

Department of Chemistry

**Resolutions of the 1st Board of Studies Meeting
Department of Chemistry
A Y. 2025-26**



Date : 25-FEB-2026
Time : 11:00 AM
Mode : Hybrid

Department of Chemistry

AGENDA - FIRST BOARD OF STUDIES MEETING

- 1. Welcome Address by the Chairperson**
Formal welcome to all honorable members, university nominees, external experts, and internal faculty invitees, and presentation of the agenda before the Board.
- 2. Ratification of Chemistry & Engineering Chemistry Theory Syllabus (R-23)**
Discussion and approval of the Theory syllabus for implementation as per JNTUK R23 regulations.
- 3. Ratification of Chemistry & Engineering Chemistry Laboratory Syllabus (R-23)**
Examination and approval of the Laboratory syllabus, including course structure, experiments, and evaluation scheme under R23 regulations.
- 4. Review and Approval of Credits, Contact Hours, and Course Structure**
Verification and approval of credit allocation, weekly contact hours, and overall course organization in accordance with university norms.
- 5. Academic Suggestions and Recommendations**
Consideration of members' suggestions regarding laboratory syllabus improvement and future curriculum revisions.
- 6. Vote of Thanks and Conclusion of the Meeting**
Formal expression of gratitude to all members and closure of the meeting with the approval of the Chair.

Department of Chemistry

Ref: ESWR/CHEM/BoS-MoM/2025-26/01

26-FEB- 2026

Resolutions of the 1st BoS Meeting, Department of Chemistry, Eswar College of Engineering (Autonomous), Kesanupalli, 25.02.2026 (Hybrid Mode).

<https://us06web.zoom.us/join/86217318509?signature=nw5Gj2pTpEN>

[W2nCtQboZF6Mu ouLWTbq9-31vFiyL0w](https://us06web.zoom.us/join/86217318509?signature=nw5Gj2pTpEN)

BoS Members

S.No	Name of the Member	Designation/Occupation	Category
1	Mrs.K.Surya Prabha	Head of the Department	Chairman
2	Mrs.G.Sowjanya	Asst.Professor	One Faculty from each specialization from the College
3	Mrs.B.Madhavi	Asst.Professor	
4	Mrs.K.Sravanthi	Asst.Professor	
5	Mrs. Naga Sowjanya	Asst.Professor	
6	Prof.P.Sudhakar	Asst.Professor in Chemistry, IIT,Tirupathi Mobile: 8074036011 Mailid:psudhakar@iittp.ac.in	Subject experts outside parent university
7	Prof.B.B.V.Sailaja	Professor & HOD, Department of Chemistry, Andhra University Mail id: sailajabbv.chem@gmail.com Contact no: 8639574190	
8	Prof.R.Ramesh Raju	Professor, Department of Chemistry, Acharya Nagarjuna University, Guntur Mailid:rrraju1@gmail.com Contact no:9866190692	University Nominee
9	Mr.P. Srinivasarao	Assistant Area Manager sales, Mahindra & Mahindra Ltd, Farm Equipment sector, Telangana state Contact Ph no: 9712443474 Email:srinivasarao.pilla@mahindra.com	Industry
10.	Mr,V.Manojkumar	Motor Claims manager ,Tata AIG General Insurance ,Anantapur (Dt) Contact Ph no: 7396351251 Email: vangurimanojkumar.@tataaig.com	Alumni

Department of Chemistry
MINUTES OF THE 1ST BOS MEETING

Welcome of the Members and Invitees

Resolution

The Chairperson welcomed all the Honorable members and internal faculty invites to the first Board of Studies Meeting and placed the agenda before the Board for consideration.

Agenda 1: Approval for ratification of Chemistry & Engineering Chemistry Theory Syllabus (R-23)

Resolution:

The draft Theory syllabus of Chemistry & Engineering Chemistry under R-23 regulations was presented before the Board. After detailed discussion, the Board reviewed and approved the syllabus for implementation in accordance with JNTUK R23 regulations.

