

BACHELOR OF SCIENCE IN CHEMISTRY CURRICULUM

Institute of Chemistry, College of Science, UP Diliman

Approved during the 148th UPD UC Meeting on 28 May 2018

FIRST YEAR			
1st Semester	17 units	2nd Semester	17 units
GE 1 Eng 13. <i>Writing as Thinking</i>	3	GE 4 Speech 30. <i>Public Speaking and Persuasion</i>	3
GE 2 KAS 1. <i>Kasaysayan ng Pilipinas</i>	3	Chem 17. <i>General Chemistry II</i> (Prereq Chem 16, Chem 16.1; Coreq Chem 17.1)	3
GE 3 ARTS 1. <i>Critical Perspectives in the Arts</i>	3	Chem 17.1. <i>General Chemistry II Laboratory</i> (Coreq Chem 17)	2
Chem 16. <i>General Chemistry I</i> (Coreq Chem 16.1)	3	Math 21* <i>Elementary Analysis I</i>	4
Chem 16.1. <i>General Chemistry I Laboratory</i> (Coreq Chem 16)	2	BIO 11. <i>Fundamentals of Biology I</i> (Prereq Chem 16, Chem 16.1)	3
Geol 11. <i>Principles of Geology</i>	3	BIO 11.1 <i>Fundamentals of Biology I Laboratory</i> (Prereq Chem 16, Chem 16.1; Coreq BIO 11)	2
PE	(2)	PE	(2)
NSTP ¹	(3)	NSTP ¹	(3)

SECOND YEAR			
1st Semester	17 units	2nd Semester	16 units
Chem 28. <i>Fundamentals of Analytical Chemistry</i> (Prereq Chem 17, Chem 17.1; Coreq Chem 101.1)	3	GE 5 Philo 1. <i>Philosophical Analysis</i>	3
Chem 33. <i>Fundamentals of Organic Chemistry</i> (Prereq Chem 17, Chem 17.1)	3	Chem 34. <i>Organic Reactions and Spectroscopy</i> (Prereq Chem 33)	3
Chem 101.1. <i>Laboratory Techniques for Organic and Analytical Chemistry</i> (Coreq Chem 28, Chem 33)	3	Chem 123. <i>Advanced Analytical Chemistry</i> (Prereq Chem 28)	3
Math 22. <i>Elementary Analysis II</i> (Prereq Math 21)	4	Chem 101.2. <i>Organic Reactions and Instrumental Methods of Analysis</i> (Prereq Chem 101.1; Coreq Chem 34, Chem 123)	3
Physics 71. <i>Elementary Physics I</i> (Coreq Math 21)	4	Chem 105. <i>Mathematical Methods for Chemistry</i> (Prereq Math 22)	3
PE	(2)	Physics 71.1. <i>Elementary Physics I Laboratory</i> (Coreq Physics 71)	1
NSTP ¹	(3)	PE	(2)
		NSTP ¹	(3)

THIRD YEAR			
1st Semester	15 units	2nd Semester	15 units
GE 6 Fil 40. <i>Wika, Kultura, at Lipunan</i>	3	GE 7 Soc Sci 1. <i>Foundations of Social Science</i>	3
Chem 145. <i>Principles of Biochemistry</i> (Prereq Chem 28, Chem 34, Chem 101.1, Chem 101.2)	3	Chem 146. <i>Biochemistry of Metabolism and Informational Pathways</i> (Prereq Chem 145; Coreq Chem 102.1)	3
Chem 145.1. <i>Laboratory Techniques in Biochemistry</i> (Coreq Chem 145)	1	Chem 112. <i>Principles of Inorganic Chemistry and their Applications to Representative Elements</i> (Prereq Chem 28)	3
Chem 153. <i>Physical Chemistry: Foundations of Chemical Thermodynamics</i> (Prereq Chem 105 or COI)	3	Chem 102.1. <i>Integrated Laboratory for Biochemistry, Inorganic Chemistry and Physical Chemistry</i> (Prereq Chem 145, Chem 145.1, Chem 153; Coreq Chem 146, Chem 154)	3
Physics 72. <i>Elementary Physics II</i> (Prereq Physics 71)	4	Chem 154. <i>Physical Chemistry of Real Systems</i> (Prereq Chem 153, Physics 72)	3
Physics 72.1. <i>Elementary Physics II Laboratory</i> (Coreq Physics 72)	1		
MIDYEAR			
Chem 197. <i>Special Topics in Applied Chemistry</i> (Prereq ss)	3		

