

# **Organic chemistry**

## **EMP301**

1<sup>st</sup> semester 2017-2018

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# Course Overview

- Course Code: EMP301
- Credit hours: 3 hrs
- Contact hours: Wednesday from 9:00 am-11:00 am
- Tutorial : Wednesday from 11:00 am-1:00 pm
- Marks: 100 (60+40)
- Marks distribution: 30% mid 1 + 20% mid 2 + 10% attendance + 40 % final
- This course is Pre-requisite of Bio-energy “ESE404”

# Course Overview

- Course objectives:
  - To differentiate between organic and inorganic compounds.
  - To relate the relationship of a molecule's structure with its reactivity
  - To identify the different types of hydrocarbons and understand their physical and chemical properties.
  - To differentiate between the different types of reactions and evaluate their mechanism.
  - To differentiate between the different types stereoisomers

# Course Overview

- Course topics:
  - Types of hydrocarbons and their derivatives
  - Hybridization and stereochemistry
  - Types of reactions: elimination –addition – substitution.
  - Organic reaction mechanism: bond formation & breaking, classification of reagents and reactions, reaction intermediates (carbocation - carboanion-free radicals)
  - Molecular composition and structure of organic compounds: determination of empirical and molecular formula
  - Stereoisomers and their classification and properties.

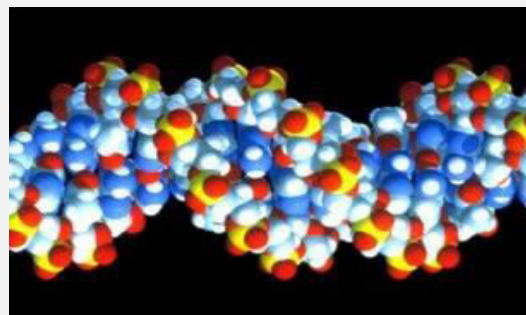
**LET'S START**

# Introduction to Organic Chemistry

- Organic chemistry is the chemistry of carbon.
- Until 1800s, “organic” meant matter derived from living organisms, and “inorganic” meant matter derived from non-living organisms.
- After synthesizing urea from inorganic molecules, chemists reconsidered their definitions.
- **Modern definitions of “organic” and “inorganic” are based on the presence of carbon and how the carbon atoms are bonded together.**
- Although many organic compounds occur in nature, chemists have **synthesized** even more. The cotton, wool, or silk in your clothes composed of natural organic compounds, whereas materials such as polyester, nylon, or plastic are synthesized through organic reactions.

# Introduction to Organic Chemistry

- Organic compounds can be found in many common products such as gasoline, medicine, shampoos, plastic bottles, clothes, perfumes, foods, *etc.*
- Large organic molecules make up the proteins in hair and skin, the lipids in cell membranes and adipose



# Introduction to Organic Chemistry

## Organic vs. inorganic molecules:

comparison	Organic compounds	Inorganic compounds
•Bond type	have covalent bonds	usually have ionic bonds
•Water Solubility	Nonpolar, water insoluble,	Water-soluble,
•Electrical conductivity	non conductor	Conduct electricity in solution and molten phase
•Melting Point & Boiling Point	Intermolecular forces broken fairly easily, so having lower MP, BP	Ionic bonds require more energy to break, so having higher MP,BP
Flammability	Flammable	nonflammable