About the Department

Sikkim Government College, Namchi formally known as Namchi Government College, Kamrang, Sikkim was established on 18th August 1995. With the increase in the number of students in Class 12 Science in different Government and Private Schools in Sikkim, the State Government had established the Science Departments on June 2012. In the same year Department of Chemistry was established and it was headed by Dr. Satyadeep Singh Chettri. Dr. Madav Prasad Thapa who was the principal at the time of establishment of Science Department, he welcomed the newly added department under Sikkim Government College, Namchi. The following faculties were added and relieved after the Inception of Chemistry Department since 2012.

1. Dr. Satyadeep Singh Chettri	June 2012- December 2012.
2. Mr. Devendra Chhetri	February 2013 - do
3. Mr. Biswa Gurung	2013- 2014
4. Miss Dawa Doma Bhutia	October 2014 - do
5. Dr. Saurav Kafley	March 2015-2021
6. Dr. Umesh Rizal	December 2018-2021
7. Dr Govinda Prasad Luitel	November 2019 - September 2024
8. Mr. Sonam Wangchuk Lepcha	Janurary 2021 - do
9. Mr. Yoash Targain	September 2021 – do
10. Dr. Chanchal Das	August 2024 – do

Today our department has five teaching Faculties and two Non Teaching Faculties. Students from our department are doing research in different University in India; they are also working as Post Graduate Teachers in different Government and Private Schools. Most of the students have Completed M.Sc. from Sikkim Manipal University and Sikkim University. Some students are working in abroad as well.

Numbers of students from date of inception of college are as follows.

Sl. No.	Year	No. of Students	Remarks
1	2012	09	
2	2013	34	
3	2014	18	

4	2015	20	
5	2016	32	
6	2017	27	
7	2018	23	
8	2019	32	
9	2020	17	
10	2021	17	
11	2022	10	
12	2023	08	
13	2024	07	

Faculty Profile

Latest profiles have been submitted through Google form.

Courses and Syllabus

B.Sc. (HONOURS) CHEMISTRY

1. Introduction:

The B.Sc. (Honours) Chemistry program is a 3 (three) years Degree program divided into 6 (six) semesters under choice based grading system. The graduation degree is provided by Sikkim University. The program is a fascinating trek into the world of atoms, molecules, and chemical reactions. One can gain deep insight into the fundamental principles that govern the behavior of matter at the molecular level which could bridge to pursue a career in the field of pharmaceuticals, research, academia, etc. The first three Chemistry papers are compulsory for all the students in B.Sc. Programmes and are taught for first three semesters.

Sl no	Paper no	Name of Paper	Credits	Marks
1	CHE-UG-E101	Introduction to Chemistry I	4	100
2	CHE-UG-E201	Introduction to Chemistry II	4	100
3	CHE-UG-E301	Introduction to Chemistry III	4	100
4	CHE-UG-C401	Organic Chemistry	4	100
5	CHE-UG-C402	Inorganic Chemistry	4	100
6	CHE-UG-C501	Physical Chemistry	4	100
7	CHE-UG-C502	Spectroscopy	4	100
8	CHE-UG-C601	Instrumental Techniques	4	100

9	CHE-UG-C602	Bio and Medicinal Chemistry	4	100
	TOTAL		**36**	**900**

2. Learning outcome based curriculum framework in B.Sc. (Honours) Chemistry:

CHE-UG-E101: Introduction to Chemistry I

Unit I: Inorganic Chemistry

1. Atomic Structure
   Students were able to understand the theory behind the determination of structure of atom and to calculate the radius and energy of H atom using Bohr's model.
   Understand Sommerfield Theory, Quantum numbers, Schrodinger wave equation, eigen value, eigen function. Plotting a graph of Probability distrubtion curve.
2. Peoridic Table:
   Students were able to classify the elements with respect to their periods and groups.
   Understand the idea of ionization enthalpy, vanderwaal radii, and ionic radii.
   Calculation of effective nuclear charge using slaters Rule.
   Calculation of electronegativity using mulliken, Alferd Roschow experiment.
3. Chemical Bonding
   Understand the radius ratio, Coordination number and ionic bond formation.
   Explain Born Lande Equation and Born Haber Cycle
   Solubility of ionic solids and solvation energy

Unit II: Organic Chemistry

1. Understand the structure and reactivity of alkanes, alkenes, and alkynes, including their hybridization.
2. Identify different functional groups and their characteristics in organic compounds.
3. Analyze various types of isomerism, with a focus on constitutional isomerism.
4. Explain the concepts of inductive effect, mesomeric effect, hyperconjugation, resonance, steric effect, and their impact on reactivity and product formation.
5. Differentiate between thermodynamically and kinetically controlled products in substitution, elimination, and addition reactions.
6. Describe substitution (S_N1, S_N2), elimination (E1, E2), addition reactions (C=C and C=O), and rearrangement reactions.
7. Understand the role of reactive intermediates, including carbocations, carbanions, carbenes, nitrenes, and free radicals, in organic reactions.

Unit III: Physical Chemistry

1. Gaseous State
   To describe the properties of gases
   Use kinetic molecular theory to explain gas behaviour
   Understand the basis of gas laws and how to use those laws
   Use kinetic molecular theory to explain the distribution of molecular speed of gases
   Recognize why gases do not behave as ideal gas.
2. Solid States
   Understanding the arrangement of atoms or ions in crystalline solids including different crystal lattice structures and unit cells.
   Learning about the 14 basic 3-D lattice structures that form the basis for describing crystalline solids.
   Exploring the principles of X-Ray diffraction and how it is used to determine crystal structures and lattice parameters.
   Understanding the bands, band gaps and the distinction between conductors, insulators and semiconductors based on electronic band structures.
3. Thermodynamics
   Understand basic concept of various thermodynamic properties
   Able to apply 1st law to analyze energy conservation in various processes like closed and open systems and understand concepts like internal energy and work.
   Develop problem solving skills related to thermodynamics.

Unit IV: Organic Chemistry Practical

1. Develop practical skills in qualitative analysis of organic compounds, including element detection and functional group identification.
2. Demonstrate the ability to determine the melting point of organic compounds accurately.

CHE-UG-E201: Introduction to Chemistry II

Unit I: Inorganic Chemistry

1. Chemical Bonding
   Students were able to understand the Concept of sigma and pi bonding, Valence Bond Theory and Hybridization
   VSEPR theory, structure and shapes of molecules
   Molecular orbital theory and molecular configuration and molecular orbital diagram of homonuclear and heteronuclear molecules.
2. Chemistry of Elements:

Explain the Reactivity of elements special reference to diagonal relationship, Catenation Property, lanthanide Contraction and compounds of noble gases.

3. Acid and Base:
   Arrhenius Theory, Bronsted Lowry Theory, Lux Flood Concept and Lewis concept.

Unit II: Organic Chemistry

1. Comprehend the preparation and properties of primary, secondary, and tertiary alcohols, and distinguish them using Victor Meyer and oxidation methods.
2. Understand the methods of converting hydroxyl groups to other functional groups in organic compounds.
3. Describe the general methods of preparation of aldehydes and ketones, including nucleophilic addition and condensation reactions.
4. Explain specific named reactions such as Aldol condensation, Cannizzaro, haloform, benzoin, Reimer-Tiemann, and Perkin reactions.
5. Analyze aromaticity, Huckel's rule, resonance, antiaromaticity, and the electrophilic and nucleophilic substitution reactions of aromatic compounds.

