

Department of Chemistry
St. Edmund's College, Shillong
Syllabus Distribution – Even Semester

Semester – 2

CHE – 150

Introductory Chemistry – II

Topics	Assigned Faculty
Part – A Theory	
Unit – I : Inorganic Chemistry - II	
(a) Nucleus and Radioactivity - I	Dr. K. Nongsiej
(b) Redox reactions	Dr. P. Sarkhel
(c) Principles of qualitative and quantitative analysis	Dr. K. Nongsiej
(d) Acid-base concept	Dr. P. Sarkhel
Unit – II: Organic Chemistry - II	
(a) Organic Stereochemistry-I	Dr. I. Kharbangar
(b) Aromatic Hydrocarbons and Aromaticity	S. Chowdhury
(c) Nucleophilic Substitution Reactions	S. Chowdhury
(d) Elimination Reactions	Dr. I. Kharbangar
Unit – III: Physical Chemistry - II	
(a) Thermodynamics-I	B. Lyngkhoi
(b) Thermochemistry	S. Deb
(c) Adsorption and Surface Phenomena	S. Deb
Part – B (Organic Practical)	
Qualitative analysis of organic compounds containing one functional group.	S. Chowdhury and Dr. I. Kharbangar

Department of Chemistry
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Syllabus Distribution – Even Semester

Semester – 4
Chem EH 401

Topics	Assigned Faculty
Part – A: Inorganic, Organic and Physical Theory	
Section 1 (Inorganic)	
Unit I:	
(a) Organometallic Chemistry-I	Dr. K. Nongsiej
(b) Inorganic polymers	Dr. K. Nongsiej
(c) Interhalogens, Polyhalides and Pseudohalides	Dr. K. Nongsiej
Unit II: Coordination Chemistry	Dr. P. Sarkhel
Section 2 (Organic)	
Unit III:	
(a) Carbohydrates	S. Chowdhury
(b) Amino acids	S. Chowdhury
(c) Urea	S. Chowdhury
(d) Drugs	S. Chowdhury
Unit IV:	
(a) Heterocyclic compounds-I	Dr. I. Kharbangar
(b) Fats, Oils, Soaps and Detergents	Dr. I. Kharbangar
(c) Dyes	Dr. I. Kharbangar
Section 3 (Physical)	
Unit V:	
(a) Ionic Equilibrium	B. Lyngkhoi
(b) Electrochemistry-I	S. Deb
Unit VI:	
(a) Electrochemistry-II	S. Deb
(b) Phase Equilibria	B. Lyngkhoi
Part – B Practical (Inorganic LC-II)	
Quantitative analysis – Volumetric Estimation	Dr. P. Sarkhel and Dr. K. Nongsiej

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Syllabus Distribution – Even Semester

Semester – 6

Topics	Assigned Faculty
Chem H 601 Inorganic Chemistry	
Unit I: Organometallic Chemistry-II	Dr. K. Nongsiej
Unit II: Bioinorganic Chemistry	Dr. P. Sarkhel
Unit III: Spectroscopic Methods in Inorganic Chemistry (a) UV-Visible Spectroscopy (b) IR Spectroscopy	Dr. K. Nongsiej Dr. K. Nongsiej
Unit IV: Reactivity of Coordination compounds	Dr. P. Sarkhel
Unit V: Nanomaterials	Dr. P. Sarkhel
Chem H 602 Organic Chemistry	
Unit I: (a) Natural Products (b) Topics in Biological Chemistry	Dr. I. Kharbangar S. Chowdhury
Unit II: Organic Photochemistry	S. Chowdhury
Unit III: Pericyclic Reactions	S. Chowdhury
Unit IV: Spectroscopy for Structural Analysis (a) Ultraviolet and Visible Spectroscopy (b) Infrared Spectroscopy (c) Nuclear Magnetic Resonance Spectroscopy (d) Mass Spectroscopy	Dr. I. Kharbangar Dr. I. Kharbangar Dr. I. Kharbangar Dr. I. Kharbangar

Chem H 603	
Physical Chemistry	
Unit I: Thermodynamics-III	S. Deb
Unit II: Electrochemistry-III	B. Lyngkhoi
Unit III: Elementary Quantum Mechanics	B. Lyngkhoi
Unit IV: Boltzmann Distribution	S. Deb
Chem H 604	
Part A – Practical (Inorganic LC-III)	
Inorganic Quantitative Analysis	Dr. P. Sarkhel and Dr. K. Nongsiej
Chem H 604	
Part B – Dissertation	
Project Work	All Faculty members of the Department

