

**DEPARTMENT OF PHYSICAL SCIENCES AND MATHEMATICS  
COLLEGE OF ARTS AND SCIENCES  
UNIVERSITY OF THE PHILIPPINES MANILA**



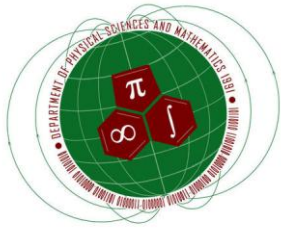
## Bachelor of Science in Biochemistry

### First Year

1 <sup>st</sup> Semester			2 <sup>nd</sup> Semester		
Subject	Units	Prerequisites	Subject	Units	Prerequisites
(AH) Comm I (Communication Skills I)	3		(AH) Comm II (Communication Skills II)	3	Comm I
(SSP) History I (Philippine History)	3		(SSP) Soc Sci I (Foundations of Behavioral Sciences)	3	
(SSP)	3		(SSP)	3	
Math 17 (Algebra and Trigonometry)	5		(MST)	3	
Geo 11 (Principles of Geology)	3		Chem 14 (Fundamentals of General Chemistry I)	3	Math 11 or equivalent
CMSC 10 (Introduction to Internet)	1		Chem 14.1 (Fundamentals of General Chemistry I – Laboratory)	1	Chem 14 (co-requisite)
PE1	(2)		Math 73 (Fundamentals of Analysis I)	3	Math 17
NSTP	(3)		PE2	(2)	
			NSTP	(3)	
<b>Total</b>	<b>18</b>		<b>Total</b>	<b>19</b>	

### Summer

Subject	Units	Prerequisites
(AH)	3	
Chem 18 (Fundamentals of General Chemistry II)	3	Chem 14 / 14.1
Chem 18.1 (Fundamentals of General Chemistry II – Laboratory)	4	Chem 18 (co-requisite)
<b>Total</b>	<b>8</b>	



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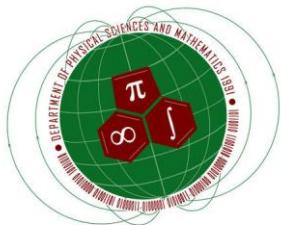


**Second Year**

1 <sup>st</sup> Semester			2 <sup>nd</sup> Semester		
Subject	Units	Prerequisites	Subject	Units	Prerequisites
(AH)	3		(SSP)	3	
Chem 31 (Elementary Organic Chemistry)	3	Chem 14 / 14.1	Chem 27 (Analytical Chemistry)	3	Chem 18 / 18.1
Chem 31.1 (Elementary Organic Chemistry – Laboratory)	2	Chem 31 (co-requisite)	Chem 27.1 (Analytical Chemistry – Laboratory)	2	Chem 27 (co-requisite)
Bio 10 (General Biology)	5	Chem 14 or equivalent	Chem 35 (Organic Chemistry 2)	3	Chem 31 / 31.1
Math 74 (Fundamentals of Analysis II)	3	Math 73	Chem 35.1 (Organic Chemistry 2 – Laboratory)	1	Chem 35 (co-requisite)
Physics 71 (Elementary Physics I)	4	Math 73 or equivalent	Math 75 (Fundamentals of Analysis III)	3	Math 74
Physics 71.1 (Elementary Physics – Laboratory)	1	Physics 71 (co-requisite)	Physics 72 (Elementary Physics II)	4	Physics 71
PE2	(2)		Physics 72.1 (Elementary Physics II – Laboratory)	1	Physics 71.1, Physics 72 (co-requisite)
			PE2	(2)	
<b>Total</b>	<b>21</b>		<b>Total</b>	<b>20</b>	

**Summer**

Subject	Units	Prerequisites
(AH)	3	
Math 101 (Elementary Statistics)	3	Math 11 or Math 17
<b>Total</b>	<b>6</b>	

