KHALISANI MAHAVIDYALAYA

AISHE CODE – C44706

Khalisani, Chandannagar, Hooghly, Pin-712138

Ph. No. (033)-2682-5530/9517/8856

Email- khalisanimahavidyalaya@gmail.com

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ESTD 1970

Enlightenment through Education

PROGRAMME OUTCOME (PO) of the department of Chemistry

- PO1:Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry
- PO2: Solving the problem independently and also think methodically, independently and draw a logical Conclusion.
- PO3: Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- PO4: Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community
- PO5: Find out the green route for chemical reaction for sustainable development
- PO6: To inculcate the scientific temperament in the students and outside the scientific community.
- PO7: Use modern techniques, various equipment's and Chemical software's

PROGRAMME SPECIFIC OUTCOME (PSO) of the department of Chemistry

- The chemistry graduates are expected to gain knowledge of the fundamental concepts of chemistry and applied chemistry through theory studies and practical experiments. These fundamental concepts would be reflected in the latest understanding of the field to keep continues its progression. Hence, students will be able to secure applications in the following fields:
  Clinical biochemist; b) Chemical development engineer; c) Toxicologist; d) Laboratory assistant; e) Research assistant; f) Textile industry; g) Biotechnology; h) Plastics and Polymer industry; i) Quality controller; j) Teacher; k) Biochemistry; l) Forensic scientist & assistants; m) Analytical chemist; n) Petrochemical and Pharmaceutical industries etc.
- Chemistry graduates are expected to achieve critical thinking ability to design, carry out, record and analyse the results of chemical reactions. They can have that much potential and confidence; they can overcome many difficulties with the help of their sharp scientific knowledge and logical approaches.
- A student may opt for higher studies such as M.Sc., Ph.D. programs and hence will be eligible for the chemist / group leader in the R& D unit of any Chemistry related industry / Pharmaceutical industry or recruitment of scientific officer in Central / State Government related jobs through advertisements.

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Mapping/Co-relation Program Outcome (PO) & Course Outcome (CO)
Department: Chemistry

Sl. No.	Course Outcome	PO1 (Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry)	PO2 (Solving the problem independently and also think methodically, independently and draw a logical Conclusion)	PO3 (Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions)	PO4 (Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community)	PO5 (Find out the green route for chemical reaction for sustainable development)	PO6 (To inculcate the scientific temperament in the students and outside the scientific community)	PO7 (Use modern techniques, various equipment's and Chemical software's)
1	CO1	✓	×	✓	✓	✓	✓	×
2	CO2	✓	✓	✓	✓	✓	✓	×
3	CO3	✓	✓	×	✓	✓	✓	✓
4	CO4	✓	✓	✓	✓	✓	✓	×
5	CO5	✓	✓	✓	✓	✓	✓	×
6	CO6	✓	✓	✓	✓	✓	✓	×
7	CO7	✓	✓	✓	✓	✓	✓	×
8	COSEC1	✓	✓	✓	✓	✓	✓	✓
9	CO8	✓	✓	✓	✓	✓	✓	×
10	CO9	✓	✓	✓	✓	✓	✓	✓
11	CO10	✓	✓	✓	✓	✓	✓	✓

12	COSEC2	✓	✓	✓	✓	✓	✓	✓
13	CO11	✓	✓	✓	✓	✓	✓	✓
14	CO12	✓	✓	✓	✓	✓	✓	✓
15	CODSE1	✓	✓	✓	✓	✓	✓	✓
16	CODSE2	✓	✓	✓	✓	✓	✓	✓
17	CO13	✓	✓	✓	✓	✓	✓	✓
18	CO14	✓	✓	✓	✓	✓	✓	✓
19	CODSE3	✓	✓	✓	✓	✓	✓	✓
20	CODSE4	✓	✓	✓	✓	✓	✓	✓

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COURSE OUTCOME (CO) of the department of Chemistry

