(EXISTING)

Name of Program: Biomedical Sciences
(BACHELOR OF SCIENCE)

Degree: Bachelor of Science

The Biomedical Sciences Program is designed to provide students with a solid scientific foundation in biology in relation to human health and disease. Emphasis will be given in the mechanisms governing normal human homeostasis as well as pathobiology of human diseases and all aspects involved (i.e. cellular, molecular, genetic, developmental, anatomical, physiological, and pharmacological). Upon completion of their studies, it is expected that graduates will have been transformed to scientists with good laboratory and writing skills and high ethical standards, ready to offer their services to the international community or continue their studies in relevant sectors such Medicine and Biomedical Research.

GENERAL OBJECTIVES:

- Provision of education leading to an academic degree, namely a Bachelor of Science in Biomedical Sciences.
- Development of the student's capacity to think, write and speak effectively and creatively.
- Development of student's capacity to plan, analyze and design Biomedical Sciences projects.
- Development of student's analytical, design and decision-making competences to perform Biomedical Sciences Studies and Research.
- Building breadth of perspective through the general education requirements and provide sufficient specialization to meet basic professional and career requirements.
- Provision of the necessary requirements for academic and/or career advancement.

SPECIFIC OBJECTIVES:

- The main objective of the program is the provision of a strong foundation in Biology in relation to human health and disease. Emphasis will be given in the mechanisms governing normal human homeostasis as well as pathobiology of human diseases**.**

  Other objectives include:

- Understanding of fundamental theoretical concepts of cell and molecular biology, genetics, physiology and anatomy, pathobiology and other biomedical sciences disciplines, as well as the importance of their application for human health and the improvement of life quality.
- Preparation of students for a lifetime career in Biomedical Sciences by establishing a foundation for life-long learning and development.
- Provision of all the necessary laboratory skills to perform experiments in biomedical sciences research.
- Ability to design and conduct experiments for problem solving and to interpret obtained experimental data.
- Understanding of current scientific literature and recent scientific advances.
- Provision of communication knowledge and skills both written and oral to document work in reports and present results in events such as international scientific conferences.
- Preparation of students for careers in the private sector, government and various research and educational institutions by providing them with all the necessary skills to be competitive for employment in the biomedical sciences field.

LEARNING OUTCOMES:

Upon successful completion of this program, the students should be able to:

- Compare prokaryotic and eukaryotic cells and be able to recall differences and similarities in terms of morphology and cellular organelles
- Explain the way by which DNA is organized in the cell, the basic principles of DNA replication, transcription and translation, as well as the mechanisms of cellular division, and the principles on which basic molecular biology techniques are based.
- Demonstrate their understanding of the process of fertilization and define key structural and molecular events involved in each stage of human development.
- Define the basic anatomical points for each organ of the human body and their relative function and interconnection.
- Identify the clinical presentation and etiology of genetic disorders including: single gene disorders, disorders of chromosome abnormalities, inborn errors of metabolism, multifactorial genetic disorders and cancer genetics and assess the importance, usefulness and limitations of genetic tests.
- Define the main hallmarks of cancer and outline major therapeutic approaches against cancer and list the steps that lead to metastasis
- Describe characteristics of acute and chronic inflammation and the procedures for the prevention and control of infectious diseases.

- Document how a potential malfunction of an organ or organ system of the human body affects the functioning of this system and that of other systems in the human body.
- Recall the molecular mechanism of action for the most important drugs as well as basic toxicological principles

- Recognize the important relationship between theory and practice through their exposure to the laboratory part of the course. Also, demonstrate ability to conduct in-depth research, both individually as well as in teams, in a specific Biomedical Sciences area.
- Illustrate oral and writing skills in topics related to biomedical sciences and develop critical thinking and the capability of problem solving.
- Recognize bioethical issues and employ scientific integrity as a life attitude in their professional scientific and/or research career.

EMPLOYMENT OPPORTUNITIES:

Graduates of the Biomedical Sciences program can be employed in many fields including but not limited to education, research, pharmaceutical sales, and diagnostics in both the private and public sector. Students will also be able to use this degree to pursue postgraduate studies in health professions in order to become medical doctors, or follow an academic or research career.
Since health care career opportunities are expected to grow over the next decade, a degree in biomedical science can be a good investment for the future.

DEGREE REQUIREMENTS All students pursuing the Bachelor of Science degree in “Biomedical Sciences” must complete the following requirements:	
YEAR 1	**60**
YEAR 2	**60**
YEAR 3	**60**
YEAR 4	**60**

Total Requirements	**240 ECTS**

Year 1		
SEMESTER 1		**30 ECTS**
BMS111	Introduction to Human Biology	6
BMS112	Calculus I	5
CHE113	General and Inorganic Chemistry	9
EUC110	Academic skills	5
ENH090	English for Health Sciences III	5
SEMESTER 2		**30 ECTS**
BMS121	Organic Chemistry	6
BMS122	Anatomy I	6
BMS123	Physiology I	6
BMS124	Cell Biology	7
BMS125	Physics for biomedical sciences	5
Year 2		
SEMESTER 3		**30 ECTS**
BMS211	Anatomy II	6
BMS212	Physiology II	6
BMS213	Molecular Biology	6
BMS214	Biochemistry I	7
BMS215	Applied Biostatistics	5
SEMESTER 4		**30 ECTS**
BMS221	Biochemistry II	8
BMS222	Basic Epidemiology	6
BMS223	Histology I	8
BMS224	Medical Genetics	8
Year 3		
SEMESTER 5		**30 ECTS**
BMS311	Developmental Biology and Embryology	5
BMS312	Bioinformatics	5

BMS313	Nutrition and metabolism	5
BIO307	Biotechnology	5
BMS314	Reproductive biology	5
RES303	Research Methodology in Health Sciences	5
SEMESTER 6		**30 ECTS**
BMS321	Microbiology	7
BMS322	Clinical Immunology and Hematology	7
BMS323	Bioethics and Scientific Integrity	5
BMS324	Regenerative Medicine	6
Elective course*		5
Year 4		
SEMESTER 7		**30 ECTS**
BMS411	Final year project I	8
BMS412	Systems Biomedicine	6
BMS413	Cancer Biology	6
BMS414	Molecular Pharmacology	5
Elective course*		5
SEMESTER 8		**30 ECTS**
BMS421	Final year project II	12
BMS422	Clinical Chemistry	7
BMS423	Drugs and disease	5
BMS424	Pathobiology	6
*** Electives are selected from the list below:**		
BIO308	Teaching Biology	5
BMS325	Health Care Management and Public Health	5
BMS326	Cellular Neuroscience	5
BMS327	Toxicology and Forensics	5
BMS415	Medical Psychology	5
BMS416	Personalized Medicine	5