










University of the Philippines
LOS BAÑOS

College of Arts and Sciences

COLLEGE OF ARTS AND SCIENCES

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OBJECTIVES

The College serves as a center of excellence in the basic sciences, a cradle of humanities and the arts, and center of liberal education and foundation courses. It provides training in the basic physical and natural sciences, social sciences, and the arts and humanities through its various undergraduate- and graduate-level degree programs. The College takes charge of general education and foundation courses required of every UPLB undergraduate, regardless of the student's area of specialization. The general education courses deal with art and literature, history, social political, economic, and environment systems, as well as their relationships and interaction. The foundation courses seek to deepen the student's understanding of science as an intellectual process and provide the fundamental knowledge needed for the student's major field of study.

UNDERGRADUATE PROGRAMS

The undergraduate degree programs are:

1. Associate in Arts (Sports Studies). The Associate in Arts (Sports Studies) is a two-year post-secondary program (78 units) offered to students in the field of sports and dance. Graduates of the AASS program are expected to acquire skills and competencies needed by recreational activity leaders and coaching staff of sports teams or dance groups in a range of settings such as barangay centers, sports clubs, resorts, school sports/recreation clubs, and fitness centers.

2. Bachelor of Arts in Communication Arts. This program seeks to produce graduates who can appraise the various contexts of communication towards the promotion of social equality through speech communication, writing, and theatre arts; evaluate the relevance of existing communication theories in the advancement of society and the promotion of social responsibility; develop research in the areas of language, communication, literature, and performance; and produce artistically excellent outputs in the fields of speech communication, writing, and theatre arts that promote the empowerment of the self and nation. Students are trained in the areas of speech communication, writing, and theater arts through a humanities approach, embodying core competencies in communication arts and the university's honor and excellence through professionalism, excellent work ethic, and public service. The program has produced stellar graduates who have become leaders in various academic, creative, and corporate industries; have received national and global recognitions; and have championed the various fields of the humanities and the arts.

3. Bachelor of Arts in Philosophy. The BA Philosophy program trains students in analysis, abstraction, and argumentation. It focuses on analytic and applied philosophy. The emphasis on analytic philosophy is designed to improve the analytical ability of the student; the student is expected to have a firmer grasp of linguistic and conceptual nuances, greater proficiency in problem-solving, and an overall improved capacity of understanding issues and topics. The focus on applied philosophy is geared towards producing intellectuals with a robust sense of how the abstract and theoretical ultimately bear on the practical world. The thrust of the program is to produce graduates who will exert pioneering efforts to uncover, highlight, and examine indigenous Filipino thought through speculative analysis. The program is an effective preparatory course for law and related graduate programs.

4. Bachelor of Arts in Sociology. BA Sociology aims to help students develop relevant skills for lifelong learning and occupational flexibility that will eventually place them on a more competitive advantage. Furthermore, the program is geared towards a range of knowledge, skills, values, and attitudes that will reflect greater learning and teaching ability and ensures that students are able to conduct sociological research enhanced by other social science disciplines.

5. Bachelor of Science in Applied Mathematics. The BS Applied Mathematics program is a four-year course that aims to produce graduates proficient in the use of mathematical principles and methods in modelling complex natural and social phenomena. Students of the program will be trained to apply these principles and methods to solve decision making problems by developing mathematical models and algorithms. Researches in the program are directed towards biomathematics, operations research, actuarial science and mathematical finance. Graduates of the program are prepared for a wide variety of career options in the academe, research institutions and the industry such as in logistics companies, insurance industry, electronics and computer manufacturers, pharmaceutical firms, banking, finance, and more.

6. Bachelor of Science in Applied Physics. The BS Applied Physics program aims to provide sufficient background knowledge, perspectives, and training to enable students to explore the practical implications of physics and extend the boundaries of what we know about the universe. Students of the program will learn how to apply the principles and methods of physics to solve practical problems or to extend our knowledge in physics and the other sciences. Students may do research in the foundations of quantum mechanics, condensed matter theory, statistical physics, cosmology and particle physics, materials physics and engineering, optics and instrumentation, physics education, and complex systems. Graduates of this four-year program are equipped to pursue advanced physics research, university physics teaching, graduate studies, and employment in physics-related jobs in academia, businesses, industry, or the government.

7. Bachelor of Science in Biology. The program provides updated training for 21st century biologists in the light of the expanding knowledge in the biological sciences. It aims to expose students to cutting-edge developments in Biology in order to

produce graduates that are well-honed in field research as well as in laboratory investigations.The BS Biology program holds the distinction of being the first academic degree program in UPLB to be accredited by the ASEAN University Network-Quality Assurance (AUN-QA) in 2014. The curriculum includes 41 units of core biology courses (BIO, BOT,MCB, ZOO), 26 units of ancillary courses (MATH, STAT, CHEM, PHYS), 24 units of major courses, 27 units of GE courses, 6 units of social science and humanities courses, 9 units of free elective courses, 3 units of practicum,1 unit of undergraduate seminar, and 6 units of undergraduate thesis. Students are allowed to choose from the following areas/disciplines of biology as their major field: Cell and Molecular Biology, Ecology, Genetics, Microbiology, Plant Biology, Systematics, Wildlife Biology, and Zoology.

8. Bachelor of Science in Chemistry. The four-year degree program is designed to produce highly trained chemistry practitioners for industry as well as for academic and research institutions who can engage in industry practice, teaching, research, development, and extension work in all areas of basic and applied chemistry. The program requires at least 77 units of chemistry, far more than the 60 units of chemistry courses set by the Professional Regulation Commission as the minimum requirement for taking the Chemist Licensure Examination. The rigorous preparation enables graduates to become professional chemists who can secure employment in top academic, industrial and government institutions as chemists or pursue further studies in chemistry, material science and other allied fields, or even pursue medicine or law.

9. Bachelor of Science in Computer Science. The program aims to produce graduates highly capable of working in the computer industry and who are well equipped to pursue graduate studies in computer science by providing a broad-based and coherent coverage of computer science. Students develop a reasonable level of understanding about the subject areas of the discipline, as well as an appreciation of the interrelationships among these areas. Students are also trained in the methodologies of computing in research and development. Specialized courses are offered as electives to ensure depth of study in some subject areas.

10. Bachelor of Science in Mathematics. The BS Mathematics program is a four-year course that seeks to develop and enhance students' mathematical skills necessary in pursuing careers in the academe, research institutions, and areas of work requiring analytical and critical thinking. It covers the breadth and depth of mathematics, from classical to contemporary, from the theoretical to the applied. Major and elective courses cover advanced topics in algebra, analysis, geometry, and combinatorics. Students of the program may pursue specialized research in the areas of graph theory, coding theory and cryptography, and partial differential equations. Graduates of the BS Mathematics program may pursue careers in business, economics, and banking that require strong analytical and problem-solving skills. They are also prepared for mathematics teaching in the university, graduate studies, and research.

11. Bachelor of Science in Mathematics and Science Teaching. The BS MST program is designed to produce versatile teachers who can teach all high school mathematics and science courses with proficiency, and who can perform action research using current technology, strategies, and methods.This joint program of IBS, IC and IMSP is a stronger version of the BS Education program as far as mathematics and science teaching is concerned. The program is composed of four curricula, each comprising 54 units of mathematics and science foundation courses.The areas of specialization: biology, chemistry, mathematics, and physics, carry 13-16 units each. Graduates can pursue advanced study in mathematics, science, or education.

12. Bachelor of Science in Statistics. The BS Statistics program is designed to provide a solid foundation in statistics anchored on a balance of skills in statistical theory and statistical methods. It provides core training in probability, experimental designs, survey design and operations, statistical computing, statistical analysis, and data analytics with opportunities for elective work and specialization. The programis also designed to make a BS Statistics graduate flexible through exposure to the basic sciences. This is done to enable them to build a career of their choice whether in business, industry, academe, or government, or to pursue graduate studies in statistics and its allied fields.

13. Bachelor of Science in Agricultural Chemistry. This five-year program is jointly offered by the College of Arts and Sciences and the College of Agriculture and Food Science. The program prepares its students to becomefull-fledged chemists who are specially trained to tackle chemistry problems related to food and agriculture in support of the agricultural and rural development thrustsof the country. Students in this program take at least 73 units of chemistry, far more than the 60 units of chemistry courses set by the Professional Regulation Commission as the minimum requirement for taking the Chemist Licensure Examination. The program also requires 15 units of specialization courses that the student can utilize to satisfy the minimum requirement for taking the Agriculture Licensure Examination. Thus, through a judicious use of specialization courses, a graduate of this program may be eligible to take both the Chemist and Agriculture Licensure Examinations. Moreover, the rigorous preparation enables graduates of this interdisciplinary degree program to become professional chemists who can secure employment in top academic, agro-industrial and government institutions as chemists; and pursue an academic or research career or graduate studies in chemistry, biochemistry, physiology, nutrition or other food and agricultural fields allied with chemistry.

ASSOCIATE IN ARTS (SPORTS STUDIES)

Approved by the UP Board of Regents (BOR) in its 1382nd meeting held last 29 June 2023

First Semester	*Units*	*Second Semester*	*Units*
	FIRST YEAR		
GE 1 : ARTS 1/ STS 1	3	GE 3: COMM 10	3
GE 2: ETHICS 1	3	SS 110	3
SS 102	3	HK Elective	3
HK Elective	3	PEd 92	3
HK Elective	3	SS 103	3
PEd 91	3	PEd 151	3
HK11/HK12	(2)	HK 11/HK12	(2)
	18		18
	MIDYEAR		
GE 4: KAS 1/HISTORY 1	3		
	SECOND YEAR		
SS 104	3	SS 120	3
PEd 93	3	P.I. 100	3
SS 130	3	PEd 172	3
PEd 174	3	PEd 100	3
PEd 176	3	PEd 196	3
HK Elective	3	PEd 130.1	3
GE 5: MATH 10	3	HK11,HK12,HK13	(2)
HK 11/HK12/HK13	(2)	NSTP	(3)
NSTP	(3)		18
	21		

TOTAL NUMBER OF UNITS 78

BACHELOR OF ARTS IN COMMUNICATION ARTS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 11 October 2019

First Semester	***Units***	***Second Semester***	***Units***
		FIRST YEAR	
ARTS 1 (GE). Critical Perspectives in the Arts	3	ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3
COMM 10 (GE). Critical Perspectives in Communication	3		
KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	STS 1 (GE). Science, Technology, and Society	3
COMA 101. Language and Communication	3	GE Elective	3
HUMM 100. Critical Theories	3	COMA 102. Language and Culture	3
SPCM 102. Voice and Diction	3	ENG 100. Rereading the Literary Canons	3
HK 11. Wellness and Basic Injury Management	(2)	SPCM 101. Rhetoric	3
	18	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
			18
		SECOND YEAR	
GE Elective	3	COMA 103. Introduction to Discourse Analysis	3
ENG 101. English Prose Styles	3	COMA 192. Introduction to Research	3
ENG 104. Argumentative Writing	3	SPCM 104. Occasional Speeches	3
HUM 101. Visual Culture	3	Major	3
THEA 101. History of Theater	3	Major	3
THEA 102. Theatre Communication	3	Major	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	HK 12/ HK 13. Human Kinetics Activities/Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	18		18
		THIRD YEAR	
COMA 190. Special Problems	3	COMA 150. Workplace Communication	3
Major	3	COMA 193. Workshop	3
Major	3	COMA 199. Undergraduate Seminar	1
Elective (Foreign Language)	3	Major	3
Elective (Social Science/Philosophy)	3	Major	3
Elective (Statistics)	3	Elective (Foreign Language)	3
	18		16
		MIDYEAR	
COMA 200a. Practicum		3	
		3	
		FOURTH YEAR	
COMA 105. Principles of Public Relations and Advertising	3	GE Elective	3
COMA 200. Undergraduate Thesis	3	PI 10. The Life and Works of Jose Rizal	3
COMA 200a. Practicum	3	COMA 200. Undergraduate Thesis	3
HUM 102. New Media Art	3	HUM 104. Culture and Arts Management	3
THEA 103. Philippine Theater	3	HUM 170. Philippine Art and Society	3
Elective (Social Science/Philosophy)	3	Elective (Social Science/Philosophy)	3
	18		18

TOTAL NUMBER OF UNITS 145

BACHELOR OF ARTS IN PHILOSOPHY

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	PI 10. The Life and Works of Jose Rizal	3
KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	GE Elective	3
ARTS 1 (GE). Critical Perspectives in the Arts	3	PHLO 150. Epistemology	3
STS 1 (GE). Science, Technology, and Society	3	PHLO 171. Ethics	3
PHLO 11. Fundamental Approaches to Philosophy	3	ECON 11/ POSC 10. General Economics/ Principles of Government and Politics	3
PHLO 12. Logic	3	SPEC. Readings in Speculative Thought	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	18		18
		SECOND YEAR	
COMM 10 (GE). Critical Perspectives in Communication	3	GE Elective	3
GE Elective	3	Elective (PHLO)	3
Elective	3	Elective	3
PHLO 110. Ancient Philosophy	3	PHLO 120. Philosophical Reasoning	3
PHLO 112. Modern Philosophy	3	PHLO 111. Medieval Philosophy	3
PHLO 173. Practical Ethics	3	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)		15
	18		
		THIRD YEAR	
PHLO 197. Philosophic Problems	3	PHLO 113. Contemporary Philosophy	3
PHLO 174. Biomedical Ethics	3	PHLO 182. Philosophy and Semiotics	3
PHLO 181. Aesthetics	3	Specialization (Elective in one discipline)	3
PHLO 195. Philosophy of Language	3	Elective (PHLO)	3
Elective	3	Elective (PHLO)	3
	15	Elective	3
			18
		FOURTH YEAR	
		Thesis Option	
PHLO 178. Environmental Ethics	3	PHLO 184. Feminist Philosophy	3
PHLO 176. Social and Political Philosophy	3	PHLO 185: Critical Perspectives on Filipino Philosophy	3
Elective (PHLO)	3	PHLO 160. Philosophy of Science	3
Specialization (Elective in one discipline)	3	PHLO 200. Undergraduate Thesis	6
Specialization (Elective in one discipline)	3		15
	15		
		Special Problem Option	
PHLO 178. Environmental Ethics	3	PHLO 184. Feminist Philosophy	3
PHLO 176. Social and Political Philosophy	3	PHLO 185: Critical Perspectives on Filipino Philosophy	3
PHLO 190. Special Problem	3	PHLO 160. Philosophy of Science	3
Elective (PHLO)	3	PHLO 190. Special Problem	3
Specialization (Elective in one discipline)	3	Specialization (Elective in one discipline)	3
	15		15

