



DEPARTMENT OF CHEMISTRY (UG & PG), JHARGRAM RAJ COLLEGE
LESSON PLAN (SESSION: 2023-2024)

TEACHER: DR. PRASANTA PATRA (ORGANIC CHEMISTRY)

UG SEMESTER-I

PAPER: CEMHMJ101
(MAJOR, UNDER CCFUP PROGRAM] ORGANIC CHEMISTRY

PERIOD	TOPIC(S) TO BE COVERED
October 2023	Basic concept of Stereochemistry, molecular representation
November 2023	Concept of chiral molecule, chiral centre, Symmetry of molecule
December 2023	Racemisation, CIP rule & R/S nomenclature
January 2023	University question practice and Class test

PAPER: CEMMI-01T (MINOR, UNDER CCFUP PROGRAM] ORGANIC CHEMISTRY

PERIOD	TOPIC(S) TO BE COVERED
November 2023	Concept of organic molecules and their representations
December 2023	Different projection of organic molecules and nomenclature
January 2024	Practice sessions

UG SEMESTER-II

PAPER: CC4T (ORGANIC CHEMISTRY)

PERIOD	TOPIC(S) TO BE COVERED
March 2024	Concept of intermolecular & intramolecular reactions.
April 2024	Concept of organic acids and bases : steric effect, interaction effect (H-bond) of structure, substituent and solvent on acidity and basicity.
May 2024	Tautomerism: prototropy (keto-enol, nitro - aci-nitro, nitroso-oximino, diazo-amino and enamine-imine systems)

PAPER: CC4P (ORGANIC CHEMISTRY LAB-I)

PERIOD	TOPIC(S) TO BE COVERED
March 2024	PREPARATION OF ORGANIC COMPOUND, NITRATION OF AROMATIC COMPOUNDS, CONDENSATION REACTIONS, ACETYLATION OF PHENOLS/AROMATIC AMINES.
April-May 2024	ACETYLATION OF PHENOLS/AROMATIC AMINES, SELECTIVE REDUCTION OF M-DINITROBENZENE TO M-NITROANILINE.
June-July 2024	BROMINATION OF ANILIDES USING GREEN APPROACH (BROMATE-BROMIDE METHOD)

UG SEMESTER-III

PAPER: CC-7T (ORGANIC CHEMISTRY-II), CARBONYL CHEMISTRY (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
August-September-2023	Rearrangement reactions, C-C bond formation reactions
October-November 2023	Concept of Oxidations and reductions reactions: MPV, Oppenauer, Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

**PAPER: CC-7P (ORGANIC CHEMISTRY LAB), FUNCTIONAL GROUP DETECTION– I (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
August 2023	Detection of special elements, Solubility and classification.
September 2023	Detection of the following functional groups by systematic chemical tests.
October 2023	Detection of the following functional groups by systematic chemical tests
November 2023	Preparation, purification and melting point determination of a crystalline derivative of the given compound. Identification of the compound through literature survey.

UG SEMESTER-IV**PAPER: CC-10P (ORGANIC CHEMISTRY LAB), Quantitative Estimations (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
February 2024	Estimation of glucose by titration using Fehling's solution, Estimation of sucrose by titration using Fehling's solution,
March 2024	Estimation of vitamin-C, Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method, Estimation of phenol by bromination.
April 2024	Estimation of urea, Estimation of formaldehyde.

UG SEMESTER-V**PAPER: CC12T (ORGANIC CHEMISTRY): Carbocycles and Heterocyclic compounds (25 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
July 2023	Concept of Heterocyclic Chemistry and nomenclature
August 2023	Property of heterocyclic compound
September 2023	Chemical reactions of pyridine
October 2023	Synthetic approach of pyrrole, furan, thiophene, pyridine

UG SEMESTER-VI**PAPER: DSE3T: (GREEN CHEMISTRY): (10 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
January 2024	Advantages of Green synthesis of organic molecules
February 2024	Examples of Green Synthesis/ Reactions and some real world cases.
March 2024	Future Trends in Green Chemistry

