Department of Chemistry

Board of Studies Meeting

The minutes of the 18th meeting of Board of Studies held on 10.11.2025 at 9.30 am at Staff room number-1402 (B1-Block)

Members Present:

S. No.	Name	Category
1	Dr. R. Ravikumar, Associate Professor & Head i/c	Chairman
2	Dr. T. Selvaraju, Associate Professor, Department of Chemistry, Bharathiar University, Coimbatore	University Nominee
3	Dr. R. Nandhakumar, Professor of Applied Chemistry, School of Sciences, Karunya Institute of Technology and Sciences, Coimbatore	Subject Expert
4	Dr. A. Thangamani, Associate Professor and Head, Department of Chemistry, Karpagam Academy of Higher Education, Coimbatore	Subject Expert
5	Er. R. Ezhilmaran, Technical Head & Unit In-Charge, Sudharsan Heavy Engineering Industries Chinnavedampatti, Coimbatore	Industry Expert
6	Ms. S. Pooja Shri	Alumni
7	Dr. M.R. Ezhilarasi	Member
8	Dr. M. Dinesh kumar	Member
9	Dr. P. Kavitha	Member
10	Dr. R. Menaka	Member
11	Dr. V. Nijarubini	Member
12	Dr. R. Rajkumar	Member
13	Dr. M. Mohanraj	Member

14	Dr. N. Kuppuchamy	Co-opted Member
15	Dr. A. Hazel Verbina	Co-opted Member
16	Dr. K.Girija	Co-opted Member
17	Dr. R. Sowrirajan	Co-opted Member
18	Dr. D. Sridevi	Co-opted Member
19	Dr. J. Rengaramanujam	Co-opted Member
20	Mr. S. Madhan Kumar	Student Representative
21	Mr. V. Gopinath	Student Representative

The HoD and Chairman of the Department of Chemistry welcome and introduced all the members and requested them to support for the development of academic standard and enrichment of the syllabus.

Item 18.1: *To review and approve the minutes of the previous meeting held on 28.06.2025.*

The Chairman of the board presented the minutes of the previous meeting held on *28.06.2025* and requested the members to approve. After brief discussion the following resolution was passed.

Resolution:

Resolved to approve the minutes of the previous meeting held on *28.06.2025.*

Item 18.2: *To consider and approve the scheme and syllabi of IV and VI semester for UG students admitted during the academic year 2024-2025 and 2023-24 respectively and IV semesters for PG students admitted during the academic year 2024-25.*

The Chairman presented the detailed scheme and syllabi of the IV and VI semesters for the UG students admitted during the academic year 2024-25 and 2023-2024 respectively and the detailed scheme and syllabi of the IV semester for the PG students admitted during the academic year 2024-25. After discussion, the existing syllabus is approved without any changes. After discussion the following resolution was passed.

Resolution

Resolved to approve the existing syllabi for the students admitted during the academic year 2024-2025 and 2023-2024.

Item 18.3: *To consider and approve the scheme and syllabi of II semester for the M. Sc students admitted during the academic year 2025-26.*

The Chairman presented the detailed scheme and syllabi of the II semester for the students admitted during the academic year 2025-26. The members deliberated in detail about

the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course	Change and Reason
25CEP2DB	Electrochemistry	The following changes have been made as per the suggestion given by subject expert Dr. T. Selvaraju, Dr. R. Nandhakumar and Dr. A Thangamani The entire syllabus has been revised to incorporate recent advances in batteries (Lithium and poly electrolyte batteries)

Resolution

Resolved to approve the above modification and adopt the revised syllabi for the students admitted during the academic year 2025-2026.

Item 18.4: *To review and approve the inter department course for UG Physics for IV semester students admitted during the academic year 2024-25. To be offered during the academic year 2025-26.*

The Chairman presented the detailed scheme and syllabus of the IV semester for the students admitted during the academic year 2024-25. After discussion, the existing syllabus is approved without any changes. After discussion the following resolution was passed.