TOTAL NUMBER OF UNITS 132

BACHELOR OF ARTS IN SOCIOLOGY

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	***Units***	***Second Semester***	***Units***
		FIRST YEAR	
KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	GE Elective	3
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	GE Elective	3
SOC 10. General Principles of Sociology	3	HIST 10. Introduction to History	3
ANTH 10. Introduction to Social and Cultural Anthropology	3	SOC 100. Social Organization	3
PSY 10. Foundations of Psychology	3	POSC 10. Principles of Government and Politics	3
STS 1 (GE). Science, Technology, and Society	3	SOC 110. Sociology of the Family	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	18		18
		SECOND YEAR	
ARTS 1 (GE). Critical Perspectives in the Arts	3	AERS 160. Rural Sociology	3
GE Elective	3	PI 10. The Life and Works of Jose Rizal	3
ECON 11. General Economics	3	SOC 140. Introduction to Demography	3
STAT 166. Statistics for the Social Sciences	3	Elective*	3
SOC 116. Sociology of Religion	3	Elective*	3
SOC 130/ SOC 135. Social Psychology/ Attitudes and Persuasion	3	Elective**	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	18		18
		THIRD YEAR	
Elective*	3	SOC 120. Urban Sociology	3
Elective*	3	SOC 152. Contemporary Sociological Theories	3
Elective**	3	SOC 192. Introduction to Qualitative Social Research	3
SOC 107. Gender Relations	3	COMM 10 (GE). Critical Perspectives in Communication	3
SOC 151. Classical Sociological Theories	3	Elective**	3
SOC 195. Research Methodologies in the Social Sciences	2		15
SOC 195.1. Research Methodologies in the Social Sciences Laboratory	1		
	18		
		MIDYEAR	
SOC 198. Internship	3		
	3		
		FOURTH YEAR	
SOC 199. Undergraduate Seminar	1	SOC 112. Sociology of Politics	3
SOC 114. Sociology of Economic Life	3	SOC 160/ SOC 165. Social Change/ Sociology of Development	3
SOC 166. Social Program Evaluation	3		
SOC 180. Collective Behavior	3	SOC 170/ SOC 175. Social Problems/ Deviance	3
SOC 191. Special Topics	3	SOC 200. Undergraduate Thesis	3
SOC 200. Undergraduate Thesis	3		15
	18		

TOTAL NUMBER OF UNITS 136

* Elective course that must belong to one discipline of the social sciences: Anthropology, History, Political Science, or Psychology

** Free elective course

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
MATH 36. Mathematical Analysis I	5	MATH 37. Mathematical Analysis II	3
AMAT 19. Finite Mathematics	3	STAT 101. Statistical Methods	3
KAS 1 / HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	CHEM 18. University Chemistry	3
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	CHEM 18.1. University Chemistry Laboratory	2
BIO 11.1. Investigative Biology Laboratory	2	ARTS 1 (GE). Critical Perspectives in the Art	3
HK 11. Wellness and Basic Injury Management	(2)	GE Elective	3
	16	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
			17
		SECOND YEAR	
MATH 38. Mathematical Analysis III	5	AMAT 105. Matrices and Applications	3
MATH 101. Logic and Set Theory	3	AMAT 112. Introduction to Mathematical Optimization	3
AMAT 110. Mathematical Modeling	3	AMAT 152. Fundamentals of Mathematical Computing	3
PHYS 51. Elements of Physics	4	AMAT 170. Theory of Interest	3
PHYS 51.1. Elements of Physics Laboratory	1	STS 1 (GE). Science, Technology, and Society	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	GE Elective	3
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)		
	16	NSTP 2. National Service Training Program II	(3)
			18
		THIRD YEAR	
MATH 151. Ordinary Differential Equations	3	MATH 175. Numerical Analysis II	3
MATH 174. Numerical Analysis I	3	MATH 155. Advanced Calculus I	3
MATH 181. Introduction to Probability Theory	3	COMA 150. Workplace Communication	3
COMM 10 (GE). Critical Perspective in Communication	3	MATH 195. Research Methods in Mathematics	3
Major Elective (AMAT/MATH)	3	Major Elective (AMAT/MATH)	3
GE Elective	3		15
	18		
		MIDYEAR	
AMAT 198. Practicum		3	
		3	
		FOURTH YEAR	
		Thesis Option	
AMAT 200. Undergraduate Thesis	3	AMAT 200. Undergraduate Thesis	3
PI 10. The Life and Works of Jose Rizal	3	AMAT 199. Undergraduate Seminar	1
Major Elective (AMAT/MATH)	3	Major Elective (AMAT/MATH)	3
Elective	3	Elective	3
Elective	3	Elective	3
	15		13

TOTAL NUMBER OF UNITS 131

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	***Units***	***Second Semester***	***Units***
		FOURTH YEAR	
		Special Problem Option	
Major Elective (AMAT/MATH)	3	AMAT 190. Special Problems	3
Major Elective (AMAT/MATH)	3	AMAT 199. Undergraduate Seminar	1
PI 10. The Life and Works of Jose Rizal	3	Major Elective (AMAT/MATH)	3
Elective	3	Elective	3
Elective	3	Elective	3
	15		13

TOTAL NUMBER OF UNITS 131

BACHELOR OF SCIENCE IN APPLIED PHYSICS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	GE Elective	3
ARTS 1 (GE). Critical Perspectives in the Arts	3	COMA 150. Workplace Communication	3
CHEM 18. University Chemistry	3	PHYS 102. Electromagnetism and Optics	4
CHEM 18.1. University Chemistry Laboratory	2	PHYS 111. Mathematical Methods of Physics I	4
MATH 27. Analytic Geometry and Calculus II	3	MATH 28. Analytic Geometry and Calculus III	3
PHYS 101. Newtonian Mechanics	4	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
HK 11. Wellness and Basic Injury Management	(2)		
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	18		17
		SECOND YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	GE Elective	3
GE Elective	3	PHYS 104. Modern Physics	4
APHY 10.1. Programming in Physics	1	PHYS 113. Mathematical Methods of Physics III	4
APHY 101. Physics in Scientific Instruments	3	PHYS 121. Theoretical Mechanics I	3
PHYS 103. Mechanical Waves, Optics, and Thermodynamics	4	PHYS 131. Electromagnetic Theory I	3
PHYS 112. Mathematical Methods of Physics II	4	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)		17
	18		
		THIRD YEAR	
APHY 102. Physics of Electronic Devices	3	PHYS 141. Quantum Physics I	3
PHYS 122. Theoretical Mechanics II	3	PHYS 151. Statistical Physics I	3
PHYS 115. Computational Physics	4	PHYS 195. Research Methods in Physics	3
PHYS 132. Electromagnetic Theory II	3	PHYS 165. Optical Physics	3
PHYS 192.1. Experimental Physics I	2	Elective (PHYS/APHY)	3
PI 10. The Life and Works of Jose Rizal	3	COMM 10 (GE). Critical Perspective in Communication	3
	18		18
		MIDYEAR	
APHY 198. Practicum	3		
	3		
		FOURTH YEAR	
APHY 200. Undergraduate Thesis	3	APHY 191. Special Topics	3
PHYS 142. Quantum Physics II	3	APHY 199. Undergraduate Seminar	1
Elective (PHYS/APHY)	3	APHY 200. Undergraduate Thesis	3
Elective (PHYS/APHY)	3	Elective (PHYS/APHY)	3
Elective (PHYS/APHY)	3	Elective	3
Elective	3	STS 1 (GE). Science, Technology and Society	3
	18		16

TOTAL NUMBER OF UNITS 143

BACHELOR OF SCIENCE IN BIOLOGY

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	***Units***	***Second Semester***	***Units***
		FIRST YEAR	
BIO 11.1. Investigative Biology Laboratory	2	BIO 14. Biodiversity	5
CHEM 18. University Chemistry	3	CHEM 40. Basic Organic Chemistry	4
CHEM 18.1 University Chemistry Laboratory	2	CHEM 40.1. Basic Organic Chemistry Laboratory	1
MATH 25. Fundamental Calculus	3	BIO 30. Genetics	3
MCB 11. Biology and Applications of Microorganisms	3	STS 1 (GE). Science, Technology, and Society	3
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	PI 10. The Life and Works of Jose Rizal	3
ARTS 1 (GE). Critical Perspective in the Arts	3	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
HK 11. Wellness and Basic Injury Management	(2)		
	19		19
		SECOND YEAR	
BOT 14. University Botany	3	PHYS 51. Elements of Physics	4
ZOO 14. University Zoology	3	PHYS 51.1. Elements of Physics Laboratory	1
CHEM 160. Introductory Biochemistry	3	BIO 101. Introductory Molecular Biology	3
BIO 150. Ecology	4	CHEM 160.1. Introductory Biochemistry Laboratory	2
GE Elective	3	BIO 140. Evolutionary Biology	3
GE Elective	3	GE Elective	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	ABME 10. Foundations of Entrepreneurship	3
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)		
	19	NSTP 2. National Service Training Program II	(3)
			18
		THIRD YEAR	
STAT 164. Statistics for the Biological Sciences	3	BIO 195. Research Methods in the Biological Sciences	3
BIO 120. Cell Biology	3	BIO 127. Developmental Biology	3
BIO 142. Principles of Systematic Biology	3	ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3
COMM 10 (GE). Critical Perspectives in Communication	3		
Major	3	Major	3
Major	3	Major	3
	18	Elective	3
			18
		MIDYEAR	
BIO 198. Practicum		3	
		3	
		FOURTH YEAR	
COMA 150. Workplace Communication	3	Major	3
BIO 199. Undergraduate Seminar in Biology	1	Elective	3
Major	3	BIO 200. Undergraduate Thesis in Biology	3
Major	3		9
Major	3		
Elective	3		
BIO 200. Undergraduate Thesis in Biology	3		
	19		

TOTAL NUMBER OF UNITS 143

BACHELOR OF SCIENCE IN CHEMISTRY

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 7 May 2020

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
CHEM 18. University Chemistry	3	CHEM 19. Chemical Structure and Properties	3
CHEM 18.1 University Chemistry Laboratory	2	CHEM 32. Quantitative Inorganic Analysis	3
MCB 11. Biology and Applications of Microorganisms	3	CHEM 32.1. Quantitative Inorganic Analysis Laboratory	2
MATH 27. Analytic Geometry and Calculus II	3	MATH 28. Analytic Geometry and Calculus III	3
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	PHYS 71. University Physics I	4
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	PHYS 71.1. University Physics I Laboratory	1
HK 11. Wellness and Basic Injury Management	(2)	ARTS 1 (GE). Critical Perspective in the Arts	3
	17	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics	(2)
			19
		SECOND YEAR	
CHEM 43. Organic Chemistry I	3	CHEM 44. Organic Chemistry II	3
CHEM 43.1. Organic Chemistry I Laboratory	2	CHEM 44.1. Organic Chemistry II Laboratory	2
CMSC 12/ AMAT 152. Foundations of Computer Science/ Fundamentals of Mathematical Computing	3	CHEM 111. Physical Chemistry I	3
		STAT 162. Experimental Designs	3
PHYS 72. University Physics II	4	PI 10. The Life and Works of Jose Rizal	3
PHYS 72.1. University Physics II Laboratory	1	GE Elective	3
GE Elective	3	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
GE Elective	3	NSTP 2. National Service Training Program II	(3)
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)		17
NSTP 1. National Service Training Program I	(3)		
	19		
		MIDYEAR	
CHEM 161a. Biochemistry I	3		
	3		
		THIRD YEAR	
CHEM 111.1. Physical Chemistry I Laboratory	2	CHEM 112.1. Physical Chemistry II Laboratory	2
CHEM 112. Physical Chemistry II	3	CHEM 115. Physical Chemistry III	3
CHEM 137. Modern Analytical Chemistry	3	CHEM 137.1. Modern Analytical Chemistry Laboratory	2
CHEM 140. Organic Analysis	4	CHEM 161.1. General Biochemistry Laboratory	2
CHEM 161b. General Biochemistry II	3	CHEM 180. General Environmental Chemistry	3
COMM 10 (GE). Critical Perspective in Communication	3	CHEM 192. Chemical Information, Literature and Communication	3
	18	Elective (CHEM)	3
			18
		MIDYEAR	
CHEM 198. Practicum	3		
	3		
		FOURTH YEAR	
CHEM 120. Inorganic Chemistry	3	CHEM 120.1. Inorganic Chemistry Laboratory	2
CHEM 131. Technical Analysis I: Foods and Feeds	4	CHEM 171. Industrial Chemistry	3
CHEM 200. Undergraduate Thesis	3	CHEM 199. Undergraduate Seminar	1
Elective	3	CHEM 200. Undergraduate Thesis	3
STS 1 (GE). Science, Technology and Society	3	Elective (CHEM)	3
	16		12

