SEMESTER IV			
Part III Allied - I	**ALLIED CHEMISTRY -II**		
Course Code: 21UCHA41	**Hrs/Week :4**	**Hrs/ Sem : 60**	**Credits : 3**

Vision : Acquire an appropriate knowledge and understanding in Chemistry underlying inmetallurgical process and industrial important polymers.

Mission :

Knowledge on steps involved in metallurgical process

Know the importance of colloids in day to-day life

Significance of synthetic reagents in organic chemistry.

Importance of nanochemistry in various fields.

Course outcomes

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO 1	Explain the methods of purification of ores and differentiate ores and minerals	**1**	**Un**
CO 2	Know the types of furnaces	**1**	**Un**
CO 3	Correlate the importance of colloids in day to day life	**5**	**An**
CO 4	Know the types of emulsions and emulsifiers	**4**	**Re**
CO 5	Know the importance of synthetic reagents	**1**	**Re, Un**
CO 6	Know the importance of Saccharin-chloramine-T-Salicylic acid -Aspirin	**1**	**Un**
CO 7	Determine the structure of various alkaloids	**4**	**Ap**
CO 8	Know the importance of isoprene rule in terpenoids	**1**	**Re, Un**
CO 9	Describe the synthesis methods of nano materials.	**5**	**Un**
CO 10	Correlate the importance of nanochemistry in various fields	**5**	**An**

UNIT I METALLURGY

Ores and Minerals- types of ores – methods of ore dressing- roasting –calcination, reduction of metal oxide by aluminium (aluminothermic process)-smelting- flux and slag -purification by

electrolysis and ion exchange method - oxidative refining- zone refining- Kroll process - van Arkel de Boer method- types of furnaces – kilns – blast – reverberatory- muffle and electric furnace. Extraction, properties and uses of titanium and vanadium. Preparation of Titanium tetrachloride and Vanadium pentoxide

UNIT II COLLOIDS AND EMULSIONS

Definition- Classification of Colloids –comparison of lyophilic and lyophobic colloids- Preparation of sols-Dispersion method (Bredig's Arc method) –Aggregation method(oxidation , reduction,double decomposition)-Properties – Optical(Tyndall effect) – kinetic(Brownian movement)Electrical (electrical double layer) – Coagulation of colloids – Hardy Schulze law – protective colloids – gold number – Gels – classification, preparation properties(imbibition,synerisis and thixotropy). Emulsion – types and their distinction.Emulsifiers – surfactants– applications of colloids-food, medicine, thixotropic paints, clarification of municipal water, formation of delta.

UNIT III SYNTHETIC REAGENTS AND SOME IMPORTANT ORGANIC COMPOUNDS

Synthetic reagents-preparation, properties of ethyl zinc-methyl lithium-diethyl malonate and tetra ethyl lead (TEL)

Preparation and properties and uses of Saccharin- chloramines -T-Salicylic acid - Aspirin

UNIT IV ALKALOIDS AND TERPENOIDS

Alkaloids-Definition-General methods of structure determination- Hoffmann's exhaustive methylation with coniine as example- structure and synthesis of coniine and nicotine

Terpenes-Definition-classification-examples-isoprene rule-general methods of structure determination- structure and synthesis of citral and menthol

UNIT V NANOCHEMISTRY

Nanoparticles – Definition – Types– nanoparticles of metals, semiconductors and oxides – Synthesis of nano sized compounds – reduction methods, sol-gel method– nanoclusters – nanorod- nano wire and uses . Carbon nanotubes – single walled nanotube- multiwalled nanotube. Application of nanochemistry in various fields.

Text Books:

1. Arun Bahl and B.S. Bahl.. Advanced Organic Chemistry. S.Chand and Company Ltd., Reprint, 2005
2. Puri, B.R., Sharma, L.R. and K.C.Kalia,. Principles of Inorganic Chemistry. Milestone Publishers and Distributers, Delhi, 2010.
3. Arun Bahl, B.S. and Bahl, G.D.Tuli. Essentials of Physical Chemistry. S.Chand &Company Ltd., New Delhi, 2008..