Unit III: Physical Chemistry

1. Thermodynamics II
   Able to explain concept of entropy and its relationship with second law of thermodynamics.
   Able to understand statements such as Clausius, Kevin Planck statement and comprehend the implications of these statements on heat engines and refrigerators.
   Able to understand Carnot cycle and its role benchmark for other thermodynamic processes and to calculate efficiency of the cycle using temperature of the reservoir.
   Able to grasp the relationship between entropy and probability.
2. Chemical Equilibrium and Phase Rule
   Able to explain the principles of chemical equilibrium, including concepts of Le Chatelier's principle and dynamic equilibrium.
   Able to calculate equilibrium constants using various methods such as concentration, temperature and pressure.
   Able to use phase rule to analyze and predict number of degrees of freedom in complex system involving multiple components and phases.
   Able to solve equilibrium related problems such as calculating equilibrium concentrations etc.
3. Chemical Kinetics
   Able to understand the concept of reaction rates and how they are affected by factors such as conc, Temp and catalysts.

Able to derive and interpret rate laws and rate expressions for various types of reactions.
Understand the concepts of reaction mechanisms.
Able to learn about catalysis, its types and their impacts on reaction rates.

4. Photochemistry
   Able to grasp fundamental concepts of electronic transitions, excited states and various pathways molecules can take upon absorbing light energy
   Familiar with laws of photochemistry which describes the factors influencing photochemical reactions.
   Able to recognize its practical implications of photochemistry in different fields.

Unit IV: Inorganic Chemistry Practical

1. Identify and analyze various anions and cations qualitatively.
2. Determine the interfering ions and its separation.
3. Prepare standard solutions, will have knowledge about normality, molarity, gram equivalent weight.

CHE-UG-E301: Introduction to Chemistry III

Unit I: Inorganic Chemistry

1. Coordination Chemistry:
   Warners Theory, Ligands and its classification and IUPAC naming and EAN rule were deeply discussed.
   Valence bond Theory and Crystal Field Theory were Discussed in Details.
   Explain high spin and Low spin Complex and Calculation of CFSE.
2. Radioactivity and Nuclear Chemistry:
   Explain Natural and Artifical Radioactivity with example
   Half life, Average life, Radioactive equilibrium, n/p ratio, Meson Field Theory, mass defects, Binding energy.
   Nuclear fission, nuclear fusion, Radiocarbon dating.
3. Analytical Chemistry:
   Understanding the idea of calculating different observation by using mean, median mode and standard deviation.
4. Concept behind theory of acid base titration and redox titration.

Unit II: Organic Chemistry

1. Understand the concepts of reactive intermediates and reactions involving amines, including methods of separation and preparation of primary amines.

2. Describe diazonium salts and their reactions, and compare the stability of diazomethane with aromatic diazonium compounds.
3. Comprehend optical isomerism, chiral centers, and optical isomerism in lactic and tartaric acids.
4. Differentiate between enantiomers and diastereomers in organic compounds.
5. Understand geometrical isomerism, particularly in maleic and fumaric acids.
6. Describe the definition, classification, reactions, and determination of structures of carbohydrates, focusing on glucose and fructose, mutarotation, and the inversion of cane sugar.

Unit III: Physical Chemistry

1. Surface Chemistry

   Able to understand various types of adsorption and factors influencing adsorption process on solid surface.

   Able to gain knowledge about different isotherm which describes the adsorption behavior of gases on solid surfaces and calculation of surface area.

   Able to explore properties of colloidal systems.
2. Electrochemical Cells

   Able to explain components of an electrochemical cell including cathode,anode electrolytes and salt bridge.

   Able to write and interpret cell notations

   Grasp concepts of electrode potential and standard electrode potential.

   Able to apply Nernst equation to calculate cell potential under non-standard conditions.

   Able to understand various practical applications of electrochemical cells
3. Ionic Equilibrium

   Able to understand and define the concept of ionic equilibrium.

   Able to calculate and interpret equilibrium constants for various chemical reactions involving ions and understand how these constants reflect the extent of reaction completion.

   Able to grasp the concept of common ion effect and effect of common ion effect on equilibrium concentrations.

   Able to learn how to calculate and prepare buffer solutions.

   Unit IV: Physical Chemistry Practical

1. Experimentally determine viscosity and surface tension of various aqueous solutions
2. Colorimetrically determine the pH of an unknown solution by preparing a set of buffer solutions.

CHE-UG-C401: Organic Chemistry

Unit I: Photochemistry of Organic Compounds/ Pericyclic Reactions

1. Understand the general cconcepts of photochemistry in organic compounds/ including the Frank-Condon principle.
2. Differentiate between singlet and triplet states in photochemical processes.
3. Comprehend Norrish type I and II processes, Paterno-Buchi reaction, Barton reaction and other photochemical reactions involving photo-oxidation and photo-reduction.
4. Analyze rearrangement reactions that occur as a result of photochemical processes.
5. Gain knowledge and understand the concepts of phase, symmetry, MO theory, bonding, anti-bonding, and non-bonding molecular orbitals in pericyclic reactions.
6. Describe various types of pericyclic reactions, such as electro-cyclic reactions and sigmatropic reactions.
7. Comprehand cycloaddition reactions, particularly the Diels-Alder reaction and its supra and antarafacial variants.
8. Explain the Claisen rearrangement reaction and its mechanism.

Unit II: Heterocyclic Compounds

1. Understand the general concept of heterocyclic compounds and their importance in organic chemistry.
2. Describe the methods of preparation for furan, pyrrole, pyridine, indole, quinoline, and isoquinoline.
3. Analyze the properties and reactivity of furan, pyrrole, pyridine, indole, quinoline, and isoquinoline.
4. Explain the Fisher-Indole synthesis, Skraup synthesis, and Bischler-Napiereski reaction and their applications in heterocyclic compound synthesis.
5. Comprehend stereochemistry, chirality of molecules, and the concept of stereoisomers.
6. Differentiate between D, L, R, S systems and E, Z systems for the notation of stereocenters.
7. Perform conformational analysis of n-butane, 1,2-ethanediol, and understand the energy profile curves, including dihedral angles, eclipse, staggered, and gauche conformations.
8. Represent molecules using Newman, Sawhorse, and Fischer projection formulas.
9. Describe the concept of atropisomerism with chirality in allene and biphenyl systems.
10. Analyze the conformational properties of cyclohexane and substituted cyclohexane.

Unit III: Use of Reagents in Organic Synthesis

1. Identify the reagents OsO_4, SeO_2, $Pb(OAc)_4$, HIO_4, NBS, B_2H_6, $NaBH_4$, 9-BBN, CrO_3, $LiAlH_4$, n-Butyllithium, and MCPBA, and understand their roles in organic synthesis.
2. Understand the application and limitations of Na in liquid ammonia as a reagent.
3. Interpret the mechanisms of reactions involving the mentioned reagents.

Unit IV: Organic Chemistry Practical

1. Identify solid organic compounds based on their functional groups and determine their melting points/boiling points.
2. Separate and identify organic compounds using TLC (Thin Layer Chromatography) or paper chromatography based on their R_f values.

