> Year / B.Sc.

**Date of specification approval** : 11/10/2009

### A. Basic Information

**Title:** Mathematics 3

**Code:** BSC 227

**Lecture:** 4 hrs/week

**Tutorial:** 3 hrs/week

**Practical:** ---

**Credit Hours:** ---

**Total:** 7 hrs/week

### B. Professional Information

#### 1. Overall Aims of Course:

Student will be able to introduce the basics of matrix algebra, graph theory, Boolean operations in addition to introducing the fundamental concept of a vector space, Eigenvalues and Eigenvectors. Defining linear transformations, and showing how they can be related to matrices.



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Students and graduates will be provided with the requisite background in solving linear equations.

## 2. Intended Learning Outcomes of Course (ILOs):

### a. Knowledge and Understanding:

a1- Understanding and summarizing of the basic techniques of linear algebra.

### b. Intellectual Skills:

b1- Integrate applying the basic techniques of linear algebra.

### c. Professional and Practical Skills:

c1- Ability to use techniques of linear algebra in solving and handling practical problems

### d. General and Transferable Skills:

d1- Manage time effectively.

d2- Present a clear, logical argument.

d3- Work and discuss independently.

### e. Attitude:

e1. A knowledge and respect of ethics and ethical standards in relation to a major area of study.

e2. Relationship Emphasis a successful with other students.

e3. Learn how to make relation with other, and the limit of this relation.

### 3. Contents:

Topic	No. of hours	Lecture	Tutorial/ Practical
Sets, sequences. (Part I)	7	4	3
Sets, sequences. (Part II)	7	4	3
Matrices (Part I)	7	4	3
Matrices (Part II)	7	4	3
Matrices and Boolean matrices. Relations and functions.(Part III)	7	4	3
Linear equations and matrices (Part I)	7	4	3
Linear equations and matrices (Part II)	7	4	3
Vector spaces. Inner product spaces. Linear transformations. Eigenvalues and eigenvectors. Canonical forms. Jordan forms (Part I)	7	4	3
Vector spaces. Inner product spaces. Linear transformations. Eigenvalues and eigenvectors. Canonical forms. Jordan forms(Part II))	7	4	3
Vector spaces. Inner product spaces. Linear transformations. Eigenvalues and eigenvectors. Canonical forms. Jordan forms(Part III)	7	4	3
Boolean algebra	7	4	3
Mathematical Induction.	7	4	3
Networks.	7	4	3
Graph theory. Posits lattices. (Part II)	7	4	3