Books for Reference :

1. Jerry March, Advanced Organic Chemistry, Reactions Mechanisms and Structure. 4th Edition, 2013.
2. Tewari, K.S., Vishnoi, N.K. and S.N.Mehrotra. A Text Book of Organic Chemistry. 2 nd Revised Edition, 1998..
3. Puri, B.R., Sharma, L.R. and Madan S. Pathania, Principles of Physical Chemistry. Vishal Publishing Co, 2008.
4. Jain, M.K. and S.C.Sharma, Modern Organic chemistry. Vishal Publishing Co. 2012.

SEMESTER- III			
Core IIIPhysical Chemistry-I			
Course Code : 21UCHC31	**Hrs/Week : 4**	**Hrs/ Sem : 60**	**Credits : 4**

Objectives:

- To appreciate the surface phenomenon in industry and biological systems.
- To have an overall knowledge about gaseous and liquid states of matter.
- To understand the importance of colloids in day to day life

Course Outcome:

CONo.	Upon completion of this course, students should be able to	PSOaddressed	CL
CO- 1	enumerate the general characteristics of adsorption and have thorough knowledge of the theory behind physisorption and chemisorptions	1,2,5,7,8	Ap
CO- 2	prioritise the phenomenon of catalysis in industry and biological systems and learn the basic concepts of adsorption and its applications in various walks of life	1 ,2,7	Re
CO- 3	Gainextensive knowledge about kinetic theory of gases and its relation with temperature and velocity ofa gas	1,3	Un
CO-4	understand the deviation of gases from ideal behaviour using Van der Waal's equation	1,2 , 3	Re

CONo.	Upon completion of this course, students should be able to	PSOaddressed	CL
CO- 5	classify, compare and discuss the preparation method and properties of colloids and also know the importance of colloids in day to day life,	1,2,5	Un
CO-6	have a thorough learning of miscible andimmiscible liquids and outline the statement of Nernst distribution law, its deviations and applications	2,3,4	Re
CO- 7	compare the vapour pressure of partiallymiscible liquids and mixture of immiscible liquids and understand the theory of fractional distillation and steam distillation and its applications.	2,3	An
CO-8	appreciate the chemistry behind the reversible reactions and nature of chemical equilibrium and apply Lechatelier's principle in various aspects.	1,2,3,4,	Ap

Unit I Surface Chemistry

Adsorption – types- physisorption and chemisorption – adsorption of gases by solids adsorption isotherm – derivation and significance of Freundlich and Langmuir isotherms – BET isotherm (no derivation) – applications of adsorption – adsorption indicator-production of high vacua-gas mask-removal of colouring matter from solutions- chromatographic analysis.

Catalysis - General characteristics of catalytic reactions – acid-base catalysis and enzymecatalysis– Fischer Lock and key theory – characteristics of enzyme catalysis. Mechanism andkinetics of enzyme catalysed reaction (Michaelis-Menton equation). Activation energy andcatalysis – theories of homogeneous and heterogeneous catalysis – mechanism of thehydrogenation of ethene on nickel surface. Acid base catalysis –

mechanism – promoters –promotion action – catalytic poisoning – negative catalysis – mechanisms ofnegative catalysis, autocatalysis and photocatalysis.

Unit II Gaseous State

Kinetic theory of gases – justification of postulates-derivation of kinetic gas equation deduction of gas laws from the kinetic gas equation-Charle's law, Boyle's law, Avogadro's law, ideal gas equation – Dalton's law of partial pressure – Graham's law of diffusion-kinetic theory and temperature – Maxwell's law of distribution of velocities (no derivation) – types of molecular velocities – graphical representation and its significance- collision diameter –collision number – collision frequency – mean free path - deviations from ideal behavior compressibility factor- effect of pressure and temperature on deviation-explanation of deviation-volume correction-pressure correction – Van der Waal's equation—limitations liquefaction of gases-critical phenomenon—Andrew's isotherms of CO_2- Van der Waal'sequation and critical constants-experimental determination- law of corresponding states.

