	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Bachelor of Technology (All branches)**	Year of Regulation	**2018**
Department	**Chemistry**	Semester	**I/II**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
CY 101	**Chemistry**	**2**	**1**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives		Course Outcomes		
	To provide the students with some knowledge of coordination chemistry and properties and applications of co-ordinations compounds		CO1	Able to acquireknowledge about coordination chemistry, properties and identification of its application
	To provide fundamental understanding on electrochemistry, corrosion, reaction dynamics, polymer science and importance of green chemistry		CO2	Able to acquire knowledge about electrochemical analysis and identification of application to engineering problems (energy storage devices and corrosion)
	To develop the student's ability to apply knowledge of different instrumental methods for chemical analysis		CO3	Able to acquire knowledge about the basics chemical kinetics, theories of reaction rates and their applications in catalysis
			CO4	Able to acquireknowledge about various instrumental techniques and their applications in chemical analysis
	To introduce the students with the concept, classifications and industrial applications of different polymers		CO5	Able to acquire knowledge about different types (solid, liquid and gases) of fuels and its extraction process and their applications
			CO6	Able to acquire knowledge about the concepts of polymers, polymerization processes and their industrial applications

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
2	CO2	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
3	CO3	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
4	CO4	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
5	CO5	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
6	CO6	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

SYLLABUS

No.	Content	Hours	COs
I	Double salts, coordination compounds, different types Werner's theory of coordination compounds, valance bond and crystal field theory of co-ordination compounds, optical and magnetic properties, isomerism in co-ordination compounds	**05**	**CO1**
II	Conductance of electrolytic solutions, effect of temperature and concentration, conductometric titrations Redox reactions, electrode potential, Nernst equation, factors affecting the emf of half cells, Latimer diagram, hydrogen half-cell, calomel half-cell, quinhydrone half-cell. Introduction to fuel cell.	**07**	**CO2**
III	Galvanic series, electrochemical theory, galvanic corrosion, crevice corrosion and pitting corrosion, control of corrosion.	**04**	**CO2**
IV	Theoretical and experimental pH-metry, potentiometry and colorimetry.	**04**	**CO4**
V	Principals and applications of green chemistry	**01**	**CO3**
VI	Various factors affecting the rate of reactions, integrated rate laws for zero, first and second order reactions, half-life periods Activation energy, theories of reaction rates, catalysis, kinetics of homogeneous, heterogeneous and enzyme catalysis	**06**	**CO3**
VII	Solid, liquid and gaseous fuels, coal analysis, classification of coal, anti-knocking agents, octane number and cetane number, aviation fuel and biodiesel.	**04**	**CO5**
VIII	Concepts, classification, structures, and molecular weights of polymers, mechanism and kinetics of various polymerization process, natural rubber and its properties, vulcanization of rubber, synthesis and applications of various industrial polymers.	**05**	**CO6**
	Total Hours	**36**	

Essential Readings

1. P. C. Jain and M. Jain, "Engineering Chemistry", Dhanpat Rai Publication Co.
2. S. S. Dara, "A Text Book of Engineering Chemistry", S. Chand & Co. Ltd.

Supplementary Readings

1. M. G. Fontana, "Corrosion Engineering", McGraw-Hill Book Company.
2. R. Gopalan, "Engineering Chemistry", Vikas Publishing House Pvt. Ltd.
3. B. K. Sharma, "Engineering Chemistry", Krishna Prakashan Media (P) Ltd.