



RISE Krishna Sai Gandhi Group of Institutions::Ongole (Autonomous)

(Approved by AICTE-New Delhi, Affiliated to JNTUK, Kakinada)
Accredited by NAAC & Recognized under UGC2(f)
NH-16, Valluru-523272, Ongole, Prakasam District, A.P

DEPARTMENT OF CHEMISTRY

Minutes of Board of Studies Meeting

Date: 03/01/2025

The second External Board of Studies Meeting of the department of chemistry was held online on 03.01.2025 at 11.00AM via Google meet to finalizing the syllabus for second semester. The following members were present:

S.No	Name of the Member	Designation/occupation	position	signature
1	Mrs.P.Sridevi	Head of The Department	Chairman	
2	Dr.S.Satya Veni	Asst. Professor, Department of Chemistry, JNTUK, Kakinada.	University Nominee	
3	Dr.B.Hari Babu	Professor &HOD, Department of Chemistry, Register of AKU	Subject experts outside parent university	Approved via E-mail
4	Dr.S.Srinivasa Rao	Assoc. Professor, Department of Chemistry, V.R.Siddartha Engineering College,	Subject experts outside parent university	Approved via E-mail
5	Mrs.K.Sai Prasanna	Asst.Professor, Chemistry	One Faculty from each specialization From the College	
6	Mrs.R.Rajitha	Asst .Manager of QC Department ANNORA pharmaceutical company	Industry	Approved via E-mail
7	Ms.V.Lakshmi devi	Asst.Professor	Alumni	

At the onset of the meeting, the Chairman of BOS, Mrs.P.Sridevi, welcomed all the members. The meeting began with the presentation of the syllabus of **Chemistry of I-II semester** under R-24 regulations prepared by the internal BOS members.



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Resolutions in Meeting

Agenda: Discussion and approval of I-II semester subjects' chemistry Theory and chemistry lab syllabus for academic year 2024-2025.

Resolutions: The syllabus of Chemistry Theory and Lab I-II Semester is approved by the Board of Studies Committee.

General Comments

- As per the suggestion of Dr. S. Satya Veni, University Nominee, the methods of polymerization (emulsion and suspension) have been clearly mentioned in Unit-4.
- As per the suggestion of Dr. S. Satya Veni, University Nominee, changes were made in Lab Experiment-12 by modifying 'ferrous iron' to 'ferrous ion'.

Subject Expert Comments

- As per the suggestion of Dr. S. Srinivasa Rao, Subject Expert from outside the parent university, Unit-4 clearly mentions carbon fibers, including their preparation, properties, and applications.
- As per the suggestion of Dr. S. Srinivasa Rao, Subject Expert from outside the parent university, Lab Experiment-9 was modified by changing 'Mn (II)' to 'Mn'.
- As per the suggestion of Dr. B. Hari Babu, Subject expert outside the parent University, rectified the sentence formation in unit -2.
- Mrs. R. Rajitha, Industry person, suggested to focus on applications.



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CHEMISTRY

(Common to EEE, ECE, CSE, CSE-AI&ML&CSE-DS)

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Course Objectives:

- To Familiarize Engineering Chemistry and its Applications.
- To Train the Students on the Principles and Applications of Electrochemistry and Polymers.
- To Introduce Instrumental Methods.

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

CO1: Explain the Significance of wave Functions, Illustrate the Molecular orbital energy level Diagrams of Different Molecular Species.

CO2: Apply the Principles of band Diagrams in the Applications of Conductors & Semiconductors.

CO3: Compare the Materials of Construction for Battery and Electrochemical Sensors.

CO4: Explain the Preparation, Properties and Applications of Thermoplastics & Thermosetting & Elastomers & Conducting Polymers.

CO5: Explain the principles of spectrometry, HPLC in separation of solid and liquid mixtures.