Unit III Colloids

Definition-Types of colloidal system –lyophilic and lyophobic colloids-characteristics and comparison- Sols- Preparation-Dispersion method (Bredig's Arc method, peptization) – Aggregation method-(double decomposition, reduction, oxidation, Hydrolysis,Change of solvent)-purification of Sols-Dialysis-Properties – Optical (Tyndall effect) – kinetic (Brownianmovement) Electrical (electrical double layer) – Coagulation of colloids – Hardy Schulze law-Hoffmeister series – protective colloids – gold number.

Emulsion – types and their distinction-Emulsifiers – surfactants– Gels – classification, preparation, properties (imbibition,synerisis and thixotropy). Applications of colloids-food, medicine, thixotropic paints, clarification of municipal water, formation of delta.

Unit IV Solution

Liquids in liquids –Completely miscible liquids- Ideal and non-ideal solution-Raoult's law - distillation of homogenous binary liquid mixtures -Theory of fractional distillation – Azeotropic distillation.

Partially miscible liquids – Phenol-water-Triethylamine-water and Nicotine-water systems– Variation of solubility with temperature – Vapour pressure of partially miscible liquids- Criticalsolutiontemperature-upper, lower,upper and lower - influence of impurityon CST (Crismer Test) and applications.

Immiscible liquid systems- Vapour pressure of mixtures of immiscible liquids- Theory ofsteam distillation and its applications.

Nernst distribution law – Statement–Conditions - Thermodynamic derivation – Deviationsfrom the law(molecular association and dissociation) –Applications-Distribution indicators-solvent extraction.

Unit V Chemical Equlibrium

Reversible reactions- nature of chemical equilibrium- characteristics-law of mass action-explanation of the law of mass action based on the molecular collision theory-equilibrium constant; equilibrium law-relationship between K_c and K_p-Application of law of mass action to the equilibria involving the formation of NH_3 , dissociation of $CaCO_3$ and the dehydration of $CuSO_4.5H_2O$. Lechatelier's principle – statement-application to the formation of NH_3

Text Books:

1. Puri B.R, Sharma L.R, Madan S. Pathania. *Principles of Physical Chemistry.* VishalPublishing Co., 2008.
2. Arun Bahl, Bahl B.S, Tuli G.D. *Essentials of Physical Chemistry*. New Delhi: S. Chand &Company Ltd., 2008.

Books for Reference:

1. Malligarjunan U.M . *Principles of Physical Chemistry*. SreeVinayaga Publications. First Edition, 2020.
1. Soni P.L, Dharmaha O.P. *Text Book of Physical Chemistry (A Modern Approach).*SultanChand and Sons Publishers, Revised Edition 2010.

SEMESTER- IV			
CoreIV	**OrganicChemistry-I**		
Course Code :21UCHC41	**Hrs/Week:4**	**Hrs/ Sem: 60**	**Credits:4**

Objectives:

- To gain knowledge about the importance of nitro and amino compounds
- To study the synthetic importance of active methylene compounds and know the conformational analysis
- To appreciate the applications of organometallic compounds in synthesis
- To know the laboratory and industrial importance of Carbohydrates
- To understand the concepts of tautomerism &molecular rearrangements

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO -1	compare alcohols, nitroalkanes and alkyl nitrites,Differentiate1°, 2°&3° amines by reactions.	1,3	An
CO - 2	justify the effect of substituent on the basicity of aromaticamines.	1,3	Cr
CO - 3	synthesize and Characterize acetoacetic ester and malonic ester.	5,7	Cr
CO- 4	define Sachse Mohr theory – Newman projection ,Sawhorse & Fischer formulaeKnow about the	1	Re

