



Republic of the Philippines  
**BATANGAS STATE UNIVERSITY**  
 Pablo Borbon, Batangas City, Philippines 4200  
**COLLEGE OF ARTS AND SCIENCES**  
 Tel No: 980-0385 loc. 1125  
 Email: cas.batstateu@gmail.com



**CURRICULUM**  
**Bachelor of Science in Biology (BS Biology)**  
 Academic Year 2018-2019

Reference CMOs: CMO No. 49, s. 2017, CMO 4 s. 2018 and CMO No 20, s. 2013

**Curriculum Description**

The BS Biology program is a 4- year degree program that is structured as a generalized framework of study with the end view of grounding students with the fundamental concepts, principles and theories of the biological, natural and physical sciences and the conduct of research. This includes the acquisition of appropriate skills, and training in the efficient processing and presentation of information in both written and oral form.

**Program Objectives**

- The BS Biology program is structured to meet the needs of professional biologists who:
- can be employed in government/ private institutions and other agencies where scientists with biological expertise are needed;
  - can engage in entrepreneurial activities;
  - conduct research in the various areas of biology;
  - undertake post graduate education in Biology and allied fields; and,
  - pursue a career in teaching.

**Institutional Graduate Attributes (IGA)**

IGA	Institutional Graduate Attributes (IGA) Statements
IGA 1	<b>Knowledge Competence</b> Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
IGA 2	<b>Creativity and Innovation</b> Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
IGA 3	<b>Critical and Systems</b> Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
IGA 4	<b>Communication</b> Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Filipino.
IGA 5	<b>Lifelong Learning</b> Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
IGA 6	<b>Leadership, teamwork, and Interpersonal Skills</b> Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.
IGA 7	<b>Global Outlook</b> Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
IGA 8	<b>Social and National Responsibility</b>

	Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.
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### Student Outcomes (SO)

SO	Student Outcomes (SO) Statements
SO 1	<b>Discipline Knowledge</b> Demonstrate broad and coherent knowledge and understanding in the core areas of the statistical theory and statistical model.
SO 2	<b>Investigation</b> Interpret scientific data and reflect on relevant scientific and ethical issues.
SO 3	<b>Developments in Field of Practice</b> Articulate the latest developments in their specific field of practice.
SO 4	<b>Leadership and Teamwork</b> Work effectively in multi-disciplinary and multi-cultural teams.
SO 5	<b>Problem Analysis</b> Apply analytical, critical and problem solving skills using the Scientific Method.
SO 6	<b>Ethics and Professionalism</b> Demonstrate professional, social, and ethical responsibility, especially in practicing intellectual property rights.
SO 7	<b>Communication</b> Effectively communicate orally and in writing using both the English/Filipino language.
SO 8	<b>Environment and Sustainability</b> Preserve and promote Filipino historical and cultural heritage based on RA7722.
SO 9	<b>Lifelong Learning</b> Develop an in-depth understanding of the basic principles governing the science of life.
SO 10	<b>Science and other Disciplines</b> Connect science and math to the other disciplines.
SO 11	<b>Modern Tool Usage</b> Carry out basic mathematical and statistical computations and use appropriate technologies in (a) the analysis of data; and (b) In pattern recognition, generalization, abstraction, critical analysis and problem solving.
SO 12	<b>Project Management</b> Accepts and critically evaluates input from others.
SO 13	<b>Social and National Responsibility</b> Communicate information, ideas problems and solutions both, orally and in writing, to other scientists, decision makers and the public.
SO 14	<b>Design and Development Solutions</b> Design and perform techniques and procedures following safe and responsible laboratory or field.
SO 15	<b>Science in Everyday Life</b> Appreciate the limitations and implications of science in everyday life.
SO 16	<b>Data Management</b> Commit to the integrity of data.
SO 17	<b>Research Skills</b> Utilize techniques/procedures relevant to laboratory or field work research settings.
SO 18	<b>Problem Solving Skills</b> Carry out basic mathematical and statistical computations and use of appropriate technologies in the analysis of biological data.
SO 19	<b>Science and Society</b> Extend knowledge and critically assess current views and theories in selected areas of the biological science.

