

**UNIVERSITY OF MADRAS**  
**B.Sc. DEGREE COURSE IN MATHEMATICS**  
**SYLLABUS WITH EFFECT FROM 2020-2021**

**BMA-CSC13**

**CORE-XIII: ALGEBRAIC STRUCTURES-II**  
**(Common to B.Sc. Maths with Computer Applications)**

**Inst.Hrs : 6**

**Credits : 4**

**YEAR: III**

**SEMESTER: VI**

**Learning outcomes:**

Students will acquire knowledge about the Vector Spaces, Dual spaces, Inner product spaces and linear transformations.

**UNIT I**

Vector spaces. Elementary basic concepts- linear independence and bases Chapter 4 Section 4.1 and 4.2.

**UNIT II**

Dual spaces  
Chapter 4 Section 4.3.

**UNIT III**

Inner product spaces.  
Chapter 4 Section 4.4.

**UNIT IV**

Algebra of linear transformations- characteristic roots.  
Chapter 6 Section 6.1 and 6.2.

**UNIT V**

Matrices- canonical forms- triangular forms.  
Chapter 6 Section 6.3 and 6.4.

**Content and Treatment as in**

“Topics in Algebra” – I. N. Herstein-Wiley Eastern Ltd.

**Reference:**

1. University Algebra – N. S. Gopalakrishnan – New Age International Publications, Wiley Eastern Ltd.
2. First course in Algebra – John B. Fraleigh, Addison Wesley.
3. Text Book of Algebra – R. Balakrishna and N. Ramabadrana, Vikas publishing Co.
4. Algebra – S. Arumugam, New Gamma publishing house, Palayamkottai.

**e-Resources:**

1. <https://nptel.ac.in>.
2. <http://ebooks.lpude.in.linearalgebra>.