


Minutes of the Board of studies held on 3-3-2020
in the library, Department of chemistry

Agenda

syllabus restructuring at UG level
Mode I and Model III

Members Present

Dr. Girish Kumar K. (External expert) 

Dr. M.R. Prathapa chandhakurup (External expert)

Dr. Kochu baby Manjoran (BOS External)

Dr. T. Narayanan (BOS External)

K.P. Ashokan (Chairman)

Dr. Meera Gopal (BOS member)

Smt. Femina K-S.

Dr. Bindu sharmila T.K.

Dr. Amrutha S. Rajan

Dr. Sreelasha Sari

Dr. Jolly V. Antony

Board of Studies meeting started at
10 a.m. Discussed the revisions made by internal
board of studies and meeting resolved to implement
the following changes

Inorganic chemistry

- 1) In the syllabus of inorganic chemistry
d and f-block elements are brought to the 1st and 2nd
Sem ~~as per~~ Vth Sem.
- 2) Theory of coordination compounds and its application
changed V Sem
- 3) In the practical section of inorganic chemistry Volumetric

Analysis is brought to 1st and 2nd Sem and the mixture analysis is changed to \bar{V} and \bar{VI} Sem.

4) Human Right-environmental chemistry paper is added to the \bar{V} Sem

5) In Sem \bar{III} Organic chemistry

① Module I - from section classification and nomenclature of organic compounds specific examples are removed

② Section on resonance is removed and it is included in module \bar{III}

③ Section on projection formula is shifted to the middle of section 2.2 as it is more appropriate to discuss it there.

6) Sem \bar{VI} Polymer chemistry

The following topics are added 1) Determination of molecular weight 2) gel permeation chromatography

③ Natural rubber, isoprene, processing applications and synthetic rubbers, preparation, properties and applications

④ ~~conducting~~ blends and polymer composites

SEMESTER 5

CHOICE BASED COURSE - I

(Any one course to be opted from the following courses)

CHE5CBP01: CHEMISTRY IN EVERYDAY LIFE

Credits: 4

Contact lecture hours: 72

Module 1: Food additives

- 1.1 Removed:- Principles of food preservation: Maintenance of anaerobic condition - high temperature and low temperature storage, drying.

Added:- emulsifying agents, antioxidants (shifted from 1.2), Leavening agents, Health drinks. Fast foods and junk foods and their health effects.

Module 2: House hold materials

- 2.1 Removed:- Significance of acidity and alkalinity.

Added:- TFM and grades of soap.

- 2.2 Removed:- excipients colours and flavours.

Added:- Biodegradable and non-biodegradable detergents. Comparison between soaps and detergents.

Module 3: Plastics, Paper and Dyes

- 3.1 Changed Recycling of plastics to Reuse, reduce and recycle of plastics

Module 4: Drugs

- 4.1 Added: -Psychotropic drugs- antidepressants and stimulants

Module 5: Chemistry and Agriculture

Class hrs have been changed from 9 to 12

Module 6: Integrated Solid Waste Management

Changed the class hrs from 9 to 6

Changed the title from Water Treatment and Waste Management to Integrated Solid Waste Management.

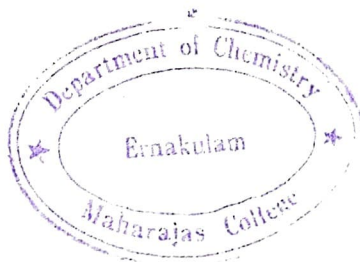
Removed 6.1 and 6.2

- 6.3 Added:- Objectives of solid waste Management, types and sources of solid wastes, solid waste disposal methods – incineration, pulverization, pyrolysis, Hazardous waste management. Recycling of solid wastes.

Reference

Added:- Ref. [11]. Surinder Deswal, Anupama Deswal, A basic course in Environmental Studies, Dhanpat Rai & Co. LTD, Delhi.


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MINUTES OF THE SYLLABUS REVISION- B.Sc CHEMISTRY
SEMESTER 3
CHE3COR03- ORGANIC CHEMISTRY -I
(REACTION MECHANISM & STEREOCHEMISTRY)

Module 1: Basic concepts of reaction mechanism

1. From the section on classification and nomenclature of organic compounds (Section 1.1), the specific examples are removed.
2. The section on resonance is removed from this module as it is included in Module 3.

Module 2: Stereochemistry

1. The section on projection formulae is shifted to the middle of Section 2.2 as it is more appropriate to discuss it there.
2. The section on optical activity in compounds not containing asymmetric carbon atoms with biphenyls as example is removed as it is not appropriate for a B.Sc syllabus and more fitting for an M.Sc syllabus.
3. A section on origin of ring strain in cyclic systems and Baeyer's strain theory is included in the discussion on conformational analysis.