Agenda 2: Approval for ratification of Chemistry & Engineering Chemistry Laboratory Syllabus (R-23)

Resolution:

The draft Laboratory syllabus of Chemistry & Engineering Chemistry under R-23 regulations was presented before the Board. The Board examined the course structure, experiments, and evaluation scheme, and approved the syllabus for implementation in accordance with JNTUK R23 regulations.

General Suggestions

The honourable members expressed the following suggestions regarding the Chemistry Laboratory component:

- **Prof. R. Ramesh Raju** highlighted the need for modification of the syllabus and suggested that necessary revisions may be considered in future academic regulations after assessing students' knowledge levels and learning requirements.
- **Prof. B. B. V. Sailaja** emphasized the introduction of a Mini Project component, such as *Green Synthesis of Nanoparticles*, in the forthcoming academic regulations to enhance practical and research-oriented learning.
- **Prof. P. Sudhakar** suggested replacing the existing Lead-Acid Battery experiment with a Volumetric Analysis experiment in future academic frameworks to improve fundamental laboratory skill development.

The Board resolved to continue the existing JNTUK R23 syllabus for the current academic year without modification, and to place suggestions for consideration in future academic revisions.

Conclusion

The meeting concluded with a formal vote of thanks proposed by Mrs.K. Surya Prabha, acknowledging the contributions and academic insights of all members. The proceedings ended at 12:00 PM with the approval of the Chair.

Department of Chemistry

BoS Committee

S.No	Name of the Member	Designation/Occupation	Category	Signature
1	Mrs.K.Surya Prabha	Head of the Department	Chairman	K.S. Surya
2	Mrs.G.Sowjanya	Asst.Professor	One Faculty from each specialization from the College	Sowjanya
3	Mrs.B.Madhavi	Asst.Professor		M.B.
4	Mrs.K.Sravanthi	Asst.Professor		K. Sravanthi
5	Mrs. Naga Sowjanya	Asst.Professor		Naga Sowjanya
6	Prof.P.Sudhakar	Asst.Professor in Chemistry, IIT,Tirupathi Mobile: 8074036011 Mailid:psudhakar@iittp.ac.in	Subject experts outside parent university	Approved through Mail
7	Prof.B.B.V.Sailaja	Professor & HOD, Department of Chemistry, Andhra University Mail id: sailajabbv.chem@gmail.com Contact no: 8639574190		Approved through Mail
8	Prof.R.Ramesh Raju	Professor, Department of Chemistry, Acharya Nagarjuna University, Guntur Mailid:rrraju1@gmail.com Contact no:9866190692	University Nominee	Sent attested pdf copy
9	Mr.P. Srinivasarao	Assistant Area Manager sales, Mahindra & Mahindra Ltd, Farm Equipment sector, Telangana state Contact Ph no: 9712443474 Email:srinivasarao.pilla@mahindra.com	Industry	P.S. Rao
10.	Mr.V.Manojkumar	Motor Claims manager, Tata AIG General Insurance, Anantapur (Dt) Contact Ph no: 7396351251 Email: vangurimanojkumar.@tataaig.com	Alumni	Manoj Kumar

Department of Chemistry

Resolution

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The honourable members expressed the following suggestions regarding the Chemistry Laboratory component:

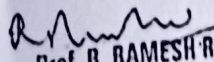
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- Prof. B. B. V. Sailaja emphasized the introduction of a Mini Project component, such as *Green Synthesis of Nanoparticles*, in the forthcoming academic regulations to enhance practical and research-oriented learning.
- Prof. P. Sudhakar suggested replacing the existing Lead-Acid Battery experiment with a Volumetric Analysis experiment in future academic frameworks to improve fundamental laboratory skill development.

The Board resolved to continue the existing JNTUK R23 syllabus for the current academic year without modification, and to place suggestions for consideration in future academic revisions.