TOTAL NUMBER OF UNITS 142

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	ARTS 1 (GE). Critical Perspectives in the Arts	3
STS 1 (GE). Science, Technology, and Society	3	KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3
CMSC 12. Foundations of Computer Science	3	CMSC 21. Fundamentals of Programming	3
CMSC 56. Discrete Mathematical Structures in Computer Science I	3	CMSC 57. Discrete Mathematical Structures in Computer Science II	3
MATH 27. Analytic Geometry and Calculus II	3	MATH 28. Analytic Geometry and Calculus III	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	15		15
		SECOND YEAR	
CMSC 22. Object-Oriented Programming	3	CMSC 23. Mobile Computing	3
CMSC 123. Data Structures	3	CMSC 100. Web-Programming	3
CMSC 130. Logic Design and Digital Computer Circuit	3	CMSC 127. File Processing and Database Systems	3
CMSC 150. Numerical and Symbolic Computation	3	CMSC 131. Introduction to Computer Organization and Machine-Level Programming	3
PI 10. The Life and Works of Jose Rizal	3	STAT 101. Statistical Methods	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	15		15
		THIRD YEAR	
COMM 10 (GE). Critical Perspectives in Communication	3	CMSC 128. Introduction to Software Engineering	3
CMSC 124. Design and Implementation of Programming Language	3	CMSC 137. Data Communications and Networking	3
CMSC 125. Operating Systems	3	CMSC 142. Design and Analysis of Algorithms	3
CMSC 132. Computer Architecture	3	CMSC 173. Human-Computer Interaction	3
CMSC 141. Automata and Language Theory	3	CMSC 180. Introduction to Parallel Computing	3
CMSC 170. Introduction to Artificial Intelligence	3	GE Elective	3
	18		18
		MIDYEAR	
CMSC 198. Practicum	3		
	3		
		FOURTH YEAR	
		Thesis Option	
GE Elective	3	GE Elective	3
CMSC 199. Undergraduate Seminar	1	CMSC 200. Undergraduate Thesis	3
CMSC 200. Undergraduate Thesis	3	Elective	3
ENG 10. Writing of Scientific Papers	3	Elective	3
Elective	3	Elective	3
Elective	3		15
	16		
		Special Problems Option	
GE Elective	3	GE Electve	3
CMSC 190. Special Problems	1	CMSC 190. Special Problems	2
CMSC 199. Undergraduate Seminar	1	Elective	3
ENG 10. Writing of Scientific Papers	3	Elective	3
Elective	3	Elective	3
Elective	3		14
Elective	3		
	17		

TOTAL NUMBER OF UNITS 130

BACHELOR OF SCIENCE IN MATHEMATICS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
MATH 36. Mathematical Analysis I	5	MATH 37. Mathematical Analysis II	3
MATH 20. The Landscape of Mathematics	3	STAT 101. Statistical Methods	3
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	CHEM 18. University Chemistry	3
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	CHEM 18.1. University Chemistry Laboratory	2
BIO 11.1. Investigative Biology Laboratory	2	ARTS 1 (GE). Critical Perspectives in the Arts	3
HK 11. Wellness and Basic Injury Management	(2)	GE Elective	3
	16	HK 12/ HK 13. Human Kinetics Activities/Advanced Human Kinetics Activities	(2)
			17
		SECOND YEAR	
MATH 38. Mathematical Analysis III	5	MATH 103. Elementary Theory of Numbers	3
MATH 101. Logic and Set Theory	3	MATH 138. Introductory Topology	3
PHYS 51. Elements of Physics	4	MATH 141. Introductory Combinatorics	3
PHYS 51.1. Elements of Physics Laboratory	1	AMAT 152. Fundamentals of Mathematical Computing	3
GE Elective	3	STS 1 (GE). Science, Technology, and Society	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	GE Elective	3
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)		
	18	NSTP 2. National Service Training Program II	(3)
			16
		THIRD YEAR	
MATH 111. Modern Algebra 1	3	MATH 120. Linear Algebra	3
MATH 155. Advanced Calculus I	3	MATH 133. Euclidean and Non-Euclidean Geometry	3
COMM 150. Workplace Communication	3	MATH 151. Ordinary Differential Equations	3
COMM 10 (GE). Critical Perspective in Communication	3	PI 10.The Life and Works of Jose Rizal	3
MATH 195. Research Methods in Mathematics	3	Major Elective (MATH)	3
Elective	3		15
	18		
		MIDYEAR	
MATH 198. Practicum	3		
	3		
		FOURTH YEAR	
		Thesis Option	
MATH 135. Projective Geometry	3	MATH 192. Foundations of Mathematics	3
MATH 165. Complex Analysis I	3	MATH 199. Undergraduate Seminar	1
MATH 181. Introduction to Probability Theory	3	MATH 200. Undergraduate Thesis	3
MATH 200. Undergraduate Thesis	3	Elective	3
Major Elective (MATH)	3	Elective	3
	15		13
		Special Problem Option	
MATH 135. Projective Geometry	3	MATH 190. Special Problems	3
MATH 165. Complex Analysis I	3	MATH 192. Foundations of Mathematics	3
MATH 181. Introduction to Probability Theory	3	MATH 199. Undergraduate Seminar	1
Major Elective (MATH)	3	Major Elective (MATH)	3
Elective	3	Elective	3
	15		13

TOTAL NUMBER OF UNITS 131

BACHELOR OF SCIENCE IN MATHEMATICS AND SCIENCE TEACHING
(BIOLOGY)

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 9 September 2018

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
STS 1 (GE). Science, Technology, and Society	3	KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3
PI 10. The Life and Works of Jose Rizal	3		
CHEM 18. University Chemistry	3	BIO 14. Biodiversity	5
CHEM 18.1 University Chemistry Laboratory	2	MATH 27. Analytic Geometry and Calculus II	3
BIO 11.1. Investigative Biology Laboratory	2	AMAT 19. Finite Mathematics	3
MATH 25. Fundamental Calculus	3	CHEM 40. Basic Organic Chemistry	4
PHYS 50. Foundations of Physics	3	CHEM 40.1. Basic Organic Chemistry Laboratory	1
MST 101a. Field Study I	1	MST 101b. Field Study II	1
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	20		20
		SECOND YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	BOT 14. University Botany	3
EDUC 102. Theories and Principles of Education	3	EDUC 122. Principles and Strategies of Teaching	3
BIO 30. Genetics	3	PHYS 71. University Physics	4
STAT 166. Statistics for the Social Sciences	3	PHYS 71.1. University Physics Laboratory	1
SPCM 156. Speech Communication Strategies for Classroom Instruction	3	DEVC 40/ MST 40. Fundamentals of Educational Communication and Technology	3
EDUC 111. Educational Psychology	3	CHEM 160. Introductory Biochemistry	3
MST 101c. Field Study III	1	MST 101d. Field Study IV	1
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	COMA 150. Workplace Communication	3
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	19		21
		THIRD YEAR	
STAT 162. Experimental Designs	3	COMM 10 (GE). Critical Perspectives in Communication	3
BIO 150. Ecology	4	GE Elective	3
MCB 11. Biology and Applications of Microorganisms	3	MATH 18. College Geometry	3
EDUC 144. Evaluation of Learning Outcomes	3	MST 195. Research Methodologies in Education	3
MST 123. The Teaching of Mathematics and Science	5	MST 199. Undergraduate Seminar	1
ZOO 14. University Zoology	3	MST 200a. Student Teaching I (on-campus)	3
	21		16
		FOURTH YEAR	
ARTS 1 (GE). Critical Perspective in the Arts	3	GE Elective	3
MST 190. Special Problems	3	PHYS 72. University Physics II	4
MST 191. Special Topics	3	PHYS 72.1. University Physics II Laboratory	1
MST 200b. Student Teaching II (off-campus)	3	HFDS 130. Human Physiology	3
GE Elective	3		11
	15		

TOTAL NUMBER OF UNITS 143

BACHELOR OF SCIENCE IN MATHEMATICS AND SCIENCE TEACHING (CHEMISTRY)

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 9 September 2018

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
STS 1 (GE). Science, Technology, and Society	3	KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3
PI 10. The Life and Works of Jose Rizal	3		
CHEM 18. University Chemistry	3	BIO 14. Biodiversity	5
CHEM 18.1 University Chemistry Laboratory	2	MATH 27. Analytic Geometry and Calculus II	3
BIO 11.1. Investigative Biology Laboratory	2	AMAT 19. Finite Mathematics	3
MATH 25. Fundamental Calculus	3	CHEM 40. Basic Organic Chemistry	4
PHYS 50. Foundations of Physics	3	CHEM 40.1. Basic Organic Chemistry Laboratory	1
MST 101a. Field Study I	1	MST 101b. Field Study II	1
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	20		20
		SECOND YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	CHEM 160. Introductory Biochemistry	3
EDUC 102. Theories and Principles of Education	3	PHYS 71. University Physics	4
BIO 30. Genetics	3	PHYS 71.1. University Physics Laboratory	1
STAT 162. Experimental Designs	3	DEVC 40/ MST 40. Fundamentals of Educational Communication and Technology	3
SPCM 156. Speech Communication Strategies for Classroom Instruction	3	EDUC 122. Principles and Strategies of Teaching	3
CHEM 32. Quantitative Inorganic Analysis	3	STAT 166. Statistics for the Social Sciences	3
CHEM 32.1. Quantitative Inorganic Analysis Laboratory	2	MST 101d. Field Study IV	1
MST 101c. Field Study III	1	COMA 150. Workplace Communication	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	21		21
		THIRD YEAR	
CHEM 160.1. Introductory Biochemistry Laboratory	2	CHEM 102. Elementary Physical Chemistry	3
PHYS 72. University Physics II	4	MST 195. Research Methodologies in Education	3
PHYS 72.1. University Physics II Laboratory	1	MATH 18. College Geometry 3	
EDUC 111. Educational Psychology	3	EDUC 144. Evaluation of Learning Outcomes	3
MST 123. The Teaching of Mathematics and Science	5	MST 200a. Student Teaching I (on-campus)	3
	15	COMM 10 (GE). Critical Perspectives in Communication	3
		GE Elective	3
			21
		FOURTH YEAR	
ARTS 1 (GE). Critical Perspective in the Arts	3	GE Elective	3
MST 190. Special Problems	3	MST 191. Special Topics	3
CHEM 180. General Environmental Chemistry	3	MST 199. Undergraduate Seminar	1
MST 200b. Student Teaching II (off-campus)	3		7
GE Elective	3		
	15		

TOTAL NUMBER OF UNITS 140

BACHELOR OF SCIENCE IN MATHEMATICS AND SCIENCE TEACHING
(MATHEMATICS)

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 9 September 2018

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
STS 1 (GE). Science, Technology, and Society	3	KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3
PI 10. The Life and Works of Jose Rizal	3		
CHEM 18. University Chemistry	3	BIO 14. Biodiversity	5
CHEM 18.1 University Chemistry Laboratory	2	MATH 27. Analytic Geometry and Calculus II	3
BIO 11.1. Investigative Biology Laboratory	2	AMAT 19. Finite Mathematics	3
MATH 25. Fundamental Calculus	3	CHEM 40. Basic Organic Chemistry	4
PHYS 50. Foundations of Physics	3	CHEM 40.1. Basic Organic Chemistry Laboratory	1
MST 101a. Field Study I	1	MST 101b. Field Study II	1
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	20		20
		SECOND YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	COMA 150. Workplace Communication	3
EDUC 102. Theories and Principles of Education	3	EDUC 122. Principles and Strategies of Teaching	3
BIO 30. Genetics	3	DEVC 40/ MST 40. Fundamentals of Educational Communication and Technology	3
MATH 20. The Landscape of Mathematics	3		
MATH 28. Analytic Geometry and Calculus III	3	MATH 18. College Geometry	3
EDUC 111. Educational Psychology	3	MATH 101. Logic and Set Theory	3
MST 101c. Field Study III	1	STAT 166. Statistics for the Social Sciences	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	MST 101d. Field Study IV	1
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)		
	19	NSTP 2. National Service Training Program II	(3)
			19
		THIRD YEAR	
PHYS 71. University Physics	4	COMM 10. Critical Perspectives in Communication	3
PHYS 71.1. University Physics Laboratory	1	GE Elective	3
EDUC 144. Evaluation of Learning Outcomes	3	PHYS 72. University Physics II	4
SPCM 156. Speech Communication Strategies for Classroom Instruction	3	PHYS 72.1. University Physics II Laboratory	1
		MST 195. Research Methodologies in Education	3
MST 123. The Teaching of Mathematics and Science	5	MATH 103. Elementary Theory of Numbers	3
STAT 162. Experimental Designs	3	MST 200a. Student Teaching I (on-campus)	3
	19		20
		FOURTH YEAR	
ARTS 1 (GE). Critical Perspective in the Arts	3	GE Elective	3
MST 190. Special Problems	3	MST 191. Special Topics	3
CHEM 160. Introductory Biochemistry	3	MST 199. Undergraduate Seminar	1
MST 200b. Student Teaching II (off campus)	3	AMAT 105. Matrices and Applications	3
GE Elective	3		10
	15		

TOTAL NUMBER OF UNITS 142

BACHELOR OF SCIENCE IN MATHEMATICS AND SCIENCE TEACHING
(PHYSICS)

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 9 September 2018

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
STS 1 (GE). Science, Technology, and Society	3	KAS 1/HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3
PI 10. The Life and Works of Jose Rizal	3		
CHEM 18. University Chemistry	3	BIO 14. Biodiversity	5
CHEM 18.1 University Chemistry Laboratory	2	MATH 27. Analytic Geometry and Calculus II	3
BIO 11.1. Investigative Biology Laboratory	2	AMAT 19. Finite Mathematics	3
MATH 25. Fundamental Calculus	3	CHEM 40. Basic Organic Chemistry	4
PHYS 50. Foundations of Physics	3	CHEM 40.1. Basic Organic Chemistry Laboratory	1
MST 101a. Field Study I	1	MST 101b. Field Study II	1
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	20		20
		SECOND YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	COMA 150. Workplace Communication	3
BIO 30. Genetics	3	CHEM 160. Introductory Biochemistry	3
EDUC 102. Theories and Principles of Education	3	EDUC 122. Principles and Strategies of Teaching	3
MATH 18. College Geometry	3	STAT 162. Experimental Designs	3
PHYS 71. University Physics	4	DEVC 40/ MST 40. Fundamentals of Educational Communication and Technology	3
PHYS 71.1. University Physics Laboratory	1		
EDUC 111. Educational Psychology	3	PHYS 72. University Physics II	4
MST 101c. Field Study III	1	PHYS 72.1. University Physics II Laboratory	1
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	MST 101d. Field Study IV	1
		HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)		
	21	NSTP 2. National Service Training Program II	(3)
			21
		THIRD YEAR	
EDUC 144. Evaluation of Learning Outcomes	3	COMM 10 (GE). Critical Perspectives in Communication	3
APHY 101. Physics in Scientific Instruments	3		
SPCM 156. Speech Communication Strategies for Classroom Instruction	3	CMSC 12. Foundations of Computer Science	3
		MST 200a. Student Teaching I (on-campus)	3
STAT 166. Statistics for the Social Sciences	3	MST 195. Research Methodologies in Education	3
GE Elective	3	PHYS 192.1. Experimental Physics I	2
MST 123. The Teaching of Mathematics and Science	5	APHY 102. Physics of Electronic Devices	3
	20		17
		FOURTH YEAR	
ARTS 1 (GE). Critical Perspective in the Arts	3	GE Elective	3
MST 190. Special Problems	3	MST 191. Special Topics	3
MST 199. Undergraduate Seminar	1		6
MST 200b. Student Teaching II (off campus)	3		
GE Elective	3		
PHYS 193.1. Experimental Physics II	2		
	15		

