Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NCYC514	Main Group Chemistry	3	0	0	3

Course Objective

- This course contains the chemistry of s- and p-block elements, synthesis, structure and bonding and their chemical reactivity. Organometallic chemistry of main group elements is included with a special focus on their applications in organic synthesis. Various applications of main group elements in catalysis and material chemistry will be explored.
- With this course students will learn the concepts involved in the syntheses, structure, physical and chemical properties of main group elements along with their application in various field

Learning Outcomes

- General synthetic procedures and characterization for inorganic and organometallic compounds
- Structure, binding and reactivity
- Application in multidisciplinary areas.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Classification of elements and periodic properties, periodic trends	04	Students will learn how the elements are classified and their trend in properties.
2	Chemistry of s-block elements: Properties, structure of compounds. Organometallic compounds of alkali and alkaline earth metals, synthetic methods, structure, bonding and reactivity, application catalysis. Comparison with d-block elements.	11L	Students will learn chemistry of s-block elements
2	p-block elements: General properties, synthesis, structure, bonding of organoelements compounds, spectroscopic characterization and application. Multiple bonding in main group elements, Hypervalency in p-block elements, heavier carbene analogues, small molecule activation, and unusual oxidation states of main group elements.	12L	Students will get extensive knowledge about synthesis, structure and important applications of these elements.
3	Inorganic rings, cages and polymers: boron, carbon, silicon, germanium, tin, nitrogen, phosphorus and arsenic, sulfur and selenium compounds, synthesis, structures, bonding, nomenclature, application in catalysis and material chemistry.	15L	This part will focus on the synthesis, structure and bonding of polynuclear compounds with the specified elements. Their application in different areas of chemistry will be discussed.
Total		**42L**	

Text Books:

1. The Chemistry Of The p-Block Elements: Syntheses, Reactions And Applications, Anil J Elias, The Orient Blackswan; First edition (1 January 2019).
2. Inorganic Chemistry, Catherine Housecroft, Alan Sharpe, Pearson; 4th edition (31 May 2012)

Reference Books:

1. Inorganic Rings and Polymers of the p-Block Elements: From Fundamentals to Applications, Tristram Chivers and Ian Manners, RSC, 2009.
2. Organometallics, A concise introduction, C. Elschenbroich, A. Salzer 3rd edition, 2006, Wiley-VCH Verlag GmbH& Co, KGaA,Weinheim, Germany.