



## المعايير المرجعية الأكاديمية القومية لبرنامج الحيوان والكيمياء:

### Generic National Academic Reference Standards (NARS)

#### 1. Knowledge and Understanding

##### Graduates must acquire the knowledge and understanding of:

- 1.1. The related basic scientific facts, concepts, principles and techniques.
- 1.2. The relevant theories and their applications.
- 1.3. The processes and mechanisms supporting the structure and function of the specific topics.
- 1.4. The related terminology, nomenclature and classification systems.
- 1.5. The theories and methods applied for interpreting and analyzing data related to discipline.
- 1.6. The developmental progress of the program-related knowledge.
- 1.7. The relation between the studied topics and the environment.
- 1.8. Chemical concepts, nomenclature, formulae and units.
- 1.9. Characteristics of the different states of the matter and elements including trends within the periodic table and the related theories.
- 1.10. The principles, procedures and techniques used in chemical analysis, characterization and structural investigations of different chemical compounds.
- 1.11. The major types of chemical reactions, their characteristics and mechanisms as well as their kinetics including catalysis.
- 1.12. The principles of physical chemistry and their applications in chemistry.
- 1.13. The constitution and properties of the different chemical compounds, including the main synthetic pathways and the relation between the properties of molecules.
- 1.14. The current issues of chemical research and technological development
- 1.15. Life of representative Taxa in different disciplines from cellular to organismal levels.
- 1.16. Physiological aspects of animals and human beings.
- 1.17. The characteristic habitat features of representative animal models.
- 1.18. Theories applied for interpreting and analyzing animal and human related information.
- 1.19. Complex organisms through the study of genetics, developmental stages and evolution.

#### 2. Intellectual Skills

##### The graduates must be able to:

- 2.1. Differentiate between subject-related theories and assess their concepts and principles.
- 2.2. Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant



data.

- 2.3. Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.
- 2.4. Postulate and deduce mechanisms and procedures to handle scientific problems
- 2.5. Construct several related and integrated information to confirm, make evidence and test hypotheses.
- 2.6. Differentiate between the different states of the matter, elements and compounds based on the recognition and quantification of the properties.
- 2.7. Employ computational software's and data-processing skills in handling of chemical information and analysis of chemical data.
- 2.8. Analyze chemical data to identify and confirm chemical structures as well as determine chemical composition.
- 2.9. Propose and conclude mechanisms for physical and chemical processes
- 2.10. Interpret the animal and human related knowledge to solve problems.
- 2.11. Assess the interrelationships and the impact of a specific animal model on its ecosystem.
- 2.12. Evaluate animals in the ecosystem, their conservation, economics and sustainability.
- 2.13. Interpret zoological data and respond to a variety of information sources appropriately.

### **3. Practical and Professional Skills**

**The graduates must be able to:**

- 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.
- 3.5. 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.
- 3.6. Conduct standard laboratory procedures involved in analytical and synthetic work.
- 3.7. Monitor by observation and measurements the chemical properties or changes, including systematic recording and technical reporting.
- 3.8. Use computational packages and tools In chemical investigations
- 3.9. Solve Biological problems by a variety of methods including computer-based and other recent tools.
- 3.10. Collect, record and analyze animal and human related data using appropriate techniques in the field and laboratory.
- 3.11. Apply field and laboratory investigations of animal systems in an ethical and responsible manner.

#### 4. General and Transferable Skills

The graduates must be able to:

- 4.1. Use information and communication technology effectively.
- 4.2. Identify roles and responsibilities, and their performing manner.
- 4.3. Think independently, set tasks and solve problems on a scientific basis.
- 4.4. Work in groups effectively; manage time, collaborate and communicate with others positively.
- 4.5. Consider community linked problems, ethics and traditions.
- 4.6. Acquire self- and long life-learning.
- 4.7. Apply scientific models, systems, and tools effectively.
- 4.8. Dealing with scientific patents considering property rights.  
Exhibit the sense of beauty and neatness.