TOTAL NUMBER OF UNITS 140

BACHELOR OF SCIENCE IN STATISTICS

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 28 August 2019

First Semester	***Units***	***Second Semester***	***Units***
		FIRST YEAR	
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	ARTS 1 (GE). Critical Perspectives in the Arts	3
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	GE Elective	3
MATH 27. Analytic Geometry and Calculus II	3	MATH 28. Analytic Geometry and Calculus III	3
BIO 30. Genetics	3	CMSC 12. Foundations of Computer Science	3
STAT 101. Statistical Methods	3	STAT 162. Experimental Designs	3
STAT 135. Logic and Matrix Algebra in Statistics	3	STAT 182. Statistical Packages	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics	(2)
	18		18
		SECOND YEAR	
STS 1 (GE). Science, Technology, and Society	3	GE Elective	3
GE Elective	3	MATH 182. Stochastic Processes	3
CMSC 21. Fundamentals of Programming	3	CMSC 22. Object-Oriented Programming	3
ECON 11. General Economics	3	ABME 10. Foundations of Entrepreneurship	3
STAT 144. Introductory Statistical Theory I	3	STAT 145. Introductory Statistical Theory II	3
STAT 168. Response Surface Methodology	3	STAT 163. Survey Designs	3
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
NSTP 1. National Service Training Program I	(3)	NSTP 2. National Service Training Program II	(3)
	18		18
		THIRD YEAR	
COMM 10 (GE). Critical Perspectives in Communication	3	Elective Track	3
Elective Track	3	CMSC 127. File Processing and Database Systems	3
STAT 146. Introductory Statistical Theory III	3	STAT 147. Introduction to the Theory of Nonparametric Statistics	3
STAT 173. Survey Operations	3		
STAT 175. Analysis of Multivariate Data	3	STAT 151. Applied Regression and Correlation	3
STAT 181. Statistical Computing	3	STAT 156. Introductory Time Series Analysis	3
	18	STAT 174. Introductory Biostatistics	3
		STAT 192.1. Statistical Consulting Laboratory	1
			19
		MIDYEAR	
STAT 198. Practicum		3	
		3	
		FOURTH YEAR	
Elective Track	3	PI 10. The Life and Works of Jose Rizal	3
ENG 10. Writing Scientific Papers	3	STAT 157. Financial Risk Analysis	3
STAT 148. Introductory Bayesian Statistics	3	STAT 167. Statistical Quality Control	3
STAT 165. Categorical Data Analysis	3	STAT 183. Introductory Data Analytics	3
STAT 190. Special Problems	1	STAT 190. Special Problems	2
STAT 191. Special Topics	3	STAT 199. Undergraduate Seminar	1
	16		15

TOTAL NUMBER OF UNITS 143

BACHELOR OF SCIENCE IN AGRICULTURAL CHEMISTRY

(A joint program of the College of Agriculture and Food Science and the College of Arts and Sciences)

Special UPLB UC 21 May 2018; Executive Vice President's Approval (by authority of the UP President) 7 May 2020

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
CHEM 18. University Chemistry	3	CHEM 19. Chemical Structure and Properties	3
CHEM 18.1 University Chemistry Laboratory	2	MATH 28. Analytic Geometry and Calculus III	3
MCB 11. Biology and Applications of Microorganisms	3	BIO 30. Genetics	3
MATH 27. Analytic Geometry and Calculus II	3	AGRI 31. Fundamentals of Crop Science I	3
KAS 1/ HIST 1 (GE). Kasaysayan ng Pilipinas/ Philippine History	3	ARTS 1 (GE). Critical Perspectives in the Arts	3
ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life	3	GE Elective	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
	17		18
		SECOND YEAR	
CHEM 32. Quantitative Inorganic Analysis	3	CHEM 43. Organic Chemistry I	3
CHEM 32.1. Quantitative Inorganic Analysis Laboratory	2	CHEM 43.1. Organic Chemistry I Laboratory	2
PHYS 71. University Physics I	4	PHYS 72. University Physics II	4
PHYS 71.1. University Physics I Laboratory	1	PHYS 72.1. University Physics II Laboratory	1
BOT 20. Fundamentals of Plant Physiology	3	AGRI 21. Introduction to Animal Science	3
CMSC 12/ AMAT 152. Foundations of Computer Science/ Fundamentals of Mathematical Computing	3	AGRI 32. Fundamentals of Crops Science II	3
		ECON 11. General Economics	3
PI 10. The Life and Works of Jose Rizal	3	HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)
HK 12/ HK 13. Human Kinetics Activities/ Advanced Human Kinetics Activities	(2)	NSTP 2. National Service Training Program II	(3)
NSTP 1. National Service Training Program I	(3)		19
	19		
		THIRD YEAR	
CHEM 44. Organic Chemistry II	3	CHEM 111. Physical Chemistry I	3
CHEM 44.1. Organic Chemistry II Laboratory	2	CHEM 131. Technical Analysis I: Foods and Feeds	4
STAT 162. Experimental Designs	3	CHEM 140. Organic Analysis	4
AGRI 22. Introduction to Livestock and Poultry Production	3	CHEM 161a. Biochemistry I	3
AAE 111/ AAE 120. Farm Management/ Agricultural Marketing I	3	AGRI 51. Principles of Soil Science	3
AGRI 61. Agricultural Extension Communication	3	AGRI 41. Principles of Crop Protection	3
GE Elective	3		20
	20		
		FOURTH YEAR	
CHEM 111.1. Physical Chemistry I Laboratory	2	CHEM 112.1. Physical Chemistry II Laboratory	2
CHEM 112. Physical Chemistry II	3	CHEM 115. Physical Chemistry III	3
CHEM 137. Modern Analytical Chemistry	3	CHEM 137.1. Modern Analytical Chemistry Laboratory	2
CHEM 161b. Biochemistry II	3	CHEM 161.1. General Biochemistry Laboratory	2
CHEM 192. Chemical Information, Literature and Communication	3	COMM 10 (GE). Critical Perspectives in Communication	3
AGRI 42. Pest Management	3	Specialization*	3
Specialization*	3	Specialization*	3
	20		18
		MIDYEAR	
CHEM 198. Practicum	3		
	3		
		FIFTH YEAR	
CHEM 120. Inorganic Chemistry	3	CHEM 180. General Environmental Chemistry	3
CHEM 133. Technical Analysis II (Soils, Fertilizers and Pesticides)	4	CHEM 185. Structure and Reactivity of Agricultural Chemicals	3
CHEM 199. Undergraduate Seminar	1		
AGRI 171. Ethics, Laws and Policies in Agriculture	3	AGRI 199. Colloquium in Agriculture	1
ACHM 200. Undergraduate Thesis	3	ACHM 200. Undergraduate Thesis	3
STS 1 (GE). Science, Technology and Society	3	GE Elective	3
Specialization*	3	Specialization*	3
	20		16

TOTAL NUMBER OF UNITS 190

** At least three (3) out of five (5) specialization courses must be taken by the student under his/her chosen field of specialization which may be any of the following subdisciplines of Agriculture: Food Science, Animal Science, Soil Science, Entomology, Plant Pathology, Plant Physiology, Weed Science, or Agricultural Biotechnology.*

COURSES

INSTITUTE OF BIOLOGICAL SCIENCES

BIOLOGY

BIO 11.1. Investigative Biology Laboratory (2). Integrating concepts in Biology through investigatory approaches. 6 hrs (6 lab). PR. None. (1,2)

BIO 14 (formerly BIO 3). Biodiversity (5). Systematic survey of the diversity of life, with emphasis on functional organization, maintenance and integration, reproduction and development; evolution of the major groups of microorganisms, plants and animals; interrelationships of organisms with the environment. 9 hrs (3 class, 6 lab) PR. BIO 11.1. (1,2)

BIO 30. Genetics (3). Mechanisms of heredity and variation, cytogenetics, mutation, nature of genes, population genetics, and quantitative genetics; biometrical procedures. 5 hrs (2 class, 3 lab). PR. None (1,2)

BIO 70. Earth's Processes and Biological Systems (3). The earth's processes and their relationship to the evolution, diversity, and distribution of various communities of plants and animals. 3 hrs (class). PR. NONE. (1,2)

BIO 101. Introductory Molecular Biology (3). Structure, properties, functions and interactions of biomolecules in basic cellular processes, with emphasis on the processes involving the genetic material. 3 hrs (class). PR. BIO 30 and CHEM 160 or CHEM 161b. (1,2)

BIO 120. Cell Biology (3). Nature and function of ultra-structure components and possible relationships to such processes as chemical energy transformations, transport, excitation, movement, and growth. 5 hrs (2 class, 3 lab). PR. BIO 30 and CHEM 160. (1,2)

BIO 125. Principles of Cell and Molecular Biology Techniques (3). Theoretical bases of standard techniques in cell and molecular biology with emphasis on approaches to research problems on gene expression at the cell and molecular levels. 3 hrs (class). PR. BIO 101. (1,2)

BIO 127. Developmental Blology (3). Molecular and cellular bases of cell determination, differentiation, and morphogenesis in relation to multicellularity in plants and animals. 3 hrs (class). PR. BIO 120. (1,2)

BIO 130a. Intermediate Genetics I (3). The nature and behavior of the genetic material as expressed in the development of the individual. 3 hrs (class). PR. BIO 30. (1,2)

BIO 130b. Intermediate Genetics II (3). The nature and behavior of the genetic material as expressed in the population. 3 hrs (class). PR. BIO 30. (2)

BIO 131. Cytogenetics (3). The chromosomal bases of heredity; variations in chromosome structure and number; hybridization; apomixis and chromosomes in sex determination. 5 hrs (2 class, 3 lab). PR. BIO 30. (2)

BIO 134. Introduction to Genomics and Bioinformatics (3). Structure, organization, and function of genomes of selected organisms; techniques in genome analysis and bioinformatics. 3 hrs (class). PR. BIO 101. (1,2)

BIO 137 (or ENT 137). Insect Genetics (3). Genetic concepts and mechanisms in insects, and their application in taxonomy, pest management, and genetic improvement of beneficial species. 5 hrs (2 class, 3 lab). PR. ENT 101 and BIO 30 or COI and CHEM 40. (1,2)

BIO 138. Molecular Genetics (3). The nature, functions, and interactions of molecules in heredity; the molecular basis of certain biological phenomena in relation to the genetic material. 3 hrs (class). PR. BIO 101. (1)

BIO 139. Human Genetics (3). Physical and molecular bases of genetics of human traits, the application of DNA technology in human biology, and its implications to biosocial issues. 3 hrs (class). PR. BIO 130a. (1)

BIO 140. Evolutionary Biology (3). The basic concepts on the theory of evolution, with emphasis on the processes and mechanisms as revealed in genetics, systematics, ecology, ethology, and historical geology. 3 hrs (class). PR. BIO 30. (1,2)

BIO 142. Principles of Systematic Biology (3). The concept of species and the higher taxa and categories in plants, animals and microorganisms; individual and geographic variation; taxonomic characters, identification, classification; biological nomenclature. 3 hrs (class). PR. BIO 14 or BIO 30. (1)

BIO 150. Ecology (4). Organisms, populations, communitites, ecosystems, and the biosphere in relation to changes on earth through time. 6 hrs (3 class, 3 lab). PR. None. (1,2)

BIO 151. Environmental Management (3). Principles of environmental management; technological development and activities affecting the environment and pertinent case studies. 3 hrs (class). PR. BIO 150 or COI. (2)

BIO 152. Biogeography (3). Principles and applications of biogeography. 3 hrs (class). PR. BIO 150. (1)

BIO 154. Cave Ecology (3). Cave ecosystems, biodiversity, and adaptations of organisms. 5 hrs (2 class, 3 lab). PR. BIO 150 or COI. (2)

BIO 155. Biology of Pollution (3). Interactions of biota with polluted environments. 5 hrs (2 class, 3 lab). PR. BIO 150 or COI. (1)

BIO 159. Conservation Biology in the Tropics (3). Conservation and values of tropical biological diversity, threats, and pertinent policies, methods, and strategies in conserving biodiversity. 3 hrs (class). PR. BIO 150 or COI. (2)

BIO 180. Biological Microtechnique (3). Collection and preparations of whole mounts and tissue sections of plants and animals; preservation and storage. 7 hrs (1 class, 6 lab). PR. CHEM 40.1. (2,M)

BIO 190. Special Problems (1-3). May be taken twice provided that the total number of units to be credited to the student's program will

not exceed 4 units. (1,2,M)

BIO 191. Special Topics (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. (1,2)

BIO 192. Museum Herbarium Curatorship (3). Methods and procedures pertaining to the establishment, maintenance, and management of museums and herbaria; collection and preservation of biological materials for research and reference. 7 hrs (1 class, 6 lab). PR. BOT 140 or ZOO 140. (1,2)

