

Parvatibai Chowgule College of Arts & Science

(Autonomous)

Margao – Goa

MINUTES OF THE MEETING OF THE BOARD OF STUDIES IN CHEMISTRY

Held on 7th February 2020 at 10:00 a. m.

Vide Chowgule College notice dated 21st January 2020, a meeting of the BoS of Department of Chemistry was hereby convened on 7th February 2020 at 10:00 a.m. in the G-block Room Number G-304, Parvatibai Chowgule College of Arts & Science (Autonomous), Margao – Goa. Since the members present represented the quorum, the BoS began its proceedings.

Members present:

1. Dr. Sachin B. Kakodkar – Chairman
2. Dr. S. P. Kamat – Vice-Chancellor Nominee
3. Dr. Teotone Vaz – Academic Council Nominee
4. Dr. A. K. Srivastava – Expert
5. Dr. Sunder Dhuri – Expert
6. Ms. Asmita Naik Gaonkar – Postgraduate meritorious alumnus
7. Dr. G. K. Naik – Member
8. Dr. Roopa S. Belurkar – Member
9. Mrs. Padmini C. Panjekar – Member
10. Dr. Lactina R Gonsalves – Member
11. Dr. Mayuri M. Naik – Member Secretary
12. Ms. Navita D. Naik – Member
13. Dr. Kashinath L. Dhumaskar – Member
14. Ms. Priyanka P. Kavalekar – Member

Members absent: After intimation

1. Dr. Purnakala Samant - Academic Council Nominee
2. Mr. Vishwas Dessai - Industry Representative
3. Dr. Manjita R. Porob - Member
4. Dr. Rohan K. Kunkalekar - Member
5. Dr. Sandesh T. Bugde - Member

Proceedings:

At the outset, Chairman welcomed the BoS members for the 7th BoS meeting and business was transacted as per the agenda.

Agenda items:

1. To approve the syllabi of a) Skill Enhancement course (CHE. SEC-2 Plating and Corrosion) b) Skill Enhancement course (CHE. SEC-3 Laboratory Techniques in Organic Chemistry).
2. To approve revised undergraduate course syllabi.
3. Recommend methodologies for innovative teaching and evaluation techniques.
4. Coordinate research, teaching, extension and other academic activities in the department/ college.
5. A.O.B.

The Chairman spoke on the agenda and explained in brief the structure of syllabus to the new BoS members.

Part A: Discussion of Agenda

Agendum 1: To approve the syllabi of a) Skill Enhancement course (CHE. SEC-2 Plating and Corrosion) b) Skill Enhancement course (CHE. SEC-3 Laboratory Techniques in Organic Chemistry).

BoS suggested the following changes

a) Skill Enhancement course (CHE. SEC-2 Plating and Corrosion)

1. Changing the subtopic of CHE.SEC-2 course from “quality” to “quality test for plated materials”.

b) Skill Enhancement course (CHE. SEC-3 Laboratory Techniques in Organic Chemistry)

1. Experiments like drying of acetone to be deleted.
2. Addition of new experiments aligned with theory which are feasible for students to perform in laboratory.

Agendum 2: To approve revised undergraduate course syllabi

BoS suggested the following changes

1. There are 8 experiments in CHE-I. C-1 course, which should be increased to 12.
2. Increasing the number of inorganic practicals in CHE-I. C-2 course.
3. Change in title of unit II of CHE-I. C-2 course from “structural theories and reactivities of organic compounds” to “structure and reactivity of organic compounds” since the structure determines the reactivity of molecule and structural theories becomes a general term.
4. Addition of Vogel’s textbook in reference list for core papers of semester I and II.

