



MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE

[Govt. Aided First Grade College & Affiliated to University of Calicut.
Re-Accredited by NAAC with A Grade]



OFFICE OF THE PRINCIPAL

PEOs, PSOs, POs & COs B.Sc CHEMISTRY

1. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Table 1: Programme Educational Objectives of B.Sc Chemistry

PEO1	Acquire the fundamental principles of science and chemistry with modern experimental and computational skills.
PEO2	Ability to handle problems of practical relevance to society while complying with economical, ethical and safety factors.
PEO3	Demonstrate professional excellence, ethics, soft skills and leadership qualities.
PEO4	Have sufficient breadth of understanding to enable continued professional development and lifelong learning throughout their career

2. PROGRAMME SPECIFIC OUTCOMES (PSOs)

Table 2: Programme Specific Outcomes of B.Sc Chemistry

PSO1	Gain the knowledge of Chemistry through theory and practical.
PSO2	To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.
PSO3	To familiarize with the emerging areas of chemistry and their applications in various spheres of chemical sciences and to apprise the students of its relevance in future studies.
PSO4	Understand good laboratory practices and safety.
PSO5	To be conversant with the applications of chemistry in day- to-day life.

3. PROGRAMME OUTCOMES (POs)

Table 3: Programme Outcomes of B.Sc Chemistry

PO1	Demonstrate, solve and an understanding of major concepts in all Disciplines of chemistry
PO2	Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
PO3	Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.



Manassery, Mukkam Post,
Kozhikode, Kerala, India, 673 602.
email: mamocollege@gmail.com



Office: 0495-2297319
Principal: 0495-2295121



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Table 3: Programme Outcomes of B.Sc Chemistry

P04	Find out the green route for chemical reaction for sustainable development.
P05	To inculcate the scientific temperament in the students and outside the scientific community.
P06	Use modern techniques, decent equipment and Chemistry software's
P06	To demonstrate professional and ethical attitude with enormous responsibility to serve the society.
P06	To apply contextual knowledge and modern tools of chemistry research for solving problems
P06	An understanding of professional, ethical, legal, security, social issues and responsibility
P07	Be acquainted with the contemporary issues latest trends in technological development and thereby innovate new ideas and solutions to existing problems.
P08	Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
P09	Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
P010	Find out the green route for chemical reaction for sustainable development.

4. COURSE OUTCOMES (COs)

Table 4: Courses Outcomes of B.Sc Chemistry

COURSE 1: ENG1A01: TRANSACTIONS: ESSENTIAL ENGLISH LANGUAGE SKILLS

C01	To impart the necessary macro and micro English language skills to the learners to enable them to express their feelings, opinions, ideas and thoughts fluently and accurately in a variety of personal and professional contexts.
C02	To create in learners a definitive sense of the stylistic variations of English and how they are used in real life situations.
C03	To inculcate in learners a taste for deeper pursuit and acquisition of advanced level of skills in English.
C04	To guide them on how to participate in discussions and make seminar presentations with special focus on specific vocabularies and styles of usage in such contexts.



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Table 4: Courses Outcomes of B.Sc Chemistry

COURSE 2: ENG1A02: WAYS WITH WORDS: LITERATURES IN ENGLISH

C01	To help students develop the acumen to read, appreciate and discuss literature.
C02	To introduce students to the linguistic qualities of a literary text and to unravel the many meanings Of the text
C03	To acquaint the students with different genres of literature and to analyse them.

COURSE 3: ARB1A07(2): BASIC SKILLS IN ARABIC

C01	To teach the students the basics of interpersonal interaction in Arabic.
C02	To train the students to communicate in Arabic in selected situations
C03	Enhancement of communication skills in Arabic
C04	Knowledge of writing letters, ads, notifications, tenders and quotations in Arabic
C05	Enhancement of translation skills from Arabic to English and vice versa

COURSE 4: HIN1A07(3): PROSE AND ONE ACT PLAYS

C01	Approach literary texts in terms of genre, gender and the canon
C02	Understand and use academic conventions: referencing and bibliography.
C03	The learner will be aware of socio-political and economic conditions of the society from different periods
C04	Be familiar with the theoretical foundations of the genre;
C05	Be able to compare and contrast the genre with other dramatic forms;

COURSE 5: MAL1A07(3): MALAYALA SAHITHYAM -1

C01	To gain an understanding of the relations between culture, history and texts. They learn to use texts as a gateway to various cultural traditions and interpret them in their historical contexts.
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C02	To create in learners a definitive sense of the stylistic variations of Malayalam and how they are used in real life situations.
C03	To inculcate in learners a taste for deeper pursuit and acquisition of advanced level of skills in Malayalam.
C04	To guide them on how to participate in discussions and make seminar presentations with special focus on specific vocabularies and styles of usage in such contexts.