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
	conformational analysis.		
CO - 5	recall the synthetic importance of organometalliccompounds, RecogniseFrankland reagent and its significance.	1,6,7	Re
CO - 6	know the preparation and properties of Thioalcohols and Mustard gas.	1	Re
CO- 7	classify carbohydrates and compare and contrast the reactions and structure of glucose andfructoseIllustrate the structure and reactions of carbohydrate and discuss epimerization and mutarotation.	5,6,1	Un
CO - 8	illustrate the theory of resonance and tautomerism and identify the product of rearrangement reactions such as pinacol-pinacolone, Benzil-Benzilic acid, Curtius,Lossen,Favorskiiand Friesrearrangement.	1,3	Un, An

Unit I : Nitro compounds and Amino compounds

Preparation and reaction of nitrile and isonitrile – distinction between nitroalkane and alkyl nitrites – reduction reaction of nitroalkane – NEFreaction. Preparation of o, p,m-dinitrobenzene- trinitrobenzene.

Aliphatic amine – separation of mixture of amine –(Hoffmann, Heisenberg method)- Comparison of 1º, 2º&3º amines- Mustard oil reaction- Mannich reaction – ascending and descending of amines.

Aromatic amines – effect of substitutents on the basicity of aromatic amines- preparation and properties ofphenylenediamine

Diazonium compounds- Preparation of diazonium chloride and its synthetic applications.

Unit II: Reactive Methylene compounds and Conformational Analysis

Active methylene compounds –preparation, synthetic applications of acetoacetic ester and malonic ester.

Conformational Analysis Definition – Bayer's strain theory – Sachse Mohr theory – Newman projection - Sawhorse & Fischer formulae –examples- butane, 1,2-diol, - difference between conformation and configurations. Conformation analysis of ethane, 1,2 – dichloro ethane andcyclohexane (boat form, Chair form)—dihedral angle (torsional angle) – factors affecting stability of conformation – Dipole - Dipole interaction, bond opposite strain- factors affecting conformational stability

Unit III: Organometallic compounds and Organosulphur Compounds

Definition – examples- Organomagnesium compound (Alkyl magnesium halides) – preparation, general characteristics and synthetic applications (Nucleophilic substitution reactions,additionreactionandmiscellaneousreactions.)Organozinccompounds(Diethyl Zinc-Frankland reagent)- preparation, properties and synthetic applications (Nucleophilic substitution and addition reactions). Preparation and uses ofTEL.

Preparation and properties of thioalcohols and thioethers – sulphonal-mustard gas and sulphones.

Unit IV: Carbohydrates

Introduction and classification – laboratory and industrial preparation of glucose and fructose – reactions of glucose and fructose – structure of glucose and fructose – open chain and ring structure – epimerisation – mutarotation – interconversion of glucose and fructose and vice versa – ascending and descending the series – (Kiliyani& Wohl's synthesis). Manufacture of sucrose – Structure of maltose, lactose and sucrose (elucidation not included) – Starch and cellulose – reactions –uses – differences between starch and cellulose.

Unit V: Tautomerism and Molecular Rearrangement

Resonance – definition – resonance energy – resonance theory. Tautomerism – Definition – Types of tautomerism – Keto-enol, Nitro -acinitro, Lactam - lactim, p-Nitrosophenol-Quinone monoxime and amido-imidotautomerism.

Molecular Rearrangement

a) Rearrangement involving migration to electron deficient carbon- Pinacol-pinacolone rearrangement, Benzil-benzilicacidrearrangement

b)Rearrangement involving migration to electro deficient nitrogen-Curtiusrearrangement, Lossen rearrangement

c) Rearrangement involving carbanion intermediate –Favorskiirearrangement

Rearrangement involving migration from oxygen to aromatic ring-Friesrearrangement.

Text Books:

1. Tewari K.S, Vishnoi N.K . *A Text Book of Organic Chemistry*. 2nd Revised Edition, 2017.

2.Arun Bahl and Bahl. B.S. *Advanced Organic Chemistry*.S.Chand and Company Ltd., Reprint, 2017.