PG SEMESTER-I**PAPER: CEM 102 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
October 2023	Reagents in Organic synthesis-I
November-December 2023	Organic transformations by using metal, Food Chemistry

PG SEMESTER-II**PAPER: CEM 202 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
February 2024	Oxidations reactions: Hydroxylation reagents, use of peroxy acids, Woodward prevost hydroxylation, Sharpness asymmetric epoxidation, AD-mix, Transformation of epoxides. Organophosphorus reagents, organo sulfur reagents, organo boranes, organo silanes, organostannanes,



PERIOD	TOPIC(S) TO BE COVERED
	metal hydrides, Birch reduction, Bayer Villiger reactions
March 2024	Retro synthetic analysis: disconnection approach. Examples to illustrate disconnection approach in organic synthesis.

PG SEMESTER-III**PAPER: CEM 302 (ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
September 2023	Preparation and reactions of pi-complexes, heptonumbers, rules for nucleophilic addition to complexes. synthesis.
October- November 2023	Applications to typical synthesis. use of transition metals : organometallics in organic chemistry

PAPER: CEM 395 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2023 – December 2023 (16 weeks)	Review work in an area of coumarin fused heterocycles

PG SEMESTER-IV**PAPER: CEM 402(ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
February 2024	Heterocycles: Synthesis and Reactions: Generalized approach to the synthesis of heterocycles possessing 5-,6-, and 7- membered rings with one or two heteroatoms per ring.
March 2024	Reactions of heterocycles with one hetero atom oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused ring systems as examples.
April 2024	Oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused Heterocyclic ring systems as example

PAPER: CEM 495 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2024 – May 2024 (16 weeks)	Review work in an area of coumarin fused heterocycles



DEPARTMENT OF CHEMISTRY (UG & PG), JHARGRAM RAJ COLLEGE
LESSON PLAN (SESSION: 2022-2023)

TEACHER: DR. PRASANTA PATRA (ORGANIC CHEMISTRY)

UG SEMESTER-I

PAPER: CC1T (ORGANIC CHEMISTRY)

PERIOD	TOPIC(S) TO BE COVERED
October 2022	Basic concept of Stereochemistry, molecular representation, conformation & configuration
November 2022	Concept of chiral molecule, chiral centre, Symmetry of molecule
December 2022	Racemisation, CIP rule & R/S nomenclature
January 2022	University question practice and Class test

PAPER: DSC1A (FOR GENERAL COURSE)

PERIOD	TOPIC(S) TO BE COVERED
November 2022	Concept of organic molecules and their representations & conformational analysis of ethane
December 2022	Different projection of organic molecules and nomenclature
January 2023	Practice sessions

UG SEMESTER-II

PAPER: CC4T (ORGANIC CHEMISTRY)

PERIOD	TOPIC(S) TO BE COVERED
March 2023	Concept of intermolecular & intramolecular reactions. KCP & TCP concept
April 2023	Concept of organic acids and bases : steric effect, interaction effect (H-bond) of structure, substituent and solvent on acidity and basicity.
May 2023	Tautomerism: prototropy (keto-enol, nitro - aci-nitro, nitroso-oximino, diazo-amino and enamine-imine systems)

PAPER: CC4P (ORGANIC CHEMISTRY LAB-I)

PERIOD	TOPIC(S) TO BE COVERED
March 2023	PREPARATION OF ORGANIC COMPOUND, NITRATION OF AROMATIC COMPOUNDS, CONDENSATION REACTIONS, ACETYLATION OF PHENOLS/AROMATIC AMINES.
April-May 2023	ACETYLATION OF PHENOLS/AROMATIC AMINES, SELECTIVE REDUCTION OF M-DINITROBENZENE TO M-NITROANILINE.
June-July 2023	BROMINATION OF ANILIDES USING GREEN APPROACH (BROMATE-BROMIDE METHOD)

UG SEMESTER-III

PAPER: CC-7T (ORGANIC CHEMISTRY-II), CARBONYL CHEMISTRY (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
August-September-2022	Rearrangement reactions, C-C bond formation reactions
October-	Concept of Oxidations and reductions reactions: MPV, Oppenauer,



PERIOD	TOPIC(S) TO BE COVERED
November 2022	Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

PAPER: CC-7P (ORGANIC CHEMISTRY LAB), FUNCTIONAL GROUP DETECTION– I (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
August 2022	Detection of special elements, Solubility and classification.
September 2022	Detection of the following functional groups by systematic chemical tests.
October 2022	Detection of the following functional groups by systematic chemical tests
November 2022	Preparation, purification and melting point determination of a crystalline derivative of the given compound. Identification of the compound through literature survey.