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 hetero nuclear diatomic molecules – energy level diagrams of O₂ and CO, etc. π -molecular orbital of butadiene and benzene, calculation of bond order.

UNIT II Modern Engineering Materials

Semi conductors -Introduction, types properties, and Applications.

Super conductors-Introduction, types properties and Applications.

Super capacitors-Introduction, types properties, and Applications



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

UNIT III Electro chemistry and Applications

Electro chemical 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, amperometry 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

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

Plastics –Thermo and Thermosetting plastics, Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6.6, carbon fibers.(preparation ,properties and applications)

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), Poly 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.

Text Books:

1. Jain and Jain, Engineering Chemistry,16/e,DhanpatRai,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,5thEdition, WileyPublications,Feb.2008
3. Text book of Polymer Science, Fred W.Bill mayer Jr,3rdEdition



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CHEMISTRYLAB

(Common to EEE, ECE, CSE, CSE-AI&ML&CSE-DS)

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: Preparation of nano materials by precipitation method.

CO5: Analysis of IR Spectra of some Organic Compounds.

List of Experiments(CompleteAny12ofthebelowExperiments)

1. Determination of HCl using standard Na_2CO_3 solution
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. Potentiometer-determination of redox potentials and emfs
6. Determination of Strength of an acid in Pb-Acidbattery.
7. Preparation of Bakelite
8. Verify Lambert-Beer's law
9. Determination of Mn using standard and oxalic acid solution
10. Preparation of Nylon-6,6.
11. Preparation of nano material by precipitation method
12. Estimation of Ferrous Ion by Dichrometry
13. Measurement of Fe^{2+} by spectrophotometric method
14. Wavelength measurement of sample through UV-Visible Spectroscopy
15. Identification of simple organic compounds by IR

Reference:

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



SH HOD <shhod@risekrishnasaigandhi.edu.in>

Minutes of Meeting for Board of Studies (BoS) of I-II Sem

Satya Veni Sunkara <dr.satyapurna@gmail.com>
To: SH HOD <shhod@risekrishnasaigandhi.edu.in>

Fri, Jan 10, 2025 at 9:06 AM

Respected Madam,

I approve the syllabus of Chemistry for the B. Tech. students.

Thanking you,

Sincerely,

Satya Veni

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SH HOD <shhod@risekrishnasaigandhi.edu.in>

Minutes of Meeting for Board of Studies (BoS) of I-II Sem

Srinivasa Rao, Vijayawada <chemysri@yahoo.com>
To: SH HOD <shhod@risekrishnasaigandhi.edu.in>

Thu, Jan 9, 2025 at 12:53 PM

Respected Madam,

While thanking you for the opportunity provided to me to act as a subject expert in BOS for the approval of the Chemistry Syllabus, I have gone through the revised syllabus content sent by you. The modifications suggested by me in BOS meeting are made in the syllabus content, and hence **I approve the syllabus in the present form.**

Thanking you once again,

Dr. S. Srinivasa Rao
Associate Professor & HOD
Department of Chemistry
V. R. Siddhartha Engineering College
Vijayawada-520007
Andhra Pradesh, India.
Contact No. 08897557599

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SH HOD <shhod@risekrishnasaigandhi.edu.in>

Minutes of Meeting for Board of Studies (BoS) of I-II Sem

H B Bollikolla <dr.b.haribabu@gmail.com>
To: SH HOD <shhod@risekrishnasaigandhi.edu.in>

Thu, Jan 9, 2025 at 9:06 PM

Approved

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SH HOD <shhod@risekrishnasaigandhi.edu.in>

Minutes of Meeting for Board of Studies (BoS) of I-II Sem

Rajitha rayapati <rajitha.innovation@gmail.com>
To: lakshmi veerapogu <veerapogulakshmi86@gmail.com>
Cc: SH HOD <shhod@risekrishnasaigandhi.edu.in>

Thu, Jan 9, 2025 at 9:59 PM

I have approved

[Quoted text hidden]