Books for Reference:

1. Ernest l. Eliel. *Stereochemistry of Organic compounds*.New Delhi:Tata McGRAW–Hill Publication company Ltd., 1975.
2. Nasipuri D. *Stereochemistry of Organic Compounds - Principles and Applications*. New Age International Publishers,1994.
3. Kalsi S. *Stereochemistry-Conformation and Mechanism*. New Age International Publishers, 2008.
4. Anup Pathak, AnupaSaha.*Organic Chemistry*. Kolkata: Books and Allied Pvt Limited, Volume I, 2015.
5. Jain M.K and Sharma S.C. *Modern Organic chemistry*. Vishal Publishing Company,

2017.

6. Jerry March. *Advanced Organic Chemistry Reactions Mechanisms and Structure*. 4th Edition 2013.

7. Tewari N. .*Advance Organic Reaction mechanism*.Kolkata:Books and allied (P) Ltd.

Second revised edition, 2017.

SEMESTER-III			
NMEI	**Everyday Chemistry**		
Course Code :21UCHN31	**Hrs/Week:2**	**Hrs/ Sem: 30**	**Credits:2**

Objectives:

- To study the purification process for drinking purpose.
- To classify solid, liquid and gaseous fuels.
- To study the constituents of paints and varnishes.
- To appreciate the manufacture of sugar.
- To know the preparation of candles, toothpowder.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO - 1	understand the biological importance of water.	2	Un
CO -2	aware of the ill effects of water borne diseases and prevention.	2, 5	Ap
CO - 3	know the ignition temperature and flash point of fuels.	1	Re
CO – 4	know the characteristics of solid liquid and gaseous fuels.	1	Re
CO – 5	know the fundamental knowledge about constituents of paints and varnishes and their functions.	2, 5	Re

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-6	aware of fluorescent paints (traffic signal) and fire retardant paints.	2, 5	Ap
CO – 7	understand the recovery of alcohol from molasses and know the chemistry of manufacture of paper.	2, 5	Un, Re
CO – 8	outline the preparation and uses of Candle,ToothPowder,Liquidblues,Blackboard chalk, Moth ballssoap, shampoo, lipstick ..	1, 2,5	Re

UNIT I: Water

Water as universal solvent-Hard and soft water-Purification of water for drinking purpose. Desalination, reverse osmosis, mineral water, pH of water for drinking purpose. Biological importance of water-waterbalance and electrolyte balance in human body. Water borne diseases and prevention.

UNIT II: Fuels

Definition-Classification with examples (solid, liquid and gas)- calorific Value-Ignition temperature-Flash point. Characteristics of solid, liquid, and gaseous fuels and their applications.Nuclear fuels- Rocket fuels- Biofuels.

UNIT III: Surface Coating

Pigments, purpose of surface coating. Constituents of paints and varnishes and their functions. Emulsions.Different kinds of paints-fluorescent paints (traffic signal), fire retardant paints.

UNIT IV: Sugar and Paper Industry

Manufacture of sugar, recovery of alcohol from molasses, fermentation, manufacture of beverages. Bagasse. Paper industry- Manufacture of paper.

UNIT V: Chemicals in Day to Day Use

An Outline of the preparation and uses of the following:

a) Candle b) Tooth Powder c) Liquid blues d) Blackboard chalk e) Moth balls f) Soap

g) Shampoo h) Lipstick i) Phenoyle j) Eyetex k) Cleaning powder l) Face powder

Books for Reference:

1. Jayashree Ghosh. *Fundamental concepts of Applied chemistry*. Edition, New Delhi:S. Chand &company Ltd., 2006.
2. Jain P.C and Monika Jain. *Engineering chemistry.*New Delhi:Dhanpat Rai & Sons, 2020.
3. Prakash Shetty.*Science and Technology of Printing materials.*Chennai: MJP Publishers, 2019.
4. Sharma B.K . *Industrial Chemistry.*Meerut:Goel Publishing House, 2003.