Conclusion

The meeting concluded with a formal vote of thanks proposed by Mrs. K. Surya Prabha, acknowledging the contributions and academic insights of all members. The proceedings ended at 12:00 PM with the approval of the Chair.

Above Resolution Ratified formally.


Prof. R. RAMESH RAJU, M.Sc., Ph.D.
PROFESSOR
Fellow of AP Academy of Sciences
Department of Chemistry
Acharya Nagarjuna University
522 510



Pagidi Sudhakar <psudhakar@iittp.ac.in>

BoS Proceedings Submitted for Ratification – First Year UG (A.Y. 2025–26)

Pagidi Sudhakar <psudhakar@iittp.ac.in>
To: Connect with KSP <suryaprabhaannie@gmail.com>

Fri, Feb 27, 2026 at 2:20 PM

Dear Madam,

Thank you for sending me the minutes of the meeting. I hereby approve them.

Yours sincerely,

Sudhakar

(Quoted text hidden)

Pagidi Sudhakar, Ph.D

Assistant Professor

Department of Chemistry

Indian Institute of Technology Tirupati (IIT)

Yerpedu – Venkateswari Road, Yerpedu Post

Tirupati District, A.P - 517619


Homepage: <https://psudhakar08.wixsite.com/ps-iit>

P. Sudhakar
27/02/2026

02/03/2026, 11:16

BoS Proceedings Submitted for Ratification – First Year UG (A.Y. 2025–26) - suryaprabhaannie@gmail.com - Gmail

 Gmail

 Search mail



Compose



BoS Proceedings Submitted for Ratification – First Year UG (A.Y. 2025–26) info

Inbox 52

Starred

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Important

Sent

Drafts 50

Purchases 3

Social 6,658


Updates 4,098

Forums 2

Promotions 889

More

Labels

 Upgrade →



Connect with KSP

Respected Madam, I am forwarding the Minutes of the First Board of Studies (BoS) Meeting in Chemistry held on 25 February 2025 for your



sailaja bbv

to me

Dear madam,

With reference to your mail today, it is to inform you that I received Minutes of the First Board of Studies (BoS) Meeting in Chemistry held on 25 February 2025 pertaining to the First Year B.Tech programme for the A.Y. 2025–26. I am herewith approving the same for further processing. Thanking you.

Respectful regards

–

Prof. B. B. V. Sailaja
Dept. of Chemistry

Reply

Forward



Enable desktop notifications for Gmail.

Department of Chemistry
 CHEMISTRY

(Common to EEE, ECE, CSE, IT & allied branches)

L	T	P	C
3	0	0	3

Course Objectives:

1. To familiarize engineering chemistry and its applications
2. To train the students on the principles and applications of electrochemistry and polymers
3. To introduce instrumental methods, molecular machines and switches.

Course Outcomes: At the end of the course, the students will be able to:

- CO1: Compare the materials of construction for battery and electrochemical sensors.
- CO2: Explain the preparation, properties, and applications of thermoplastics & thermosetting & elastomers conducting polymers.
- CO3: Explain the principles of spectrometry, slc in separation of solid and liquid mixtures, CO4: Apply the principle of Band diagrams in the application of conductors and semiconductors.
- CO5: Summarize the concepts of Instrumental methods.

UNIT I Structure and Bonding Models:

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ^2 , particle in one dimensional box, molecular orbital theory – bonding in homo- and heteronuclear diatomic molecules – energy level diagrams of O₂ and CO, etc. π -molecular orbitals of butadiene and benzene, calculation of bond order.

UNIT II Modern Engineering materials Semiconductors – Introduction, basic concept, application Super conductors-Introduction basic concept, applications.

Supercapacitors: Introduction, Basic Concept-Classification – Applications.

Nano materials: Introduction, classification, properties and applications of Fullerenes, carbon nano tubes and Graphines nanoparticles.