Course Outcome of B.Sc. General Chemistry					
Semester	**Program**	**Course Code**	**Course Title**	**Credit**	**Course Outcome**
1	B.Sc. (Gen)	CC-1A	Atomic Structure, Chemical Periodicity, Acids And Bases, Redox Reactions, General Organic Chemistry & Aliphatic Hydrocarbons	6 (Th:4; Pr:2)	i)preliminary idea of atoms, molecules and their abilities to act as acids & bases. ii) How concept of Oxidation number, ionic balance method involves to explain redox behavior of elements during chemical changes. iii) Fundamental and basic organic chemistry helps to explain Name Reactions, detection of functional groups, and their stereo chemical properties.
2	B.Sc. (Gen)	CC-1B	States of Matter & Chemical Kinetics, Chemical Bonding & Molecular Structure, P-Block Elements	6 (Th:4; Pr:2)	i) Physical Characteristics of gases, liquids and solids, Origin of liquid viscosity and gas viscosity. ii) Detection of unknown acid and basic radicals present in the inorganic salt. iii) different types solid systems and their properties, iv) Nematic and Sematic liquid crystals and their applications. v) Concept of MO and LCAO approach towards the combination of atoms and controlling their bond orders, bond strengths.
3	B.Sc. (Gen)	CC-1C	Chemical energetic, equilibria, organic chemistry	6 (Th:4; Pr:2)	i) Basic concept of thermodynamics helps to explain homogeneous and heterogeneous chemical equilibrium. ii) Concept of strong, moderate and weak electrolytes. iii) different kinds of buffer solutions and their specific uses. iv) Organometallic chemistry and their uses.
4	B.Sc. (Gen)	SEC-1	Analytical clinical biochemistry	2	Concept of clinical biochemistry helps to detect different kinds of disease by blood and urine analysis.

4	B.Sc. (Gen)	CC-1D	Solutions, Phase Equilibria, Conductance, Electrochemistry & Analytical and Environmental Chemistry	6 (Th:4; Pr:2)	i) application of thermodynamics in ideal and non-idea solutions, phase diagrams, distillation of solvents and azeotrope formation. ii) Replacement of conventional acid - base titration by conductometric titrations without use of indicator. iii) Distinction between Electrolytic cell and Galvanic cell and their applications towards potentiometric titrations. iv) Use of analytical chemistry towards the chromatographic purification process. v) How to maintain water quality standards by measuring BOD, COD, TDS, hardness parameters. vi) Application of reverse osmosis in the commercial market in water purifiers (EUREKA FORBES, KENT etc. vii) Use of electro dialysis in the case of kidney failure patients by purifying blood.
4	B.Sc. (Gen)	SEC-2	Pharmaceuticals Chemistry	2	Findings of specific nature of organic compounds controlling drug industry and their potential applications towards medicines for different diseases.
5	B.Sc. (Gen)	DSE-1A	Transition Metal & Coordination Chemistry, Analytical and Industrial Chemistry	6 (Th:4; Pr:2)	Concept of 3d series transitions elements and lanthanides and their complexing abilities to explain fascinating inorganic chemistry and their potential applications.
5	B.Sc. (Gen)	Sec-4	Polymer Chemistry	2	One can get the idea of classification of polymers, preparation, structure, and physical, chemistry properties and along with its applications in various industrial fields.
6	B.Sc. (Gen)	DSE-1B	Functional Group Organic Chemistry and Industrial Chemistry	6 (Th:4; Pr:2)	i) Preparation and reactions of functional group approach towards famous Name reactions and their uses in protein chemistry and carbohydrate chemistry. ii) Industrial use of polymers, paints, varnishes, drugs, oil, fat, soap, detergent, pesticides and food additives.