CHE-UG-C402: Inorganic Chemistry

Unit I: Elemental Chemistry

1. Students will be able to learn about preparation, properties and structures of different compounds from group III elements like boranes, carboranes, borax, borazine.
2. Able to learn about preparation, properties and structures of different compounds from group IV elements like lamellar compounds, metal carbonyls, fullerenes, carbides, fluorocarbons, silicates, silicons.
3. Able to learn about preparation, properties and structures of different compounds from group V elements like hydride, hydrazine, phosphorus and hypophosphorus acid, phosphonitriles, sodium nitroprusside and oxyacids of phosphorus.
4. Able to learn about preparation, properties and structures of different compounds from group VI elements like oxides, peroxides, superoxides, hydrides of sulphur
5. Able to learn about preparation, properties and structures of different compounds from group VII elements like acids, oxyacids of halogens, anamolous behaviour of F and interhalogen, polyhalides and pseudohalides.

Unit II: Oxidation and Reduction

1. Studied of redox potential data, analysis of redox stability in water.
2. Frost Latimer and Pourbax Diagram.
3. Limitation of Valence Bond Theory.
4. Crystal Field Theory Octahedral, Tetrahedral, and Square Planar Complex, Jahn Tellar splitting.
5. L-S coupling, Term symbols and Microstate.

6. dd spectra, selection rule and Orgel Diagram

Unit III: Non Aqueous Solvents

1. Types of solvets and their Characteristics.
2. Reactions of non aqueous solvents with special reference to liq HF, LIq NH3, liq SO2
3. Ligands, Nomenclature of sigma bonded and pai bonded compounds, structure and bonding in metallocene, Zeise salt, dibenzene chromium, 18 electron rule.
4. Occurrence of Lanthanides, electronics configuration, oxidation number, lanthanides contraction, extraction of lanthanides.

Unit IV: Practical

1. Quantitative analysis of Fe salt using standard mohr salt solution Permaganometrically
2. Quantitative analysis of Fe salt using standard mohr salt solution Dichromatometrically
3. Quantitative analysis of Cu salt using Cupper salt solution Iodometrically.

CHE-UG-C501: Physical Chemistry

Unit I: Quantum Mechanics

1. Understand and apply quantum mechanics postulates and operator.
2. Analyze particle in a box model rigorously including energy level and wave function.
3. Comprehend degeneracy and its significance in quantum system.
4. Analyze bonding in homonuclear and hetronuclear diatomic and tri atomic molecule using Molecular Orbital theory.
5. Strong understanding of quantum mechanics and chemical bonding enabling analysis of atomic and molecular system.

Unit II: Polymers

1. Explain the mechanism of polymerization and their application.
2. Understand the nature of solids state, including crystal systems, Bravais lattices and X-ray diffraction analysis.
3. Interpret diffraction pattern and apply Miller indices to describe crystal structure.

Unit III: Statistical Thermodynamics

1. Understand thermodynamics probability, entropy and Boltzmann distribution.
2. Calculate partition function and interpret thermodynamic functions.
3. Explain specific heat of solid's using Einstein theory and Debye's T^3 law.

4. Describes kinetics of complex reactions and different types of reaction mechanism.
5. Apply theories of reaction rates.
6. Analyze primary and secondary salt effect in chemical kinetics.

Unit IV: Practical

1. Demonstrate proficiency in determining the molar mass of a polymer using viscometric methods.
2. Analyze and determine the kinetics of acid hydrolysis of esters.
3. Determine the distribution coefficient of iodine between CCl4 and water.
4. Investigate the adsorption behaviour of oxalic acid and acetic acid on activated charcoal.

CHE-UG-C502: Spectroscopy

Unit I: Molecular symmetry & Group theory

1. Understand the concept of molecular symmetry, including symmetry elements and symmetry operations.
2. Apply group theory principles to determine the symmetry of molecules and construct group multiplication tables for molecules like H_2O and NH_3.
3. Comprehend the interactions of electromagnetic radiation with molecules and various types of spectra.
4. Explain the Born-Oppenheimer approximation and its significance in molecular spectroscopy.
5. Analyze rotational spectroscopy, including the rigid rotator model, selection rules, and determination of bond lengths in diatomic and triatomic molecules through isotopic substitutions.

Unit II: Vibrational Spectroscopy

1. Describe vibrational terms and the classical equation of vibrations for diatomic molecules.
2. Understand concepts related to vibrational energy, zero-point energy, force constants, and Morse potential in diatomic molecular vibrations.
3. Explain the concept of anti-harmonicity and determine dissociation energies of diatomic molecules.
4. Analyze vibrational and rotational spectroscopy, including the P, Q, and R branches, for diatomic vibrating rotators.
5. Explore the concept of group frequencies and their significance in polyatomic molecules.

Unit III: Spectroscopy of Organic Compounds UV, IR, MS

9. Understand the Frank-Condon principle and electronic transitions in molecules, including singlet and triplet states.
10. Describe fluorescence and phosphorescence phenomena and their importance in spectroscopy.
11. Apply the free electron model to calculate electronic transitions in polyenes.
12. Comprehend the principles of NMR spectroscopy, including Larmor precession, chemical shift, low-resolution spectra, spin-spin coupling, and relaxation processes.
13. Interpret PMR spectra of A-X organic molecules and apply PMR and CMR techniques for structure elucidation of organic compounds.
14. Understand the principles and applications of electronic spin resonance (ESR) and interpret ESR spectra of simple radicals.
15. Develop practical skills in using spectroscopic techniques like UV, IR, and MS for structural determination of organic compounds.
16. Acquire proficiency in applying NMR spectroscopy to elucidate the structure of organic compounds.
17. Demonstrate the ability to perform various spectroscopic experiments and analyze the results accurately.

Unit IV: Practical

1. Prepare a term paper on a specific spectroscopic technique and its applications, showcasing research and communication skills.

CHE-UG-C601: Instrumental Techniques

Unit I: Treatment of Analytical Data

1. Analyze and interpret analytical data and make accurate and meaningful conclusions based on statistical analysis and data treatment techniques.

Unit II: Gravimetry

1. Understand gravimetric analysis techniques and their application in quantitative measurements.
2. Apply appropriate gravimetric methods to determine the mass of substances.

Unit III: Chromatography/ Solvent Extraction

1. Understand various chromatographic techniques and their application in separation and analysis.

2. Understand different extraction techniques and apply these techniques in separation processes, water treatment and chemical analysis.

Unit IV: Practical

1. Develop practical laboratory skills in conducting experiments related to separation techniques, analytical measurements and titrations.
2. Prepare standard solutions, will have knowledge about Normality, molarity, gram equivalent weight.

CHE-UG-C602: Bio and Medicinal Chemistry

Unit I: Biological Chemistry

1. Differentiate between prokaryotic and eukaryotic cells, and understand their structural and functional differences.
2. Describe the structure and function of bacterial cell walls and plant cell walls.
3. Identify and list the local and botanical names of ten medicinal plants from the Sikkim Himalayas and their traditional uses in treating human diseases.
4. Understand the structure and function of biomolecules including carbohydrates, lipids, amino acids and proteins, nucleic acids (DNA and RNA), and coenzymes and cofactors.

Unit II: Basic Concepts in Enzymology

1. Describe the catalytic nature of enzymes and explain the mechanisms of enzyme actions.
2. Define the primary, secondary, tertiary, and quaternary structures of enzymes and their significance in enzyme function.
3. Explain enzyme kinetics and the Michaelis-Menten equation for enzyme-catalyzed reactions.
4. Understand the concept of the lock and key model in enzyme-substrate interactions.
5. Explore the applications of industrial enzymes in organic synthesis.

