WEL COME NAAC TEAM

DEPARTMENT OF CHEMISTRY
MAHAMAYEE MAHILA
MAHAVIDYALAYA

About the Department

- Department of Chemistry ,Mahamayee Mahila Mahavidyalaya was established in the year 1998 with only pass courses .
- In the year 2004 , Chemistry honours was started with the student strength of 8. It increased to 12 in 2012 and to 32 in 2014. Finally in the year 2016, it was increased to 64 and till now it is continuing.
- The Department was full fledged with the faculty members like Dr. Sabita Sahu, Dr. Ramesh Mahapatra, Dr. Eijaz Ahmed, Dr.Santosh Choudhury, at present the department is actively running with three lecturers, one demonstrator, one lab assistant and one lab attendant.
- The curriculum covers a range of topics, including Physical Chemistry, Organic Chemistry and Inorganic Chemistry with respective practical.

Vision and mission

➢Vision :

- Leading in chemistry education and research,
- prioritizing innovation, sustainability, and societal impact.
- Fostering curiosity, collaboration among students.
- Striving to be a catalyst for positive change in the chemical field and beyond.

➢Mission :

- Inspiring students to explore chemistry and to advance in scientific knowledge
- Teaching chemical principles, and providing research exposure
- Promoting diversity, equity, and inclusion while using chemistry for societal well-being

Importance /objectives of the department

- Chemistry is an importance field of science, which plays an important and useful role towards the development and growth of a number of industries.
- It is considered as a central science because it joins together biology, medicine, physics and mathematics, the earth and environmental sciences.
- There is huge applications of chemistry in industries like pharmaceuticals ,plastic, petroleum, sugar, pigments etc.
- It plays a crucial role in the development of new materials and technologies.
- Important for production of food, fuel, and other essential products, understanding issues related to pollution and climate change.
- The aim of the department is to produce highly qualified chemists who have a broad knowledge of modern and applied chemical sciences and good career prospective.

Our Faculty Members

Name of the Faculty	Details	Name of the Faculty	Details
Dr. Sumita Kumari Panda 	Designation : Lecturer Qualification : M.Sc.,B.Ed, PhD Specialization :Organic chemistry	Smt. Nutan maharana 	Designation : Lecturer Qualification : M.Sc., M.Phil. Specialization : analytical, Inorganic chemistry
Smt. Archana Kumari Pradhan 	Designation : Lecturer Qualification : M.Sc., M.Phil., CSIR-NET (JRF),GATE Specialization :Organic ,physical chemistry	Lt.Smt. Nirupama Mah 	Designation : Demonstrator Qualification : M.Sc., Specialization : analytical chemistry
Smt. Suman Rani Patra 	Designation : Lab. Assistant Qualification : B.Sc.,		

SWOC analysis

STRENGTH	WEAKNENESS
•Qualified and experienced faculty members •Energetic and supportive staff .	•Lack of industry connection •Poor academic and economic background of students.
OPPORTUNITIES	**CHALLENGES**
•Confidence building through seminars •Creating awareness about self-employment •Group discussion and personality development through interactive sessions	•Better infrastructure facility •More number of chemicals and apparatus are required.