BIO 195. Research Methods in Biological Sciences (3). Methods and approaches in conducting and communicating researches in the biological sciences. 5 hrs (2 class, 3 lab). PR. STAT 164. (1,2)

BIO 198. Practicum (3). Minimum of 150 hrs. PR. COI* (M)

*COI: Cell and Molecular Biology:	BIO 101
Ecology:	BIO 151
Genetics:	BIO 130a & BIO 130b
Microbiology:	MCB 101 & MCB 180
Plant Biology:	BOT 20 & BOT 110
Systematics:	BOT 140 & ZOO 140
Wildlife Biology:	WLDL 101
Zoology:	ZOO 113

BIO 199. Undergraduate Seminar in Biology (1). PR. Senior standing or COI. (1,2)

BIO 200. Undergraduate Thesis in Biology (6). (1,2,M)

BOTANY

BOT 14. University Botany (3). Analysis of processes and mechanisms shaping plant life; and economic importance of plants. 5 hrs (2 class, 3 lab). PR. None. (1,2)

BOT 20. Fundamentals of Plant Physiology (3). Photosynthesis, respiration, nutrition, water relations, transport of materials, and growth of plants. 5 hrs (2 class, 3 lab). PR. None. (1,2)

BOT 101. Phycology (3). Classification, ecology, morphology, physiology, and economic importance of algae. 5 hrs (2 class, 3 lab). PR. None. (2)

BOT 110. Morphology and Anatomy of Plants (3). Structure, function, development, adaptation, and phylogenetic relationships of vascular plants. 5 hrs (2 class, 3 lab). PR. None. (1)

BOT 111. Bryophytes and Vascular Cryptogams (3). Structure, development, and systematics of bryophytes, psilopsids, lycopods, sphenopsids, and selected ferns. 5 hrs (2 class, 3 lab). PR. COI. (2)

BOT 120. Advanced Plant Physiology (3). Plant function, behavior, and metabolism of primary and secondary plant products and physiological ecology. 5 hrs (2 class, 3 lab). PR. BOT 20 or COI. (2)

BOT 131 (or HORT 131). Inorganic Plant Nutrition (3). Principles of mineral nutrition of higher plants. 5 hrs (2 class, 3 lab). PR. BOT 20. (1,2)

BOT 132 (or HORT 132). Plant Growth (3). The nature and processes of growth in plants, including the role played in the process by phytohormones. 5 hrs (2 class, 3 lab). PR. BOT 20. (1,2)

BOT 140. Systematics of the Spermatophytes (3). The identification, nomenclature, and classification of the principal families of seedplants, with emphasis on their geographic distribution and economic importance. 7 hrs (1 class, 6 lab). PR. COI. (1,2)

BOT 142. Economic Botany (3). Origin, history, botanical relationships, and uses of plants of the Philippines, with emphasis on wild species of economic value. 5 hrs (2 class, 3 lab). PR. COI. (1,2)

BOT 150. Plant Ecology (3). Principles of plant environment interactions in relation to distribution, structure and functioning of plant communities. 5 hrs (2 class, 3 lab). PR. BOT 14 or COI. (2)

BOT 152. Phytogeography (3). Principles, patterns, causes, and barriers of plant distribution and migration on land evolution of world vegetations and floristic provinces. 3 hrs (class). PR. BOT 150 or COI. (2)

BOT 191. Special Topics (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units.

BOT 192. Plant Histochemistry (3). Histochemical analysis of plants, with special emphasis on medicinal, wild food, and pesticidal plants, and their active constituents. 5 hrs (2 class, 3 lab). PR. CHEM 40 or COI and BOT 110. (1)

MICROBIOLOGY

MCB 11. Microorganisms (3). Biology of major groups of microorganisms, with emphasis on prokaryotes, and an introduction to applied microbiology. 5 hrs (2 class, 3 lab). PR. None. (1,2)

MCB 101. Microbial Identification Techniques (3). Principles and techniques for the morphological, cultural, and physiological characterization of selected groups of micro- organisms. 7 hrs (1 class, 6 lab). PR. MCB 11. (1,2)

MCB 102. General Virology (3). The physical, chemical, and biological properties of plant, animal, and bacterial viruses. 3 hrs (class). PR. MCB 11. (1,2)

MCB 103. Introductory Medical Microbiology (3). The role and control of medically important microorganisms in human disease development. 3 hrs (class). PR. MCB 11. (1,2)

MCB 120. Microbial Physiology (3). Physiological processes in microorganisms including a study of structure, energy production, macromolecular biosynthesis, nutrition, and growth. 3 hrs (class). PR. MCB 11 and CHEM 160. (1,2)

MCB 130. Microbial Genetics (4). The principles of heredity in microbial systems and their applications in microbiology and molecular biology. 8 hrs (2 class, 6 lab). PR. MCB 101 and BIO 101 or COI. (1,2)

MCB 150. Microbial Ecology (3). An introduction to the basic principles of microbial ecology; interrelationships of bacteria, fungi,

algae, and protozoa in natural systems. 5 hrs (2 class, 3 lab). PR. MCB 11. (1,2)

MCB 180. Introductory Food Microbiology (3). An introduction to the microbiological aspects of food processing, preservation, spoilage, and quality control; food-borne microorganisms of public health importance. 5 hrs (2 class, 3 lab). PR. MCB 11. (1,2)

MCB 181. Dairy Microbiology (3). Microorganisms in milk and milk products, their growth, destruction and utilization, and methods in microbiological quality control. 5 hrs (2 class, 3 lab). PR. MCB 11. (2)

MCB 182 (formerly MCB 160). Industrial Microbiology (3). Microorganisms, principles, and processes involved in industrial fermentation. 3 hrs (class). PR. MCB 11 and CHEM 160. (1,2)

MCB 182.1 (formerly MCB 160.1). Industrial Microbiology Laboratory (2). Techniques in industrial fermentation. 6 hrs (lab). PR. MCB 101 and MCB 182 (can be taken concurrently with MCB 182). (1)

SCIENCE

SCIENCE 11 (GE). Living Systems: Concepts and Dynamics (3). Principles, interactions, and contemporary issues concerning living systems. PR. None. (1,2)

WILDLIFE

WLDL 101. Introduction to Philippine Wildlife (3). Survey of Philippine flora and fauna; biology and ecology of selected species. 5 hrs (2 class, 3 lab). PR. None. (1)

WLDL 150. (formerly WLDL 155) Wildlife Ecology (3). Ecological factors that influence abundance in the tropical ecosystems. 3 hrs (class). PR. WLDL 101. (2)

ZOOLOGY

ZOO 14. University Zoology (3). Integrative analysis of processes and mechanisms shaping animal life. 5 hrs (2 class, 3 lab). PR. None. (1,2)

ZOO 113. Comparative Vertebrate Anatomy (5). Comparative and phylogenetic study of vertebrate organ systems; their development, structures, and functions. 9 hrs (3 class, 6 lab). PR. ZOO 14. (1,2)

ZOO 115. Animal Histology (3). Detailed study of types, structure, and functions of vertebrate tissues, selected glands and organs; principle of histochemistry. 5 hrs (2 class, 3 lab). PR. ZOO 113. (1,2)

ZOO 117. Developmental Zoology (3). Patterns of growth, differentiation and morphogenesis from molecule to organism; control mechanisms of development; animal life cycles. 5 hrs (2 class, 3 lab). PR. BIO 101. (1,2)

ZOO 120. Animal Physiology (5). Mechanisms involved in the functional processes of animals; sources of energy; its distribution and utilization; environmental relations; nervous integration and animal activity; reproduction and development. 9 hrs (3 class, 6 lab). PR. ZOO 113 and CHEM 160. (1,2)

ZOO 122. Animal Behavior (3). Behavior patterns of animals, their nervous and endocrine control mechanisms; evolutionary significance of behavior adaptations. 5 hrs (2 class, 3 lab). PR. ZOO 14. (1)

ZOO 127. Animal Toxinology (3). Sources, modes of actions, and applications of animal toxins. 3 hrs (class). PR. CHEM 160. (2)

ZOO 140. Animal Taxonomy (3). Principles of animal taxonomy; taxonomic literature and catalogs, with special reference to Philippine fauna. 5 hrs (2 class, 3 lab). PR. None. (1,2)

ZOO 142. Invertebrate Zoology (3). Systematics, ecology, and evolutionary relationships of invertebrates. 5 hrs (2 class, 3 lab). PR. None. (1,2)

ZOO 145. Herpetology (3). Taxonomy of Philippine reptiles and amphibians; biology and ecology of important species; collection and preparation for scientific study. 7 hrs (1 class, 6 lab). PR. None. (1)

ZOO 146. Ornithology (3). Taxonomy of Philippine birds; biology and ecology of important species; collection and preparation for scientific study. 7 hrs (1 class, 6 lab). PR. None. (2)

ZOO 148. Mammalogy (3). Taxonomy of Philippine mammals; biology and ecology of important species; collection and preparation for scientific study. 7 hrs (1 class, 6 lab). PR. None. (2)

ZOO 149. Biology of Marine Mammals (3). Life history, systematics ecology, and conservation of marine mammals of the world, with emphasis on those found within the Philippine waters. 3 hrs (class). PR. None. (1)

ZOO 150. Animal Ecology (3). Fundamental factors of the environment, population dynamics, community concepts and principal habitats of animals. 7 hrs (1 class, 6 lab). PR. None. (1,2)

ZOO 151. Marine Zoology (5). Taxonomy and ecology of marine invertebrates and vertebrates; collection, preservation, and storage of marine ecological specimens. 11 hrs (2 class, 9 lab). PR. BIO 150 or ZOO 150. (M)

ZOO 152. Freshwater Zoology (3). Ecology and taxonomy of the freshwater fauna. 7 hrs (1 class, 6 lab). PR. BIO 150 or ZOO 150. (1,2)

ZOO 153. Marine Animal Ecology (3). Adaptations of marine animals and their interactions with the environment in different marine habitats. 3 hrs (class). PR. BIO 150. (2)

ZOO 155. General Limnology (3). Origin, classification, and structures of inland waters; their physical, chemical, and biological processes. 3 hrs (class). PR. COI. (1)

ZOO 160. General Malacology (3). Morpho-taxonomy, ecology, and physiology of different molluscan classes, with emphasis on economically and medically important species. 5 hrs (2 class, 3 lab). PR. BIO 150 or ZOO 150. (1)

ZOO 173. Introduction to Parasitology (3). Fundamental principles of parasitology, with reference to man and other animals. 5 hrs (2

class, 3 lab). PR. None. (1,2)

ZOO 180. Ichthyology (3). Basic fish anatomy, functional morphology, and physiology; taxonomy of important fishes. 5 hrs (2 class, 3 lab). PR. None. (2)

ZOO 185. Introduction to Aquaculture (3). Basic principles and practices of aquaculture. 3 hrs (class). PR. None. (1,2)

ZOO 191. Special Topics (1-3). (May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units.) (1,2)

INSTITUTE OF CHEMISTRY

AGRICULTURAL CHEMISTRY

ACHM 190. Special Problems (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2,M)

ACHM 200. Undergraduate Thesis (6). (1,2,M)

CHEMISTRY

CHEM 18. University Chemistry (3). Chemical concepts, principles, and applications. 3 hrs (class). Co-requisite: CHEM 18.1. (1,2)

CHEM 18.1 University Chemistry Laboratory (2). Laboratory exercises in university-level General Chemistry. 6 hrs (3 hrs lab, 2x a week). Co-requisite: CHEM 18. (1,2)

CHEM 19. Chemical Structure and Properties (3). Theories and energetics of bond formation; relationship of structure and properties of substances. 3 hrs (class). PR. CHEM 18. (1,2)

CHEM 32. Quantitative Inorganic Analysis (3). Basic principles and practice of quantitative inorganic chemical analysis. 3 hrs (class). PR. CHEM 18 and CHEM 18.1. Co-requisite: CHEM 32.1. (1,2,M)

CHEM 32.1. Quantitative Inorganic Analysis Laboratory (2). 6 hrs (lab). Co-requisite: CHEM 32. (1,2,M)

CHEM 40. Basic Organic Chemistry (4). Elementary organic structural theory and functional group chemistry; introduction to carbohydrates, fats, and proteins. 4 hrs (class). PR. CHEM 18 and CHEM 18.1. Co-requisite: CHEM 40.1. (1,2)

CHEM 40.1. Basic Organic Chemistry Laboratory (1). 3 hrs (lab). Co-requisite: CHEM 40. (1,2)

CHEM 43. Organic Chemistry I (3). Organic structural theory, basic reaction mechanism, stereochemistry, elementary organic synthesis, and ultraviolet-visible and infrared spectroscopy; structure, properties, nomenclature and reactions of hydrocarbons, alkyl halides and aryl halides. 3 hrs (class). PR. CHEM 18.1 and CHEM 19. Co-requisite: CHEM 43.1. (1,2)

CHEM 43.1. Organic Chemistry I Laboratory (2). 6 hrs (lab). Co-requisite: CHEM 43. (1,2)

CHEM 44. Organic Chemistry II (3). Structure, properties, nomenclature, and reactions of alcohols, phenols, ethers, epoxides, ketones, aldehydes, amines, carboxylic acids, and derivatives; introduction to biomolecules; elementary organic synthesis; basic mass spectrometry and nuclear magnetic resonance spectroscopy. 3 hrs class. PR. CHEM 43 and CHEM 43.1. Co-requisite: CHEM 44.1. (1,2)

CHEM 44.1. Organic Chemistry II Laboratory (2). 6 hrs (lab). Co-requisite: CHEM 44. (1,2)

CHEM 102. Elementary Physical Chemistry (3). Elements of thermodynamics, chemical equilibria, chemical kinetics, and electrochemistry. 3 hrs (class). PR. CHEM 18. (1,2)

CHEM 111. Physical Chemistry I (3). Fundamental laws of gases; elementary principles of thermodynamics and thermochemistry; the liquid state and properties of solutions; chemical equilibria. 3 hrs (class). PR. CHEM 32 and CHEM 32.1, PHYS 51 or PHYS 71, and MATH 28. (1,2)