UG SEMESTER-IV**PAPER: CC-10P (ORGANIC CHEMISTRY LAB), Quantitative Estimations (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
February 2023	Estimation of glucose by titration using Fehling's solution, Estimation of sucrose by titration using Fehling's solution,
March 2023	Estimation of vitamin-C, Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method, Estimation of phenol by bromination.
April 2023	Estimation of urea, Estimation of formaldehyde.

UG SEMESTER-V**PAPER: CC12T (ORGANIC CHEMISTRY): Carbocycles and Heterocyclic compounds (25 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
July 2022	Concept of Heterocyclic Chemistry and nomenclature
August 2022	Property of heterocyclic compound
September 2022	Chemical reactions of pyridine
October 2022	Synthetic approach of pyrrole, furan, thiophene, pyridine

UG SEMESTER-VI**PAPER: DSE3T: (GREEN CHEMISTRY): (10 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
January 2023	Advantages of Green synthesis of organic molecules
February 2023	Examples of Green Synthesis/ Reactions and some real world cases.
March 2023	Future Trends in Green Chemistry

PG SEMESTER-I**PAPER: CEM 102 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
October 2022	Reagents in Organic synthesis-I
November- December 2022	Organic transformations by using metal, Food Chemistry

PG SEMESTER-II**PAPER: CEM 202 (ORGANIC CHEMISTRY):**



PERIOD	TOPIC(S) TO BE COVERED
February 2023	Oxidations reactions: Hydroxylation reagents, use of peroxy acids, Woodward prevost hydroxylation, Sharpness asymmetric epoxidation, AD-mix, Transformation of epoxides. Organophosphorus reagents, organo sulfur reagents, organo boranes, organo silanes, organostannanes, metal hydrides, Birch reduction, Bayer Villiger reactions
March 2023	Retro synthetic analysis: disconnection approach. Examples to illustrate disconnection approach in organic synthesis.

PG SEMESTER-III**PAPER: CEM 302 (ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
September 2022	Preparation and reactions of pi-complexes, heptonumbers, rules for nucleophilic addition to complexes. synthesis.
October- November 2022	Applications to typical synthesis. use of transition metals : organometallics in organic chemistry

PAPER: CEM 395 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2022 – December 2022 (16 weeks)	Review work in an area of coumarin fused pyridine/quinolines

PG SEMESTER-IV**PAPER: CEM 402(ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
February 2023	Heterocycles: Synthesis and Reactions: Generalized approach to the synthesis of heterocycles possessing 5-,6-, and 7- membered rings with one or two heteroatoms per ring.
March 2023	Reactions of heterocycles with one hetero atom oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused ring systems as examples.
April	Oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused Heterocyclic ring systems as example

PAPER: CEM 495 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2023 – May 2023 (16 weeks)	Review work in an area of coumarin fused pyrrole/pyridine

DEPARTMENT OF CHEMISTRY (UG & PG), JHARGRAM RAJ COLLEGE
LESSON PLAN (SESSION: 2021-2022)

TEACHER: DR. PRASANTA PATRA (ORGANIC CHEMISTRY)

**UG SEMESTER-I****PAPER: CC1T (ORGANIC CHEMISTRY)**

PERIOD	TOPIC(S) TO BE COVERED
October 2021	Basic concept of Stereochemistry, molecular representation, conformation & configuration
November 2021	Concept of chiral molecule, chiral centre, Symmetry of molecule
December 2021	Racemisation, CIP rule & R/S nomenclature
January 2022	University question practice and Class test

PAPER: DSC1A (FOR GENERAL COURSE)

