Sankalchand Patel University

Faculty Of Science

M.Sc. Mathematics (SEM-IV)

In Effect from Academic Year 2017-18

Subject Code: 1SC2040402	**Subject Title: ALGEBRA-II**

Course Objective:

- This is an introductory course in Algebra-II which provide a working knowledge of the basic definitions and theorems of the extensions of field, the splitting field of a polynomial over a field and the Galois group of a polynomial described in detail in the syllabus.

Teaching scheme (hours) per week		**credit**		**Theory Marks**		**Practical Marks**		**Total**
Theory	**Tutorial**	**Theory**	**Tutorial**	**University Assessment**	**Cont. Assessment**	**University Assessment**	**Cont. Assessment**	
4	**1**	**4**	**1**	**60**	**40**	**-**	**-**	**100**

Subject Contents			
Unit. No	**Topic**	**Total Hours**	**Weight (%)**
1	Extensions of field, Finite, algebraic and simple field extensions, algebraic and transcendental numbers.	16	25
2	Roots of polynomials, the splitting field of a polynomial over a field, construction with straightedge and compass.	16	25
3	The fixed field of a group of automophisms, the theorem on symmetric polynomials, normal field extension, the Galois group of a polynomial.	16	25
4	The fundamental theorem of Galois theory, solvability by radicals, Galois group over the rationals, finite fields.	16	25

Course Outcome:

On successful completion of the course,

- students should be able understand the concept of field theory, roots of polynomials and the Galois group of a polynomial.

Note: The topics are roughly covered by chapter 5 (all articles) and chapter 7 (7.1 and 7.2 only) of the book, entitled "Topics in Algebra" by I. N. Herstein 2nd Edition. Wiley Eastern Ltd., 1975.

List of References:

- "Basic Algebra" by Jacobson Vol. I & II Hindustan Publishing Co., 1984.
- "Basic Abstract Algebra" by P B Bhattacharya, S K Jain, S R Nagpaul, 2nd Edition, Cambridge University Press, 1995.
- "Algebra", by Lang S, Addison – Wesley, Reading, Mass, 1965.
- "Algebra", by Artin M, Prentice Hall, Englewood Cliffs N J, 1991.
- "Abstract Algebra" by David S. Dummit and Richard M – Foote, Prentice Hall, Englewood.
- "University Algebra" by Vijay Krishnan.
- "A first course in Abstract Algebra" by John Fraleigh, Nawsa Publishing 3rd Edition House.

- A textbook of Modern Abstract Algebra" by Shantinaryan & Satpal, S. Chane & Company.