Curriculum

Semester	Course	Credits	Total marks	Semester	Course	Credits	Total marks
I	AECC-I	04	100	II	AECC-II	04	100
	C-I+ C-I Practical	04+ 02	75 + 25		C-III+ C-III Practical	04+ 02	75 + 25
	C-II+ C-II Practical	04+ 02	75 +25		C-IV + C-IV Practical	04+ 02	75 +25
	GE-I+GE-IPractical	04+02	75 +25		GE-II+ GE-II Practical	04+02	75 +25
		22	**400**			**22**	**400**
III	C-V+ C-V Practical	04+ 02	75 + 25	IV	C-VIII + C-VIII Practical	04+ 02	75 + 25
	C-VI +C-VI Practical	04+ 02	75 + 25		C-IX + C-IX Practical	04+ 02	75 + 25
	C-VII + C-VII Practical	04+ 02	75 + 25		C-X + C-X Practical	04+ 02	75 + 25
	GE-III + GE-III Practical	04+ 02	75 + 25		GE-IV+GE-IV Practical	04+ 02	75 + 25
	SECC-I	04	100		SECC-II	04	100
		28	**500**			**28**	**500**
V	C-XI + C-XI Practical	04+ 02	75 + 25	VI	C-XIII + C-XIII Practical	04+ 02	75 + 25
	C-XII + C-XII Practical	04+ 02	75 + 25		C-XIV + C-XIV Practical	04+ 02	75 + 25
	DSE-I+ DSE-I Practical	04+ 02	75 + 25		DSE-III+ DSE-III Practical	04+ 02	75 + 25
	DSE-II + DSE-II Practical	04+ 02	75 + 25		DSE-IV	06	75 + 25
		24	**400**			**24**	**400**
					Total	**148**	**2600**

Programme outcome

- The CBCS course curriculum of chemistry well designed and very promising.
- The course would help the students to enrich the subject knowledge and increase the confidence level in the field of both academic as and industry.
- It makes integration among various interdisciplinary courses in science stream to full fill the vision and mission of the course.
- It provides opportunity for the students to gain knowledge on various natural and industrial products, useful materials and also helps them to be familiar and expert in handling different chemistry based task after proper training.

Course Outcomes(CBCS Pattern)

- **Core Course I – inorganic chemistry-I**

  Structure of atom and their periodic properties. Types of bonding and properties related to it.

- **Core Course II – Physical chemistry-I**

  Different states of matter and a brief idea of electrolytes and the concepts related to electrolytes.

- **Core Course III:- Organic chemistry-I**

  Basic concepts of electron displacement,fundamental knowledge on stereochemistry,chemistry of aliphatic and aromatic hydrocarbons.

- **Core Course IV – Physical chemistry-II**

  Laws of thermodynamics and their application, chemical equilibrium and colligative properties of solution.

- **Core Course V- Inorganic chemistry-II**

  Occurance and purification of metals, acid-base concepts and properties of s- & p-block elements and their compounds.

- **Core Course VI:- Organic chemistry-II**

  Preparation ,properties and reactions of halogenated hydrocarbons ,alcohol, phenol, ether, carbonyl compounds, carboxylic acids and their derivatives with their mechanism , name reactions with mechanism.

- **Core Course VII:- Physical chemistry-III**

  Phase equilibrium ,different terms and phase diagram of some molecules,chemical kinetics,catalysis and surface chemistry.

- **Core Course VIII:- Inorganic chemistry-III**

Coordination chemistry, chemistry of Transition and inner-transition elements and their compounds & bio-inorganic chemistry.

- **Core Course IX:- Organic chemistry-III**

  Preparation, properties of nitrogen containing functional groups, related name reaction. Poly-nuclear hydrocarbons heterocyclic compound& alkaloids and terpenoids.

- **Core Course X:- Physical chemistry-IV**

  Conductivity , conductance of electrolytes, different laws, chemical cells. Calculation and application of EMF, Electrical properties of atoms and molecules .

- **Core Course XI:- Organic chemistry-IV**

  Brief idea about UV spectroscopy , IR-spectroscopy and its application in functional group analysis, NMR spectra and interpretation of organic compounds, Mass spectroscopy, carbohydrates.

- **Core Course XII:- Physical chemistry-V**

  Quantum mechanics, Knowledge on VB and LCAO-MO theories and their application, physical spectroscopy like Rotational, Vibrational, Electronic and Raman, concepts of photochemistry.

- **Core Course XIII:- inorganic chemistry-IV**

  Organo-metallic chemistry. Preparation, structure of metal carbonyls ,Catalytic activity organo-metallic compounds , reaction mechanism of complex compunds.