## Curriculum Components

Courses	Units	Total
<b>A. General Education Courses (CMO No. 20, Series of 2013)</b>		<b>36 units</b>
<b>B. Biology Tool Courses (CMO No. 49, Series 2017)</b>		<b>18 units</b>
<b>C. Fundamental Courses (CMO No. 49, Series 2017)</b>		<b>50 units</b>
<b>D. Major Specialization Courses</b>		<b>25 units</b>
Marine Biology	5	
Human Anatomy and Physiology	5	
Marine Biotechnology	5	
Food Microbiology	5	
Medical Histology	5	
<b>E. Free Electives*</b>		<b>6 units</b>
Human Genetics		
Qualitative and Quantitative Genetics	3	
Industrial Microbiology	3	
Microbial Ecology	3	
Marine Ecosystem	3	
Marine Macrophytes	3	
<b>F. Mandated Courses</b>		
Physical Education 1-4		<b>8 units</b>
NSTP 1 and 2		<b>6 units</b>
<b>G. Undergraduate Thesis</b>		<b>6 units</b>
<b>H. On-the-Job Training</b>		<b>3 units</b>
<b>TOTAL</b>		<b>158 units</b>

## Program of Study

FIRST YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
NSTP 111	National Service Training Program 1	3	3	-	-	-
PE 101	Physical Fitness, Gymnastics and Aerobics	2	2	-	-	-
BIO 102	General Botany lecture	3	3	-	-	BIO102L
BIO 102L	General Botany laboratory	2	0	2	-	BIO102
BIO 103	General Zoology	3	3	-	-	BIO103L
BIO 103L	General Zoology laboratory	2	0	2	-	BIO103
GE 109	Science, Technology and Society	3	3	-	-	-
GE 106	Purposive Communication	3	3	-	-	-
GE 102	Mathematics in the Modern World	3	3	-	-	-
	<b>TOTAL</b>	<b>24</b>	<b>20</b>	<b>4</b>		

FIRST YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
NSTP 121	National Service Training Program 2	3	3	-	NSTP 111	
PE 102	Rhythmic Activities	2	2	-	PE 101	
BIO 104	Systematics lecture	3	3	-	BIO102 BIO103	BIO104L
BIO 104L	Systematics laboratory	2	0	2		BIO104
BIO 105	Chemical Biology I (Organic Molecules) lecture	2	2	-		BIO105L
BIO 105L	Chemical Biology I (Organic Molecules) laboratory	1	0	1		BIO105
BIO 106	Statistical Biology	3	3	-	-	
GE 105	Readings in Philippine History	3	3	-	-	
GE 101	Understanding the Self	3	3	-	-	
	<b>TOTAL</b>	<b>22</b>	<b>19</b>	<b>3</b>		

SECOND YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
PE 103	Individual and Dual Sports	2	2	-	PE 101	
BIO201	Microbiology lecture	3	3	-	BIO102 BIO103	BIO201L
BIO201L	Microbiology laboratory	2	0	2		BIO201
BIO202	General Ecology lecture	3	3	-	BIO102 BIO103 BIO104	BIO202L
BIO202L	General Ecology laboratory	2	0	2		BIO202
BIO203	Chemical Biology II (Analytical Methods for Biology) lecture	2	2	-	BIO105	BIO203L
BIO203L	Chemical Biology II (Analytical Methods for Biology) laboratory	1	0	1		BIO203
Fili 101	KontekstwalisadongKomunikasyonsa Filipino	3	3	-	-	
GEd 104	The Contemporary World	3	3	-	-	
	<b>TOTAL</b>	<b>21</b>	<b>16</b>	<b>5</b>		

SECOND YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
PE 104	Team Sports	2	2	-	PE 101	
BIO204	Chemical Biology III (Biomolecules) lecture	3	3	-	BIO105 BIO203	BIO204L
BIO204L	Chemical Biology III (Biomolecules) laboratory	2	0	2		BIO204
BIO205	Evolutionary Biology lecture	3	3	-	BIO102 BIO103	BIO205L
BIO205L	Evolutionary Biology laboratory	2	0	2		BIO205
BIO206	Genetics lecture	3	3	-	BIO102 BIO103	BIO206L
BIO206L	Genetics laboratory	2	0	2		BIO206
Fili 102	Filipino saIba'tIbangDisiplina	3	3	-		Fili 101
	<b>TOTAL</b>	<b>20</b>	<b>14</b>	<b>6</b>		

