



Mathematics III Course Specifications

Faculty: Computer and Informatics

Department: Scientific Computing

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 : Scientific Computing

Department offering the course : Basic Sciences

Academic year / Level : 2nd 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.



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