CHEM 111.1 Physical Chemistry I Laboratory (2). 6 hrs (lab). PR. CHEM 111. (1,2)

CHEM 112. Physical Chemistry II (3). Non-ideal solutions; electrolytes and electrode processes; chemical kinetics; the crystalline state. 3 hrs (class). PR. CHEM 111 and PHYS 51 or PHYS 72. (1,2)

CHEM 112.1 Physical Chemistry II Laboratory (2). 6 hrs (lab). PR. CHEM 112 and CHEM 111.1. (1,2)

CHEM 115. Physical Chemistry III (3). Introduction to classical and quantum mechanics; quantum chemistry; molecular spectroscopy; nuclear chemistry and photochemistry. 3 hrs (class). PR. CHEM 112. (1,2)

CHEM 120. Inorganic Chemistry (3). Theoretical aspects of inorganic chemistry; a systematic study of the properties of the elements from the point of view of modern atomic structure. 3 hrs (class). PR. CHEM 115. (1,2)

CHEM 120.1 Inorganic Chemistry Laboratory (2). 6 hrs (lab). PR. CHEM 120. (1,2)

CHEM 131. Technical Analysis I (Foods and Feeds) (4). Theory and practice of selected quantitative methods in analysis including instrumentation. 8 hrs (2 class, 6 lab). PR. CHEM 40 and CHEM 40.1 (or CHEM 44 and CHEM 44.1) and CHEM 32 and CHEM 32.1 or COI. (1,2)

CHEM 133. Technical Analysis II (Soils, Fertilizers, and Pesticides) (4). Theory and practice of selected quantitative methods of analysis, including instrumentation. 8 hrs (2 class, 6 lab). PR. CHEM 32 and CHEM 32.1 or COI. (2)

CHEM 135. Technical Analysis III (Analysis of Industrial Products) (4). The analysis of industrial products such as fuels, paints, cements, etc. and their evaluation. 8 hrs (2 class, 6 lab). PR. CHEM 40 and CHEM 32. (2)

CHEM 137. Modern Analytical Chemistry (3). Theories and

principles of modern methods of chemical analysis. 3 hrs (class). PR. CHEM 111. (1,2)

CHEM 137.1 Modern Analytical Chemistry Laboratory (2). 6 hrs (lab). PR. CHEM 137. (1,2)

CHEM 140. Organic Analysis (4). Identification of organic compounds. 8 hrs (2 class, 6 lab). PR. CHEM 32 and CHEM 32.1 and CHEM 44 and CHEM 44.1. (1,2)

CHEM 157. Phytochemistry (3). Introduction to the chemistry, distribution, and functions of natural products derived from plants. 5 hrs (2 class, 3 lab). PR. CHEM 140. (2)

CHEM 160. Introductory Biochemistry (3). Structure and function of biologically active compounds in living systems. 3 hrs (class). PR. CHEM 40 and CHEM 40.1 or CHEM 44 and CHEM 44.1 or COI (intended for graduate students only). (1,2,M)

CHEM 160.1 Introductory Biochemistry Laboratory (2). 6 hrs (lab). PR. CHEM 160. (1,2,M)

CHEM 161a. Biochemistry I (3). Structure, function, analysis, and metabolism of carbohydrates and lipids. 3 hrs (class). PR. CHEM 44 and CHEM 44.1. (1,2,M)

CHEM 161b. Biochemistry II (3). Structure, function, analysis, and metabolism of proteins and nucleic acids. 3 hrs (class). PR. CHEM 161a. (1,2)

CHEM 161.1 General Biochemistry Laboratory (2). Isolation, identification, characterization, and quantification of biomolecules using techniques such as spectrophotometry, potentiometry, electrophoresis, and chromatography. 6 hrs (lab). PR. CHEM 161b, CHEM 32 and CHEM 32.1. (1,2)

CHEM 162. Plant Biochemistry (3). Metabolic processes in plant systems. 3 hrs (class). PR. CHEM 160 or CHEM 161b. (2)

CHEM 164. Introduction to Chemical Toxicology (3). Biochemical mode of action and effects of chemical toxicants on biological systems; toxicological testing; detection and evaluation of hazards of toxicants. 5 hrs (2 class, 3 lab). PR. CHEM 160 or CHEM 161b. (2)

CHEM 165 (formerly CHEM 154). Biophysical Chemistry (3). Physical chemistry of biological systems. 3 hrs (class). PR. CHEM 161b and CHEM 112 or COI. (2)

CHEM 171. Industrial Chemistry (3). Introduction to the manufacture and production of some important organic and inorganic compounds. 3 hrs (class). PR. CHEM 32 and CHEM 40 or CHEM 44. (2)

CHEM 172. Medicinal Chemistry (3). Concepts, principles, and applications of Organic Chemistry and Biochemistry in the development of modern drugs, their discovery, and mechanisms of action of drugs. 3 hrs (class). PR. CHEM 160 or CHEM 161b. (2)

CHEM 173. Polymer Chemistry (3). Synthetic and natural polymers classification, molecular structure, physico-chemical properties, synthesis and reactions. 5 hrs (2 class, 3 lab). PR. CHEM 40 and CHEM 40.1 or CHEM 44 and CHEM 44.1 and CHEM 112. (2)

CHEM 174. Principles of Radioisotope Methodology (3). Principles of radioisotope methodology applied to chemistry and biology. 5 hrs (2 class, 3 lab). PR. CHEM 32 and CHEM 32.1 and PHYS 13 or COI. (2)

CHEM 177. Biochemical Technology I (3). Kinetic, energetic, and biochemical engineering aspects of fermentation processes; fermenter types and their operation. 3 hrs (class). PR. MCB 1 and CHEM 112 or CHEM 102. (1)

CHEM 177.1 Biochemical Technology I Laboratory (2). 6 hrs (lab). PR. CHEM 177. (2)

CHEM 178. Biochemical Technology II (3). Production and characterization of industrially important enzymes; immobilization and applications of enzymes; enzyme reactor types and their operation. 3 hrs (class). PR. CHEM 177.

CHEM 178.1 Biochemical Technology II Laboratory (2). 6 hrs (lab). PR. CHEM 178.

CHEM 180. Environmental Chemistry (3). Chemical concepts and principles applied to the study of the environment and the preservation of environmental quality. 3 hrs (class). PR. CHEM 40 or CHEM 44. (1,2)

CHEM 181. Pollution Chemistry (3). Nature, sources, transformations, and effects of pollutive substances in the environment; chemical basis of pollution control and water management; pollution analysis. 3 hrs (class). PR. CHEM 180 or COI. (2)

CHEM 185. Structure and Reactivity of Agricultural Chemicals (3). Structures, properties, modes of actions, and environmental effect of agrochemicals. 3 hrs (class). PR. CHEM 160 or 161b. (2)

CHEM 190. Special Problems (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1, 2)

CHEM 191. Special Topics (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR COI. (1,2,M)

CHEM 192. Chemical Information, Literature and Communication (3). History of chemistry; the Chemistry Law; Code of Conduct for Chemists; types of chemical literature and sources of chemical information; the organization of the chemistry library; techniques of manual literature searching; technical writing for chemists. 5 hrs (2 class, 3 lab). PR. CHEM 32 and CHEM 44. (1,2)

CHEM 198. Practicum (3). Field training in private or government institutions engaged in chemistry or related activities. PR. COI. (M)

CHEM 199. Undergraduate Seminar (1). Review and discussion of current literature in Chemistry. May be taken twice. PR. CHEM 192. (1,2)

CHEM 200. Undergraduate Thesis (6). (1,2,M)

INSTITUTE OF COMPUTER SCIENCE

COMPUTER SCIENCE

CMSC 12. Foundations of Computer Science (3). An overview of the major area of computer science. 5 hrs (2 class, 3 lab). PR. None. (1,2,M)

CMSC 21. Fundamentals of Programming (3). Introduction to computer programming using a general purpose, structured, and procedural programming language; program design, testing, and debugging. 5 hrs (2 class, 3 lab). PR. CMSC 12. (1,2)

CMSC 22. Object-Oriented Programming (3). Objects; design and implementation of object-oriented programs. 5 hrs (2 class, 3 lab). PR. CMSC 12. (1,2)

CMSC 23. Mobile Computing (3). Methods and techniques for developing mobile applications. 5 hrs (2 class, 3 lab). PR. CMSC 22. (1,2)

CMSC 56. Discrete Mathematical Structures in Computer Science I (3). Principles of logic, set theory, relations and functions, Boolean algebra, and linear algebra. 5 hrs (2 class, 3 lab). PR. None. (1,2)

CMSC 57. Discrete Mathematical Structures in Computer Science II (3). Principles of combinations, probability, algebraic systems, and graph theory. 5 hrs (2 class, 3 lab). PR. CMSC 56. (2,M)

CMSC 100. Web Programming (3). Design and imple mentation of Web applications. 5 hrs (2 class, 3 lab). PR. CMSC 22. (1,2)

CMSC 123. Data Structures (3). Abstract data types and implementations of data structures; arrays, stacks, queues, linked lists, mappings, trees, sets and graphs; internal and external searching and sorting; dynamic storage manage- ment. 5 hrs (2 class, 3 lab). PR. CMSC 57 and CMSC 21 or COI. (2,M)

CMSC 124. Design and Implementation of Programming Languages (3). Language definition structure; data types and structures; control structures and data flow; interpretation of identifiers and run-time consideration. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (1)

CMSC 125. Operating Systems (3). Processor management, memory management, file and disk management, resource management, concurrent processes, networks, and distributed systems. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (1,2)

CMSC 127. File Processing and Database Systems (3). Hierarchical network and relational database models; principal database systems and query languages; database processing and implementation. 5 hrs (2 class, 3 lab). PR. CMSC 22 or COI. (2)

CMSC 128. Introduction to Software Engineering (3). Principles and methods for the design, implementation, val- idation, evaluation, and maintenance of software systems. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (2)

CMSC 129. Principles of Compiler Design (3). Fundamental concepts in the design and implementation of compilers: texical analysis, syntax analyses, code generation and optimization. 5 hrs (2 class, 3 lab). PR. CMSC 124. (2)

CMSC 130. Logic Design and Digital Computer Circuits (3). Logic functions and equations; description, analysis, and design of combinatorial and sequential circuits; digital logic circuits. 5 hrs (2 class, 3 lab). PR. CMSC 57 or COI. (1)

CMSC 131. Introduction to Computer Organization and Machine Level Programming (3). An introduction to computer organization and interfaces between hardware and software; microcomputer systems, and assembly language programming. 5 hrs (2 class, 3 lab). PR. CMSC 21 or COI. (1)

CMSC 132. Computer Architecture (3). Computer systems organization from a designer's point of view; design and testing of simple computer systems and components using a hardware description language; measuring and summarizing the performance of computer systems. 5 hrs (2 class, 3 lab). PR. CMSC 131 or COI. (2)

CMSC 137. Data Communications and Networking (3). Basic principles of data communications; design issues and protocols in the layers of data network; networks for various applications. 5 hrs (2 class, 3 lab). PR. CMSC 125. (1)

CMSC 141. Automata and Language Theory (3). Abstract machines and languages; finite automata, regular expressions, pushdown automata, context free languages, Turing machines, and recursively enumerable languages. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (1,2)

CMSC 142. Design and Analysis of Algorithms (3). Algorithm design and analysis techniques and their applications. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (1,2)

CMSC 150. Numerical and Symbolic Computation (3). Computational problem solving; sources of errors in computation; iterative approximation methods and symbolic algebra; mathematical software libraries and symbolic manipulation packages. 5 hrs (2 class, 3 lab). PR. CMSC 21 and MATH 27 or COI. (1)

CMSC 161. Interactive Computer Graphics (3). Graphics systems software and hardware, 2D drawing algorithms, geometrical transformations, surface modelling, 3D viewing, visible surface determination algorithms, reflection and illumination models, shading models for polygons, color theory, ray tracing, animation. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (2)

CMSC 165. Digital Image Processing (3). Methods for acquiring, creating, manipulating, enhancing, and analyzing digital images. 5 hrs (2 class, 3 lab). PR. CMSC 123 or COI. (1)

CMSC 170. Introduction to Artificial Intelligence (3). Basic principles and applications of Artificial Intelligence: knowledge representation, natural language processing, pattern recognition, and effect systems. 5 hrs (2 class, 3 lab). PR. CMSC 123. (2)

CMSC 172. Robot Modelling (3). Robotics manipulators and their characteristics; conversion from joint space to real world coordinates;

inverse kinematics; workspace analysis; differential motion. 5 hrs (2 class, 3 lab). PR. CMSC 123. (2)

CMSC 173. Human-Computer Interaction (3). Theory, design methodologies and programming practices in Human-Computer Interaction. 5 hrs (2 class, 3 lab). PR. CMSC 123 and STAT 101. (1,2)

CMSC 180. Introduction to Parallel Computing (3). Parallel computational models, machine architectures, performance model, algorithms, and programming. 5 hrs (2 class, 3 lab). PR. CMSC 132. (1)

CMSC 190. Special Problems (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2)

CMSC 191. Special Topics (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2)

CMSC 198. Practicum (3). PR. COI. (M)

CMSC 199. Undergraduate Seminar (1). May be taken twice. PR. COI. (1,2)

CMSC 200. Undergraduate Thesis (6). PR. COI. (1,2)

INSTITUTE OF MATHEMATICAL SCIENCES AND PHYSICS

APPLIED MATHEMATICS

AMAT 19. Finite Mathematics (3). An introduction to the concepts of logic, probability, mathematical programming, theory of games and graph. 3 hrs (class). PR. None. (1,2)

AMAT 105. Matrices and Applications (3). Properties, operations and applications of matrices. 3 hrs (class). PR. MATH 28 or MATH 38. (1,2)

AMAT 110. Mathematical Modeling (3). Principles, methods and applications of mathematical modeling. 3 hrs (class). PR. MATH 27 or MATH 37. (1)