THIRD YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
BIO301	Cell and Molecular Biology lecture	3	3	-	BIO102 BIO103 BIO 204 BIO206	BIO301L
BIO301L	Cell and Molecular Biology laboratory	2	0	2		BIO301
BIO302	General Physiology lecture	3	3	-	BIO102 BIO103	BIO302L
BIO302L	General Physiology laboratory	2	0	2	-	BIO302
GEd 107	Ethics	3	3	-	-	-
GEd 108	Art Appreciation	3	3	-	-	-
GEd 103	Life and Works of Rizal	3	3	-	-	-
Litr 102	ASEAN Literature	3	3	-	-	-
	<b>TOTAL</b>	<b>22</b>	<b>18</b>	<b>4</b>		

THIRD YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
BIO303	Biophysics lecture	3	3	-		
BIO303L	Biophysics laboratory	1	0	1		
BIO304	Developmental Biology lecture	3	3	-	BIO102 BIO103 BIO301	BIO304L
BIO304L	Developmental Biology laboratory	2	0	2		BIO304
BIO305	Specialization Course I (Marine Biology) lecture	3	3	-	BIO102	BIO305L

					BIO103 BIO202	
BIO305L	Specialization Course I (Marine Biology ) laboratory	2	0	2		BIO305
BIORES1	Thesis I: Introduction to Research	2	2	-		
	<b>TOTAL</b>	<b>16</b>	<b>11</b>	<b>5</b>		

THIRD YEAR						
SUMMER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
BIO306	On-the-Job Training / Practicum (200 hours)	3	-	-	Finished all major subjects from First year to Third Year	
	<b>TOTAL</b>	<b>3</b>	<b>-</b>	<b>-</b>		

FOURTH YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
BIO 401	Specialization Course II (Human Anatomy and Physiology)	3	3	-	BIO102 BIO302	BIO401L
BIO 401L	Specialization Course II (Human Anatomy and Physiology Laboratory)	2	0	2		BIO401
BIO 402	Specialization Course III (Marine Biotechnology) lecture	3	3	-	BIO 204 BIO 301	BIO402L
BIO 402L	Specialization Course III (Marine Biotechnology) laboratory	2	0	2		BIO402
BIO 403	Free Elective *	2	2	-		
BIO 403L	Free Elective Lab	1	0	1		
BIO RES2	Thesis II: Thesis Experimentation	2	2	-	BIORES1	
	<b>TOTAL</b>	<b>15</b>	<b>9</b>	<b>5</b>		

FOURTH YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	Co-requisite
BIO404	Specialization Course IV (Food Microbiology) lecture	3	3	-	BIO201	BIO404L
BIO404L	Specialization Course IV (Food Microbiology) laboratory	2	0	2		BIO404
BIO405	Specialization Course V (Medical Histology)	3	3	-	BIO101 BIO102 BIO302	BIO405L
BIO405L	Specialization Course V (Medical Histology)	2	0	2		BIO405
BIO406	Free Elective *	2	2	-	(refer to attached table on electives)	BIO406L
BIO406L	Free Elective Lab	1	0	1		BIO406
BIORES3	Thesis III: Oral Defense	2	2	-	BIORES2	
	<b>TOTAL</b>	<b>15</b>	<b>10</b>	<b>5</b>		

Free Electives (6 units). Students are required to choose 6 units from the following courses:

	Units	Prerequisite
Human Genetics	3	BIO206, BIO404
Qualitative and Quantitative Genetics	3	BIO206, BIO404
Industrial Microbiology	3	BIO201, BIO401
Microbial Ecology	3	BIO101, BIO201, BIO401
Marine Ecosystem	3	BIO 202, BIO402
Marine Macrophytes	3	BIO 102, BIO 301, BIO 402