PERIOD	TOPIC(S) TO BE COVERED
November 2021	Atomic structure: Bohr theory, electronic configuration, Concept of organic molecules
December 2021	Bonding: VBT, VSEPR to determine structure
January 2022	Practice sessions

UG SEMESTER-II**PAPER: CC4T (ORGANIC CHEMISTRY)**

PERIOD	TOPIC(S) TO BE COVERED
March 2022	Concept of intermolecular & intramolecular reactions. KCP & TCP concept
April 2022	Concept of organic acids and bases : steric effect, interaction effect (H-bond) of structure, substituent and solvent on acidity and basicity.
May 2022	Tautomerism: prototropy (keto-enol, nitro - aci-nitro, nitroso-oximino, diazo-amino and enamine-imine systems)

PAPER: CC4P (ORGANIC CHEMISTRY LAB-I)

PERIOD	TOPIC(S) TO BE COVERED
March 2022	PREPARATION OF ORGANIC COMPOUND, NITRATION OF AROMATIC COMPOUNDS, CONDENSATION REACTIONS, ACETYLATION OF PHENOLS/AROMATIC AMINES.
April-May 2022	ACETYLATION OF PHENOLS/AROMATIC AMINES, SELECTIVE REDUCTION OF M-DINITROBENZENE TO M-NITROANILINE.
June-July 2022	BROMINATION OF ANILIDES USING GREEN APPROACH (BROMATE-BROMIDE METHOD)

UG SEMESTER-III**PAPER: CC-7T (ORGANIC CHEMISTRY-II), CARBONYL CHEMISTRY (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
August-September-2021	Rearrangement reactions, C-C bond formation reactions
October-November 2021	Concept of Oxidations and reductions reactions: MPV, Oppenauer, Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

PAPER: CC-7P (ORGANIC CHEMISTRY LAB), FUNCTIONAL GROUP DETECTION- I (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
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PERIOD	TOPIC(S) TO BE COVERED
August 2021	Detection of special elements, Solubility and classification.
September 2021	Detection of the following functional groups by systematic chemical tests.
October 2021	Detection of the following functional groups by systematic chemical tests
November 2021	Preparation, purification and melting point determination of a crystalline derivative of the given compound. Identification of the compound through literature survey.

UG SEMESTER-IV

PAPER: CC-10P (ORGANIC CHEMISTRY LAB), Quantitative Estimations (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
February 2022	Estimation of glucose by titration using Fehling's solution, Estimation of sucrose by titration using Fehling's solution,
March 2022	Estimation of vitamin-C, Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method, Estimation of phenol by bromination.
April 2022	Estimation of urea, Estimation of formaldehyde.

UG SEMESTER-V

PAPER: CC12T (ORGANIC CHEMISTRY): Carbocycles and Heterocyclic compounds (25 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
July 2021	Concept of Heterocyclic Chemistry and nomenclature
August 2021	Property of heterocyclic compound
September 2021	Chemical reactions of pyridine
October 2021	Synthetic approach of pyrrole, furan, thiophene, pyridine

UG SEMESTER-VI

PAPER: DSE3T: (GREEN CHEMISTRY): (10 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
January 2022	Advantages of Green synthesis of organic molecules
February 2022	Examples of Green Synthesis/ Reactions and some real world cases.
March 2022	Future Trends in Green Chemistry

PG SEMESTER-I

PAPER: CEM 102 (ORGANIC CHEMISTRY):

PERIOD	TOPIC(S) TO BE COVERED
October 2021	Reagents in Organic synthesis: Cation-olefin cyclization reaction: Functional groups inter conversion. Multicomponent reactions: Definition, early examples, Passerine reaction, Ugi reaction. Olefin metathesis reaction: Definition, Ring closing metathesis reaction, examples. Phase transfer catalysis.
November-December 2021	Constituents of Food: Water; Water in foods and its properties, Carbohydrates; Sources and physico-chemical and functional properties, Proteins; Sources and physico-chemical and functional properties, Purification of proteins, Common food proteins, Lipids; Sources and physico chemical and functional properties, PUFA (Poly-unsaturated Fatty Acids), Lipids of biological importance like cholesterol and phospholipids, Hydrogenation and rancidity of lipids, Saponification number, iodine value of lipids, Vitamins and Minerals; Sources, classification and structures of minerals & vitamins, Effect of processing and storage of vitamins, Pro vitamins A & D; Vitamins as antioxidants