5. The sub topic “curved arrows in organic chemistry” in CHE-I. C-2 course is to be replaced by “different arrows used in organic reaction mechanisms”.
6. The sub topic “ipso-attack and orientation in benzene with more than one substituent” of CHE-III. E-1 course is to be replaced by “ipso-substitution and orientation in aromatic compounds with electron donating and electron withdrawing substituents”.
7. For all the practical courses, minimum number of experiments mentioned should be removed.
8. Change in title of unit I of CHE-III. E-2 course from “Fundamentals of industrial chemicals and need for greener processes, materials Science and Introduction to electroplating” to “Fundamentals of Industrial chemistry and electroplating”.
9. Change in title of unit II of CHE-III. E-2 course from “Selected key industrial processes, Boilers and heat exchangers and Paint chemistry” to “Industrial process, Boilers, Heat exchangers and Paint chemistry”.
10. Change in title of unit III of CHE-III. E-2 course from “Industrial Safety and conducts, effluent treatment and waste management” to “Industrial safety, conduct, waste management and effluent treatment”.
11. Addition of subtopic “treatment of electronic waste” in unit III of CHE-III. E-2 course.
12. Change in title of unit II of CHE-III. E-4 course from “Iron and Copper containing compounds in biology” to “Iron containing compounds in biology” as major topics covers iron.
13. Deletion of “Determination of hardness of water by EDTA” experiment from CHE-III. E-4 course since it is already included in CHE-II. C-3 course and should be replaced by a new experiment.
14. Unit I of section I (organic chemistry) of CHE-IV. C-6 course “Studies of organic compound containing C, H and O” is to be replaced by “Ethers” since other classes of compounds apart from ethers are covered in earlier courses.
15. Addition of subtopic “Acid anhydrides: Preparation and reactions” in CHE-IV. C-6 course since acid anhydrides is an important subtopic for the course.
16. Addition of experiments based on estimation of organic compounds in CHE-IV. C-6 course.
17. Change in title of experiment “Estimation of Ascorbic acid in tablets by iodometry” by “Estimation of Ascorbic acid in tablets” of CHE-IV. E-5 course since new title is more general and different methods can be used for estimation.

18. Change in title of unit II of CHE-IV.E-7 course from “Electronic (UV) Spectroscopy and Atomic Spectroscopy” to “Electronic and Atomic Spectroscopy” since new title is more specific.
19. Restructuring of the units of CHE-IV. E-8 course in a proper order of introduction, isolation, purification followed by terpenoids and then alkaloids since syllabus lacked continuity and restructuring of syllabus was necessary. Deletions of subtopics “Morphine and Biogenesis and biosynthesis” due to its difficulty level and deletions of subtopic “Carbohydrates: Classification, nomenclature and uses” because of repetition in another course. Addition of subtopics “Atropine and Papaverine” since it is easy for students to understand.
20. Deletion of 4 experiments from CHE-V. C-7 course in order to align the practicals with theory course and accordingly new experiments to be added.
21. Change in subtopic of CHE-V. E-9 course from “Methods of preparation” to “Any two methods of preparation” for all kinds of classes of heterocycles in all three Units in order to make the syllabus more specific.
22. Change in title of unit II of CHE-V. E-10 course from “Applications of nanomaterials and Solid State Chemistry” to “Applications of nanomaterials and Solid State Reactions” since the new title is more specific. Introduction of new subtopic “Superconductors: Theory of Superconductivity, discovery, critical temperature, Meissner effect, types of superconductors” as this subtopic is essential in this course. Need to add 2 more experiments in this course.
23. Deletion of some experiments of CHE-V. E-11 course was necessary to avoid use of some harmful chemicals and accordingly replacement by new experiments.
24. Addition of 1 new experiment from each theory topic of section I (organic chemistry) of CHE-VI. C-8 course. Deletion of some experiments that are repeated in another course and accordingly replacement by new experiments. Rearranging the order of chromatographic techniques.
25. Restructuring the units in a sequential order in CHE-VI. E-13 course since the syllabus lacked continuity and restructuring of syllabus with same subtopics is necessary.
26. Change in title of unit III of CHE-VI. E-15 course from “Inorganic Polymers and Materials Chemistry” to “Inorganic Materials Chemistry” as new title is more specific. Deletion of subtopic “Superconductors: discovery, critical temperature, Meissner effect, types of superconductors” as it is repeated in another course.” Experiment “Determination

of instability constant for the reaction between Ag^+ and NH_3 ” to be changed to “Determination of instability constant for the reaction between Cu^{2+} and NH_3 ”.

Agendum 3: Recommend methodologies for innovative teaching and evaluation techniques

BoS recommendations are as follows:

1. Conduct practical examination after few experiments or at the end of semester due to difficulties encountered in evaluation of practicals by continuous assessment mode.
2. Practical examination can be conducted if time permits.
3. To include pre lab for experiments and evaluation of lab book for better understanding of practicals by students.

Agendum 4: Coordinate research, teaching, extension and other academic activities in the department/ college

BoS recommended the purchase of necessary chemicals, instruments and required laboratory items for carrying out research.

Agendum 5: A.O.B.

Since there was no business under A.O.B., the Chairman declared the meeting over.

The Chairman thanked the members of the Board of Studies in Chemistry for their active participation and valuable suggestions and the meeting ended at 04:30 p.m.