Resolution

Resolved to approve the existing syllabus for the students admitted during the academic year 2024-2025.

Item 18.5: *To review and approve the inter department course for UG Food science and Nutrition and Microbiology for II semester students admitted during the academic year 2025-26. To be offered during the academic year 2025-26.*

The Chairman presented the detailed scheme and syllabi of the II semester for the students admitted during the academic year 2025-26. After discussion, the existing syllabi is approved without any changes. After discussion the following resolution was passed.

Resolution

Resolved to approve the existing syllabi for the students admitted during the academic year 2025-2026.

Item 18.6: *To review and approve the student skill development course on Polymer Processing Technology for IV semester UG students admitted during the academic year 2024-25. To be offered during the academic year 2025-26.*

The chairman presented the Polymer Processing Technology syllabus for the students admitted during the academic year 2024-25. The members unanimously decided to retain the existing syllabus without any modification.

After discussion the following resolution was passed.

Resolution:

Resolved to retain the existing syllabus without any modification for the students admitted for the academic year 2024-25.

Item 18.7: *To approve the panel of examiners for question paper setting, question paper scrutiny and conduct of practical and theory examinations for the even semester of the academic year 2025-26.*

The Chairman presented the panel of examiners for question paper setting, question paper scrutiny and conduct of practical and theory examinations for the even semester of the academic year 2025-26.

Resolution:

Resolved to approve the panel of examiners for question paper setting, question paper scrutiny and conduct of practical and theory examinations for the even semester of the academic year 2025-2026.

Finally, the Chairman thank all the members for their cooperation and contribution in enriching the syllabi with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by Dr. R. Ravikumar, Head i/c and Chairman- Chemistry.

10/11/25

(Dr. R. Ravikumar)
PSG Chairman/HoD
Department of Chemistry
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Date: 10.11.2025

M.Sc Chemistry Syllabus Revision

Name of the faculty: BAS
Board: Chemistry
Semester: II
Course Code/Name: 25CEP2DB
–ELECTROCHEMISTRY

Unit	Existing	Changes
1	**Electrochemistry** ~~Electrolytic cell, Electrochemical cell, Electrode Potential. The reaction quotient (Q), for a chemical reaction – The potential (E), for non-standard conditions using the Nernst Equation – Rate of reaction and types of over-voltages in galvanic and electrolytic cells and the Tafel Equation – Efficiency of chemical energy conversion: batteries versus heat engines.~~	**Electrochemical cells** Electrolytic cell, Electrochemical cell, Electrode Potential. The reaction quotient (Q), for a chemical reaction - The potential (E), for non-standard conditions using the Nernst Equation - Rate of reaction and types of over-voltages in galvanic and electrolytic cells and the Tafel Equation - Efficiency of chemical energy conversion: batteries versus heat engines
2	**Batteries** ~~Primary batteries – Secondary batteries – Battery charging and discharging curves for secondary batteries – Specific power and specific energy, Ragone plot – Energy efficiency of batteries, energy out during discharge – Energy in during charge – Energy efficiency of batteries versus heat engines for converting chemical energy into work~~	**Batteries** Hybrid Batteries: Metal-air batteries, Zn-air battery, Fe-air battery, Charging of metal-air battery, Metal oxide-hydrogen/hydride batteries, advantages and limitations Lithium batteries: Li-ion battery and Lithium-ion polymer battery. Electrochemical supercapacitors: electrolytic (super) capacitor and ultracapacitors, applications, advantages and limitations.
3	~~**Batteries for Electric and Hybrid Vehicles** Battery packs, voltage and state of charge, coulomb counting – Energy in a battery (kWh) and charge in a battery (Ah); C-Rate of charging and discharging, Peukert equation – Coulombic efficiency of batteries and battery lifetime – Button type battery – Difference between cells and batteries~~	**Fuel Cells** Energy efficiency of electrochemical and thermal conversion (Carnot limitation) - Classification. Fuel cell efficiency-thermodynamic, electrochemical efficiency. Electrode mechanism of fuel cell, working principle and applications of fuel cells - Proton exchange membrane (PEM) fuel cells and direct methanol fuel cell.
4	~~**Fuel Cells** Fuel cells – Description – Working principle – Anodic, cathodic and cell reactions. Fabrication of electrodes and other components. – Applications, advantages, disadvantages and environmental aspects of the following types of fuel cells: Proton Exchange Membrane Fuel Cells – Alkaline fuel cells – Phosphoric acid – Solid oxide, Molten carbonate and direct methanol fuel cells.~~	**Surface modification Techniques** Importance of metal finishing – Electroplating-Additives in plating baths and their significance - Effect of plating variables on deposit properties - Preparation of substrate surface - Techniques of Electroplating and Electroless Plating - Galvanizing, Anodizing, Phosphating, Chromating - Electroless plating: Definition, advantages over electroplating, pretreatment of substrates -Electroless plating of Ni – process and applications.
5	~~**Additional energy storage devices and Renewable energy** Hydrogen fueling system and hydrogen storage aboard vehicles – Comparison of fuel cells and batteries for powering electric vehicles. Capacitors – Super capacitor storing charge – Flywheels: storing kinetic energy – Compressed air: storing potential energy – Renewable energy and synergy with electric vehicles.~~	**Battery Thermal Management Systems** Cooling techniques: Air, liquid, phase-change materials (PCMs), and hybrid systems - Heating systems: Pre-heating for low-temperature operation - Design and simulation: Thermal modeling of battery modules and packs -Thermal sensors and control strategies: Real-time monitoring, BMS integration