PG SEMESTER-II

PAPER: CEM 202 (ORGANIC CHEMISTRY):



PERIOD	TOPIC(S) TO BE COVERED
February 2022	Oxidations reactions: Hydroxylation reagents, use of peroxy acids, Woodward prevost hydroxylation, Sharpness asymmetric epoxidation, AD-mix, Transformation of epoxides. Organophosphorus reagents, organo sulfur reagents, organo boranes, organo silanes, organostannanes, metal hydrides, Birch reduction, Bayer Villiger reactions Birch reduction, Bayer Villiger reactions, chichibabin reaction, Merrifield resin: solid phase synthesis.
March 2022	Retro synthetic analysis: disconnection approach. Examples to illustrate disconnection approach in organic synthesis.

PG SEMESTER-III**PAPER: CEM 302 (ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
September 2021	Preparation and reactions of pi-complexes, heptonumbers, rules for nucleophilic addition to complexes. synthesis.
October- November 2021	Applications to typical synthesis. use of transition metals : organometallics SPECIALLY ORGANO-PALLADIUM in organic chemistry

PAPER: CEM 395 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2021 – December 2021 (16 weeks)	Review work in an area of LAMELLARINS(PYRROLOCOUMARINS)

PG SEMESTER-IV**PAPER: CEM 402(ORGANIC CHEMISTRY SPECIALIZATION):**

PERIOD	TOPIC(S) TO BE COVERED
February 2022	Heterocycles: Synthesis and Reactions: Generalized approach to the synthesis of heterocycles possessing 5-,6-, and 7- membered rings with one or two heteroatoms per ring.
March 2022	Reactions of heterocycles with one hetero atom oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused ring systems as examples.
April	Oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused Heterocyclic ring systems as example

PAPER: CEM 495 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2022 – May 2022 (16 weeks)	Review work in an area of coumarin fused pyrrole/pyridine

**TEACHER: DR. PRASANTA PATRA (ORGANIC CHEMISTRY)****UG SEMESTER-I****PAPER: CC1T (ORGANIC CHEMISTRY)1**

PERIOD	TOPIC(S) TO BE COVERED
November 2020	Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule. Basic concept of Stereochemistry, molecular representation, conformation & configuration
December 2020	Basic concept of Stereochemistry, molecular representation, Concept of chiral molecule, chiral centre, Symmetry of molecule
January 2021	Racemisation, CIP rule & R/S nomenclature
February 2021	University question practice and Class test

PAPER: DSC1A (FOR GENERAL COURSE)

PERIOD	TOPIC(S) TO BE COVERED
November 2020	Atomic structure: Bohr theory, electronic configuration, Concept of organic molecules
December 2020	Bonding: VBT, VSEPR to determine structure
January 2021	Practice sessions

UG SEMESTER-II**PAPER: CC4T (ORGANIC CHEMISTRY)**

PERIOD	TOPIC(S) TO BE COVERED
March 2021	Concept of intermolecular & intramolecular reactions. KCP & TCP concept
April 2021	Concept of organic acids and bases : steric effect, interaction effect (H-bond) of structure, substituent and solvent on acidity and basicity.
May 2021	Tautomerism: prototropy (keto-enol, nitro - aci-nitro, nitroso-oximino, diazo-amino and enamine-imine systems)

PAPER: CC4P (ORGANIC CHEMISTRY LAB-I)

PERIOD	TOPIC(S) TO BE COVERED
March 2021	PREPARATION OF ORGANIC COMPOUND, NITRATION OF AROMATIC COMPOUNDS, CONDENSATION REACTIONS, ACETYLATION OF PHENOLS/AROMATIC AMINES.
April-May 2021	ACETYLATION OF PHENOLS/AROMATIC AMINES, SELECTIVE REDUCTION OF M-DINITROBENZENE TO M-NITROANILINE.
June-July 201	BROMINATION OF ANILIDES USING GREEN APPROACH (BROMATE-BROMIDE METHOD)

