

**CURRICULUM**  
**Bachelor of Science in Chemistry (BS Chemistry)**

Academic Year 2018-2019

Reference CMOs: CMO No. 47, s. 2017; CMO No 4, s. 2018 and CMO No. 20, s 2013

**Curriculum Description**

The BS Chemistry program is a four year degree program that prepares the students to become highly skilled practitioners for industry, academic and research institutions and will enable them to engage in national and international concern and action. The program requires 144 units consisting the full spectrum of chemistry courses and supporting biological sciences, mathematics and physics needed by the students to develop in-depth understanding of chemical principles; a working knowledge of the properties of chemical substances; skill in basic laboratory methods, including modern instrumentation; the ability to observe, record, critically interpret, and communicate experimental results; and a facility in analytical and logical problem solving. The program is designed to promote collaborative efforts that span borders and cultures towards the enhancement of chemical knowledge and processes for the benefit of society and the environment.

**Program Objectives**

The program aims to:

1. Produce graduates who comply with the current qualification requirements of professional chemists for local and overseas employment; and
2. Prepare students for higher studies in chemistry and in other fields.

**Program Outcomes**

Graduates of BS Chemistry are expected to demonstrate the following competencies:

- a. demonstrate a broad and coherent knowledge and understanding in the core areas of chemistry: inorganic, organic, physical, biological and analytical chemistry; and in addition the necessary background in mathematics and physics
- b. gather data using standard laboratory equipment, modern instrumentation and classical techniques
- c. identify and solve problems involving chemistry, using current disciplinary and interdisciplinary principles
- d. qualify for further study and/or for entry-level professional employment in the general workplace
- e. work effectively and independently in multi-disciplinary and multi- cultural teams
- f. act in recognition of professional, social, and ethical responsibility
- g. effectively communicate orally and in writing using both English and Filipino
- h. articulate and discuss the latest developments in the specific field of practice
- i. interpret relevant scientific data and make judgments that include reflection on relevant scientific and ethical issues
- j. preserve and promote “Filipino historical and cultural heritage”

**Curriculum Components**

Courses	Units	Total
<b>a. General Education Courses (CMO No. 20, Series of 2013)</b>		36
<b>b. Core Courses</b>		
<i>Ancillary Courses</i>		18
Math Analysis 1	5	
Math Analysis 2	5	
Physics 1	4	
Physics 2	4	
<i>Chemistry</i>		61
Principles of Chemistry	5	
Inorganic Chemistry 1	4	
Organic Chemistry 1	5	
Physical Chemistry 1	4	
Analytical Chemistry 1	5	
Inorganic Chemistry 2	3	
Organic Chemistry 2	5	
Physical Chemistry 2	4	
Biochemistry 1	5	
Analytical Chemistry 2	5	
Analytical Chemistry 3	4	
Physical Chemistry 3	3	
Biochemistry 2	3	
Prof. Practice w/ Comprehensive Exam 1	2	
Prof. Practice w/ Comprehensive Exam 2	2	
Prof. Practice w/ Comprehensive Exam 3	2	

<b>c. Chemistry Electives</b>		9
Chemistry Elective 1	3	
Chemistry Elective 2	3	
Chemistry Elective 3	3	
<b>d. Thesis and Professional Engagement</b>		6
Professional Engagement	3	
Introduction to Research	1	
Thesis Experimentation and Writing	1	
Thesis Oral Defense	1	
<b>e. Mandated Courses</b>		14
Physical Fitness, Gymnastics and Aerobics	2	
Rhythmic Activities	2	
Individual and Dual Sports	2	
Team Sports	2	
National Service Training Program 1	3	
National Service Training Program 1	3	
<b>TOTAL</b>	<b>144</b>	

## PROGRAM OF STUDY

FIRST YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 141	Principles of Chemistry	3	3	-	-	-
CHEM 141L	Principles of Chemistry Laboratory	2	-	6	-	-
Math 114	Math Analysis 1	5	5	-	-	CHEM141
GE 102	Mathematics in the Modern World	3	3	-	-	-
GE 106	Purposive Communication	3	3	-	-	-
NSTP 101	National Service Training Program 1	3	3	-	-	-
PE 101	Physical Fitness, Gymnastics and Aerobics	2	2	-	-	-
<b>TOTAL</b>		<b>21</b>	<b>19</b>	<b>6</b>		

FIRST YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 142	Inorganic Chemistry 1	3	3	-	-	-
CHEM 142L	Inorganic Chemistry 1 Laboratory	1	-	3	CHEM 141	-
Math 115	Math Analysis 2	5	5	-	-	CHEM 142
Phy106	Physics 1	3	3	-	Math114	-
Phy106L	Physics 1 Laboratory	1	-	3	-	-
GE 101	Understanding the Self	3	3	-	-	Phy106
GE 105	Readings of the Philippine History	3	3	-	-	-
NSTP 102	National Service Training Program 2	3	3	-	-	-
PE 102	Rhythmic Activities	2	2	-	NSTP 101	-
<b>TOTAL</b>		<b>24</b>	<b>22</b>	<b>6</b>		