PART B: Important points/ recommendation of BoS that require consideration/ approval of Academic Council

The following changes were suggested by BoS:

SEMESTER I:

1. CHE-I. C-1 General Physical and Inorganic Chemistry

Practicals

Following four new experiments are introduced in Course:

1. To study the molecular condition of benzoic acid in toluene-water system
2. To study distribution of acetic acid between water and cyclohexane
3. Preparation of lead carbonate
4. Preparation of ferrous ammonium sulphate

2. CHE-I. C-2 General Organic and Inorganic Chemistry

Unit II

Title of Unit II “Structural Theories and Reactivities of Organic Compounds” is changed to “Structure and Reactivity of Organic Compounds”.

Practicals

Following one new experiment is introduced in Course:

1. Volumetric estimation of Calcium

SEMESTER II:

3. CHE-II. C-3 Concepts in Physical and Analytical Chemistry

Practicals

Following four new experiments are introduced in Course:

1. To determine the heat of neutralization of strong acid with strong base
2. To determine the heat of neutralization of weak acid with weak base
3. To determine the amount of boric acid in the given solution using conductometry
4. To determine the amount of lead ions in the given solution using conductometry

SEMESTER III:

4. CHE-III. E-1 Name reactions and Synthetic methodologies

Unit II

Sub topic “ipso-attack and orientation in benzene with more than one substituent” is changed to “ipso-substitution and orientation in aromatic compounds with electron donating and electron withdrawing substituents”.

5. CHE-III. E-2 Introduction to Industrial Chemistry

Unit I

Title “Fundamentals of Industrial chemicals and need for greener processes, materials Science and Introduction to Electroplating” **is changed to** “Fundamentals of Industrial Chemistry and Electroplating”.

Unit II

Title “Selected key industrial processes, Boilers and heat exchangers and Paint chemistry” **is changed to** “Industrial processes, Boilers, Heat exchangers and Paint chemistry”.

Unit III

Title “Industrial Safety and Conducts, Effluent treatment and Waste management” **is changed to** “Industrial Safety, Conducts, Waste management and Effluent treatment”.

Subtopic “Treatment of electronic waste” is added.

6. CHE-III. E-4 Bioinorganic Chemistry

Unit II

Title “Iron and Copper containing compounds in biology” **is changed to** “Iron containing compounds in biology”.

Practicals

Following one new experiment is deleted from Course:

1. Determination of hardness of water by EDTA

Following one new experiment are introduced in Course:

1. Preparation of Potassium trisoxalato ferrate(III)

SEMESTER IV:

7. CHE-IV. C-6 Comprehensive Chemistry-II

Unit I

Unit I “Studies of organic compound containing C, H and O” **is changed to** “Ethers”.

Unit III

Addition of subtopic

Subtopic “Acid anhydrides: Preparation and reactions” was added.

Practicals

Following two new experiments are introduced in Course:

1. Estimation of Ester
2. Estimation of Amide

8. CHE-IV. E-5 Pharmaceutical Chemistry

Practicals

Experiment “Estimation of Ascorbic acid in tablets by iodometry” **is changed to** “Estimation of Ascorbic acid in tablets”.

9. CHE-IV. E-6 Polymer and Colloid Science

Practicals

Following one new experiment is introduced in Course:

1. To determine the amount of chloride ion by adsorption indicator method

10. CHE-IV. E-7 Spectroscopic Techniques

Unit III

Title “Electronic (UV) Spectroscopy and Atomic Spectroscopy” **is changed to** “Electronic and Atomic Spectroscopy”.

11. CHE-IV. E-8 Chemistry of Natural Products

The course syllabus is restructured Unit wise with the following changes:

Subtopics deleted

1. Morphine
2. Biogenesis and biosynthesis
3. Carbohydrates: Classification, nomenclature and uses

Subtopics added

1. Atropine and Papaverine

12. CHE. SEC-2 Plating and corrosion

New Introduction of a four credit course as per the structure of the Programme

Subtopic “Quality and cost effectiveness” **is changed to** “Quality test for plated materials and cost effectiveness”.

Practicals

Experiment “To study electroless plating of copper” (one experiment) **is changed to** “To study electroless plating of nickel”.

