

BASIC SCIENCES CENTER

BACHELOR IN BIOLOGY

OBJECTIVE

To train graduates in Biology capable of knowing, proposing, understanding, assimilating, generating, and transmitting theoretical-experimental knowledge through scientific-biological methodologies, with the ability to contribute to the solution of biological problems in the health, biodiversity, and environmental areas, with a critical, proactive, innovative, ethical, and social sense.

STUDENT PROFILE

With the intention to promote a successful academic performance, to provide information that facilitates the vocational decision and the promotion of the career, the desirable characteristics in the academic formation, as well as the attitudes and necessary values to favor the academic success, are included here:

- Interest in biological phenomena
- Interest in laboratory, deskwork, and field activities
- Ability to observe
- Responsibility, constancy, and order at work
- Creativity
- Disposition to work as a team
- Ability to analyze and synthesize information
- Logical and mathematical ability

GRADUATE PROFILE

Knowledge of:

1. Theoretical bases in mathematics and statistics that allow to comprehend and / or develop models that facilitate the understanding of biological phenomena.
2. Molecular bases of organisms at their most elemental level: chemistry, biochemistry, physics chemistry, structure and molecular interactions, genetics and its applications.
3. Fundamentals of cellular biology that allow to understand the morpho-physiological concepts of the organisms.
4. Structure, organization, and development of living beings through processes of cell proliferation and differentiation, involved in cell and organism cloning, as well as genetic manipulation techniques, relevant to medicine, agriculture, and biotechnology.

5. Functional aspects of organisms, concepts, processes of integration and coordination of their functions, contemplating adaptations to the environment where they live.
6. Origin and evolution of living beings: general view of hypotheses and evidence on the origin of different organization levels of living matter.
7. Facts, hypotheses, and evidences that explain biodiversity and phylogenetic lineages, from classic systematics to recent contributions.
8. Organization and interaction of populations and ecosystems considering the different taxa and their relationships among themselves and with the physical environment.
9. Conservation of nature and sustainable development, its perspectives and methodologies.
10. Methodologies to structure and develop research projects.

Skills to:

1. Analyze and solve qualitative and quantitative problems by interpreting, evaluating, and synthesizing data from observations and biological measurements in terms of their significance and explanatory models.
2. Safe handling and use of laboratory materials, following appropriate safety procedures, hygienic measures, and environmental impact.
3. Develop scientific reports using new communication and information technologies.
4. Recognize and interpret the structural and functional mechanisms of organisms from their genetic, embryonic and ontogenetic development.
5. Solve new problems and biological paradigms in the industrial, agricultural, environmental, biotechnological context through planning, development, and control of strategies for their solution.
6. Identify species, their patterns of distribution and paleontological evidence, perform phylogenetic and evolutionary analyzes, to measure biodiversity.
7. Develop ecological studies related to the characterization of the structure of ecosystems and function, their environmental impact, their conservation, aimed at decision-making and management procedures to protect the natural resources through their sustainable use.
8. Apply and analyze concepts, principles and biological theories directed to different sectors of the society.

9. Develop productive projects, showing creativity, initiative, and an entrepreneurial spirit to face the challenges of their activities as a biologist.

Attitudes:

1. Willingness to work as a team and collaborate in multidisciplinary projects.
2. Respect and fair treatment towards nature and living beings.
3. Responsibility in decision-making.
4. Openness for self-training.
5. Critical and insightful.
6. Professional ethics
7. Investigative curiosity

Values:

1. Autonomy
2. Commitment and social responsibility
3. Pluralism
4. Humanism
5. Equity
6. Sustainability
7. Quality in the development of his/her professional activity

Career field:

1. Federal, national, and local government institutions such as the National Biodiversity Commission (CONABIO), the Ministry of Environment and Natural Resources (SEMARNAT), the National Commission for Natural Protected Areas (CONANP), Ecology Directorates, Municipal Parks, State Environmental Protection Agency (PROESPA), Institute of Health of Aguascalientes (ISEA), Museums, Zoos, etc.

2. Governmental and private educational institutions at all levels, from pre-school to higher education institutions.
3. Private companies and NGOs related to environmental analyses, environmental consultancies, Environmental Management Units, propagation and conservation of species, food and pharmaceutical production.
4. National and international research institutions such as National Science and Technology Council (CONACyT) Research Centers, National Forestry Commission (CONAFOR), Agriculture and Livestock Research (INIFAP), Institute of Ecology (INECOL), Center for Research in Mathematics (CIMAT), etc.
5. Creation of companies related to the knowledge and skills acquired during the development of their professional training, which would lead to self-employment and creation of new jobs.