Unit III: Medicinal Chemistry

1. Define antibiotics and describe the structures, modes of action, and uses of specific antibiotics such as Ampicillin, penicillin, streptomycin, and tetracycline.
2. Understand the synthesis and medicinal use of paracetamol and aspirin.
3. Explore the use and applications of isoxazole, isoxazoline and isoxazolidines.

Unit IV: Practical

1. Develop practical skills in the identification of liquid organic compounds, including determining functional groups and measuring melting points/boiling points.
2. Conduct the Ninhydrin test for amino acids and proteins.
3. Perform the separation of pigments by paper chromatography.
4. Participate in laboratory and industrial visits to gain exposure to real-world applications of the learned concepts.

3. Aims of B.Sc. (Honours) Chemistry:

1. Comprehensive Knowledge: To provide students with a broad and in-depth understanding of the fundamental principles, theories, and concepts in chemistry across various sub-disciplines.
2. Practical Skills: To develop students' hands-on laboratory skills, enabling them to conduct experiments, analyze data, and perform chemical synthesis effectively and safely.
3. Critical Thinking: To cultivate critical thinking and problem-solving abilities, allowing students to analyze complex chemical phenomena, propose solutions, and evaluate scientific literature critically.
4. Research and Inquiry: To foster a spirit of inquiry and curiosity, encouraging students to explore new areas of chemistry, conduct independent research, and contribute to the advancement of scientific knowledge.
5. Analytical Techniques: To equip students with knowledge of modern analytical techniques and instrumentation, enabling them to characterize and identify chemical compounds accurately.
6. Ethical and Responsible Practice: To instill a strong sense of ethical and responsible conduct in chemical research and practice, emphasizing the importance of safety, environmental stewardship, and social responsibility.
7. Communication Skills: To develop effective communication skills, both written and oral, allowing students to present scientific findings, write research papers, and engage in scientific discussions with clarity and precision.
8. Interdisciplinary Knowledge: To foster an understanding of how chemistry interfaces with other scientific disciplines, such as biology, physics, environmental science, and materials science, promoting a holistic approach to problem-solving.
9. Professionalism and Collaboration: To prepare students for professional careers in the field of chemistry, emphasizing teamwork, adaptability, and the ability to work collaboratively in diverse settings.

10. Specialization: To offer opportunities for students to specialize in specific areas of chemistry, such as organic, inorganic, physical, analytical, or theoretical chemistry, according to their interests and career aspirations.
11. Continuous Learning: To instigate a passion for lifelong learning and professional development, encouraging students to stay updated with the latest advancements and research in the field of chemistry.
12. Career Readiness: To equip graduates with the necessary knowledge, skills, and competencies required for successful careers in academia, industry, government, research, or other fields related to chemistry.
13. Overall, the aims of a B.Sc. (Honours) in Chemistry program are to provide students with a solid foundation in chemistry, prepare them for diverse career paths, and nurture their intellectual curiosity and enthusiasm for the science of matter.

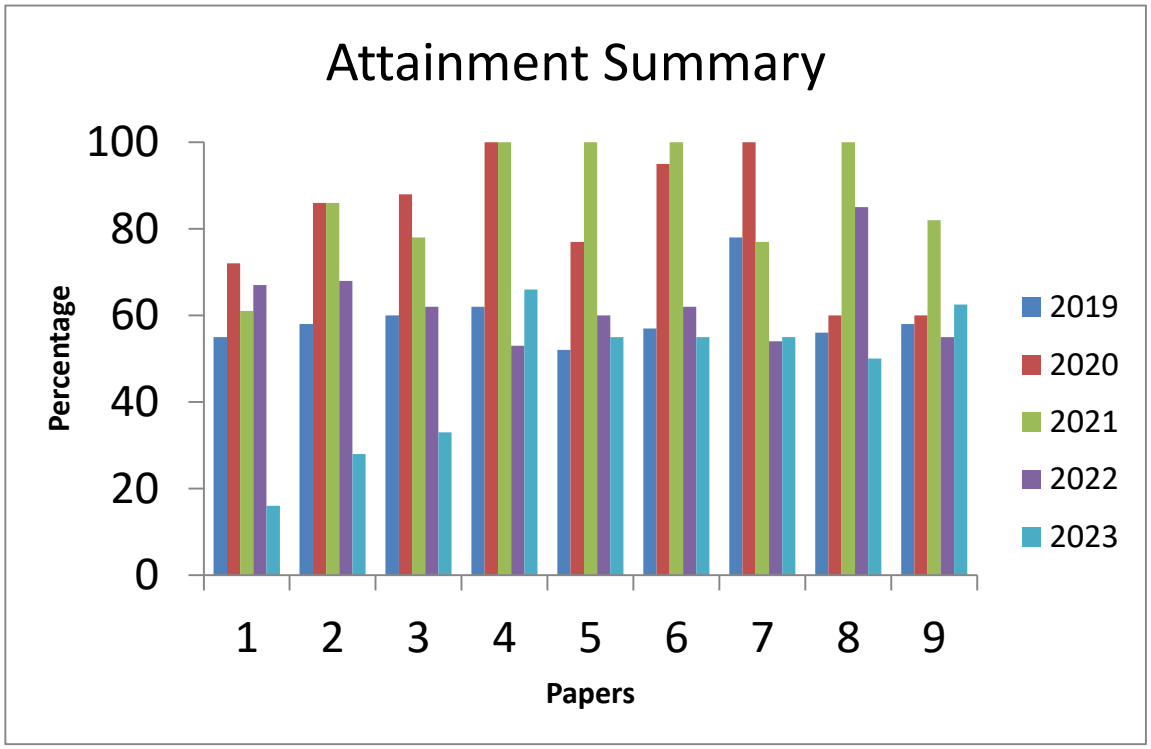
4. Attributes for graduates of B.Sc. (Honours) Chemistry

Graduates of the B.Sc. (Honours) in Chemistry program possess a diverse set of attributes, making them well-equipped for successful careers and further academic pursuits in the field of chemistry. They have acquired a comprehensive knowledge of fundamental principles, theories, and concepts across various sub-disciplines of chemistry. These graduates are adept at conducting experiments, demonstrating strong practical skills and a keen understanding of safety protocols.