FOURTH YEAR			
1st Semester	15-17 units	2nd Semester	17-19 units
Chem 113. <i>Transition and Rare Earth Elements and their Compounds</i> (Prereq Chem 112)	3	GE 8 STS 1. <i>Science, Technology and Society</i>	3
Chem 102.2. <i>Advanced Integrated Laboratory for Biochemistry, Inorganic Chemistry and Physical Chemistry</i> (Prereq Chem 112, Chem 102.1)	3	GE 9 Elective.	3
Chem 156. <i>Introduction to Quantum Chemistry</i> (Prereq Chem 153, Physics 72)	3	GE 10 Elective.	3
Chem 196. <i>Undergraduate Seminar</i> (Prereq ss)	1	PI 100. <i>The Life and Works of Jose Rizal</i>	3
Chem 200. <i>Undergraduate Thesis</i> (Prereq ss)	2	Chem 200. <i>Undergraduate Thesis</i> (Prereq ss)	2
Elective ²	3-5	Elective ²	3-5

1. Choice of CMT (may be taken starting the first year) or CWTS (may be taken starting second year). Note: As a requirement for graduation, all students are required to take six (6) units in one of the National Service Training Program (NSTP) components: Civic Welfare Training Service (CWTS), Literacy Training Service (LTS), and Reserved Officers' Training Corps Military Service (ROTC Mil Sci). These are offered by UPD.

2. Two (2) course elective equivalent to a minimum of six (6) units, at least 3 units of which are science electives.

* All students required to take Math 21 must have passed any of the following: (1) Pre-Calculus from the STEM or equivalent strand of K-12; (2) the Validation Examination for Math 20 (Pre-Calculus: Functions and their Graphs) administered by the UPD Institute of Mathematics; or (3) Math 20 as a non-credit course. For latest directive on this please see (<https://our.upd.edu.ph/memoranda/2021/MEMO-No.-MVPL0-21-05.pdf>).

The University regularly reviews course curricula and may revise them. Students admitted into this program shall follow the existing curriculum until such time that a new curriculum replacing it has been duly approved for implementation. All courses prescribed and taken under this existing curriculum shall be credited under the new curriculum.

BS in CHEMISTRY: Required GE subjects and electives

UP Diliman Required GE (21u)	ENG 13 (3u), FIL 40 (3u) ARTS 1 (3u), STS 1 (3u) Soc Sci 1 (3u), KAS 1 (3u), Philo 1 (3u)
CS/IChem Program-prescribed GE (3u)	SPEECH 30 (3u)
UP Diliman GE electives(x2) (6u)	Student decides the 2 courses among the other GE subjects of UP Diliman https://our.upd.edu.ph/ge.php
Science elective (3u)	Please see the list below for approved the Science electives approved by IChem (e.g. Stat 101, Physics 73, MS 101, Bio 12, etc).
Free elective (3u)	Student decides what 3u subject to enlist. This must NOT be listed among the GE courses of UP. (e.g. Languages or Science or Engineering courses or any 3u-5u course from any other academic clusters)

The List of Science Electives approved by IChem (Students must satisfy the prerequisites for many of these listed subjects. In some cases, many of the units offering may refuse to enlist students who are not from their units).