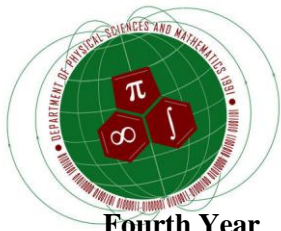


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**Third Year**

<b>1<sup>st</sup> Semester</b>			<b>2<sup>nd</sup> Semester</b>		
<b>Subject</b>	<b>Units</b>	<b>Prerequisites</b>	<b>Subject</b>	<b>Units</b>	<b>Prerequisites</b>
Biochem 34 (Chemistry of Biomolecules)	3	Chem 18/18.1, Chem 35/35.1, Bio 10	Biochem 35 (Metabolism)	3	Biochem 34 / 34.1
Biochem 34.1 (Chemistry of Biomolecules)	2	Biochem 34 (co-requisite)	Biochem 35.1 (Metabolism – Laboratory)	1	Biochem 35 (co-requisite)
Biochem 171 (Bioethics)	1	Junior standing	Biochem 198 (Seminar)	1	Junior standing
Chem 156 (Physical Chemistry)	3	Chem 18 / 18.1, Math 75, Physics 72 / 72.1	Chem 151 (Introductory Quantum Chemistry)	3	Math 75, Physics 72 / 72.1
Chem 156.1 (Physical Chemistry – Laboratory)	2	Chem 156 (co-requisite)	Chem 157 (Physical Chemistry II)	3	Chem 156 / 156.1
Bio 120 (Microbiology)	4	Bio 10, Chem 31 or equivalent	Chem 157.1 (Physical Chemistry II – Laboratory)	2	Chem 157 (co-requisite)
CMSC 110 (Foundation of Biocomputing)	3		Bio 150 (Introduction to Molecular and Cell Biology)	4	Biochem 14 or equivalent, Bio 10
<b>Total</b>	<b>18</b>		<b>Total</b>	<b>17</b>	



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**Fourth Year**

1 <sup>st</sup> Semester			2 <sup>nd</sup> Semester		
Subject	Units	Prerequisites	Subject	Units	Prerequisites
Biochem 124 (Physical Biochemistry)	3	Chem 157 / 157.1, Biochem 35 / 35.1	(MST)	3	
Biochem 124.1 (Physical Biochemistry – Laboratory)	1	Biochem 124 (co-requisite)	PI 100 (The Life and Works of Jose Rizal)	3	
Biochem 199 (Research Methods in Biochemistry)	3	Senior standing	Biochem 121 (Biochemistry of the Gene)	3	Biochem 34 / 34.1
Chem 114 (Advanced Inorganic Chemistry)	3	Chem 18 / 18.1, Math 74	Biochem 121.1 (Biochemistry of the Gene – Laboratory)	1	Biochem 121 (co-requisite)
Chem 127 (Advanced Analytical Chemistry)	3	Chem 27 / 27.1, Chem 157 / 157.1	Biochem 168 (Environmental Biochemistry)	3	Biochem 35 / 35.1
Chem 127.1 (Advanced Analytical Chemistry – Laboratory)	2	Chem 157 / 157.1	Biochem 200 (Thesis)	3	Senior standing
Elective	2/3		Elective	2/3	
<b>Total</b>	<b>17/18</b>		<b>Total</b>	<b>18/19</b>	

**GE Courses** (Students are required to take following number of GE courses.)

- AH (Arts and Humanities) Cluster – 15 units
  - Comm I and Comm II are required GE courses across all degree programs in UP Manila.
  - 9 units of AH courses to be selected by students
- SSP (Social Science and Philosophy) Cluster – 15 units
  - Soc Sci I and History I are required GE courses across all degree programs in UP Manila.
  - 9 units of SSP courses to be selected by students
- MST (Math, Science and Technology) Cluster – 12 units
  - 12 units of SSP courses to be selected by students

**Electives**

Subject	Units	Prerequisites
Biochem 130 (Nutritional Biochemistry)	3	Biochem 35 / 35.1, Chem 35
Biochem 155 (Industrial Biochemistry)	2	Biochem 35 / 35.1
Biochem 157 (Bioenergetics)	3	Biochem 124 / 124.1
Biochem 159 (Membrane Biochemistry)	3	Biochem 124 / 124.1, Chem 35
Biochem 170 (Computational Tools in Biochemistry)	2	Biochem 124 / 124.1, Chem 35
Biochem 175 (Immunobiochemistry)	3	Biochem 35 / 35.1, Chem 35
Chem 124 (Bioinorganic Chemistry)	3	Biochem 35 / 35.1
Chem 135 (Chemistry of Natural Products)	3	Biochem 35 / 35.1
Chem 155 (Industrial Chemistry)	3	Chem 157 / 157.1
Chem 197 (Special Topics in Applied Chemistry)	3	Chem 35 / 35.1, Chem 127 / 127.1