COURSE 6: CHE1B01: THEORETICAL AND INORGANIC CHEMISTRY- I

C01	To apply the methods of a research project.
C02	To understand the principles behind volumetry.
C03	To analyse the characteristics of different elements.
C04	To distinguish between different acid base concepts.
C05	To analyse the stability of different nuclei.

COURSE 7: MTS1C01: MATHEMATICS - 1

C01	Understand differentiation and limits
C02	Understand Second derivative and Antiderivative
C03	Understand Continuity theorem and drawing of graph
C04	Understand fundamental theorem of calculus and integration

COURSE 8: PHY1C01: PROPERTIES OF MATTER & THERMODYNAMICS

C01	Understand the basic principles of elasticity
C02	Understand the concepts of surface tension
C03	Understand the aspects of viscosity



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Table 4: Courses Outcomes of B.Sc Chemistry

C04	Understand the basic principles of thermodynamics
COURSE 9: AUD1E01: ENVIRONMENTAL STUDIES	
C01	To learn the environment in the Indian context
C02	Understand renewable and non-renewable resources
C03	To learn structure and function of an ecosystem
C04	To learn about biodiversity and its conse
C05	To learn about environmental pollution
COURSE 10: ENG2A03: WRITING FOR ACADEMIC AND PROFESSIONAL	
C01	To develop writing skills, to learn to integrate writing and thought and to apply the conventions of academic writing correctly.
C02	To acquire the correct sense of format, syntax, grammar, punctuation and spelling.
C03	To acquire concepts, principles and vocabulary of reasoning and argumentation and use analysis, synthesis, and evaluations to advance arguments.
C04	To gain an understanding of discourse conventions ranging from structure and paragraphing to tone and mechanics
COURSE 11: ENG2A02: ZEITGEIST - READINGS ON CONTEMPORARY CULTURE	
C01	To inculcate the values enshrined in the constitution of India and to provide an insight on the secular framework of the country.
C02	To familiarize the learners with concepts such as conservation, sustainability and the life of the marginalized and their interconnectedness.
C03	To foster among the learners an awareness of the diverse problems faced by women and the sexual minorities and to promote a culture of inclusion and mutual respect.
C04	To understand the "human' as articulated among the various cultures and promote a multicultural and plural understanding of rights.
COURSE12: ARB2A08(2): READING ARABIC LITERATURE	



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Table 4: Courses Outcomes of B.Sc Chemistry

C01	To understand the literary traditions of Arabs
C02	To study how Arabic literature acted as a medium of resistance against European colonialism In Medieval Malabar.
C03	Understanding the language of Arabic poetry of the classical and modern period

COURSE 13: HIN2A08(3): POETRY AND SHORT STORIES

C01	Understand the common techniques underlying free verse and traditional forms of poetry
C02	Identify personal experiences that can be used when writing poems
C03	Understand the basic terminology and practical elements of poetry.
C04	Students get to know various cultures and construction of gender, nation and race throughout the history.
C05	The prescribed fiction helps the students to learn human values and the behavioral patterns from great works of art, and develops the ability to understand human race.

COURSE 14: MAL2A08(3): MALAYALA SAHITHYAM - 2

C01	To help students develop the acumen to read, appreciate and discuss literature.
C02	To acquire concepts, principles and vocabulary of reasoning and argumentation and use analysis, synthesis, and evaluations.
C03	To inculcate in learners a taste for deeper pursuit and acquisition of advanced level of skills in Malayalam
C04	To guide them on how to participate in discussions and make seminar presentations with special focus on specific vocabularies and styles of usage in such contexts.

COURSE 15: CHE2B02: THEORETICAL AND INORGANIC CHEMISTRY- II

C01	To understand the importance and the impact of quantum revolution in science.
C02	To understand and apply the concept that the wave functions of hydrogen atom are nothing but atomic orbitals.
C03	To understand that chemical bonding is the mixing of wave functions of the two combining atoms.