SEMESTER- III			
Skill Based Elective	**Agricultural Chemistry**		
Course Code : 21UCHS31	**Hrs/Week : 2**	**Hrs/ Sem : 30**	**Credits : 2**

Objectives:

- To facilitate the students to know the basic knowledge about agriculture and soil
- To realize the importance of agriculture
- To understand the chemistry behind fertilizers and pesticides
- To get an idea about vermin composting
- To analyze the quality of drinking water
- To know the various water treatment methods

Course Outcome:

CONo.	**Upon completion of this course, students should be able to**	**PSOaddressed**	**CL**
CO- 1	understand the importance of soil its constituents, fertility and to promote agriculture.	1, 7	Un
CO- 2	have an overview of the macro and micronutrients and their functions	1, 7	Re
CO- 3	know the preparation and importance of fertilizers in agriculture	1, 7	Ap
CO-4	aware of the harmful effects of pollutants Produce vermi compost and gobar gas	2, 3, 8	An,Cr
CO- 5	realize the importance of pesticides and insecticides	1, 7	Ap

CONo.	Upon completion of this course, students should be able to	PSOaddressed	CL
CO-6	rationalise the environmental hazards of pesticides	4, 7	Ap
CO-7	understand the water quality standards and water quality parameters and analyse the case studies of heavy metal pollution like Hg, As, and Cd.	1,4,2, 3, 7	Un
CO-8	understand the processes used for purification of municipal water and treat waste water by using different methods	4,7, 8	Un, Cr

Unit I: Soil Nature and Plant Nutrients

Saline, alkali and acid soils. Buffering capacity of soil - Soil reclamation. Liming of soil – measurement of soil pH - Soil fertility – essential plant nutrients and their functions – deficiency symptoms – macro and micro nutrients& their functions.

Unit II: Fertilisers

Natural and synthetic manures-qualities of a good fertilizer- classification of fertilizers – nitrogeneous fertilizers - Preparation and importance of urea-calcium cyanamide - super phosphate-triple super phosphate- potassium chloride-potassium nitrate - DAP, mixed fertilizers (NPK) and human effluent from gobar gas plant as a manure. Vermiculture -vermi compost.

Unit III: Pesticides

Pesticides, Insecticides, Repellants, Fungicides- Definition-classification – on the basis of their mode of action, target organisms they control, method of application- environmental hazards - preparation and uses ofDDT, BHC, lead arsenate,bordeaux mixture. Biopesticides – definition – examples – applications.

Unit IV: Water Quality Parameters Water quality standard for drinking water (WHO)- Water quality parameters-pH, EC, alkalinity, Total acidity, hardness, DO, BOD, COD,

Methaemoglobinemia) – Eutrophication- Case studies- Hg, As, and Cd. (Minamata, arsenic poison in West Bengal, Itai-itai)

Unit V: Water Treatment Methods

Waste water treatment-methods and equipments used-preliminary treatment (screening, skimming) - primary treatment (sedimentation, coagulation) - secondary treatment (trickling filters, oxidation pond, anaerobic digestion)-tertiary treatment (adsorption, ion-exchange, reverse osmosis, electrodialysis, disinfection)-treatment of water of municipal purposes-domestic sewage treatment-industrial waste water treatment.

Hands on Training:

1. Analysis of carbon, nitrogen, potassium, phosphorous, zinc and calcium in soil using mini lab for soil analysis.

2. Determination of BOD and COD of water samples

3. Determination of pH and conductivity of water from different sources.

4. Determination of DO and hardness of water.

Industrial Visit:

A visit may be made to an industry or a premier institution.

*A report of the industrial visit may be submitted as an assignment.

Text Books:

1. Jayashree Ghosh. *Text Book of Pharmaceutical Chemistry*. NewDelhi:S. Chand and company, 2003.

2. BagavathiSundari K . *Applied Chemistry*. MJP Publishers, 2008.

Books for Reference:

1. Sharma B. K . *Industrial Chemistry*. Goel Publishing House. Fifth Edition, 1993-94.

2. Sindhu P.S. *Environmental Chemistry*. New Age International Publishers, 2010.

3. Dr Joshi. S.R *Biopesticides- A Biotechnological Approach*. New Age International (P)

Ltd., Publishers, 2020.