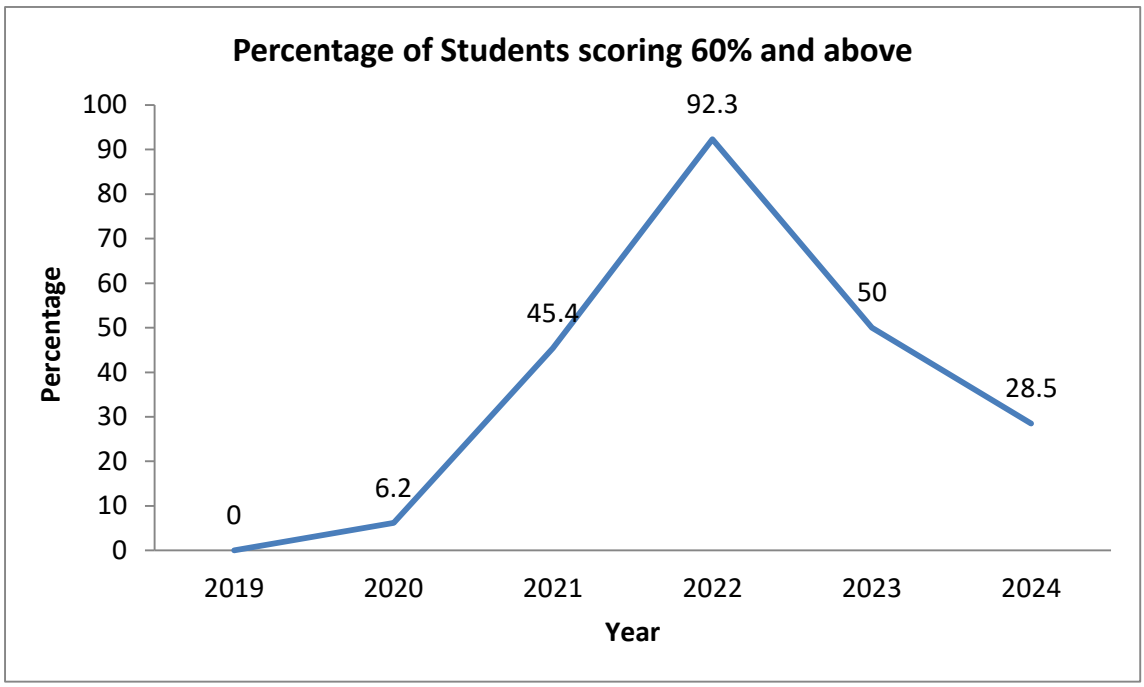
Ethical and responsible practices are ingrained in their approach to chemical research and practice, emphasizing safety, environmental sustainability, and social responsibility. Effective communication skills allow them to present scientific findings and engage in articulate discussions. Their interdisciplinary knowledge enables them to recognize the interconnectedness of chemistry with other scientific disciplines, fostering holistic problem-solving approaches.

Prepared for professional careers, graduates demonstrate professionalism, collaboration, and adaptability, excelling in diverse settings. Lifelong learners, they remain abreast of the latest advancements in the field, nurturing their passion for continuous growth. Overall, graduates of the B.Sc. (Honours) Chemistry program are versatile, skilled, and dedicated professionals, ready for contributing to academia, industry, research, and the wider scientific community.

Students' details/Result analysis

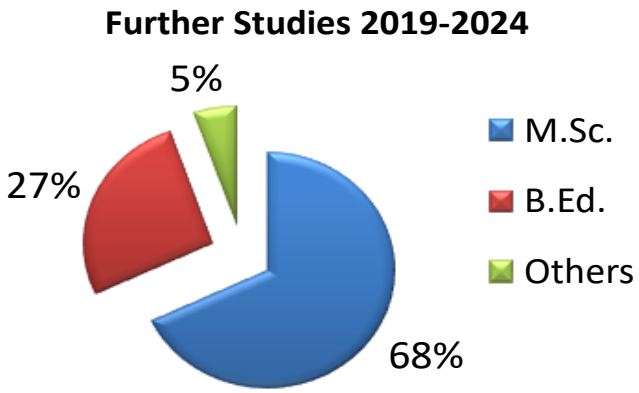


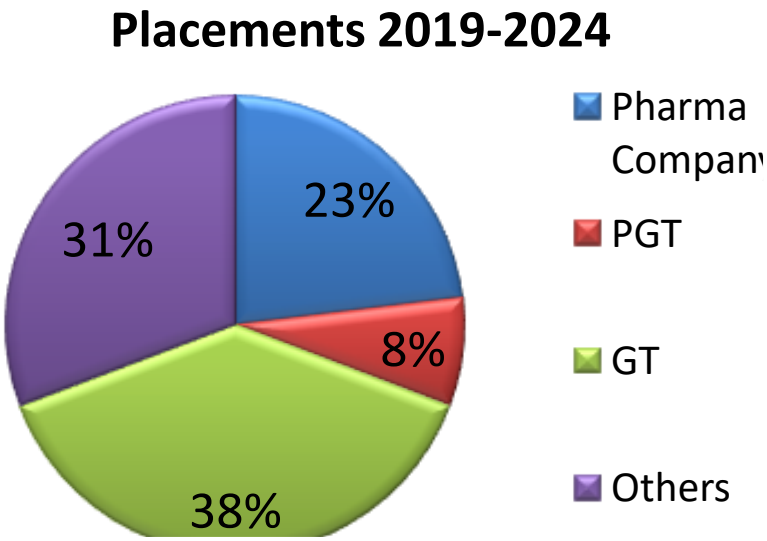
Almost 70% students have continuously scored more than targeted marks.



The average Percentage of Students scoring 60% and above over these years is approximately 37%.

Student Progression





Since 2019, the total students of 119 have completed the B.Sc. (Honours) Chemistry program. 75 of those students are currently pursuing higher education. 25 of those students are currently working for Pharma Company, Post Graduate Teacher and Graduate Teacher with various Government & Private Schools, or others Government & Private agencies.

Departmental Activities/Achievements

Report on Industrial Visit to Sikkim Supreme Factory

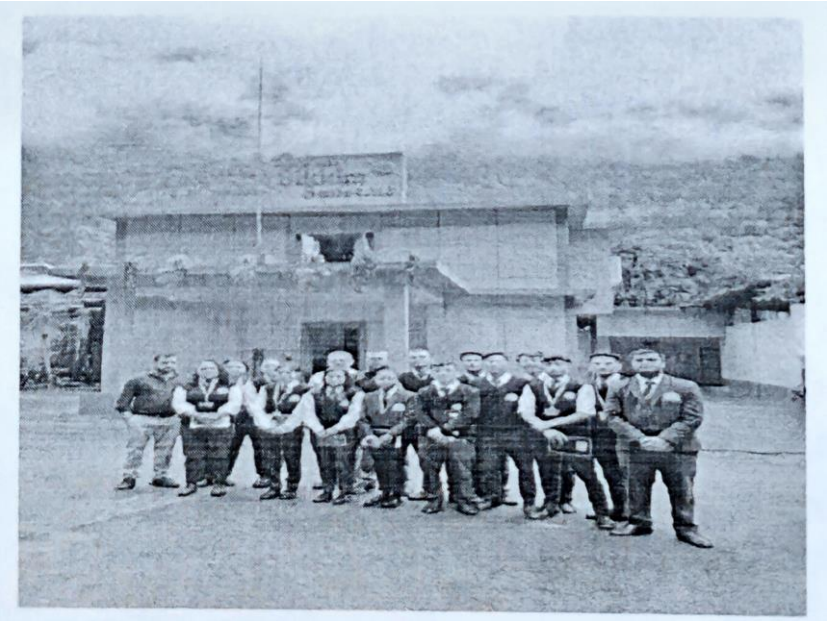
17/06/2024

Introduction

On 17th of June 2024, the 6h semester students along with faculty members of Department of Chemistry, Sikkim Government College Namchi, visited the Sikkim Supreme Factory, Singtam as a part of their academic activities. The students were guided by Brajendra Ghosh who is the staff member of Sikkim Supreme. According to him the Sikkim supreme was established in 1956 during Chogyal's time and was named as Orange Factory to prepare juice from Mandarin varieties of orange, later it was named as Sikkim Supreme Factory. Right now there are more than 80 employees in the factory. Today annual income of the factory is more than 5 crores. Sikkim Supreme consist of three units one unit produce Orange Juice, Orange Squash, Passion Fruit Juice, Passion fruit Squash. Now they are trying carbonated drinks also. Another unit produces varieties of pickles, Jam etc. The third unit of factory produces packaged mineral water.