AMAT 112. Introduction to Mathematical Optimization (3). A survey of major techniques in the mathematical modeling of optimization problems. 3 hrs (class). PR. MATH 28 or MATH 38 and AMAT 110. (2)

AMAT 115. Introduction to Mathematical Decision Theory (3). Fundamental concepts of quantitative decision-making. 3 hrs (class). PR. AMAT 105 and AMAT 110. (2)

AMAT 152. Fundamentals of Mathematical Computing (3). Theory and applications of mathematical computing. 5 hrs (2 class, 3 lab). PR. MATH 28 or MATH 38. (1,2)

AMAT 160. Linear Programming (3). Formulation, computation, solutions, and applications of linear programming. 3 hrs (class). PR. AMAT 105 and AMAT 110. (1)

AMAT 161. Nonlinear Programming (3). Formulation, computation, solutions, and applications of nonlinear programming. 3 hrs (class). PR. AMAT 105 and AMAT 110. (2)

AMAT 162. Integer and Dynamic Programming (3). Survey of integer and dynamic programming techniques. 3 hrs (class). PR. AMAT 160. (2)

AMAT 163. Metaheuristics (3). Metaheuristics and their implementation to solve real-world optimization problems. 3 hrs (class). PR. AMAT 110. (1)

AMAT 167. Mathematical Models in Operations Research I (3). Survey and analysis of mathematical models used in inventories, queues, maintenance of systems, and project management. 3 hrs (class). PR. AMAT 110. (1)

AMAT 168. Mathematical Models in Operations Research II (3). Survey and analysis of mathematical models used in transportation planning, facility layout and location, finance and investment, and performance evaluation of systems. 3 hrs (class). PR. AMAT 160. (2)

AMAT 170. Theory of Interest (3). Principles, methods, and applications of the theory of interest. 3 hrs (class). PR. MATH 27 or MATH 37. (1,2)

AMAT 171. Life Insurance Mathematics I (3). Mortality, life annuities, life insurance policies and net premiums, methods of valuation, modified and net level reserves, non-forfeiture options, and gross premiums. 3 hrs (class). PR. AMAT 170. (1)

AMAT 172. Life Insurance Mathematics II (3). Mathematical theory of contingencies of single and multiple lives. 3 hrs (class). PR. AMAT 171. (2)

AMAT 174. Measurement of Mortality (3). Theory and methods of measuring mortality. 3 hrs (class). PR. AMAT 172. (1)

AMAT 176. Actuarial Science (3). Investment of life insurance funds, selection of risks and reinsurance, valuation of liabilities, non-forfeiture values, asset share studies, process of premium formulation. 3 hrs (class). PR. AMAT 172. (1)

AMAT 177. Introduction to Mathematical Finance (3). Mathematical theory underlying the pricing and analysis of financial derivatives. 3 hrs (class). PR. AMAT 170 and MATH 181. (1)

AMAT 178. Stochastic Calculus for Finance (3). Ito processes, their construction, properties, and application to the pricing of financial derivatives. 3 hrs (class). PR. AMAT 177 and MATH 182. (2)

AMAT 180. Introduction to Biomathematics (3). Discrete and continuous mathematical models of biological processes. 3 hrs (class). PR. MATH 28 or MATH 38 and AMAT 105. (2)

AMAT 190. Special Problems (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2,M)

AMAT 191. Special Topics (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1)

AMAT 198. Practicum (3). PR. COI. (M)

AMAT 199. Undergraduate Seminar (1). May be taken twice. 1 hr (class). PR. COI. (1,2)

AMAT 200. Undergraduate Thesis (6). PR. COI. (1,2,M)

APPLIED PHYSICS

APHY 10.1. Programming in Physics (1). Essential programming concepts and tools for physicists. 3 hrs (lab). PR. None. (1)

APHY 101. Physics in Scientific Instruments (3). Physical laws of measurement; operation and use of electronic instruments. 5 hrs (2 class, 3 lab). PR. PHYS 72 and PHYS 72.1, or PHYS 102. (1)

APHY 102. Physics of Electronic Devices (3). Principles of operation and use of electronic devices. 5 hrs (2 class, 3 lab). PR. PHYS 72 and PHYS 72.1, or PHYS 102. (1)

APHY 103. Electronic Circuits (3). Design, implementation, and application of analog electronic circuits in physical instrumentation. 5 hrs (2 class, 3 lab). PR. APHY 102. (2)

APHY 104. Digital Computer Electronics (3). Design, implementation, and application of digital electronic circuits in computers and other instruments. 5 hrs (2 class, 3 lab). PR. APHY 102 or COI. (2)

APHY 105. Microprocessor-based Instrumentation (3). Basic computer concepts; programming and operation; I/O implementation interfacing techniques; microcomputer systems. 5hrs (2 class, 3 lab). PR. APHY 101 and APHY 104. (1)

APHY 106. Biophysical Instrumentation (3). Properties of measuring instruments; physiological systems of the body from the point of view of instrumentation; animal instrument systems; diagnostic instrumentation; instruments for sensory measurements; bio-telemetry; radioisotope instrumentation and microcomputer in biophysical instrumentation. 5 hrs (2 class, 3 lab). PR. APHY 102. (2)

APHY 130.1. Logic Design Laboratory (1). Logic design techniques and applications; construction of digital logic circuits. 3 hrs (lab). PR. APHY 104. (1)

APHY 131. Microcomputer Architecture (3). Principles of microcomputer design and organization; microprocessor structure, functional parts and their operations, classification and comparative microprocessor evaluation; interfacing techniques; microprogramming; system development; microprocessor applications. 5 hrs (2 class, 3 lab). PR. APHY 130.1. (2)

APHY 132. Embedded Systems Programming for Instrumentation (3). Methods and techniques in programming microprocessors, microcontrollers, and embedded systems for instrumentation. 5 hrs (2 class, 3 lab). PR. APHY 105. (2)

APHY 140. Modeling and Simulation in Environmental Physics (3). Physical principles of the environment of biological systems; radiation exchange; transfer of momentum, heat, and mass applied to micro- meteorology. 5 hrs (2 class, 3 lab). PR. PHYS 115. (1,2)

APHY 145. Physics of Complex Systems (3). Nonlinear dynamics and emergent phenomena. 5 hrs (2 class, 3 lab). PR. PHYS 115. (2)

APHY 150. Introduction to Materials Development (3). Fundamentals of synthesis, fabrication, processing, and characterization of materials; survey of novel materials. 3 hrs (class). PR. PHYS 72 or PHYS 104. (2)

APHY 155 (formerly PHYS 116). Computational Modelling in Surface Physics (3). Basic concepts and applications of Monte Carlo methods and density functional theory in surface physics. 3 hrs (class). PR. PHYS 141 or COI. (1)

APHY 160. Microscopy and Spectroscopy for Materials Characterization (3). Fundamental theory and methods of microscopy and spectroscopy. 5 hrs (2 class, 3 lab). PR. PHYS 72 or PHYS 104. (1)

APHY 190. Special Problems (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. Senior Standing. (1,2,M)

APHY 191. Special Topics (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (2)

APHY 198. Practicum (3). Apprenticeship in research agencies or manufacturing industries related to the student's area of specialization and report on the apprenticeship - a total of 144 hrs. PR. COI. (M)

APHY 199. Undergraduate Seminar (1). May be taken twice. 1 hr (class). PR. Senior standing. (2)

APHY 200. Undergraduate Thesis (6). PR. COI. (1,2,M)

MATHEMATICS

MATH 10 (GE). Mathematics, Culture, and Society (3). Appreciation of the beauty and power of mathematics through the examination of its nature, development, utility, and relationship with culture and society. 3 hrs (class). PR. None. (1,2)

MATH 18. College Geometry (3). Axioms and propositions of plane, solid, and spherical geometry. 3 hrs (class). PR. None. (1,2)

MATH 20. The Landscape of Mathematics (3). Fundamental concepts and theorems of mathematics. 3 hrs (class). PR. None. (1,2)

MATH 25. Fundamental Calculus (3). Fundamental concepts, methods, and applications of differential and integral calculus in one or more variables. 3 hrs (2 class, 1 recit). PR. None. (1,2)

MATH 27. Analytic Geometry and Calculus II (3). Differentiation and integration of transcendental functions. in determinate forms; integration formulas; integration procedures; application of integration; polar coordinate system. 3 hrs (class). PR. None. (1,2,M)

MATH 28. Analytic Geometry and Calculus III (3). Parametric equations, vectors, and solid analytic geometry; partial differentiation; multiple integrals; infinite series. 3 hrs (class). PR. MATH 27. (1,2,M)

MATH 36. Mathematical Analysis I (5). Theory and applications of limits, continuity, and derivatives of functions of a single variable. 5 hrs (class). PR. None. (1,2)

MATH 37. Mathematical Analysis II (3). Theory and applications of integrals of functions of a single variable and infinite series. 3 hrs (class). PR. MATH 36. (1,2)

MATH 38. Mathematical Analysis III (5). Theory and applications of derivatives and integrals of functions of several variables. 5 hrs (class). PR. MATH 37. (1,2)

MATH 101. Logic and Set Theory (3). Elements of mathematical logic and the algebra of propositions; arguments, set operations, functions, and relations; algebra of sets; cardinal and ordinal numbers; ordered sets; axiom of choice and other topics in set theory. 5 hrs (2 class, 3 comp). PR. MATH 27 or MATH 37, and AMAT 19 or MATH 20. (1,2)

MATH 103. Elementary Theory of Numbers (3). Divisibility of integers; primes; congruences; quadratic reciprocity; some functions in number theory and diophantine equations. 3 hrs (class). PR. MATH 101. (2)

MATH 111. Modern Algebra I (3). Fundamental concepts of groups, rings, fields, and their substructures; permutation representations; isomorphism theorems. 3 hrs (class). PR. MATH 101. (1,2)

MATH 112. Modern Algebra II (3). Advanced topics in groups, rings and fields, and their substructures; ring of Laurent series and factorization in commutative rings. 3 hrs (class). PR. MATH 111. (2)

MATH 115. Introduction to Coding Theory and Cryptography (3). Algebraic concepts and methods in the construction and analysis of error-correcting codes and cryptographic systems. 3 hrs (class) PR. MATH 111. (2)

MATH 120. Linear Algebra (3). Properties of modules and vector spaces under linear transformations and their matrices. 3 hrs (class). PR. MATH 111. (1,2)

MATH 130. Metric Geometry (3). Foundation and structure of metric geometry as a postulational system of reasoning. PR. MATH 101. (2)

MATH 133. Euclidean and Non-Euclidean Geometry (3). Axiomatic development, concepts, theorems, and analytic models of Euclidean and non-Euclidean geometry and their transformations. 3 hrs (class). PR. MATH 111. (1,2)

MATH 135. Projective Geometry (3). Basic concepts, principles, and theorems of projective geometry and its transformations and collineations, using synthetic and analytic approaches. 3 hrs (class). PR. MATH 133 or COI. (1,2)

MATH 138 (formerly MATH 168). Introductory Topology (3). Basic topological concepts, theory, and methods. 3 hrs (class). PR. MATH 38 and MATH 101. (2)

MATH 141. Introductory Combinatorics (3). Elementary configurations; enumeration of configurations and investigation of unknown configurations. 3 hrs (class). PR. MATH 38 and either MATH 101 or CMSC 56 and CMSC 57. (2)

MATH 143. Graph Theory (3). Path problems, directed graphs, and colorability and their application. 3 hrs (class). PR. MATH 101 or CMSC 56 and CMSC 57. (1)

MATH 151. Ordinary Differential Equations (3). Theory methods and applications of ordinary differential equations. 3 hrs (class). PR. MATH 38 or MATH 28. (1,2)

MATH 152. Partial Differential Equations (3). Theory, methods, and applications of partial differential equations. 3 hrs (class). PR. MATH 151. (2)

MATH 155. Advanced Calculus I (3). Concepts in the theory of the reals and analysis of functions of one variable. 3 hrs (class). PR. MATH 38 and MATH 101 or COI. (1,2)

MATH 156. Advanced Calculus II (3). Concepts in the theory of the real n-space and analysis of functions of several variables. 3 hrs (class). PR. MATH 155. (2)

MATH 160. Vector Analysis (3). The algebra of vectors; differentiation of vectors; the vector operators del and curl; divergence; Frenet-Serret formulas; involutes, envelopes, first and second fundamental forms; geodesics; integration of vectors. 3 hrs (class). PR. MATH 38 or MATH 28. (2)

MATH 165. Complex Analysis I (3). Fundamental concepts in the analysis of functions of complex variables. 3 hrs (class). PR. MATH 38 and MATH 101 or COI. (1)

MATH 166. Complex Analysis II (3). Advanced concepts in the analysis of functions of complex variables. 3 hrs (class). PR. MATH 165. (2)

MATH 170. Finite Differences (3). Calculus of finite differences; difference equations in general; and linear difference equations with constant coefficients and selected topics. 3 hrs (class). PR. MATH 38. (1)

MATH 174. Numerical Analysis I (3). Theory, analysis, and implementation of algorithms in polynomial approximation, numerical differentiation, and integration. 5 hrs (2 class, 3 lab). PR. AMAT 152. (1)

MATH 175. Numerical Analysis II (3). Theory, analysis, and implementation of algorithms for solving nonlinear equations, linear systems, and ordinary differential equations. 5 hrs (2 class, 3 lab). PR. MATH 174. (2)

MATH 181. Introduction to Probability Theory (3). Elements of combinatorial analysis and introductory probability theory. 3 hrs (class). PR. MATH 101 and MATH 38 or MATH 28. (1,2)

MATH 182. Introduction to Stochastic Processes (3). Theory and applications of Bernoulli trials; infinite sequence of trials; random walk and run problems; branching processes and Markov chains. 3 hrs (class). PR. MATH 181 or STAT 144. (2)

MATH 190. Special Problems (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2,M)

MATH 191. Special Topics (3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1)