UG SEMESTER-III**PAPER: CC-7T (ORGANIC CHEMISTRY-II), CARBONYL CHEMISTRY (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
August-September-2020	Rearrangement reactions, C-C bond formation reactions
October-November 2020	Concept of Oxidations and reductions reactions: MPV, Oppenauer, Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

PAPER: CC-7P (ORGANIC CHEMISTRY LAB), FUNCTIONAL GROUP DETECTION- I (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
August 2020	Detection of special elements, Solubility and classification.



PERIOD	TOPIC(S) TO BE COVERED
September 2020	Detection of the following functional groups by systematic chemical tests.
October 2020	Detection of the following functional groups by systematic chemical tests
November 2020	Preparation, purification and melting point determination of a crystalline derivative of the given compound. Identification of the compound through literature survey.

UG SEMESTER-IV**PAPER: CC-10P (ORGANIC CHEMISTRY LAB), Quantitative Estimations (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
February 2021	Estimation of glucose by titration using Fehling's solution, Estimation of sucrose by titration using Fehling's solution,
March 2021	Estimation of vitamin-C, Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method, Estimation of phenol by bromination.
April 2021	Estimation of urea, Estimation of formaldehyde.

UG SEMESTER-V**PAPER: CC12T (ORGANIC CHEMISTRY): Carbocycles and Heterocyclic compounds (25 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
July 2020	Concept of Heterocyclic Chemistry and nomenclature
August 2020	Property of heterocyclic compound
September 2020	Chemical reactions of pyridine
October 2020	Synthetic approach of pyrrole, furan, thiophene, pyridine

UG SEMESTER-VI**PAPER: DSE3T: (GREEN CHEMISTRY): (10 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
January 2021	Advantages of Green synthesis of organic molecules
February 2021	Examples of Green Synthesis/ Reactions and some real world cases.
March 2021	Future Trends in Green Chemistry

PG SEMESTER-I**PAPER: CEM 102 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
October 2020	Reagents in Organic synthesis: Cation-olefin cyclization reaction: Functional groups inter conversion. Multicomponent reactions: Definition, early examples, Passerine reaction, Ugi reaction. Olefin metathesis reaction: Definition, Ring closing metathesis reaction, examples. Phase transfer catalysis.
November-December 2020	Constituents of Food: Water; Water in foods and its properties, Carbohydrates; Sources and physico-chemical and functional properties, Proteins; Sources and physico-chemical and functional properties, Purification of proteins, Common food proteins, Lipids; Sources and physico chemical and functional properties, PUFA (Poly-unsaturated Fatty Acids), Lipids of biological importance like cholesterol and phospholipids, Hydrogenation and rancidity of lipids, Saponification number, iodine value of lipids, Vitamins and Minerals; Sources, classification and structures of minerals & vitamins, Effect of processing and storage of vitamins, Pro vitamins A & D; Vitamins as antioxidants

PG SEMESTER-II**PAPER: CEM 202 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
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PERIOD	TOPIC(S) TO BE COVERED
February 2021	Oxidations reactions: Hydroxylation reagents, use of peroxy acids, Woodward prevost hydroxylation, Sharpness asymmetric epoxidation, AD-mix, Transformation of epoxides. Organophosphorus reagents, organo sulfur reagents, organo boranes, organo silanes, organostannanes, metal hydrides, Birch reduction, Bayer Villiger reactions Birch reduction, Bayer Villiger reactions, chichibabin reaction, Merrifield resin: solid phase synthesis.
March 2021	Retro synthetic analysis: disconnection approach. Examples to illustrate disconnection approach in organic synthesis.