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Chemistry Hons.: Course Outcome						
Sl.No.	**Name of the Programme**	**Semester**	**Course Code**	**Course Title**	**Number of Credit**	**Course Outcome (CO)**
1	B.Sc. Hons	1st	CC-1	Organic Chemistry-1	6 (Th:4; Pr:2)	It will help students to understand the mechanisistic path of organic reactions and their optical properties.
2	B.Sc. Hons	1st	CC-2	Physical Chemistry -1	6 (Th:4; Pr:2)	Concept of thermodynamics and kinetics of reactions to understand the endothermic and exothermic chemical reactions and their mechanistic path ways suggested based on chemical kinetic.
3	B.Sc. Hons	2nd	CC-3	Inorganic Chemistry-1	6 (Th:4; Pr:2)	Students will get preliminary idea about Atomic spectra, basic quantum chemistry, electronegativity, electron affinity, concept redox reactions and precipitation reactions.
4	B.Sc. Hons	2nd	CC-4	Organic Chemistry-II	6 (Th:4; Pr:2)	Students will be able to understand about chirality, reaction thermodynamics, different intermediates, tautomerism, substitution and elimination reaction.
5	B.Sc. Hons	3rd	CC-5	Physical Chemistry-II	6 (Th:4; Pr:2)	Physical propertiesof liquid and its experimental verification along application of quantum chemistry.
6	B.Sc. Hons	3rd	CC-6	Inorganic Chemistry-II	6 (Th:4; Pr:2)	Thorough knowledge of different kinds bonding, concept radio activity and its application in various fields of modern science & technology.
7	B.Sc. Hons	3rd	CC -7	Organic Chemistry-III	6 (Th:4; Pr:2)	Important alkene and alkyne addition reactions, understanding of Name reactions and use of organometallic chemistry in catalysis.
8	B.Sc. Hons	3rd	SEC-1	Basic Analytical Chemistry	2	Analysing and use of experimental data, use of pH meter in soil analysis, water analysis and purifications, purification of organic compounds using chromatographic analysis, use of chemistry in cosmetics.
9	B.Sc. Hons	4th	CC-8	Physical Chemistry-III	6 (Th:4; Pr:2)	Appplications of thermodymics and electrical propertis of molecules, quantum chemistry related to theoritical studies of molecules etc can be studied by a student.
10	B.Sc. Hons	4th	CC-9	Inorganic Chemistry-III	6 (Th:4; Pr:2)	Students can gather knoledge about applications of chemistry in metallargy, chemical properties of s-p block elements, applications of silicones , industrial use of chemicals etc
11	B.Sc. Hons	4th	CC-10	Organic Chemistry-IV	6 (Th:4; Pr:2)	A student acquires the knowledge of organic spectroscopy in his/her advanced studies.

12	B.Sc. Hons	4th	SEC-2	Pharmaceutic als Chemistry	2	Use of chemistry in drug systhesis and its use may be applicable for industry related jobs.
13	B.Sc. Hons	5th	CC-11	Inorganic Chemistry-IV	6 (Th:4; Pr:2)	Astudent can gather knowledge of cooridination chemistry ant its application in bio -inorganic chemistry field.
14	B.Sc. Hons	5th	CC-12	Organic Chemistry -V	6 (Th:4; Pr:2)	This chapter helps a student to get the idea of preparation of heterocyclic compounds via different Name Reactions and its application in medicinal chemistry. Besides these one can get the idea about pericyclic reactions, carbohydrates, important biomoleclecues , alkaloids, terpenoids and their specific applications.
15	B.Sc. Hons	5th	DSE-1	Advanced Physical Chemistry	6 (Th:4; Pr:2)	A student acquires the knowledge of diferent forms of solids, statistical thermodynamics, polymer synthesis, diplomomment and its application in spectroscopy.
16	B.Sc. Hons	5th	DSE-2	Analytical methods in chemistrty	6 (Th:4; Pr:2)	This paper gives an idea how spectroscopy is helpful to identify the organic molecles and also hepls a student to know about the purification process to isolate aa compound in very pure form.
17	B.Sc. Hons	6th	CC-13	Inorganic Chemistry -V	6 (Th:4; Pr:2)	Biological application of important metal ions, enzymes and uses of organomettallic compounds as catalysts.
18	B.Sc. Hons	6th	CC-14	Physical Chemistry-IV	6 (Th:4; Pr:2)	Identification of organic and inorganic compounds by IR, UV, Microwave, Raman spectroscopy and different kinds of physical phenomena like, surface tension, adsorption and application of colloids in medicine.
19	B.Sc. Hons	6th	DSE-3	Polymer Chemistry	6 (Th:4; Pr:2)	One can get the idea of classification of polymers, preparation , structure, and physical, chemistry properties and along with its applications in various industrial fields.
20	B.Sc. Hons	6th	DSE-4	Dissertation followed by Power Point Presentation	6	At the end semester, a student can get a scope to work with a departmental teacher, studies thoroghly the allotted topic, do some experimental work, established the results & discussion part and important conclusions thorough power point presentations. Link forPower Point Presentations of final year students given :**https://drive.google.com/drive/folders/1qMFl_B4LnPVJ1huKp4IjduwiLEvSaLPl?usp=sharing**