13. CHE. SEC-3 Laboratory Techniques in Organic Chemistry

New Introduction of a four credit course as per the structure of the Programme

Practicals

Practicals restructured by removing some experiments and adding some new experiments to align the practicals with the learning objectives of the course

SEMESTER V:

14. CHE-V. C-7 Advanced Chemistry I: Physical and Inorganic Chemistry

Practicals

Following four experiments are deleted from the Course:

1. Preparation of $K_3[Al(C_2O_4)_3] \cdot H_2O$
2. Preparation and estimation of Ti in $[Ti(H_2O)_6]^{3+}$ complex

3. Estimation of Ni in $[\text{Ni}(\text{NH}_3)_6]\text{Cl}_2$ gravimetrically
4. Estimation of Co in a cobalt complex gravimetrically

Following five new experiments are introduced in Course:

1. To determine solubility product of silver halide potentiometrically
2. Preparation of $\text{K}_3[\text{Fe}(\text{C}_2\text{O}_4)_3]$
3. Estimation of Al from the $\text{K}_3[\text{Al}(\text{C}_2\text{O}_4)_3]\cdot\text{H}_2\text{O}$ complex
4. Preparation of zinc oxalate and estimation of zinc from the complex
5. To estimate the amount of barium as BaSO_4 in the solution of Barium chloride containing ferric chloride and free HCl

15. CHE-V. E-9 Heterocyclic Chemistry

Subtopics “Methods of preparation” **changed to** “Any two methods of preparation”

(For all kinds of classes of heterocycles in all three Units)

16. CHE-V. E-10 Nanomaterials and Solid State Chemistry

Unit II

Title “Applications of nanomaterials and Solid State Chemistry” **is changed to** “Applications of nanomaterials and Solid State Reactions”.

Unit III

New subtopic “Superconductors: Theory of Superconductivity, discovery, critical temperature, Meissner effect, types of superconductors” is introduced.

Following two new experiments are introduced in Course:

Practicals

1. Synthesis of PbS nanoparticles by chemical method
2. Synthesis of CdS nanoparticles using plant extract

17. CHE-V. E-11 Organometallic Chemistry

Practicals

Following two experiments are deleted from the Course:

1. Preparation of chloro(pyridine) bis(dimethylglyoximate) cobalt(III)
2. Preparation of bromo (pyridine) bis (dimethylglyoximate) cobalt (III)

Following five new experiments are introduced in Course:

1. Preparation of alkyl (aquo)cobaloxime
2. Preparation of aquobromobis(dimethylglyoximate) cobalt (III)
3. Preparation of chlorobis(dimethylglyoximate)triethanolamine cobalt(III)
4. Preparation of chlorobis(dimethylglyoximate)(1,10-phenanthroline)cobalt(III)
5. Synthesis of $\text{Ni}(\text{NCS})_2(\text{PPh}_3)_2$

SEMESTER VI:

18. CHE-VI. C-8 Advanced Chemistry II: Organic and Analytical Chemistry

Practicals

Following two experiments are deleted from the Course:

1. To estimate magnesium from Zn^{2+}/Mg^{2+} mixture by using an anion exchanger resin
2. To estimate zinc from Zn^{2+}/Mg^{2+} mixture by using an anion exchanger

Following eight new experiments are introduced in Course:

1. Preparation of 2-bromostyrene
2. Reduction of nitrobenzene to aniline
3. Estimation of Glucose
4. Wittig reaction between acetophenone and methylenetriphenylphosphorane
5. To estimate nickel from Zn^{2+}/Ni^{2+} mixture by ion exchange chromatography
6. To estimate zinc from Zn^{2+}/Ni^{2+} mixture by ion exchange chromatography
7. To estimate amount of potassium ions in the given solution by ion exchange chromatography
8. To determine partition co-efficient of succinic acid between ether and water

19. CHE-VI. E-13 Spectroscopic Methods in Organic Chemistry

All Units (Unit I, Unit II and Unit III)

The course syllabus is restructured Unit wise with the same subtopics

20. CHE-VI. E-15 Selected Topics in Inorganic Chemistry

Unit III

Title "Inorganic Polymers and Materials Chemistry" is changed to "Inorganic Materials Chemistry".

Subtopic "Superconductors: discovery, critical temperature, Meissner effect, types of superconductors" is deleted.

Practicals

Experiment "Determination of instability constant for the reaction between Ag^+ and NH_3 " is changed to "Determination of instability constant for the reaction between Cu^{2+} and NH_3 ".

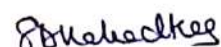


Dr. Mayuri M. Naik

Member Secretary

Board of Studies

Date: 09/03/2020



Dr. Sachin B. Kakodkar

Chairman

Board of Studies

PART C: The remarks of the Dean of the Faculty:

- a. The minutes are in order
- b. The minutes may be placed before the Academic Council with remark, if any.
- c. Important points of the minutes which need clear policy decision of the Academic Council to be recorded

Signature of the Dean: SPlehanb 11/3/2020

Date: 09/03/2020