MS1014 – Materials Chemistry II

Course Code	MS1014					
Course Title	Materials Chemistry II					
Pre-requisites	NIL					
Pre-requisite for	MS2013	Polymers and Composites				
	MS4666	Sustainable Development in Water, Agriculture and Aquaculture				
No of AUs	2					
Contact Hours	LECTURES	18 hrs	TUTORIALS	8 hrs		

Course Aims

The aim of the course is to provide you with fundamental understanding of basic organic chemistry, including polymer chemistry, surfactant chemistry and inorganic chemistry, including reactivity of metals and non-metals and their compounds including metal coordination complexes.

Intended Learning Outcomes (ILO)

By the end of this course, you (as a student) would be able to:

1. Identify the nomenclature, bonding and structure of organic compounds;
2. Predict physical properties of organic compounds from their molecular structures;
3. Predict chemical reactions of organic compounds from their molecular structures and write chemical equations;
4. Predict products of organic reactions based on reaction mechanisms covered in this course;
5. Compare reactivities of metals based on their electronic structures and suggest appropriate methods for their production.
6. Interpret properties of inorganic compounds based on periodic relationships among the elements.
7. Identify structural features of transition metal complex ions and coordination compounds and predict their optical properties

Course Content

It introduces basic chemistry concepts and theories that are important for understanding of structures, properties and applications of materials. The organic chemistry part covers basic chemistry concepts and theories about organic molecules as well as nomenclature, structures and reactions of common organic compounds. Structures and properties of polymers, are also introduced briefly. The inorganic chemistry part includes an introduction to basic chemistry concepts, atomic orbital theory, periodic relationships among the elements, and chemistry of metals, non-metallic inorganic compounds and coordination compounds.

Reading and References

1. Robert C. Atkins, Francis A. Carey, Organic Chemistry: A Brief Course, 3rd Edition, McGraw-Hill, Inc, 2002.
2. TWG Solomons and CB Fryhle, Organic Chemistry, 9th Edition, John Wiley and Sons Inc., 2008.
3. Chang, Raymond, Chemistry, 11th Edition, McGraw-Hill, 2012 (Call no.: QD31.2.C456 2013)

Course Policies and Student Responsibilities

For CAs, all non-attendance must be supported by a medical certificate or other valid official

documents.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.