UNIT III Electrochemistry and Applications

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems, potentiometry- potentiometric titrations (redox titrations), concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations).

Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples. Primary cells – Zinc-air battery, Secondary cells –lithium-ion batteries- working of the batteries including cell reactions; Fuel cells, hydrogen-oxygen fuel cell- working of the cells.

Polymer Electrolyte Membrane Fuel cells (PEMFC).

UNIT IV Polymer Chemistry

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Introduction to polymers, functionality of monomers, chain growth and step growth polymerization, coordination polymerization, with specific examples and mechanisms of polymer formation.

Plastics –Thermo and Thermosetting plastics, Preparation, properties and applications of - PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres.

Elastomers–Buna-S, Buna-N–preparation, properties and applications.

Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications.

Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA).

UNIT V Instrumental Methods and Applications

Electromagnetic spectrum. Absorption of radiation: Beer-Lambert's law. UV-Visible Spectroscopy, electronic transition, Instrumentation, IR spectroscopies, fundamental modes and selection rules, Instrumentation. Chromatography-Basic Principle, Classification-HPLC: Principle, Instrumentation and Applications.

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.D. Lee, Concise Inorganic Chemistry, 5th Edition, Wiley Publications, Feb.2008
3. Textbook of Polymer Science, Fred W. Billmeyer Jr, 3rd Edition

Department of Chemistry
CHEMISTRY LAB

(Common to EEEEEE, ECE, CSE, IT & allied branches)

L	T	P	C
0	0	2	1

Course Objectives:

Verify the fundamental concepts with experiments.

Course Outcomes: At the end of the course, the students will be able to CO1: Determine the cell constant and conductance of solutions.

CO2: Prepare advanced polymer Bakelite materials.

CO3: Measure the strength of an acid present in secondary batteries. CO4: Analyse the IR spectra of some organic compounds.

CO5: Calculate strength of acid in Pb-Acid battery.

List of Experiments:

1. Measurement of $10Dq$ by spectrophotometric method
2. Conductometric titration of strong acid vs. strong base
3. Conductometric titration of weak acid vs. strong base
4. Determination of cell constant and conductance of solutions
5. Potentiometry - determination of redox potentials and emfs
6. Determination of Strength of an acid in Pb-Acid battery
7. Preparation of a Bakelite
8. Verify Lambert-Beer's law
9. Wavelength measurement of sample through UV-Visible Spectroscopy
10. Identification of simple organic compounds by IR
11. Preparation of nanomaterials by precipitation method
12. Estimation of Ferrous Iron by Dichrometry

Reference:

"Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition" Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar

Department of Chemistry

ENGINEERING CHEMISTRY

(Common to Civil, Chemical, Mechanical Engineering and allied branches)

L	T	P	C
3	0	0	3

Course Objectives:

- To familiarize engineering chemistry and its applications
- To impart the concept of soft and hard waters, softening methods of hard water
- To train the students on the principles and applications of electrochemistry, polymers, surface chemistry, and cement

Course Outcomes: At the end of the course, the students will be able to

- CO1: Demonstrate the corrosion prevention methods and factors affecting corrosion.
- CO2: Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
- CO3: Explain calorific values, octane number, refining of petroleum and cracking of oils.
- CO4: Explain the setting and hardening of cement.
- CO5: Summarize the concepts of colloids, micelle and nanomaterials.

UNIT I Water Technology

Soft and hardwater, Estimation of hardness of water by EDTA Method, Estimation of dissolved Oxygen - Boiler troubles - Priming, foaming, scale and sludge, Caustic embrittlement, Industrial water treatment - Specifications for drinking water, Bureau of Indian Standards(BIS) and World health organization(WHO) standards, Ion-exchange processes - desalination of brackish water, reverse osmosis (RO) and electrodialysis.