<p>College of Science</p> <p><u>Chemistry courses:</u> Chem 125 Basic Electronics for Chemical Instrumentation; Chemistry Graduate Courses</p> <p><u>Biology courses:</u> BIO 12 Fundamentals of Biology II; BIO 101 Plant Morphoanatomy; BIO 102 Comparative Vertebrate Anatomy; BIO 115 Taxonomy, morphology and phylogeny of algae; BIO 112 Mycology; BIO 114 Mosses, Hepatics & Ferns; BIO 115 Taxonomy of Angiosperms; BIO 116 Invertebrate Biology; BIO 116.1 Invertebrate Biology Laboratory; BIO 118 Insect Biology; BIO 120 General Microbiology; BIO 150 Fundamental of Cell and Molecular Biology; BIO 180 Statistical Methods in Biology</p> <p><u>Geology courses:</u> Geol 11.1 Laboratory in Principles of Geology; Geol 40 Elementary Mineralogy</p> <p><u>Marine Science courses:</u> MS 101 Oceans; MS 102 The Marine Sciences; MS 220 Chemical Oceanography; MS 221 Marine Geochemistry; MS 222 Chemistry of Marine Coastal Environment; MS 226 Marine Pollution Chemistry; MS 226.1 Marine Pollution Chemistry Laboratory.</p> <p><u>Mathematics courses:</u> Math 40 Linear Algebra; Math 162 Theory of Interest; Math 203 Matrices and Applications; Math 258 Combinatorial Mathematics.</p> <p><u>Meteorology courses:</u> Meteo 101 General Meteorology; Meteo 224 Air Pollution Meteorology.</p> <p><u>Materials Science and Engineering courses:</u> MSE 201 Fundamentals of Materials Science and Engineering; MSE 211 Laboratory Module in Transmitted Light Microscopy; MSE 212 Laboratory Module in Mineralogy; MSE 214 Laboratory Module in Vacuum Technologies and Thin Film Deposition; MSE 215 Laboratory Module in Electronic and Magnetic Measurements; MSE 216 Laboratory Module in Ceramics Processing and Characterization; MSE 231 Thermodynamics of Materials; MSE 223 Kinetics of Materials; MSE 266 Polymer Materials; MSE 271 Physics of Liquid Crystals.</p> <p><u>Molecular Biology and Biotechnology courses:</u> MBB 10 Introduction to Molecular Biology; MBB 110 Fundamentals of Molecular Microbiology; MBB 121 Fundamentals of Cell and Tissue Culture; MBB 125 Molecular Physiology of Eukaryotic Systems; MBB 140 Molecular Genetics.</p> <p><u>Environmental Science courses:</u> Env Sci 201 Fundamentals of Environmental Science I; Env Sci 202 Fundamentals of Environmental Science II; Env Sci 211 Computational Methods in Environmental Science; Env Sci 212 Environmental Problems and Issues;</p> <p><u>Physics courses:</u> Physics 73 Elementary Physics III; Physics 73.1 Elementary Physics III Laboratory</p>	
<p>College of Engineering</p> <p><u>Chemical Engineering courses:</u> ChE 2 Elementary Chemical Engineering; ChE100 Introduction to Chemical Engineering Profession</p> <p><u>Civil Engineering courses:</u> CE 21 Engineering Statistics</p> <p><u>Engineering Sciences courses:</u> ES 1 Engineering Drawing</p> <p><u>Materials Engineering courses:</u> MatE 10 Engineering Materials; MatE 11 Fundamentals of Materials Engineering I; MatE 101 Thermodynamics of Materials; MatE105 Analytical Techniques in Materials Engineering; MatE 105.1 Analytical Techniques in Materials Engineering Lab; MatE 131 Polymer Materials</p> <p><u>Metallurgical Engineering courses:</u> MetE 11 Principles of Metallurgy; MetE 12 Metallurgical Measurement; MetE 13 Methods of Metallurgical Analysis; MetE14 Metallurgical Experimental Design; MetE 17 Metallurgical Thermodynamics; MetE 18 Metallurgical Thermodynamics Laboratory; MetE 120 Ore Dressing; MetE 121 Mineral Processing I.</p> <p><u>Industrial Engineering courses:</u> IE 3 Engineering to Industrial Engineering; IE 21 Industrial Materials and Processes.</p> <p><u>Information Technology:</u> IT 100 Introduction to Information Technology; IT 110 Information System in Enterprises</p>	
<p>College of Home Economics</p> <p><u>Foods and Nutrition courses:</u> FN 102 Principles of Food Preparation; FN 121 Physiological Aspect of Nutrition; FN 122 Principles of Nutrition; FN 124 Nutrition for at-Risk Groups; FN 131 Dietary Patterns</p> <p><u>Food Science Courses:</u> FS 106 General Microbiology; FS 116 Food Microbiology; FS 125 Food Chemistry; FS 126 Food Biotechnology; FS 127 Food Processing I; FS 135 Physico-Chemical Analysis of Foods; FS 140 Waste Management in Food Processing</p>	
<p>School of Statistics</p> <p>Stat 101 Elementary Statistics</p>	
<p>GE ELECTIVES</p> <p>Please see the updated list of GE and allowed substitutions on the UPD Office of the University Registrar. https://our.upd.edu.ph/ge.php</p>	