PG SEMESTER-III

PAPER: CEM 302 (ORGANIC CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2020	Preparation and reactions of pi-complexes, heptonumbers, rules for nucleophilic addition to complexes. synthesis.
October- November 2020	Applications to typical synthesis. use of transition metals : organometallics SPECIALLY ORGANO-PALLADIUM in organic chemistry

PAPER: CEM 395 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2020 – December 2020 (16 weeks)	Review work in an area of LAMELLARINS(PYRROLOCUMARINS)

PG SEMESTER-IV

PAPER: CEM 402(ORGANIC CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2021	Heterocycles: Synthesis and Reactions: Generalized approach to the synthesis of heterocycles possessing 5-,6-, and 7- membered rings with one or two heteroatoms per ring.
March 2021	Reactions of heterocycles with one hetero atom oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused ring systems as examples.
April 2021	Oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused Heterocyclic ring systems as example

PAPER: CEM 495 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2021 – May 2021 (16 weeks)	Review work in an area of coumarin fused pyrrole/pyridine



DEPARTMENT OF CHEMISTRY (UG & PG), JHARGRAM RAJ COLLEGE
LESSON PLAN (SESSION: 2019-2020)

TEACHER: DR. PRASANTA PATRA (ORGANIC CHEMISTRY)

UG SEMESTER-I

PAPER: CC1T (ORGANIC CHEMISTRY)

PERIOD	TOPIC(S) TO BE COVERED
October 2019	Basic concept of organic structure, methane, ethane etc. Aromaticity: Benzenoids and Hückel's rule. Basic concept of Stereochemistry, molecular representation, conformation & configuration
November 2019	Basic concept of Stereochemistry, molecular representation, Concept of chiral molecule, chiral centre, Symmetry of molecule
December 2019	Racemisation, CIP rule & R/S nomenclature
January 2020	University question practice and Class test

PAPER: DSC-1A (FOR GENERAL COURSE)

PERIOD	TOPIC(S) TO BE COVERED
November 2019	Atomic structure: Bohr theory, electronic configuration, Concept of organic molecules
December 2019	Bonding: VBT, VSEPR to determine structure
January 2020	Practice sessions

UG SEMESTER-II

PAPER: CC4T (ORGANIC CHEMISTRY)

PERIOD	TOPIC(S) TO BE COVERED
March 2020	Concept of intermolecular & intramolecular reactions. KCP & TCP concept
April 2020	Concept of organic acids and bases : steric effect, interaction effect (H-bond) of structure, substituent and solvent on acidity and basicity.
May 2020	Tautomerism: prototropy (keto-enol, nitro - aci-nitro, nitroso-oximino, diazo-amino and enamine-imine systems)

PAPER: CC4P (ORGANIC CHEMISTRY LAB-I)

PERIOD	TOPIC(S) TO BE COVERED
March 2020	PREPARATION OF ORGANIC COMPOUND, NITRATION OF AROMATIC COMPOUNDS, CONDENSATION REACTIONS, ACETYLATION OF PHENOLS/AROMATIC AMINES.
April-May 2020	ACETYLATION OF PHENOLS/AROMATIC AMINES, SELECTIVE REDUCTION OF M-DINITROBENZENE TO M-NITROANILINE.
June-July 2020	BROMINATION OF ANILIDES USING GREEN APPROACH (BROMATE-BROMIDE METHOD)

UG SEMESTER-III

PAPER: CC-7T (ORGANIC CHEMISTRY-II), CARBONYL CHEMISTRY (20 Lectures)

PERIOD	TOPIC(S) TO BE COVERED
August-September-2019	Rearrangement reactions, C-C bond formation reactions
October-November 2019	Concept of Oxidations and reductions reactions: MPV, Oppenauer, Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

PAPER: CC-7P (ORGANIC CHEMISTRY LAB), FUNCTIONAL GROUP DETECTION- I (20 Lectures)



PERIOD	TOPIC(S) TO BE COVERED
August 2019	Detection of special elements, Solubility and classification.
September 2019	Detection of the following functional groups by systematic chemical tests.
October 2019	Detection of the following functional groups by systematic chemical tests
November 2019	Preparation, purification and melting point determination of a crystalline derivative of the given compound. Identification of the compound through literature survey.

