



M.E.S MAMPAD COLLEGE (AUTONOMOUS)

MAMPAD COLLEGE P.O, MALAPPURAM, KERALA, INDIA, 676542

Affiliated to University of Calicut

Accredited by NAAC with A grade

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| Syllabus Year | 2021-2022 |
| Department | Chemistry |
| Programme | BSc Chemistry |

Programme outcome.

| Sl.No | Programme Outcome |
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| P01 | Understand basic facts and concepts in chemistry and apply the principles of chemistry. |
| P02 | Appreciate the achievements in chemistry and to know the role of chemistry in nature and in society. |
| P02 | 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. |
| P04 | Develop skills in the proper handling of instruments and chemicals. |
| P05 | Familiarize with the different processes used in industries and their applications. |
| P06 | Develop an eco-friendly attitude by creating a sense of environmental awareness. To be conversant with the applications of chemistry in day-to-day life. |

Programme specific outcome

| Sl.No | Programme Specific Outcome. |
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| 1 | Will become familiar with the different branches of chemistry like analytical, organic, inorganic, physical, environmental, polymer and biochemistry |
| 2 | Understand laboratory hygiene and safety measures. Acquires the ability to synthesize, separate and characterize compounds using laboratory and instrumentation techniques |
| 3 | Inculcate an atomic/molecular level philosophy in the mind and understand the importance of quantum mechanical model of atomic structure and chemical bonding |

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| 4 | Understand the basic concepts of thermodynamics, Kinetics, surface chemistry, electrochemistry and spectroscopy and apply for various process |
| 5 | Understand the different preparation methods and properties for organic compounds. Grasp the mechanism of organic reactions and apply the concepts of stereochemistry |
| 6 | Familiar applications of chemistry in daily life such as in drugs, petrochemicals, cosmetics food additives, cement, glass etc. |

Course Outcome

| Semester | Course Code | Course Name | Course out come |
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| I | CHE1B01 | Theoretical and Inorganic Chemistry-I | To apply the methods of a research project. |
| | | | To understand the principles behind volumetry. |
| | | | To analyse the characteristics of different elements. |
| | | | To distinguish between different acid base concepts. |
| II | CHE2B02 | Theoretical and Inorganic Chemistry- II | To analyse the stability of different nuclei. |
| | | | To understand the importance and the impact of quantum revolution in science. |
| | | | To understand and apply the concept that the wave functions of hydrogen atom are nothing but atomic orbitals. |
| | | | To understand that chemical bonding is the mixing of wave functions of the two combining atoms. |
| III | CHE3B03 | PHYSICAL CHEMISTRY - I | To understand the concept of hybridization as linear combination of orbitals of the same atom. |
| | | | To inculcate an atomic/molecular level philosophy in the mind. |
| | | | To understand the properties of gaseous state and how it links to thermodynamic systems. |
| | | | To understand the concepts of thermodynamics and it's relation to statistical thermodynamics. |
| IV | CHE4B04 | ORGANIC CHEMISTRY- I | To apply the concept of catalysis and adsorption to various physical and chemical processes. |
| | | | To apply the concept of stereochemistry to different compounds. |
| | | | To understand the basic concepts of reaction mechanism. |
| | | | To analyse the mechanism of a chemical reaction. |
| IV | CHE4B05 (P) | INORGANIC | To analyse the stability of different aromatic systems. |
| | | | To enable the students to develop skills in quantitative analysis and preparing inorganic |