UNIT II Electrochemistry and Applications

Electrodes -electrochemical cell, Nernst equation, cell potential calculations.
Primary cells - Zinc-air battery, Secondary cells - Nickel-Cadmium (NiCad), and lithium ion batteries- working principle of the batteries including cell reactions; Fuel cells-Basic Concepts, the principle and working of hydrogen-oxygen Fuel cell.
Corrosion: Introduction to corrosion, electrochemical theory of corrosion, differential aeration cell corrosion, galvanic corrosion, metal oxide formation by dry electrochemical corrosion, Pilling Bedworth ratios and uses, Factors affecting the corrosion, cathodic and anodic protection, electroplating and electro less plating (Nickel and Copper).

UNIT III Polymers and Fuel Chemistry

Introduction to polymers, functionality of monomers, Mechanism of chain growth, step growth polymerization. Thermoplastics and Thermo-setting plastics-: Preparation, properties and

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applications of poly styrene, PVC Nylon 6,6 and Bakelite. Elastomers – Preparation, properties and applications of Buna S, Buna N, Thiokol rubbers. Fuels – Types of fuels, calorific value of fuels, numerical problems based on calorific value; Analysis of coal (Proximate and Ultimate analysis), Liquid Fuels, refining of petroleum, Octane and Cetane number- alternative fuels- propane, methanol, ethanol and bio fuel-bio diesel.

UNIT IV Modern Engineering Materials

Composites- Definition, Constituents, Classification- Particle, Fibre and Structural reinforced composites, properties and Engineering applications

Refractories- Classification, Properties, Factors affecting the refractory materials and Applications.

Lubricants- Classification, Functions of lubricants, Mechanism, Properties of lubricating oils – Viscosity, Viscosity Index, Flash point, Fire point, Cloud point, saponification and Applications. Building materials- Portland Cement, constituents, Setting and Hardening of cement.

UNIT V Surface Chemistry and Nanomaterials

Introduction to surface chemistry, colloids, nanometals and nanometal oxides, micelle formation, synthesis of colloids (Braggs Method), chemical and biological methods of preparation of nanometals and metal oxides, stabilization of colloids and nanomaterials by stabilizing agents, adsorption isotherm (Freundlich and Langmuir), BET equation (no derivation) applications of colloids and nanomaterials – catalysis, medicine, sensors, etc.

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

1. H.F.W. Taylor, Cement Chemistry, 2/e, Thomas Telford Publications, 1997.
2. D.J. Shaw, Introduction to Colloids and Surface Chemistry, Butterworth-Heinemann, 1992.
3. Textbook of Polymer Science, Fred W. Billmeyer Jr, 3rd Edition

Department of Chemistry
ENGINEERING CHEMISTRY LAB

(Common to Civil, Chemical, Mechanical Engineering & allied branches)

L	T	P	C
0	0	2	1

Course Objectives:

To verify the fundamental concepts with experiments

Course Outcomes: At the end of the course, the students will be able to CO1: Determine the cell constant and conductance of solutions.

CO2: Prepare advanced polymer materials.

CO3: Determine the physical properties like surface tension, adsorption and viscosity. CO4: Estimate the Iron and Calcium in cement.

CO5: Calculate the hardness of water.

List of Experiments:

1. Determination of Hardness of a groundwater sample.
2. Estimation of Dissolved Oxygen by Winkler's method
3. Determination of Strength of an acid in Pb-Acid battery
4. Preparation of a polymer (Bakelite)
5. Determination of percentage of Iron in Cement sample by colorimetry
6. Estimation of Calcium in port land Cement
7. Preparation of nanomaterials by precipitation method.
8. Adsorption of acetic acid by charcoal
9. Determination of percentage Moisture content in a coal sample
10. Determination of Viscosity of lubricating oil by Redwood Viscometer 1
11. Determination of Viscosity of lubricating oil by Redwood Viscometer 2
12. Determination of Calorific value of gases by Junker's gas Calorimeter

Reference:

"Vogel's Quantitative Chemical Analysis 6th Edition" Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar