



- المعايير القومية الأكاديمية المرجعية (NARS) لبرنامج الكيمياء الحيوية (منفرد التخصص)

1. General Attributes of the Graduates of Biochemistry program

The graduates of the Biochemistry program must be able to:

Attributes of the Graduates of Basic Sciences	<ol style="list-style-type: none">1.1. Recognize the role of Basic Sciences in the development of society.1.2. Develop scientific approaches that meet community needs considering economic, environmental, social, ethical, and safety requirements.1.3. Utilize scientific facts and theories to analyze and interpret practical data.1.4. Collect, analyze, and present data using appropriate formats and techniques.1.5. Postulate concepts and choose appropriate solutions to solve problems on scientific basis.1.6. Apply effectively information technology relevant to the field.1.7. 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.1.8. Adopt self and long life-learning and participate effectively in research activities.1.9. Deal with scientific data in Arabic, English or other languages.
Attributes of the Graduates of the Biochemistry program	<ol style="list-style-type: none">1.1. Be acquainted with the molecular basis and chemistry of the processes that take place in cells and organisms.1.2. Work safely in a laboratory environment and possess the basic competencies necessary for a range of practical biochemical techniques.1.3. Apply statistical skills in manipulation and presentation of biochemical data.1.4. Analyze biochemical data to characterize biomolecules and assess the activity of biochemical processes.

2. Knowledge and Understanding

The graduates of the Biochemistry program must be able to demonstrate the knowledge and understanding of:

NARS for Basic Sciences Graduates	<ul style="list-style-type: none">2.1. The related basic scientific facts, concepts, principles and techniques.2.2. The relevant theories and their applications.2.3. The processes and mechanisms supporting the structure and function of the specific topics.2.4. The related terminology, nomenclature and classification systems.2.5. The theories and methods applied for interpreting and analyzing data related to discipline.2.6. The developmental progress of the program-related knowledge.2.7. The relation between the studied topics and the environment.
NARS for Biochemistry program Graduates	<ul style="list-style-type: none">2.1. The fundamentals of sciences relevant to biochemistry especially chemistry, physics and mathematics.2.2. The basic knowledge of the molecular biosciences, including biochemical processes, genetics, molecular biology and cell biology.2.3. The principles and limitations of practical techniques, and methods related to biochemical investigations.2.4. The structures, assemblies and functions of biological macromolecules and how they conduct and control the biochemical processes.2.5. Mechanisms of the key metabolic reactions involved in the biochemical processes as well as the relation between biochemistry and cellular and organismal processes.2.6. The key processes involved in the control of arrangement and expression of genes.2.7. The important biochemical features that distinguish plants from animals.

3. Practical and Professional Skills

The graduates of Biochemistry program must be able to:

NARS for Basic Sciences Graduates	3.1. Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance. 3.2. Apply techniques and tools considering scientific ethics. 3.3. Solve problems using a range of formats and approaches. 3.4. Identify and criticize the different methods used in addressing subject related issues.
NARS for Biochemistry program Graduates	3.1. Use advanced biochemical techniques and methods relevant to the molecular biosciences in a safe, logistical and ethical manner. 3.2. Conduct standard laboratory procedures involved in biochemical analysis and synthetic work as well as industrial applications. 3.3. Consider variations inherent in dealing with biological materials such as sample size, accuracy, calibration and precision. 3.4. Use computational packages and statistics in data handling and manipulation of biochemical information.

4. Intellectual Skills

The graduates of Biochemistry program must be able to:

NARS for Basic Sciences Graduates	4.1. Differentiate between subject-related theories and assess their concepts and principles. 4.2. Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant data. 4.3. Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts. 4.4. Postulate and deduce mechanisms and procedures to handle scientific problems. 4.5. Construct several related and integrated information to confirm, make evidence and test hypotheses.
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NARS for Biochemistry program Graduates	<p>4.1. Use computational softwares in simulation studies to understand, confirm and optimize his/her practical techniques.</p> <p>4.2. Integrate and link information across different approaches studied in different areas of biochemistry.</p> <p>4.3. Classify and elucidate mechanisms of biochemical processes.</p> <p>4.4. Analyze biochemical data to identify and determine Biochemical Structures.</p>
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5. General and Transferable Skills

The graduates of Biochemistry program must be able to:

NARS for Basic Sciences Graduates	<p>5.1. Use information and communication technology effectively.</p> <p>5.2. Identify roles and responsibilities, and their performing manner.</p> <p>5.3. Think independently, set tasks and solve problems on scientific basis.</p> <p>5.4. Work in groups effectively; manage time, collaborate and communicate with others positively.</p> <p>5.5. Consider community linked problems, ethics and traditions.</p> <p>5.6. Acquire self- and long life-learning.</p> <p>5.7. Apply scientific models, systems, and tools effectively.</p> <p>5.8. Deal with scientific patents considering property right.</p> <p>5.9. Exhibit the sense of beauty and neatness.</p>
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