



**NARAYANA**  
PHARMACY COLLEGE  
NELLORE

NPC/4Q/JNTUA/MAR-2024/01

Date: 20-3-2024

To

The Registrar,  
JNTUA,  
Anantapuramu,  
Andhra Pradesh – 515 001

Respected Sir,

SUB: Review of feedback from Faculty, Alumni, Employer and Students about curriculum for the Academic Regulation 2019 Reg-

As per the feedback received from various stake holders like faculty, Alumni, Employer and students, the following members gave suggestions on curriculum topics may be included in the new regulation for the academic year 2024-2025.

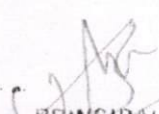
- In the subject of pharmaceutical organic chemistry-I the topic of carboxylic acids and stereo isomerism need to be included in R23 Regulation for B. Pharm I Year students.
- Green chemistry topic should include for Pharm. D I<sup>ST</sup> Year students in the subject pharmaceutical Organic Chemistry-I.

We kindly request you to take this into consideration so that it can be incorporated in the next regulation.

Thanking you,



  
PRINCIPAL  
NARAYANA PHARMACY COLLEGE  
NELLORE - 524 002

  
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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

**B.Pharm. – I YEAR COURSE STRUCTURE & SYLLABUS**

**Carbonyl compounds\*** (Aldehydes and ketones)

Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

**UNIT IV**

**Carboxylic acids\***

Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

**Aromatic Acids\*** –Acidity, effect of substituents on acidity and important reactions of benzoic acid.

**Phenols\*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol, naphthols

**Aliphatic amines\*** - Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

**Aromatic Amines\*** - Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazonium salts

**UNIT V**

**10 Hours**

**Stereo isomerism**

Optical isomerism – Optical activity, enantiomerism, diastereoisomerism, meso compounds Elements of symmetry, chiral and achiral molecules, DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules, Racemic modification and resolution of racemic mixture. **Asymmetric synthesis:** partial and absolute

**Geometrical isomerism**

Nomenclature of geometrical isomers (Cis / Trans, E/Z, Syn /Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

**Recommended Books (Latest Editions)**

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar, Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L. Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's textbook of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K. Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.
9. Reaction and reaction mechanism by Ahluwalia/Chatwal.

**Reference Books:**

1. J. McMurry, Brooks/Cole, Organic Chemistry, 6th Ed. 2004
2. T.W.G. Solomons, C.B. Fryhle, Organic Chemistry, John Wiley and Sons Inc., 10th Ed. 2009
3. L.G. Wade Jr, Organic Chemistry, Pearson Education India, 2008
4. E.L. Eliel, Stereochemistry of Carbon compounds, Mcgraw-Hill, 1962



## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

## B.Pharm. – I YEAR COURSE STRUCTURE &amp; SYLLABUS

## I Year B.Pharm. II Semester

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## (23BP202T) PHARMACEUTICAL ORGANIC CHEMISTRY-I

45 Hours

**Scope:** This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes mechanisms and orientation of reactions.

**Objectives:** Upon completion of the course the student shall be able to

- Write the structure, name and the type of isomerism of the organic compound.
- Write the reaction, name the reaction and orientation of reactions.
- Account for reactivity/stability of compounds,
- Identify/confirm the identification of organic compounds.

**Course Content:** General methods of preparation and reactions of compounds superscripted with asterisk (\*) to be explained. To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

**UNIT I**

Classification, nomenclature and isomerism

Classification of Organic Compounds

Common and IUPAC systems of nomenclature of organic compounds (upto 10 Carbons open chain and Cyclic compounds)

Alkanes\*, Alkenes\*, Alkynes and Conjugated dienes\*

SP<sup>3</sup> hybridization in alkanes, Halogenation of alkanes, uses of paraffins. Stabilities of alkenes, SP<sup>2</sup> hybridization in alkenes**Heterocyclic compounds:**

Nomenclature and classification

Synthesis, reactions and medicinal uses of following compounds/derivatives Pyrrole, Furan, and Thiophene. Relative aromaticity and reactivity of Pyrrole, Furan and Thiophene

**UNIT II**

**E1 and E2 reactions** – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidence. E1 versus E2 reactions, Factors affecting E1 and E2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

**Alkyl halides\***

**SN1 and SN2 reactions** - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

SN1 versus SN2 reactions, Factors affecting SN1 and SN2 reactions.

Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetra chloromethane and iodoform.

**Conjugated system:** Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

**UNIT III**

**Alcohols\*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

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