Module 3: Aromaticity

1. Annulenes is removed from the section on aromaticity.
2. MO picture and resonance energy of benzene and its preparation is included as Section 3.2.
3. The section on aromatic nucleophilic substitutions is made more specific.
4. Molecular orbital picture and resonance energy of naphthalene and anthracene is included in polynuclear hydrocarbons. Preparation of naphthalene is also included. Halogenation is also included in the electrophilic substitution reactions of naphthalene.
5. The section on acenaphthene is removed.

SEMESTER 4
CHE4COR04 - ORGANIC CHEMISTRY -II
(FUNCTIONAL GROUP CHEMISTRY)

Module I: Hydroxy Compounds, Ethers and Organometallics [18]


1. The term hydrogen bonding is removed since the physical property studies include hydrogen bonding.

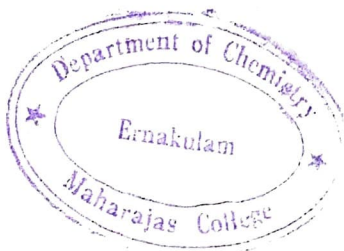
Module 2: Aldehydes, Ketones and active methylene compounds [18]

1. Addition and condensation reactions of carbonyl compounds with HCN, ROH, NaHSO₃, Grignard reagents and ammonia derivatives is included.
2. Aldol condensation is placed before Claisen condensation.
3. Tollen's and Fehling's tests, Iodoform test is included under oxidation reactions.
4. Use of acetal as protecting group is removed as it is same as the reaction of carbonyl group with ROH.

Module 3: Carboxylic and sulphonic acids and synthetic reagents [18]

1. The no. of hours required to complete the section on Carboxylic and Sulphonic acids is enhanced to 15 hours (from 12 hours) as the topics under this section is exhaustive requires more time for completion.
2. A comparative study of the nucleophilicity of acyl derivatives is included under derivatives of Carboxylic acids.
3. Discussion of methods of formation of carboxylic acids is modified by limiting the discussion to any one method.


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- Synthesis and uses of saccharin and Comparison of acidity of carboxylic acid and sulphonic acid is removed.
- The section on carbonic acid derivatives is removed.

SEMESTERS 3 & 4
CHE4P02 - ORGANIC CHEMISTRY PRACTICAL –I

No change in the syllabus

SEMESTER 5
CHE5COR06- ORGANIC CHEMISTRY-III
(NATURAL PRODUCTS)

Module 1: Natural products - I (Carbohydrates)

- Structure of maltose is included.

Module 2: Natural products –II (Terpenoids, steroids, alkaloids, vitamins and lipids)

- Synthesis of coniine and piperine is included.

Module 3: Natural Products –III (Amino acids, proteins, nucleic acids and enzymes)

- In the section on proteins, in order to include the quaternary structure of proteins also, the terms, 'primary, secondary and tertiary structure of proteins' has been replaced by 'structure of proteins'.
- Factors affecting enzyme action is included.

SEMESTER 6
CHE5COR06- ORGANIC CHEMISTRY-III
(NATURAL PRODUCTS)

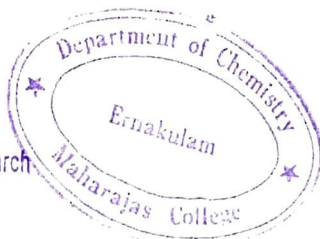
Module I: Organic compounds containing Nitrogen and Heterocyclic compounds (18 Hrs)

- In section 1.2, the preparation of alkyl and arylamines is changed from the end of the section to its beginning as a discussion is better starting with the preparation and then properties and reactions.
- In the section 1.4 on heterocyclic compounds, a discussion on the structure and aromaticity of five- and six- membered rings containing one heteroatom is included.
- The synthesis of heterocyclic compounds is limited to any one reaction. If the synthesis of any heterocyclic compounds is a name reaction, then it is included in brackets beside the name of the heterocyclic compounds. The section has also been slightly rearranged.

Module 2: Structure elucidation using spectral data (14 hrs)

- The numbers of hours allotted for completing this module is increased from 12 to 14.
- The module is modified and the examples of simple systems removed.
- In the section on UV spectroscopy, types of electronic transitions, λ_{max} , Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts and distinction between cis and trans isomers is included.
- In the section on Fundamental and non-fundamental molecular vibrations; IR absorption positions of O and N containing functional groups; Effect of H-bonding, conjugation and ring size on IR absorptions. Fingerprint region and its significance. application in functional group analysis.


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5. In the section on NMR spectroscopy, NMR Spectroscopy: Basic principles of Proton Magnetic Resonance, chemical shift, Spin – Spin coupling and coupling constant, Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple compounds.