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Table 4: Courses Outcomes of B.Sc Chemistry

C04	To understand the concept of hybridization as linear combination of orbitals of the same atom.
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COURSE 16: MTS2C02: MATHEMATICS - 2

C01	Understand polar coordinates and Hyperbolic function
C02	Understand improper integral and application of numerical integration
C03	Understand vector space and matrices
C04	Understand inverse of matrices and Eigen value problem

COURSE 17: PHY2C02: OPTICS, LASER & ELECTRONICS

C01	Understand the basic concepts of interference and diffraction
C02	Understand the concepts of polarization
C03	Understand the fundamentals of electronics
C04	Understand the important principles of laser physics

COURSE 18: AUD2E02: DISASTER MANAGEMENT

C01	Impart basic knowledge about Hazards and Disasters
C02	Impart basic knowledge about Natural Disasters
C03	Prepare for disaster Preparedness and Response
C04	Prepare for rehabilitation, reconstruction and recovery

COURSE 19: A11: BASIC NUMERICAL SKILLS

C01	To understand set operations
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Table 4: Courses Outcomes of B.Sc Chemistry

C02	To acquire knowledge on matrix and operation rules
C03	To acquire knowledge on solving equations.
C04	To understand progression, Statistical tools and their applications.
COURSE 20: A12: INFORMATICS AND EMERGING TECHNOLOGIES	
C01	To understand about the basic parts of computer and its memory devices
C02	To recognise scientific databases
C03	To distinguish wireless technologies
C04	To understand the basic principles and applications of optical fibers, lasers, holography and biometrics
COURSE 21: CHE3B03: PHYSICAL CHEMISTRY - I	
C01	To understand the properties of gaseous state and how it links to thermodynamic systems.
C02	To understand the concepts of thermodynamics and its relation to statistical thermodynamics.
C03	To apply symmetry operations to categorize different molecules.
COURSE 22: MTS3C03: MATHEMATICS - 3	
C01	Understand vector function , partial derivatives and its application
C02	Understand vector calculus and double integrals
C03	Understand Triple integral and complex numbers
C04	Understand contour integral theorem , Cauchy-Goursat Theorem and its application
COURSE 23: PHY3C03: MECHANICS, RELATIVITY, WAVES AND OSCILLATIONS	



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Table 4: Courses Outcomes of B.Sc Chemistry

C01	Understand the basic ideas of frames of reference and the principles of conservation of energy and momentum
C02	Understand the concepts of relativity
C03	Understand the basic ideas of oscillations and waves
C04	Understand the basic ideas of modern physics

COURSE 24: A13: ENTREPRENEURSHIP AND ENVIRONMENTAL SCIENCE

C01	To appreciate the role of Entrepreneur in Economic Growth
C02	To recognise the contradicting nature of industrialization and sustainable development
C03	To distinguish the types of pollution of water, air and land
C04	To understand the basic principles and applications of pollution control methods

COURSE 25: A14: NUTRITION AND HEALTH

C01	Familiarise the importance of food & health
C02	Acquire knowledge of energy requirements for various activities
C03	Exposure to nutrients in foods

COURSE 26: CHE4B04: ORGANIC CHEMISTRY- I

C01	To apply the concept of stereochemistry to different compounds.
C02	To understand the basic concepts of reaction mechanism.
C03	To analyse the mechanism of a chemical reaction.
C04	To analyse the stability of different aromatic systems.



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Table 4: Courses Outcomes of B.Sc Chemistry

COURSE 27: CHE4B05 (P): INORGANIC CHEMISTRY PRACTICAL - I

C01	To enable the students to develop skills in quantitative analysis and preparing inorganic complexes.
C02	To understand the principles behind quantitative analysis.
C03	To apply appropriate techniques of volumetric quantitative analysis in estimations.
C04	To analyse the strength of different solutions.

COURSE 28: MTS4C04: MATHEMATICS - 4

C01	Understand linear Differential equation and its application
C02	Understand higher order differential equation
C03	Understand Laplace transform and Dirac delta function
C04	Understand Fourier Series and its Application

COURSE 29: PHY4C04: ELECTRICITY, MAGNETISM AND NUCLEAR PHYSICS

C01	Understand the basic ideas of static and current electricity
C02	Understand the concepts of magnetism
C03	Describe the fundamental concepts of nuclear physics
C04	Understand the basic ideas of cosmic rays and elementary particles

COURSE 30: PHY4C05: PHYSICS PRACTICALS I

C01	Apply and illustrate the concepts of properties of matter through experiments
C02	Apply and illustrate the concepts of electricity and magnetism through experiments