According to him different process involve in production of juice are as follows.

1. Washing of fruits
2. Peeling of cover from the fruits
3. Store under minimum temperature without aerial oxidation
4. Use of steam for cooking
5. Cooling
6. Addition of sugar syrup
7. Blending
8. Homogenization
9. Sterilization
10. Chilling
11. Packing.



Report on Industrial visit to Sikkim Milk Union Ltd, Karfectar, Jorethang

12/06/2023

The 6th students of Department of Chemistry SGC, Namchi were taken to Sikkim Milk Union Ltd, Karfectar, Jorethang, for the purpose of industrial visit and as a part of their sessional activity. They are guided by three faculties' members Dr Govinda Prasad Luitel, Mr Devendra Chhetri. Mr Sonam Wangchuk Lepcha. As they reach industry they were guided by the manager Mr Ramesh Chettri and make them to understand the production activity, management process and technology. He explained everything about the collection of milk from framers till the packing of milk. According to him the different process involved in the production plant are:

1. Receipt and filtration of milk

2. Separation of all or part of milk fat

3. Pasteurization

4. Homogenization

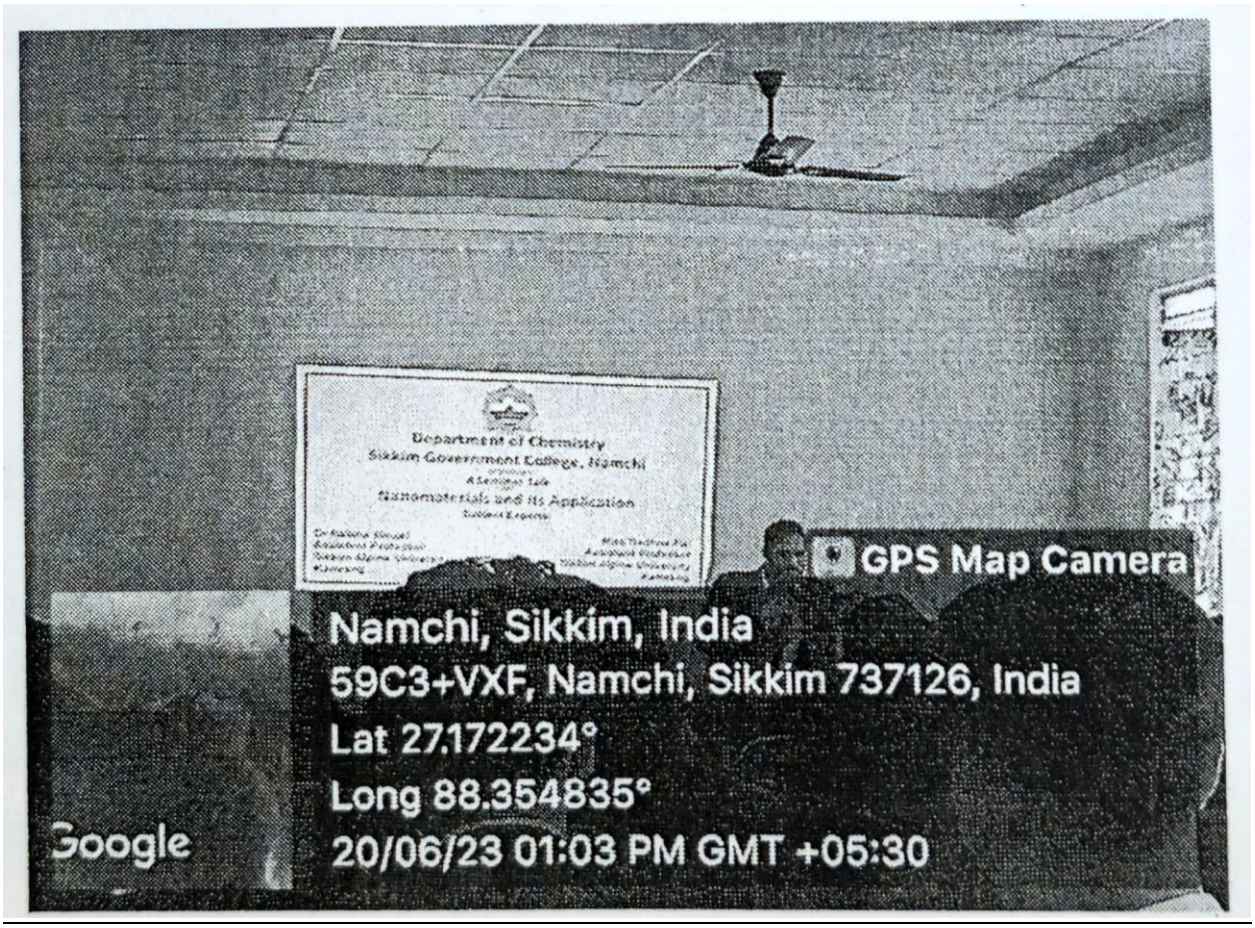
5. Packaging and storage of milk

6. Distribution of final products.

Report on One Day Seminar

21/01/2023

Department of Chemistry Sikkim Government College, Namchi has successfully conducted one day seminar talk on Nanomaterials and its Application. The program was started with welcome address by VIth semester student Saimon Tamang followed by presentation on Future with Nanomaterials by Dr. Rabina Bhujel, Assistant Professor Department of Chemistry, Sikkim Alpine University. Different aspects of Nanomaterials as highlighted in different fields like in medicine, agriculture, in solar cell etc. similarly second lecture was presented by Miss Sadhna Rai, Assistant Professor Chemistry, Sikkim Alpine University on topic Nanomaterials synthesis and application, she has mainly highlighted on history of Nanotechnology and how nanomaterials was used in 4th and 5th century AD. She has also talked about the existence of nanotechnology in nature with this idea how we can used in modern technology was also highlighted. Synthesis of Graphene oxide was also highlighted. The seminar was concluded with valedictory by Dr. Govinda Prasad Luitel Head Department of Chemistry and vote of Thanks by Sangam Hang Limboo VIth Seminar Chemistry Hons students.



Report on Career Counseling Session for Outgoing Students

28/07/2022

Resource Person: Dr. Ramesh Sharma, Associate Professor, SMIT

A career counseling session was held on July 28, 2022, for outgoing students of chemistry department and the resource person of the day was Dr. Ramesh Sharma, Associate Professor, SMIT. The session aimed to provide insights into career options and offer guidance on what next after graduation. We believe that the session has empowered our graduates to approach their future careers with confidence and purpose.

Report on industrial visit to Temi Tea Factory

Introduction

On 19th July 2022, the 6th-semester undergraduate students of the Chemistry Department, Sikkim Government College, Namchi accompanied by faculty members, visited the Temi Tea Factory. The purpose of the visit was to gain practical knowledge about the tea processing industry and understand the various processes involved in producing different varieties of tea. The students were guided by Mr. Saroj Rai, a staff member of the Temi Tea Factory, throughout the visit.

Visit Details:

Location: Temi Tea Factory

Date: 19th July 2022

Participants: 6th-semester undergraduate students and faculty members of the Chemistry Department

Guide: Mr. Saroj Rai, Staff at Temi Tea Factory.

Activities:

Introduction to Temi Tea Factory: Upon arrival at the Temi Tea Factory, Mr. Saroj Rai provided a warm welcome to the students and faculty members. He delivered a comprehensive introduction to the history and significance of the factory, highlighting its role in the local tea industry and the economy as a whole.

