General Attributes of the Graduates of Basic Sciences

The graduates must be able to:

1. Recognize the role of Basic Sciences in the development of society.
2. Develop scientific approaches that meet community needs considering economic, environmental, social, ethical, and safety requirements.
3. Utilize scientific facts and theories to analyze and interpret practical data.
4. Collect, analyze, and present data using appropriate formats and techniques.
5. Postulate concepts and choose appropriate solutions to solve problems on scientific basis.
6. Apply effectively information technology relevant to the field.
7. Participate effectively in a multidisciplinary teamwork and be flexible for adaptation, decision making and working under contradictory conditions as well as exhibiting the sense of beauty and neatness.
8. Adopt self and long life-learning and participate effectively in research activities.
9. Deal with scientific data in Arabic, English or other languages.

Chemistry Program

In addition to the general attributes of the basic science graduates, the chemist must develop a group of attributes which are the ability to:

1. Design and conduct experimental work, critically evaluate the outcomes, review and report on practice.
2. Have knowledge and experience of working with relevant and advanced laboratory techniques.
3. Participate in and review quality control processes, manage risks and organize time to finish jobs.
4. Demonstrate wide background knowledge related to the different branches of chemistry.

Knowledge and Understanding

In addition to the general knowledge acquired by the basic science graduates, the chemist should be able to demonstrate knowledge and understanding of:

1. Chemical concepts, nomenclature, formulae and units.
2. Characteristics of the different states of the matter and elements including trends within the periodic table and the related theories.
3. The principles, procedures and techniques used in chemical analysis, characterization and structural investigations of different chemical compounds.
4. The major types of chemical reactions, their characteristics and mechanisms as well as their kinetics including catalysis.
5. The principles of thermodynamics and quantum mechanics including their applications in chemistry.
6. The constitution and properties of the different chemical compounds, including the main synthetic pathways and the relation between the properties of individual atoms and molecules.
7. The current issues of chemical research and technological development.

Practical and Professional skills:

The Graduates of Chemistry Program must be able to:

1. Assess risk in laboratory work taking into consideration the specific hazards associated with the use of chemical materials as well as the safe and proper operation of the laboratory techniques.
2. Conduct standard laboratory procedures involved in analytical and synthetic work.
3. Monitor by observation and measurements the chemical properties or changes, including systematic recording and technical reporting.
4. Use computational packages and tools in chemical investigations.

Intellectual skills

The Graduates of Chemistry Program must be able to:

1. Differentiate between the different states of the matter, elements and compounds based on the recognition and quantification of the properties.
2. Employ computational software's and data- processing skills in handling of chemical information and analysis of chemical data.
3. Explain concepts and determine the efficiency of chemical systems by applying mathematical expressions.
4. Analyze chemical data to identify and confirm chemical structures as well as determine chemical composition.
5. Propose and conclude mechanisms for physical and chemical processes.

General and Transferable skills:

1. Use information and communication technology effectively.
2. Identify roles and responsibilities, and their performing manner.
3. Think independently, set tasks and solve problems on scientific basis.
4. Work in groups effectively; manage time, collaborate and communicate with others positively.
5. Consider community linked problems, ethics and traditions.
6. Acquire self- and long life–learning.
7. Apply scientific models, systems, and tools effectively.
8. Deal with scientific patents considering property right.
9. Exhibit the sense of beauty and neatness.