

رقم المقرر ورمزه : ٢٤٤ كيم

الوحدات الدراسية (نظري+عملي) : (٢+٠)

اسم المقرر : أسس الكيمياء العضوية (١)

المستوى : الثالث

البنية التركيبية والترابط - الهيدروكربونات الأليفاتية (التسمية - الخواص - طرق التحضير - التفاعلات - الكيمياء الفراغية) للالكانات والالكانات الحلقية المستبدلة والكيمياء الفراغية للالكينات - سيز/ترانس (Z - E) - الهيدروكربونات الأروماتية (البنزين والخاصة الأروماتية - تسمية مشتقات البنزين - الاستبدال الأروماتي الالكتروفيلي - الفاعلية والتوجيه) الهيدروكربونات الأروماتية عديدة الحلقة - الهاليدات العضوية - التسمية - الخواص الفيزيائية - طرق التحضير - الاستبدال النيكلوفيلي أحادي وثنائي الجزيئة.

1. Aims & Objectives:

This course will enable students to:

1. Acquire an introduction to the fundamental principles of chemistry of carbon-based compounds including nomenclature, bonding and structure, synthesis and reactions of simple aliphatic and aromatic compounds.
2. Learn the bases of the nomenclature, preparation and chemical behavior of the functional groups: alkanes, cycloalkanes, alkenes and alkynes alkyl halides, alcohols, ethers, epoxides, thiols, sulfides, amines in addition to: aldehydes, ketones, carboxylic acids and related structures of biomolecules.
3. Study molecular orbital theory and the principles of aromaticity and to recognize the unique chemical behavior and stability of “aromatic” compounds as applied to benzene and related structures

2. Intended (proposed) Learning outcome

A. Knowledge and understanding:

By the end of this course the students should be able to demonstrate knowledge and understanding of:

- 1.the chemical terminology, nomenclature and units of simple organic compounds.
- 2.types of hybridization and nature of chemical bonding in organic molecules.
- 3.the features of major functional groups: alkanes, cycloalkanes, alkenes and alkynes alkyl halides, alcohols, ethers, epoxides, thiols, sulfides, amines in addition to: aldehydes, ketones, carboxylic acids and related structures of biomolecules.
- 4.the nature of conjugation and aromaticity of aromatic compounds
- 5.methods of preparation and common reactions of aliphatic hydrocarbons and aromatic reactions.
- 6.the principles of simple mechanistic transformation such as nucleophilic substitution, elimination, carbonyl condensations and electrophilic aromatic substitution.
- 7.the characteristic properties of “name” reactions such as Grignard, Williamson ether synthesis, Wolff-Kishner and Cannizzaro reaction among others.

B. Intellectual (Thinker) skills:

By the end of this course the students should be able to:

1. Recognize the influence of the structure of the alkyl groups and the nature of the leaving group and the solvent on substitution and elimination reactions.
2. Predict the reactivity of aromatic compounds towards electrophilic and nucleophilic substitutions.
3. Compare and select the common methods of functional group interconversions, the synthesis and transformations of simple organic molecules.
4. Create of chemical information to identify the nature of chemical processes.
5. Analyze organic problems based on theories of general organic chemistry.