Tea Processing Procedures: With Mr. Saroj Rai as their guide, the students were taken through the various stages of tea processing. He explained detail the steps involved in plucking, withering, rolling, oxidation, drying, and sorting Mr. Rai utilized his expertise to provide comprehensive understanding of each process and pointed out the machinery and equipment used in the factory.

Withering and Rolling: The students observed the withering process, where Mr. Rai explained the significance of allowing tea leaves to lose moisture. He showcased the withering troughs and explained their role in the drying process. Additionally, Mr. Rai demonstrated the rolling process, showcasing the machines used to shape and bruise the leaves effectively.

Oxidation: Mr. Saroj Rai discussed the concept of oxidation, its impact on the flavor and aroma of tea, and the controlled oxidation process He showed the students the trays where tea leaves

were spread out for controlled oxidation and explained the Importance of monitoring the process to achieve the desired results.

Drying and Sorting: The drying section of the factory was explored, and Mr. Rai demonstrated the use of dryers to remove excess moisture from the oxidized leaves. The students also had the opportunity to examine the sorted tea leaves and Mr. Rai explained the different grades and qualities of tea obtained through the sorting process,

Conclusion:

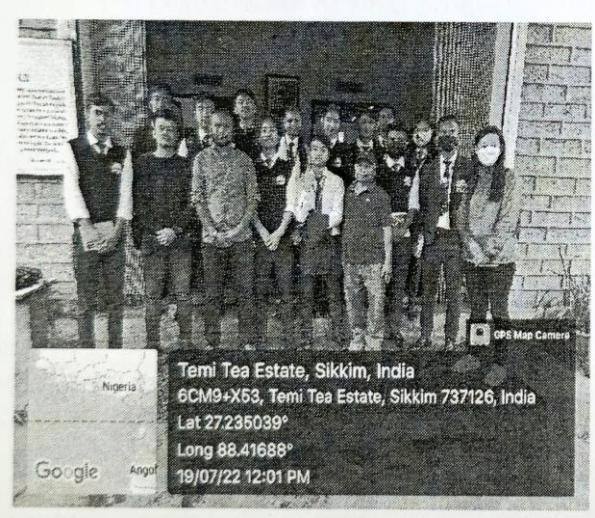
The visit to the Temi Tea Factory, guided by Mr. Saroj Rai, was a valuable learning experience for the 6th-semester undergraduate students. They gained practical knowledge about the tea processing industry and witnessed the various stages involved in producing different varieties of tea. Mr. Rai's expertise and guidance significantly contributed to the students' understanding of the processes and their applications in the real world.

Recommendations:

Similar industry visits should be organized in the future to provide students with practical learning experiences.

The chemistry curriculum could include more topics related to tea processing and other relevant industries to deepen students' understanding their applications.

Overall, the visit to the Temi Tea Factory, guided by Mr. Saroj Rai, was successful in achieving its objectives. The students and faculty members expressed their appreciation for Mr. Rai's knowledge and guidance throughout the visit, which enhanced their understanding of the tea processing procedures.



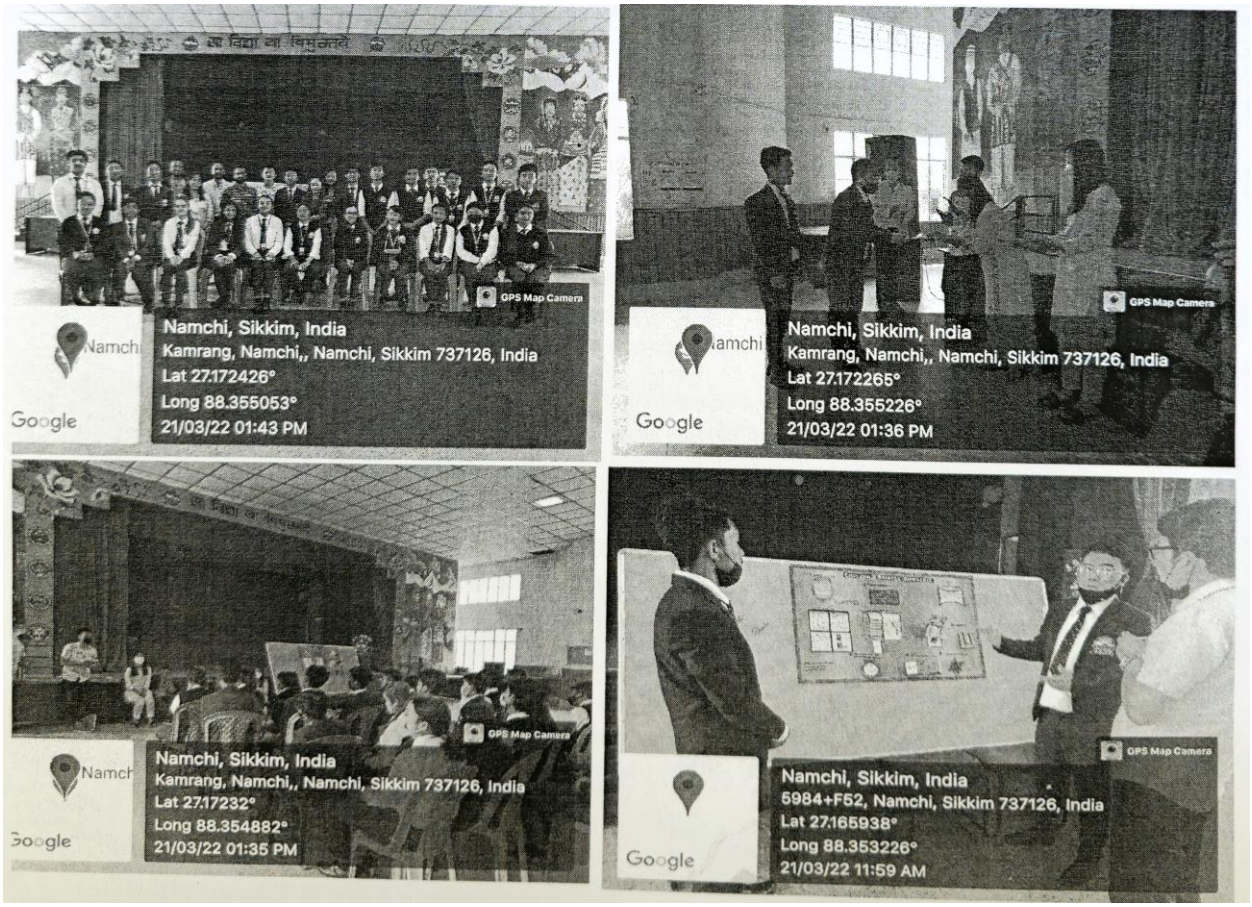
Report on Poster Presentation

21/03/2022

Department of Chemistry organized Poster presentation contest for all B.Sc. students on a theme 'Chemistry in Everyday life' A total of 11 teams participated in the contest from 5th and 3rd semester of various Science departments.

The 1st position of the contest was bagged by Saiman Tamang and Pheep Raj Limboo of chemistry department likewise 2nd position was bagged by Kailash Chettri and Prashant Chettri of Chemistry Department and 3rd position was bagged by Abhilasha Rai and Deepa Rai of Zoology department.

The event was concluded with prize distribution and certificates to winners and participants.