SECOND YEAR						
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 241	Organic Chemistry 1	3	3	-	-	-
CHEM 241L	Organic Chemistry 1 Laboratory	2	-	6	CHEM 142	-
CHEM 242	Analytical Chemistry 1	3	3	-	-	CHEM 241
CHEM 242L	Analytical Chemistry 1 Laboratory	2	-	6	CHEM 142	-
Phy 107	Physics 2	3	3	-	CHEM 141L	CHEM 242
Phy 107L	Physics 2 Laboratory	1	-	3	Phy 106	-
GE 109	Science, Technology and Society	3	3	-	-	Phy 107
Fili 101	KontekswalisadongKomunikasyonsa Filipino	3	3	-	-	-
PE 103	Individual and Dual Sports	2	2	-	-	-
<b>TOTAL</b>		<b>22</b>	<b>17</b>	<b>15</b>		

SECOND YEAR						
SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 243	Organic Chemistry 2	3	3	-	-	-
CHEM 243L	Organic Chemistry 2 Laboratory	2	-	6	CHEM 241	-

CHEM 244	Analytical Chemistry 2	3	3	-	-	CHEM 243
CHEM 244L	Analytical Chemistry 2 Laboratory	2	-	6	CHEM 242	-
CHEM 245	Physical Chemistry 1	3	3	-	-	CHEM 244
CHEM 245L	Physical Chemistry 1 Laboratory	1	-	3	Math 115, Phy 107	-
GEd 104	The Contemporary World	3	3	-	CHEM 142L	CHEM 245
Fili 102	Filipino sa Ibang Disiplina	3	3	-	-	-
PE 104	Team Sports	2	2	-	-	-
<b>TOTAL</b>		<b>22</b>	<b>17</b>	<b>15</b>		

THIRD YEAR FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 341	Physical Chemistry 2	3	3	-	-	-
CHEM 341L	Physical Chemistry 2 Laboratory	1	-	3	CHEM 245	-
CHEM 342	Biochemistry 1	3	3	-	-	CHEM 341
CHEM 342L	Biochemistry 1 Laboratory	2	-	6	CHEM 243	-
CHEM 343	Analytical Chemistry 3	3	3	-	CHEM 241L	CHEM 342
CHEM 344	Chemistry Elective 1	3	3	-	CHEM 242	-
GEd 108	Art Appreciation	3	3	-	CHEM 241, CHEM 242	-
Litr 102	ASEAN Literature	3	3	-	-	-
<b>TOTAL</b>		<b>21</b>	<b>15</b>	<b>9</b>		

THIRD YEAR SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 345	Physical Chemistry 3	3	3	-	-	-
CHEM 346	Biochemistry 2	3	3	-	CHEM 341	-
CHEM 347	Chemistry Elective 2	3	3	-	CHEM 342	-
GEd 107	Ethics	3	3	-	CHEM 241, CHEM 242	-
GEd 103	Life and Works of Rizal	3	3	-	-	-
CHEMRes1	Introduction to Research	1	1	-	-	-
<b>TOTAL</b>		<b>16</b>	<b>16</b>	<b>-</b>		
<i>*the student must have passed all board chemistry subjects up to the third year, first semester</i>						

THIRD YEAR MIDTERM						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 348	Professional Engagement	3	-	-	-	-
<b>TOTAL</b>		<b>3</b>	<b>-</b>	<b>-</b>		

FOURTH YEAR FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 441	Inorganic Chemistry 2	3	3	-	-	-
CHEM 442	Chemistry Elective 3	3	3	-	CHEM 142	-
CHEMRes 2	Thesis Experimentation and Writing	1	-	3	CHEM 241, CHEM 242	-
CHEM 441	Inorganic Chemistry 2	3	3	-	CHEMRes 1	-
<b>TOTAL</b>		<b>7</b>	<b>6</b>	<b>3</b>		

FOURTH YEAR SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Pre-requisite	Co-Requisite
CHEM 443	Professional Practice with Comprehensive Examination 1	2	2	-	-	-

CHEM 444	Professional Practice with Comprehensive Examination 2	2	2	-	Graduating Standing	CHEM 444, CHEM 445
CHEM 445	Professional Practice with Comprehensive Examination 3	2	2	-	Graduating Standing	CHEM 443, CHEM 445
CHEMRes 3	Thesis Oral Defense	1	1	-	Graduating Standing	CHEM 443, CHEM 444
<b>TOTAL</b>		<b>7</b>	<b>7</b>	<b>-</b>		