- **Core Course XIV:- Organic chemistry-V**

  Aminoacids,peptides and proteins, enzymes and their mechanism, nucleic acid, lipids,dyes and different types of drugs in pharmacy.

- **Core Course DSE-I:- Polymer chemistry**
- Preparation, structure, properties and application of polymers, kinetics and mechanism of polymerization reaction, Determination of molecular weight of polymers and glass transition temperature .
- **Core Course DSE-II :-Green chemistry**
- Introduction, principles of green chemistry. Synthesis and uses in bio-gas, bio-diesel and bio-ethanol for sustainable development .
- **Core Course DSE-II I:-Industrial chemicals and Environments**
- Industrial gases, inorganic chemicals application ,hazards in handling. Air pollution, water pollution and their effects, treatments and managements. Working of Biogeochemical cycles.
- **GE-1 :-Atomic structure ,Bonding,General Organic Chemistry & Aliphatic hydrocarbons**
- Structure of atom, their properties, reactivity and bonding. Different concepts of electron displacement, reactive intermediates ,stereochemistry and preparation ,properties of aliphatic hydrocarbons.
- **GE-2:- Chemical energies,Equilibria & functional organic chemistry**
- Basic concepts of Chemical thermodynamics and chemical equilibrium.Preparation and properties of halogenated hydrocarbons ,alcohol, phenol, ether, carbonyl compounds, carboxylic acids and their derivatives with their mechanism , name reactions with mechanism.

Practical

- **CC-1:-**

  Various acid-base titration, Standardization and estimation of Fe(II) ion.
- **CC-2:-**

  Determination of surface tension ,viscosity of aqueous solutions .Preparation of buffer solution of different pH ,pH metric titration .
- **CC-3:-**

  Determination of melting point, boiling point of liquid compound,Identification of unknown organic compound of C,H,O system,Separation and purification of component .
- **CC-4:-**

  Determination of various thermodynamic properties such as heat capacity of calorimeter , enthalpy of neutralization , enthalpy of hydration .
- **CC-5:-**

  Iodometric titration and Inorganic salt preparation.
- **CC-6:-**

  Acetylation and Benzoylation of amines and phenol ,Bromination of acetanilide,Nitration of acetanilide or nitrobenzene
- **CC-7:-**

  Study of kinetics of the following reaction:- integrated rate method,saponification ,compare the strength of acid studying kinetics of hydrolysis.

- **CC-8:-**

  Preparation of inorganic complexes ,Complexometric titration ,Gravimetric analysis
- **CC-9:-**

  Detection of extra element (N,X,S)in organic compound.Quantitative analysis of unknown organic compound under CHN system and determination of melting point and boiling point and preparation of their derivative.
- **CC-10:-**

  Conductometric and Potentiometric titration
- **CC-11:-**

  Qualitative analysis of unknown organic compound containing simple bifunctional group .Quantitative estimation of sugar.
- **CC-12:-**