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| (Practical) | | CHEMISTRY PRACTICAL – I | complexes. | |
| | | | To understand the principles behind quantitative analysis. | |
| | | | To apply appropriate techniques of volumetric quantitative analysis in estimations. | |
| | | | To analyse the strength of different solutions. | |
| V | CHE5B06 | INORGANIC CHEMISTRY – III | To understand the principles behind qualitative and quantitative analysis. | |
| | | | To understand basic processes of metallurgy and to analyse the merits of different alloys. | |
| | | | To understand the applications of different inorganic polymers. | |
| | | | To analyse different polluting agents. | |
| | | | To apply the principles of solid waste management | |
| | CHE5B07 | ORGANIC CHEMISTRY – II | To understand the difference between alcohols and phenols. | |
| | | | To understand the importance of ethers and epoxides. | |
| | | | To apply organometallic compounds in the preparation of different functional groups. | |
| | | | To apply different reagents for the inter conversion of aldehydes, carboxylic acids and acid derivatives. | |
| | CHE5B08 | PHYSICAL CHEMISTRY – II | To apply active methylene compounds in organic preparations. | |
| | | | To apply the concept of kinetics, mechanisms and applications of symmetry operations to categorize different molecules. | |
| | | | To characterize different molecules using spectral methods. | |
| To understand various phase transitions and its applications. | | | | |
| VI | CHE6B09 | INORGANIC CHEMISTRY – IV | Understand various symmetry operations of molecule and assign point group for the molecule | |
| | | | To understand the principles behind different instrumental methods. | |
| | | | To distinguish between lanthanides and actinides. | |
| | | | To appreciate the importance of CFT. | |
| | | | To understand the importance of metals in living systems. | |
| | CHE6B10 | ORGANIC CHEMISTRY – III | To distinguish geometries of coordination compounds. | |
| | | | To elucidate the structure of simple organic compounds using spectral techniques. | |
| | | | To understand the basic structure and tests for carbohydrates. | |
| | | | To understand the basic components and importance of DNA. | |
| | | | To understand the basic structure and applications of alkaloids and terpenes. | |
| | CHE6B11 | PHYSICAL CHEMISTRY – | To distinguish different pericyclic reactions. | |
| | | | To understand the basic concepts of electrochemistry. | |
| | | | | To understand the importance of colligative properties. |

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| | | III | To relate the properties of materials/solids to the geometrical properties and chemical compositions. |
| | | | To understand the applications of buffers |
| CHE6B12 | Advanced and Applied Chemistry | | To understand the importance of nanomaterials. |
| | | | To appreciate the importance of green approach in chemistry. |
| | | | To understand the uses and importance of computational calculations in molecular design. |
| | | | To understand the role of chemistry in human happiness index and life expectancy. |
| CHE6B13(E2) | POLYMER CHEMISTRY | | To understand various classification of polymers and types of polymerisation methods. |
| | | | To understand the important characteristics of polymers such as average molecular weight, glass transition temperature, viscoelasticity and degradation. |
| | | | To appreciate the importance of processing techniques. |
| | | | To characterize different commercial polymers and to understand the significance of recycling. |
| CHE6B14(P) | PHYSICAL CHEMISTRY PRACTICAL | | To enable the students to develop analytical skills in determining the physical properties (physical constants). |
| | | | To develop skill in setting up an experimental method to determine the physical properties. |
| | | | To understand the principles of Refractometry, Potentiometry and Conductometry. |
| CHE6B15(P) | ORGANIC CHEMISTRY PRACTICAL | | To enable the students to develop analytical skills in organic qualitative analysis. |
| | | | To develop talent in organic preparations to ensure maximum yield. |
| | | | To apply the concept of melting or boiling points to check the purity of compounds. |
| | | | To analyse and characterise simple organic functional groups. |
| | | | To analyse individual amino acids from a mixture using paper chromatography. |
| CHE6B16(P) | INORGANIC CHEMISTRY PRACTICAL II | | To enable the students to develop analytical skills in inorganic quantitative analysis. |
| | | | To understand the principles behind gravimetry and to apply it in quantitative analysis. |
| | | | To understand the principles behind colorimetry and to apply it in quantitative analysis. |
| CHE6B17(P) | INORGANIC CHEMISTRY PRACTICAL III | | To enable the students to develop analytical skills in inorganic quantitative analysis. |
| | | | To understand the principles behind gravimetry and to apply it in quantitative analysis. |
| | | | To understand the principles behind colorimetry and to apply it in quantitative analysis. |