Department of Chemistry
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Syllabus Distribution – Odd Semester

Semester – 1

CHE – 100

Introductory Chemistry – I

Topics	Assigned Faculty
Part – A Theory	
Unit – I : Inorganic Chemistry - I	
(a) Structure of Atom	Dr. P. Sarkhel
(b) Chemical Periodicity	Dr. K. Nongsiej
(c) Chemical Bonding	Dr. P. Sarkhel and Dr. K. Nongsiej
Unit – II: Organic Chemistry - I	
(a) Nomenclature, Structure, Bonding and Properties of Organic molecules	Dr. I. Kharbangar
(b) Alkanes and Cycloalkanes	S. Chowdhury
(c) Alkenes and Alkynes	S. Chowdhury
Unit – III: Physical Chemistry - I	
(a) States of Matter	
(i) Gaseous State-I	S. Deb
(ii) Liquid State-I	S. Deb
(iii) Solid State-I	B. Lyngkhoi
(b) Chemical Kinetics-I	B. Lyngkhoi
Part – B (Inorganic Practical)	
Qualitative analysis of inorganic mixtures containing at least five radicals/ions to be analysed.	Dr. P. Sarkhel and Dr. K. Nongsiej

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Syllabus Distribution – Odd Semester

Semester – 3
Chem EH 301

Topics	Assigned Faculty
Part – A: Inorganic, Organic and Physical Theory	
Section 1 (Inorganic)	
Unit I: s- and p-Block Elements and their compounds	Dr. P. Sarkhel
Unit II: d- and f-Block Elements and their compounds	Dr. K. Nongsiej
Section 2 (Organic)	
Unit III: (a) Carboxylic acids and their derivatives (b) Organometallic compounds-I (c) Active Methylene compounds	S. Chowdhury S. Chowdhury S. Chowdhury
Unit IV: (a) Nitro compounds (b) Amines (c) Diazo compounds	Dr. I. Kharbangar Dr. I. Kharbangar Dr. I. Kharbangar
Section 3 (Physical)	
Unit V: (a) Thermodynamics-II (b) Chemical Equilibrium	S. Deb B. Lyngkhoi
Unit VI: (a) Dilute Solutions (b) Colloids	B. Lyngkhoi S. Deb
Part – B Practical (Inorganic LC-I)	
Qualitative analysis of inorganic mixtures containing at least five radicals/ions to be analysed.	Dr. P. Sarkhel and Dr. K. Nongsiej

Department of Chemistry
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Syllabus Distribution – Odd Semester

Semester – 5

Topics	Assigned Faculty
Chem H 501	
Inorganic Chemistry	
Unit I: Molecular Symmetry	Dr. P. Sarkhel
Unit II:	
(a) Complexometric titration	Dr. P. Sarkhel
(b) Error analysis	Dr. P. Sarkhel
(c) Organic Reagents in Inorganic Analysis	Dr. P. Sarkhel
Unit III: Nucleus and Radioactivity-II	Dr. K. Nongsiej
Unit IV: Crystal Field Theory	Dr. K. Nongsiej
Unit V: Magnetochemistry	Dr. K. Nongsiej
Chem H 502	
Organic Chemistry	
Unit I:	
(a) Polynuclear Aromatic Hydrocarbons	Dr. I. Kharbangar
(b) Peptides, Proteins and Vitamins	Dr. I. Kharbangar
Unit II:	
(a) Organic Stereochemistry	Dr. I. Kharbangar
(b) Introduction to Dienes	Dr. I. Kharbangar
(c) Polymers	Dr. I. Kharbangar
Unit III:	
(a) Introduction to Organic Synthesis	S. Chowdhury
(b) Rearrangements	S. Chowdhury
Unit IV:	
(a) Heterocyclic compounds-II	S. Chowdhury
(b) Green Chemistry	S. Chowdhury
(c) Inorganic Reagents in Organic Synthesis	S. Chowdhury

Chem H 503	
Physical Chemistry	
Unit I: Gaseous State-II	S. Deb
Unit II: Physical properties and molecular structure	B. Lyngkhoi
Unit III: Solid State-II	B. Lyngkhoi
Unit IV: Chemical Kinetics-II	B. Lyngkhoi
Unit V: Molecular Spectroscopy	S. Deb
Chem H 504	
Part A – Practical (Organic LC-II)	
Separation of Mixtures and Organic preparation	S. Chowdhury and Dr. I. Kharbangar
Chem H 504	
Part B – Practical (Physical LC-II)	
Laboratory Course	B. Lyngkhoi and S. Deb