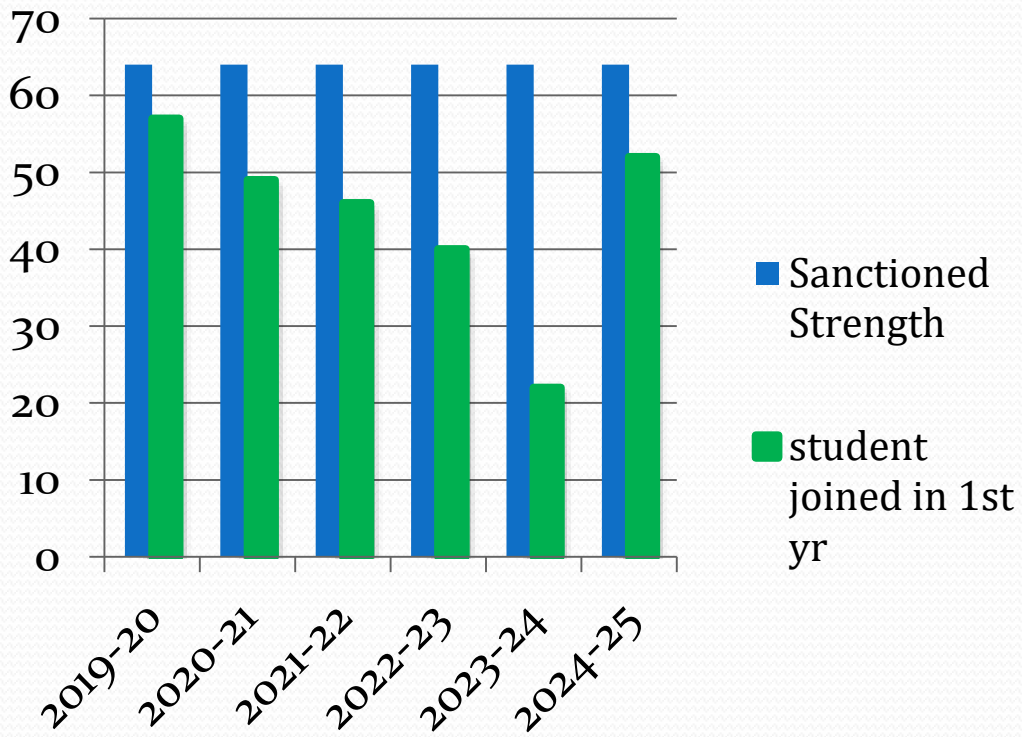
  Spectroscopy /colorimetric,determine the λ(max) value.Verify Lambert's –Beer's Law and determine the concentration
- **CC-13:-**

  Qualitative analysis of mixture containg two cationic and two anionic radicals.
- **CC-14:-**

  Preparation of aspirin and methyl orange,estimation of phenol and aniline by bromination method.