SEMESTER- IV			
Skill Based Elective I	**Medicinal Chemistry**		
Course Code : 21UCHS41	**Hrs/Week : 2**	**Hrs/ Sem : 30**	**Credits : 2**

Objectives:

- To inculcate the basic knowledge about classification drugs and their mode of action.
- To rationalize the causes and curative measures of common diseases.
- To know about the first aid to be done during emergency.
- To create an awareness about hypertension and cardiovascular drugs.
- To get an idea about diabetes and hypoglycaemic agents.

Course Outcome:

CONo.	**Upon completion of this course, students should be able to**	**PSOaddressed**	**CL**
CO- 1	have an understanding of the classification drugs.	1,3,4	Un
CO- 2	know the importance of drugs and their mode of action.	4	Un
CO- 3	know the causes of common insect borne, air borne and water borne diseases.	3, 4, 7	Re
CO-4	get an idea about the treatment for common diseases.	3, 4, 7	Re
CO- 5	estimate the sugar and cholesterol levels in blood.	4, 5, 7	Ev
CO-6	aware about first aid rules and first aid box.	4, 7	Ap

CO-7	know the types of blood pressure and treatment methods anddescribe about the cardiovascular drugs.	1,2,4	Un
CO-8	know about diabetics and its treatment andget an idea about some anti-convulsant agents.	4, 7	Re

Unit I: Classification and mechanism of drug action

The nature and sources of drugs-Classification of drugs – biological Classification –(drugs acting on central nervous system and peripheral nervous system, Chemotherapeutic drugs, pharamcodynamic agent, metabolic diseases and endocrine function) and chemical classification.

Mechanism of action-actions at extracellular and cellular site-Drug receptors and biological responses-Chemistry of drug receptor binding-covalent bond- hydrogen bond- Van der Waals forces.

Unit II: Causes of common diseases and their treatment by drugs

Common diseases and their treatment: Insect borne diseases-malaria, filariasis, plague, Air borne diseases-diphtheria, whooping cough, influenza, measles, mumps, common cold, tuberculosis (T.B)

Water borne diseases-cholera, typhoid, dysentery, Disorder of digestive system-Jaundice

Unit III: Clinical chemistry cum Hands on Training

Determination of sugar (glucose) in serum-Folin and Wu' s method — -determination of serum cholesterol -Sackett' s method for total cholesterol --tests for cholesterol — estimation of glucose in urine -Benedict's test

Important rules of First aid- First aid for cuts, abrasions and bruises-bleeding-fractures-fainting composition of first aid box — some common poisons and their antidotes

Unit IV: Blood pressure and cardio vascular drugs

Blood pressure-types and treatment -Hypertension-primary and secondary hyper tension treatment, hypo tension.

Functions and uses of the following drugs

Cardiovascular drugs-antiarrhythmic drugs-quinidine-antihypertensive agents- (hypotensive drugs) — clonidine and reserpine.

Definition forAngiogram andAngioplast.

Unit V: Diabetes and hypoglycemic agents

Diabetes types – Diabetes insipidus and diabetes mellitus – control of Diabetes –oral hypoglycemic agents –sulphonyl urease -tolubutamide, chlorpropamide, biguanides-phenformin and metformin.

Text Books:

1. Jayashree Ghosh.*Text Book of Pharmaceutical Chemistry.*New Delhi:S.Chand and company, 2003.

2. BhagavathiSundari. *Applied Chemistry*. MJP Publishers, 2008.

Books for Reference:

1. Jayashree Ghosh.*Fundamental Concepts of Applied chemistry*.New Delhi:S.Chand and Company, 2006.

2. Dr. Abhishek Tiwari, Dr.Biswa Mohan Sahoo, Dr. Rajesh Shukla.*Pharmaceutical Chemistry.*NiraliPrakashan,2021.

3. Ashutosh Kar.*Medicinal Chemistry*.New Delhi: New age International (P) Limited, 2004.