CURRICULUM

DURATION: Nine semesters

PLAN 2012

CAREER

T/H: THEORETICAL HOURS

P/H: PRACTICAL HOURS

FIRST SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Organic Chemistry	4	2	10	BASIC SCIENCES	CHEMISTRY
Mathematics I	3	2	8	BASIC SCIENCES	MATHEMATICS AND PHYSICS
Introduction To Biological Research	0	4	4	BASIC SCIENCES	BIOLOGY
Biology of the Prokaryotes	4	2	10	BASIC SCIENCES	BIOLOGY
Computer science	0	4	4	BASIC SCIENCES	INFORMATION SYSTEMS
Institutional Program of Foreign Languages Institutional Program of Humanist Formation					
SECOND SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Biochemistry	4	2	10	BASIC SCIENCES	CHEMISTRY
Mathematics II	3	2	8	BASIC SCIENCES	MATHEMATICS AND PHYSICS
Biology of the Protozoa	3	2	8	BASIC SCIENCES	BIOLOGY
Chemical physics	4	2	10	BASIC SCIENCES	BIOCHEMICAL ENGINEERING

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THIRD SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Molecular Biology	4	3	11	BASIC SCIENCES	CHEMISTRY
Cellular Biology	4	2	10	BASIC SCIENCES	BIOLOGY
Biology of Algae	3	2	8	BASIC SCIENCES	BIOLOGY
Invertebrates I	4	2	10	BASIC SCIENCES	BIOLOGY

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FOURTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Tissue Biology (Histology)	4	3	11	BASIC SCIENCES	MORPHOLOGY
Invertebrates II	4	2	10	BASIC SCIENCES	BIOLOGY
Introduction to Systematics	3	2	8	BASIC SCIENCES	BIOLOGY
Biostatistics I	3	2	8	BASIC SCIENCES	STATISTICS

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FIFTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Biology of Fungi	4	2	10	BASIC SCIENCES	BIOLOGY
Botany I	4	2	10	BASIC SCIENCES	BIOLOGY
Comparative Anatomy of the Chordates	4	2	10	BASIC SCIENCES	BIOLOGY
Biostatistics II	3	2	8	BASIC SCIENCES	STATISTICS
Professional Ethics	2	2	6	SOCIAL SCIENCES AND HUMANITIES	PHILOSOPHY

SIXTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Botany II	4	2	10	BASIC SCIENCES	BIOLOGY
Developmental Biology	4	2	10	BASIC SCIENCES	MORPHOLOGY
Animal Physiology	4	3	11	BASIC SCIENCES	PHYSIOLOGY AND PHARMACOLOGY
Plant Physiology	4	2	10	BASIC SCIENCES	CHEMISTRY

Professional Practice					
SEVENTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Plant Taxonomy	0	6	6	BASIC SCIENCES	BIOLOGY
Population Ecology	4	2	10	BASIC SCIENCES	BIOLOGY
Genetics	4	2	10	BASIC SCIENCES	CHEMISTRY
Research Workshop	0	3	3	BASIC SCIENCES	BIOLOGY
Business Management	2	2	6	ECONOMIC AND ADMINISTRATIVE	ADMINISTRATION
Bioprojects	0	2	2	BASIC SCIENCES	BIOLOGY
Professional Practice					
EIGHTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Tesina I (Undergraduate research)	0	20	20	BASIC SCIENCES	BIOLOGY
Community and Ecosystem Ecology	4	2	10	BASIC SCIENCES	BIOLOGY
Evolutionary Biology	5	0	10	BASIC SCIENCES	BIOLOGY
Environment and Society	2	2	6	SOCIAL SCIENCES AND HUMANITIES	SOCIOLOGY
Social Service Professional Practice					
NINTH SEMESTER					
COURSES	T/H	P/H	CREDITS	CENTER	DEPARTMENT
Tesina II (Undergraduate research)	0	20	20	BASIC SCIENCES	BIOLOGY
Optional Professionalization Course I	3	2	8		
Optional Professionalization Course II	3	2	8		
Optional Professionalization Course III	3	2	8		
Social Service Professional Practice					

INSTITUTIONAL PROGRAMS

- Professional Practices
- Social Service
- Tutorship
- Mobility and Academic Exchange
- Promotion of Foreign Languages
- Humanism Training Program

DEGREE REQUIREMENTS

The graduate must adhere to chapter XIV of the certification at the technical, higher technical, and bachelor levels, article 156 of the General Teaching Regulation that states the following:

"Once all the courses and requirements indicated in the curriculum of the technical, higher technical, and bachelor levels have been accredited, the graduate may request the issuance of his degree in the Department of Scholar Control, after complying with the following elements:

- I. Have fulfilled the requirements of Social Service, Humanism Training, Professional Practices, and Foreign Languages, defined in institutional programs;
- II. Verify that there is no debt with the Universidad Autónoma de Aguascalientes;
- III. Have covered the established fee in the arbitration plan to obtain the degree, and
- IV. Have presented the final examination. "

Approved by the Honorable University Council in an ordinary session held on December 15, 2011.