Module 3: Pericyclic Reactions and Organic photochemical reactions (6 Hrs)

1. In section 3.1, the stereochemical aspects of Diels-Alder reaction is removed as the topic is more suitable for a PG programme.
2. The discussion on Claisen rearrangement and its mechanism included.
3. In section 3.2, Fluorescence and Phosphorescence and photosensitization is included after Jablonski diagram.
4. The name reactions in section 3.2 should include a discussion of their mechanisms.

Module 4: Applied Organic Chemistry (16 Hrs)

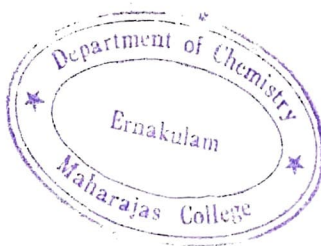
1. The numbers of hours allotted for completing this module is decreased from 18 to 16.
2. In section 4.1 on chemotherapy, therapeutic use of drugs is also included along with structure and mode of action.
3. Synthesis of drugs is not required.
4. In section 4.2 on synthetic polymers, a classification of polymers is included.
5. The various types of polymerization reactions namely free radical, cationic and anionic polymerizations - including mechanism is shifted to the beginning of the discussion followed by specific examples of synthetic polymers.
6. Section 4.3 on Green Chemistry is removed as it is covered in Inorganic chemistry in semester 5.
7. In section 4.4 on Soaps, Detergents and cosmetics, the term cosmetics is removed as there is no discussion on the same.
8. Types of soaps is included. The term detergent action is replaced by the term cleansing action of soap.
9. Classification of synthetic detergents is included and function is removed.
10. In the section on dyes, the term vat dye is replaced by indigoid dye as the discussion pertains to various classes of dyes based on their structure and not one their mode of application.

SEMESTERS 5 & 6

PRACTICAL: CHE6P04 – ORGANIC CHEMISTRY PRACTICAL-II

1. In section B on Column Chromatography, benzil is also included.
2. A new reference is included and one is removed.


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MINUTES OF THE SYLLABUS REVISION- B.Sc CHEMISTRY

SEMESTER V

CHE5COR07 – PHYSICAL CHEMISTRY- I (STATES OF MATTER AND SURFACE CHEMISTRY)

Module 1: Gases - no correction

Module 2: Liquids - no correction

Module 3: Solid States -

Removed

1. Symmetry in crystal systems- elements of symmetry– centre of symmetry, plane of symmetry, proper and improper axes of symmetry.

Addition

1. Spinel Structure

Module 4: Surface chemistry – Addition –

1. Colloids- Classification, properties – optical and electrical properties- Coagulation, electrophoresis, electro osmosis

SEMESTER 5

CHE5COR08- PHYSICAL CHEMISTRY -II (Quantum Mechanics, Spectroscopy and Photochemistry)

CHE5COR08- PHYSICAL CHEMISTRY –II

No change in the syllabus

SEMESTER 6

CHE6COR11 - PHYSICAL CHEMISTRY – III (Thermodynamics and Kinetics)

Module 1: Thermodynamics -

Addition

1. Thermo chemistry- Enthalpies of formation, combustion and neutralization. Integral and differential enthalpies of solution. Hess's law and its applications. Kirchoff's equation.
2. Concept of fugacity

Module 2: Chemical Equilibrium and Phase Equilibria –

Addition

1. Le Chatelier's Principle and its applications.

Removed

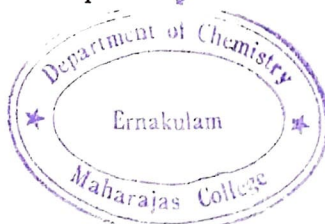
1. Nernst distribution law, thermodynamic derivation, applications of distribution law.

Module 3: Kinetics -

Addition

1. hydrogen - bromine reaction-derivation of rate expression.


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SEMESTER VI
CHE6COR12 - PHYSICAL CHEMISTRY – IV
(Solution chemistry and Electro chemistry)

**Module 1: Solutions –
Addition**

1. Azeotropic mixtures, solubility of partially miscible liquids. Critical solution temperature (UCST, LCST)
 2. Nernst distribution law, **thermodynamic derivation**, applications of distribution law.
- Removed**
1. Introduction to ternary liquid solutions.

Module 2: Ionic Equilibria – No change in the syllabus


Module 3: pH and theory of indicators – No change in the syllabus

Module 4: Electrical Conductance – No change in the syllabus

Module 5: Electromotive force – No change in the syllabus

SEMESTERS 5 & 6
CHE6P06 - PHYSICAL CHEMISTRY PRACTICAL

No change in the syllabus


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