Report of Quiz and Extempore Competition

17/02/2021

Departmental Quiz and Extempore completion was organized by Department of Chemistry, Namchi Government College on 17th of Feb. 2021 on the occasion of National Periodic Table Day and to celebrate 150 years of Periodic Law.

The event was started by a short speech on history of Periodic Table by Ms. Dawa Doma Bhutia (H.O.D). The host of the event Ms. Dawa Doma Bhutia gave a briefing on the rules and regulations of the quiz competition. A total of 5 teams with 3 members per team from 1st, 3rd and 5th semester Chemistry Honours participated in the quiz competition. The details of the participants are as follow:

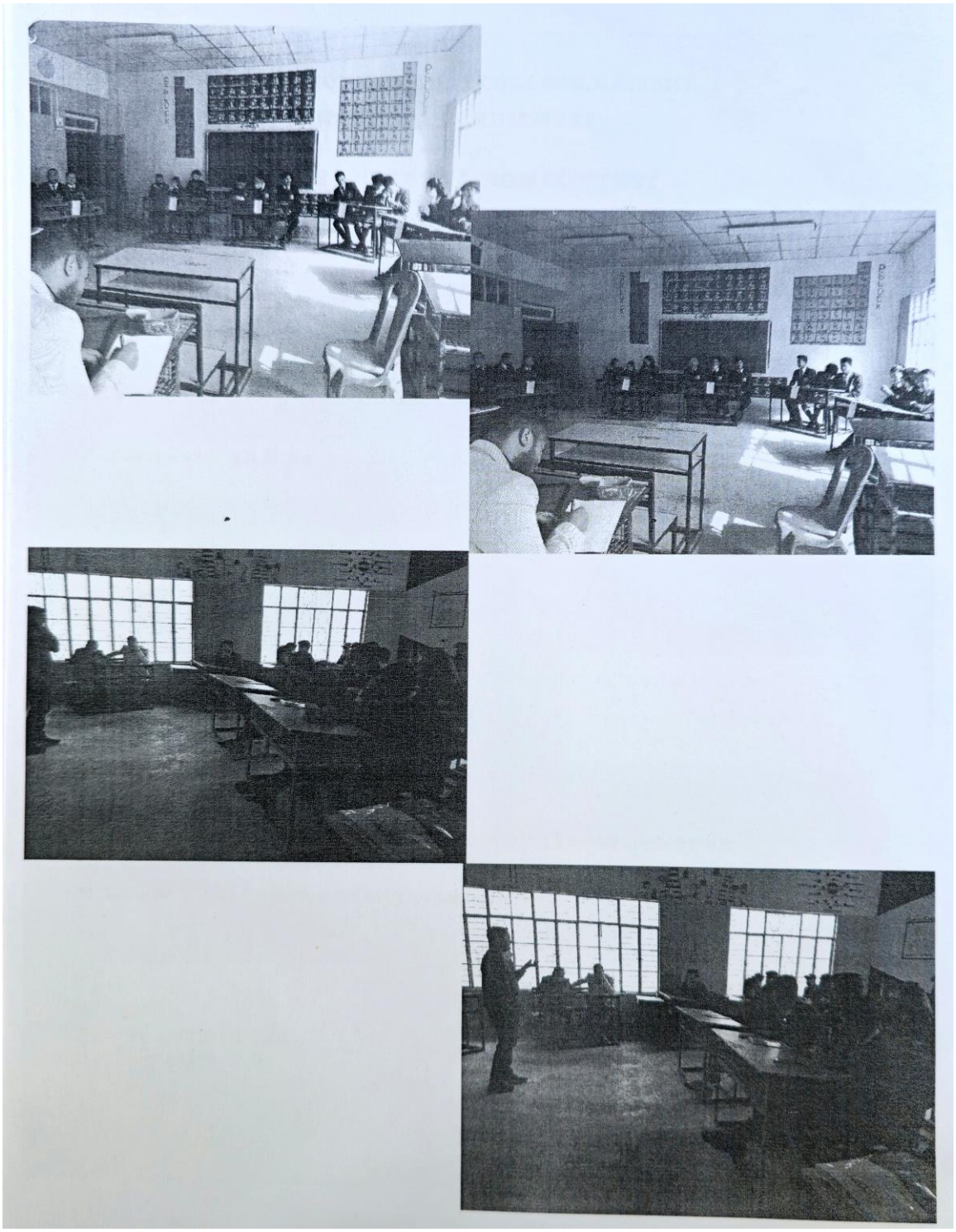
Team	Members	Semester
A	Sangita Mishra Gopal Rai Anjana Gurung	III
B	Sangam Hang Limbu Prashant Chettri Biswas Rai	I
C	Abhishek Sharma Kewal Chettri Palpal Rai	III
D	Pema Karma Tamang Rachel Bhutia Susmita Dahal	V
E	Sushmita Gurung Binod Sharma Ashwin Sharma	V

The quiz competition was divided into 3 rounds. After a final round 3 teams scores were draw from which Team A emerged as winner after a tie breaking round with Team E and Team D bagging 2nd and 3rd position respectively.

After a short tea break extempore competition was started. A total of 20 participants participated from all the three semesters. The judges for the competition were:
Mr Devendra Chhetri, Assistant Professor
Dr. Govinda Luitel, Assistant Professor
Mr. Sonam Wangchuk Lepcha, Assistant Professor.

The best speaker was awarded to Sangam Hang Limbu of 1st semester while consolation prize was awarded to Sangita Mishra of 3rd semester.

The event was concluded with the distribution of prizes to the winners and vote of thanks from Dr. Govinda Luitel.



Industrial Visit report

16-21/05/2019

Details of Journey

Sikkim Government College, Namchi had organized an industrial visit on 16 May 2019 to 21 May 2019 to Himalayan Life Plastics Pvt. Ltd located in Pokhara, Nepal for the students of B.Sc Honors Students.

The visit was organized by Department of Chemistry

Mr. Devendra Chhetri - Coordinator for the industrial visit.

Dr. Saurav Kafley -HOD

Dr.Umesh Rizal - Faculty

Totally 34 students along with 3 faculty were there in the Journey

Company Profile

Himalayan life plastic Pvt. Ltd. a social enterprise.

Himalayan life plastic Pvt. Ltd, established in 2012 and is located at Pokhara Nepal, it works under introducing bottle to bottle PET Recycling. It involves the systematic segregated post-Consumer Pet Bottles from other waste, and processed by state of the art technology to RPET granulate.

Latest technology of twin-screw extrusion under vacuum ensures pelletizing without IV loss. Their REPT pellets are recommended for bottle to bottle application with a blending ratio of upto 30 percent. Other applications includes fiber manufacturing and textile industries

Training In-Charge Address:

The training in-charge of Himalayan Life Plastic Pvt. Ltd, Mr. Prakash Bharati, addressed the students and enlightened them with a welcome speech and explained about importance of plastics, applications, various polymer materials and recycling of plastics to the students. In addition, he elucidated the various processes involved with work flow chart.

Group Observations

• This Industrial visit is very helpful in our future practical life & brought a positive change in thinking & practical behavior regarding education & in specializing technical skills.

1. Got practical knowledge about the advancement in technology of machines
2. Various plastic materials and their applications
3. Different molding machine for plastic processing
4. How to maintain a thickness of plastic material

S Feeding of plastic granules into the machine

6. Various temperatures maintained in screw type compression molding machine
7. Injection and manual blow molding operations
8. Film blowing processes
9. Management of manpower and machines.