Percentage of Syllabus revised: 100%

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ATTENDANCE OF THE EIGHTEENTH BOARD OF STUDIES MEETING

Faculty: Basic and Applied Science

S. No.	Name	Category	Attendance Status
1	Dr. R. Ravikumar, Associate Professor & Head i/c	Chairman	Present
2	Dr. T. Selvaraju, Associate Professor, Department of Chemistry, Bharathiar University, Coimbatore	University Nominee	Present
3	Dr. R. Nandhakumar, Professor of Applied Chemistry, School of Sciences, Karunya Institute of Technology and Sciences, Coimbatore	Subject Expert	Present
4	Dr. A. Thangamani, Associate Professor and Head, Department of Chemistry, Karpagam Academy of Higher Education, Coimbatore	Subject Expert	Present
5	Er. R. Ezhilmaran, Technical Head & Unit In-Charge, Sudharsan Heavy Engineering Industries Chinnavedampatti, Coimbatore	Industry Expert	Present
6	Ms. S. Pooja Shri	Alumni	Present
7	Dr. M.R. Ezhilarasi	Member	Present
8	Dr. M. Dinesh kumar	Member	Present
9	Dr. P. Kavitha	Member	Present
10	Dr. R. Menaka	Member	Present
11	Dr. V. Nijarubini	Member	Present
12	Dr. R. Rajkumar	Member	Present

13	Dr. M. Mohanraj	Member	Present
14	Dr. N. Kuppuchamy	Co-opted Member	Present
15	Dr. A. Hazel Verbina	Co-opted Member	Present
16	Dr. K. Girija	Co-opted Member	Present
17	Dr. R. Sowrirajan	Co-opted Member	Present
18	Dr. D. Sridevi	Co-opted Member	Present
19	Dr. J. Rengaramanujam	Co-opted Member	Present
20	Dr. P. Chidambara Rajan	Co-opted Member	Present
21	Dr. S. Gowri	Co-opted Member	Present
22	Mr. S. Madhan Kumar	Student Representative	Present
23	Mr. V. Gopinath	Student Representative	Present

Date: 10-11-2025

10/11/25

(Dr. R. Ravikumar)
BoS Chairman/HoD
Department of Chemistry
Dr. N. G. P. Arts and Science College
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