UG SEMESTER-IV**PAPER: CC-10P (ORGANIC CHEMISTRY LAB), Quantitative Estimations (20 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
February 2020	Estimation of glucose by titration using Fehling's solution, Estimation of sucrose by titration using Fehling's solution,
March 2020	Estimation of vitamin-C, Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method, Estimation of phenol by bromination.
April 2020	Estimation of urea, Estimation of formaldehyde.

UG SEMESTER-V**PAPER: CC12T (ORGANIC CHEMISTRY): Carbocycles and Heterocyclic compounds (25 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
July 2019	Concept of Heterocyclic Chemistry and nomenclature
August 2019	Property of heterocyclic compound
September 2019	Chemical reactions of pyridine
October 2019	Synthetic approach of pyrrole, furan, thiophene, pyridine

UG SEMESTER-VI**PAPER: DSE3T: (GREEN CHEMISTRY): (10 Lectures)**

PERIOD	TOPIC(S) TO BE COVERED
January 2020	Advantages of Green synthesis of organic molecules
February 2020	Examples of Green Synthesis/ Reactions and some real world cases.
March 2020	Future Trends in Green Chemistry

PG SEMESTER-I**PAPER: CEM 102 (ORGANIC CHEMISTRY):**

PERIOD	TOPIC(S) TO BE COVERED
October 2019	Reagents in Organic synthesis: Cation-olefin cyclization reaction: Functional groups inter conversion. Multicomponent reactions: Definition, early examples, Passerine reaction, Ugi reaction. Olefin metathesis reaction: Definition, Ring closing metathesis reaction, examples. Phase transfer catalysis.
November-December 2019	Constituents of Food: Water; Water in foods and its properties, Carbohydrates; Sources and physico-chemical and functional properties, Proteins; Sources and physico-chemical and functional properties, Purification of proteins, Common food proteins, Lipids; Sources and physico chemical and functional properties, PUFA (Poly-unsaturated Fatty Acids), Lipids of biological importance like cholesterol and phospholipids, Hydrogenation and rancidity of lipids, Saponification number, iodine value of lipids, Vitamins and Minerals; Sources, classification and structures of minerals & vitamins, Effect of processing and storage of vitamins, Pro vitamins A & D; Vitamins as antioxidants

PG SEMESTER-II**PAPER: CEM 202 (ORGANIC CHEMISTRY):**



PERIOD	TOPIC(S) TO BE COVERED
February 2020	Oxidations reactions: Hydroxylation reagents, use of peroxy acids, Woodward prevost hydroxylation, Sharpness asymmetric epoxidation, AD-mix, Transformation of epoxides. Organophosphorus reagents, organo sulfur reagents, organo boranes, organo silanes, organostannanes, metal hydrides, Birch reduction, Bayer Villiger reactions Birch reduction, Bayer Villiger reactions, chichibabin reaction, Merrifield resin: solid phase synthesis.
March 2020	Retro synthetic analysis: disconnection approach. Examples to illustrate disconnection approach in organic synthesis.

PG SEMESTER-III

PAPER: CEM 302 (ORGANIC CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2019	Preparation and reactions of pi-complexes, heptonumbers, rules for nucleophilic addition to complexes. synthesis.
October- November 2019	Applications to typical synthesis. use of transition metals : organometallics SPECIALLY ORGANO-PALLADIUM in organic chemistry

PAPER: CEM 395 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
September 2019 – December 2019 (16 weeks)	Review work in an area of LAMELLARINS(PYRROLOCUMARINS)

PG SEMESTER-IV

PAPER: CEM 402(ORGANIC CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2020	Heterocycles: Synthesis and Reactions: Generalized approach to the synthesis of heterocycles possessing 5-,6-, and 7- membered rings with one or two heteroatoms per ring.
March 2020	Reactions of heterocycles with one hetero atom oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused ring systems as examples.
April 2020	Oxidation and reduction reactions with electrophiles, nucleophiles and other reactive intermediates with typical monocyclic and fused Heterocyclic ring systems as example

PAPER: CEM 495 (Organic CHEMISTRY SPECIALIZATION):

PERIOD	TOPIC(S) TO BE COVERED
February 2020 – May 2020 (16 weeks)	Review work in an area of coumarin fused pyrrole/pyridine