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Table 4: Courses Outcomes of B.Sc Chemistry

C03	Apply and illustrate the concepts of optics through experiments
C04	Apply and illustrate the principles of electronics through experiments
COURSE 31: CHE5B06 INORGANIC CHEMISTRY - III	
C01	To understand the principles behind qualitative and quantitative analysis.
C02	To understand basic processes of metallurgy and to analyse the merits of different alloys.
C03	To understand the applications of different inorganic polymers.
C04	To analyse different polluting agents.
COURSE 32: CHE5B07: ORGANIC CHEMISTRY - II	
C01	To understand the difference between alcohols and phenols.
C02	To understand the importance of ethers and epoxides.
C03	To apply organometallic compounds in the preparation of different functional groups.
C04	To apply different reagents for the inter conversion of aldehydes, carboxylic acids and acid derivatives.
COURSE 33: CHE5B08: PHYSICAL CHEMISTRY - II	
C01	To apply the concept of kinetics, catalysis and photochemistry to various chemical and physical processes.
C02	To characterise different molecules using spectral methods.
C03	To understand various phase transitions and its applications.
COURSE 34: CHE6B14(P) PHYSICAL CHEMISTRY PRACTICAL	
C01	To enable the students to develop analytical skills in determining the physical properties (physical constants).



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Table 4: Courses Outcomes of B.Sc Chemistry

C02	To develop skill in setting up an experimental method to determine the physical properties.
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COURSE 35: CHE6B15(P): ORGANIC CHEMISTRY PRACTICAL

C01	To enable the students to develop analytical skills in organic qualitative analysis.
C02	To develop talent in organic preparations to ensure maximum yield.
C03	To apply the concept of melting or boiling points to check the purity of compounds.

COURSE 36: CHE6B18(Pr): PROJECT WORK

C01	To understand the scientific methods of research project.
C02	To apply the scientific method in life situations.
C03	To analyse scientific problems systematically.

COURSE 37: CHE6B09 INORGANIC CHEMISTRY - IV

C01	To understand the principles behind different instrumental methods.
C02	To distinguish between lanthanides and actinides.
C03	To appreciate the importance of CFT.
C04	To understand the importance of metals in living systems.

COURSE 38: CHE6B10 ORGANIC CHEMISTRY - III

C01	To elucidate the structure of simple organic compounds using spectral techniques.
C02	To understand the basic structure and tests for carbohydrates.
C03	To understand the basic components and importance of DNA.



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Table 4: Courses Outcomes of B.Sc Chemistry

C04	To understand the basic structure and applications of alkaloids and terpenes.
COURSE 39: CHE6B11 PHYSICAL CHEMISTRY – II	
C01	To understand the basic concepts of electrochemistry.
C02	To understand the importance of colligative properties.
C03	To relate the properties of materials/solids to the geometrical properties and chemical compositions.
COURSE 40: PCH6B01 POLYMER CHEMISTRY – I	
C01	To understand various classification of polymers
C02	To gain knowledge about various types of polymerisations methods and polymerisation techniques.
C03	To get basic idea about the important properties of polymer like average molecular weight, glass transition temperature and viscoelasticity
C04	To understand reactions and degradation exhibited by polymers
COURSE 41: PCH6B02(E1) POLYMER PROCESSING & TECHNOLOGY	
C01	To get deep knowledge about different natural polymer like natural rubber and cellulose and their modified forms
C02	To understand concept of compounding and commonly adopted plastic processing techniques.
C03	To understand various rubber processing techniques.
C04	To acquire basic idea about important properties and standard organisations that is used to characterise polymers.
COURSE 42: PCH6B02(E2) POLYMER BLENDS AND COMPOSITES	
C01	To get deep knowledge about different polymer blends.
C02	To understand composition and applications of different polymer blends.



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C03	To understand various types of polymer composites.
COURSE 43: CHE6B16(P) INORGANIC CHEMISTRY PRACTCAL-II	
C01	To enable the students quantitative analysis.
C02	To understand the principles behind gravimetry and to apply it in quantitative analysis.
C03	To understand the principles behind colorimetry and to apply it in quantitative analysis.
COURSE 44: CHE6B17(P) INORGANIC CHEMISTRY PRACTCAL-III	
C01	To enable the students to develop skills in inorganic quanlitative analysis.
C02	To understand the principles behind inorganic mixture analysis and to apply it in quanlitative analysis.
C03	To analyse systematically mixtures containing two cations and two anions.



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