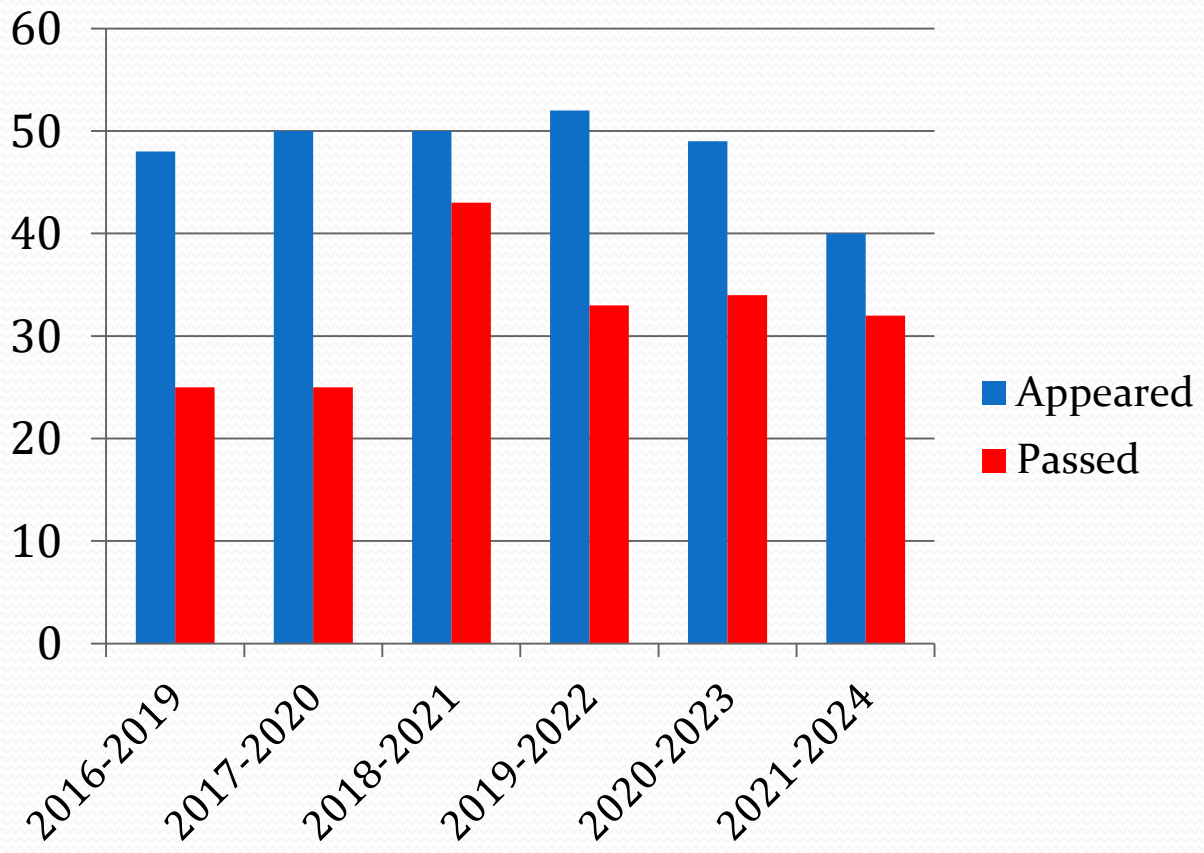
Admission Report

Sl. No.	Joining Session	Sanctioned strength	Students Joined in 1st Yr
1.	2019-2020	64	57
2.	2020-2021	64	49
3.	2021-2022	64	46
4.	2022-2023	64	40
5.	2023-2024	64	22
6.	2024-25	64	52



Result analysis

Batch	Appeared	Passed
2016-2019	48	25
2017-2020	50	25
2018-2021	50	43
2019-2022	52	33
2020-2023	49	34
2021-2024	40	32



Academic activity

Freshers

Women's Day

Hackathon

Farewell

Teachers Day

Winners in Essay Competition

FIELD BASED LEARNING

- **Project work :**

  The students of UG 6th Semester do their project work on the topics as per the CBCS guidelines, assigned by the faculty members of the department. The work is under the paper DSE carrying 100 marks.

- **Study Tour :**

  The department organizes study tours for the students to reputed educational institutions like NISER (BBSR), NIST(BAM) etc. for the enhancement of practical based knowledge on advance instruments and their working principles like Mass spectrometer, NMR, UV-IR, XRD, FTIR etc.

Sl. No.	YEAR	Name of the Institution
1.	Jan, 2020	NISER,BBSR
2.	Dec,2022	NISER,BBSR
3.	Feb, 2023	NIST, BAM

- **Departmental Seminars :**
- Departmental seminars are conducted every month and the students are encouraged to present the topic related to the syllabus in presence of Resource persons, invited from other institutions , departmental staff members and students.erson

Teaching, Learning and Innovation

- It provides an effective teaching –learning process and interactive sessions in the classroom between the teachers and students.
- Remedial classes for slow learners or who need special attention for up-liftment.
- Teachers also attend various seminars, conferences, workshops, refresher courses conducted by university and other colleges to encourage students and inspire them for future studies and research.
- Assignments, Projects, Group discussion, Class tests are done .
- Performance of the students are reviewed after every examination and accordingly they are guided for betterment.
- Parents-Teacher meeting (PTM) for all round development of students.

NEP 2020 implementation

- The main aim of NEP is to make education flexible, holistic, multidisciplinary and aligned with the needs of students and society.
- Increased focus on theoretical and experimental learning.
- It provides various core courses like major papers and minor papers.
- In multidisciplinary course basket nano material and application ,environmental chemistry etc. in order to enhance the quality of education.
- It aims to help students explore research areas in chemistry and related fields.

Future plan of the department

- To set up smart class room to improve the teaching learning process.
- More computer facility and development of research lab.
- To organize national level conference /seminars in the field of chemical science.
- Regular industry visit for exposure of students

THANK YOU