



المعايير الأكاديمية المرجعية لبرنامج الميكروبيولوجي (ARS)

3- Academic Reference Standards of Microbiology

The Academic Reference Standards for the award of the B.Sc. in microbiology as well as the attributes and capabilities of the graduates were based essentially on the Academic Reference Standards (ARS) approved by the faculty council of faculty of science Minia University (11/10/2011). The ARS mentioned herein justify and characterize the skills and achievements of the microbiology graduate students.

a. Knowledge and understanding:

In addition to the general knowledge acquired by basic sciences graduates, the microbiologist graduates must know and understand the:

- a1. Processes and mechanism of life – from molecular to cellular and –from organism to community.
- a2. Essential facts, major concepts, principles, theories that are associated with program curriculum.
- a3. Terminology, nomenclature and classification system.
- a4. Knowledge about diversity and evolution.
- a5. Ability to read and use appropriate literature with a full and critical understanding.
- a6. Complexity and diversity of life processes through the study of organisms, their molecular, cellular and physiological processes, their genetic and their relationships between them and their environment.
- a7. Nature of essential nutrients in microbes, cells, plants and animals.
- a8. Understand the information and data, and their setting within a theoretical framework.

b. Intellectual Skills:

In addition to the general skills acquired by basic sciences graduates, the microbiologist graduates must be able to:

- b1. Reason critically.
- b2. Identify and solve problems.
- b3. Analyze, evaluate and interpret.
- b4. Plan, conduct and report on a program of research.
- b5. Recognize the moral, social and ethical issues of investigations and the need for ethical standards and professional codes of practice.



c. Practical and professional skills:

In addition to the general skills acquired by basic sciences graduates, the microbiologist graduates must be able to:

- c1.** Use laboratory equipment correctly to generate data in a responsible, safe and ethical manner, paying attention to risk assessment and safety regulations.
- c2.** Record and analyze experimental data, interpret their validity, apply statistical analyses and suggest further investigations.
- c3.** Take effective notes and record experimental procedures and laboratory protocols.
- c4.** Prepare scientific reports.
- c5.** Use the scientific literature correctly and effectively.
- c6.** Communicate scientific data and results, both orally and in writing.

d. General and transferable skills:

In addition to the general skills acquired by basic sciences graduates, the microbiologist graduates must be able to:

- d1.** Structure and communicate ideas effectively both orally and in writing using a range of formats.
- d2.** Manage time, work to deadlines and priorities workloads to achieve targets.
- d3.** Actively participate in groups but be capable of independent work.
- d4.** Access and evaluate information and use IT effectively.
- d5.** Assess the relevance and importance of ideas of others.
- d6.** Develop lifelong learning skills that are flexible and adaptable.
- d7.** Evaluate own performance and working standards and those of others.