MATH 192. Foundations of Mathematics (3). Axiomatic methods and theories; symbolic logic calculi; school mathematics reform theses; constructivistics, formalistics, and related mathematics; various schools of mathematical thought and operationality of their theses. 3 hrs (class). PR. COI. (2)

MATH 195. Research Methods in Mathematics (3). Principles governing mathematical research and documentation. 3 hrs (class). PR. MATH 38 and MATH 101. (1,2)

MATH 198. Practicum (3). Minimum of 150 hours. PR. COI. (M)

MATH 199. Undergraduate Seminar (3). (May be taken twice.) PR. COI. (1,2)

MATH 200. Undergraduate Thesis (6). PR. COI. (1,2,M)

PHYSICS

PHYS 50. Foundations of Physics (3). Historical and philosophical development of fundamental concepts of Physics. 3 hrs (class). PR. None. (1,2)

PHYS 51. Elements of Physics (4). Physical laws governing classical mechanics, thermodynamics, and electromagnetism. 4 hrs (class). PR. None. (1,2,M)

PHYS 51.1. Elements of Physics Laboratory (1). Laboratory exercises in classical mechanics, thermodynamics, and electromagnetism. 3 hrs (lab). PR. PHYS 51 (can be concurrent). (1,2, M)

PHYS 71. University Physics I (4). Motion of particles, rigid bodies and fluids, and the thermodynamics of physical systems. 4 hrs (class). PR. None. (1,2)

PHYS 71.1. University Physics I Laboratory (1). Laboratory exercises in mechanics and thermodynamics. 3 hrs (lab). PR. PHYS 71 (can be concurrent). (1,2)

PHYS 72. University Physics II (4). Electromagnetism, optics, and modern physics. 4 hrs (class). PR. PHYS 71. (1,2)

PHYS 72.1. University Physics II Laboratory (1). Laboratory exercises in electromagnetism and optics. 3 hrs (lab). PR. PHYS 72 (can be concurrent) and PHYS 71.1. (1,2)

PHYS 101. Newtonian Mechanics (4). Kinematics, Newton's laws of motion, gravitation, fluid mechanics. 6 hrs (3 class, 3 lab). PR. None. (1,2)

PHYS 102. Electromagnetism (4). Electromagnetic phenomena and Maxwell's equations. 6 hrs (3 class, 3 lab). PR. PHYS 101. (1,2)

PHYS 103. Mechanical Waves, Optics, and Thermodynamics (4). Nature and propagation of mechanical waves, light, and heat. 6 hrs (3 class, 3 lab). PR. PHYS 102. (1,2)

PHYS 104. Modern Physics (4). Principles of special relativity, quantum and nuclear physics. 6 hrs (3 class, 3 lab). PR. PHYS 103. (1,2)

PHYS 111. Mathematical Methods of Physics I (4). Vectors, matrices and linear algebra, groups, and the infinite series in physics. 4 hrs (class). PR. MATH 27 or MATH 37. (1,2)

PHYS 112. Mathematical Methods of Physics II (4). Complex variables, differential equations, Gamma function, Fourier series, and integral transforms. 4 hrs (class). PR. PHYS 111. (1)

PHYS 113. Mathematical Methods of Physics III (4). Sturm-Liouville theory, special functions, integral equations, and probability and distributions in Physics. 4 hrs (class). PR. PHYS 112. (1)

PHYS 115. Computational Physics (4). Numerical approaches to modeling the dynamics of physical systems. 6 hrs (3 class, 3 lab). PR. APHY 10.1. (1,2)

PHYS 117. Computational Modeling in Modern Physics (3). Computational techniques in statistical physics and quantum mechanics. 5 hrs (2 class, 3 lab). PR. PHYS 115. (2)

PHYS 118. High Performance Computational Physics (3). Parallel computing tools and techniques in physics. 5 hrs (2 class, 3 lab). PR. PHYS 117. (1)

PHYS 121. Theoretical Mechanics I (3). Motion of a particle in one, two, and three dimensions; motion of a system of particles; rotation of rigid bodies about an axis. 3 hrs (class). PR. PHYS 101 and PHYS 111. (1,2)

PHYS 122. Theoretical Mechanics II (3). Lagrangian and Hamiltonian dynamics of extended bodies. 3 hrs (class). PR. PHYS 121. (1)

PHYS 131. Electromagnetic Theory I (3). Vector analysis; electrostatic fields in vacuo and in dielectrics; solution to Laplace's and Poisson's equations; magnetic fields of constant and variable currents; magnetic materials. 3 hrs (class). PR. PHYS 102 and PHYS 112. (1,2)

PHYS 132. Electromagnetic Theory II (3). Time-dependent electromagnetic fields. 3 hrs (class). PR. PHYS 113 and PHYS 131. (1,2)

PHYS 141. Quantum Physics I (3). Basic concepts and formalisms of quantum mechanics; one dimensional potentials, the harmonic oscillator, spin and two level systems, and the hydrogen atom. 3 hrs (class). PR. PHYS 104 and PHYS 113. (1,2)

PHYS 142. Quantum Physics II (3). Formulations, approximation schemes, and application of quantum mechanics. 3 hrs (class). PR. PHYS 141. (1,2)

PHYS 151. Statistical Physics I (3). Thermodynamics ensembles and the statistical description of systems of particles. 3 hrs (class). PR. PHYS 112 and PHYS 121. (1,2)

PHYS 152. Statistical Physics II (3). Grand canonical ensembles and quantum statistics in statistical physics. 3 hrs (class). PR. PHYS 141 and PHYS 151. (1)

PHYS 160. Structure of Matter (3). Basic evidence of the macroscopic and quantum properties of atoms, concepts, and phenomena of quantum physics, mechanics of single atoms and aggregates of atoms. 3 hrs (class) PR. PHYS 83 and PHYS 111. (1)

PHYS 165. Optical Physics (3). Nature, propagation, and detection of light. 3 hrs (class) PR. PHYS 131. (1,2)

PHYS 170. Solid State Physics (3). Crystal structure, periodicity and Bloch's theorem; band theory of solids and its applications; material properties in response to electric and magnetic fields. 3 hrs (class). PR. PHYS 141. (1)

PHYS 191. Special Topics (1-3). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units. PR. COI (1,2)

PHYS 192.1 (formerly PHYS 192). Experimental Physics I (2). Laboratory practices, experimental techniques, and analyses in physics. 6 hrs (lab). PR. PHYS 72 or PHYS 104. (1,2)

PHYS 193.1 (formerly PHYS 193). Experimental Physics II (2). Measurements of the mechanical, thermal, electrical, magnetic and optical properties of materials. 6 hrs (lab). PR. PHYS 72 or PHYS 104. (2)

PHYS 195. Research Methods in Physics (3). Conduct and presentation of pure and applied physics research, review process and ethics in scientific research and communication. 3 hrs (class). PR. PHYS 102. (1,2)

SCIENCE

SCIENCE 10 (GE). Probing the Physical World (3). Understanding the origin of the universe, synthesis of the elements, formation of the earth, and the various critical issues affecting our worldview and our planet. 3 hrs (class). PR. None. (1,2)

INSTITUTE OF STATISTICS

STATISTICS

STAT 101. Statistical Methods (3). Analysis of data using parametric and nonparametric methods. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 135. Logic and Matrix Algebra in Statistics (3). Basic concepts and methods in math logic and matrix algebra useful in statistics. 3 hrs (2 class, 1 recit). PR. None. (1)

STAT 144. Introductory Statistical Theory I (3). Probability models; operations on probability; random variables and random vectors; mathematical expectations; sampling from a probability distribution; introduction to statistical inference. 3 hrs (2 class, 1 recit). PR. MATH 28. (1,2)

STAT 145. Introductory Statistical Theory II (3). Discrete and continuous probability models; generating functions; functions of random variables and random vectors; sampling from a normal population; large-sample theory. 3 hrs (2 class, 1 recit). PR. STAT 144. (1,2)

STAT 146. Introductory Statistical Theory III (3). Estimation; testing of hypothesis and common parametric tests. 3 hrs (2 class, 1 recit). PR. STAT 145. (1,2)

STAT 147. Introduction to the Theory of Nonparametric Statistics (3). Development of point and interval estimates and formulation of test of hypothesis based on distribution-free statistics. 3 hrs (2 class, 1 recit). PR. STAT 145. (1,2)

STAT 148. Introductory Bayesian Statistics (3). Theory of Bayesian methods and their applications. 5 hrs (2 class, 3 lab). PR. STAT 145. (1,2)

STAT 151. Applied Regression and Correlation (3). Linear regression models; correlation analysis; methods of model selection. 5 hrs (2 class, 3 lab). PR. STAT 135 or COI. (2)

STAT 156. Introductory Time Series Analysis (3). Approaches to time analysis; autocovariance and autocorrelation functions; linear stationary and non-stationary processes; forecasting, modeling, and diagnostic checking; seasonal time series. 5 hrs (2 class, 3 lab). PR. STAT 135 or COI. (2)

STAT 157. Financial Risk Analysis (3). Time series analysis in finance. 5 hrs (2 class, 3 lab). PR. STAT 156. (1,2)

STAT 162. Experimental Designs (3). Principles and applications of experimental design. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 163. Survey Designs (3). Introduction to sampling methods; simple random stratified, systematic unequal probability and multi-stage sampling, sample size determination, methods of estimation. 3 hrs (2 class, 1 recit). PR. STAT 144. (2)

STAT 164. Statistics for the Biological Sciences (3). Research design and analysis of data in biological research. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 165. Categorical Data Analysis (3). Inferences on proportions, measures of associations and causal relationships among categorical variables including multinomial responses and repeated measures and categorical responses data. 5 hrs (2 class, 3 lab). PR. STAT 101. (1)

STAT 166. Statistics for the Social Sciences (3). Principles of survey research design and analysis of data in social research. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 167. Statistical Quality Control (3). Type of variables, frequency distribution, descriptive measures of a distribution, probability distribution, control charts, process capability, introduction to designed experiments for process improvement, acceptance sampling. 5 hrs (2 class, 3 lab). PR. None. (2)

STAT 168. Response Surface Methodology (3). Experimental designs and analysis for estimating response surfaces. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 173. Survey Operations (3). Planning, execution, and analysis of surveys. 5 hrs (2 class, 3 lab). PR. STAT 163. (1)

STAT 174. Introductory Biostatistics (3). Statistical methods and models in analyzing data from the health sciences. 5 hrs (2 class, 3 lab). PR. None. (1,2)

STAT 175. Analysis of Multivariate Data (3). Multivariate regression; multivariate analysis of variance; discriminant analysis; canonical variate analysis; factor analysis; cluster analysis; causal models and path analysis; log linear analy- sis. 5 hrs (2 class, 3 lab). PR. STAT 101 or COI. (1)

STAT 181. Statistical Computing (3). Computer algorithms for approximating probabilities; random number generation; sampling and randomization; resampling techniques; simulation techniques. 5 hrs (2 class, 3 lab). PR. COI. (1)

STAT 182. Statistical Packages (3). Statistical packages in data processing and analysis. 5 hrs (2 class, 3 lab). PR. STAT 101 or COI. (2)

STAT 183. Introductory Data Analytics (3). Statistical methods in handling real massive datasets and their applications. 5 hrs (2 class, 3 lab). PR. STAT 151, STAT 175, and CMSC 21. (1,2)

STAT 190. Special Problems (1-2). May be taken twice provided that the total number of units to be credited to the student's program will not exceed 3 units. PR. COI. (1,2)

STAT 191. Special Topics (1-3). May be taken more than once provided that the total number of units to be credited to the student's program will not exceed 3 units. PR. COI. (1,2)

STAT 192.1. Statistical Consulting Laboratory (1). Application of statistics in addressing client's problems. 3 hrs (lab). PR. COI. (1,2)

STAT 198. Practicum (3). PR. COI. (M)

STAT 199. Undergraduate Seminar (1). 1 hr. May be taken twice. PR. COI. (1,2)

DEPARTMENT OF HUMANITIES

ARTS

ARTS 1 (GE). Critical Perspectives in the Arts (3). A critical study of the experience, language, and context of art. 3 hrs (class). PR. None. (1,2)

COMMUNICATION

COMM 10 (GE). Critical Perspectives in Communication (3). Theories and frameworks of communication in various contexts. 3 hrs (class). PR. None. (1,2)

COMMUNICATION ARTS

COMA 101. Language and Communication (3). The nature and functions of language; the study of meaning; the communication process and the role of language in communication. 3 hrs (class). PR. None. (1,2)

COMA 102 (formerly COMA 104). Language and Culture (3). The patterned covariation of language and society, recent developments in socio-linguistic theory; cultural barriers to communication. 3 hrs (class). PR. COMA 101. (2)

COMA 103. Introduction to Discourse Analysis (3). Nature and applications of discourse analysis; approaches in analyzing discursive information in interpersonal and institutional contexts. 3 hrs (class). PR. COMA 102. (1,2)

COMA 105. Principles of Public Relations and Advertising (3). Concepts of public relations and advertising as applied in business, industry, organizations, and government. 3 hrs (class). PR. COMA 101 or COI. (1)

COMA 150. Workplace Communication (3). Communication competencies in the workplace. 3 hrs (class). PR. None. (1,2)

COMA 190. Special Problems (3). PR. COI. (1,2)

COMA 192. Introduction to Research (3). Introduction to research methods and principles. 3 hrs (class). PR. COMA 101 or COI. (1,2)

COMA 193. Workshop (3). PR. COI. (1,2)

COMA 199. Undergraduate Seminar (1). 1 hr (class). PR. COMA 192. (1,2)

COMA 200. Undergraduate Thesis (6). (1,2)

COMA 200a. Practicum (6). (1,2,M)

ENGLISH

ENG 10. Writing of Scientific Papers (3). Principles underlying the preparation and writing of scientific papers. 3 hrs (class). PR. None. (1,2,M)

ENG 100 (formerly ENG 4). Rereading the Literary Canons (3). Critical analysis of literary masterpieces and of the aesthetic and non-aesthetic processes involved in literary canon formation. 3 hrs (class). PR. None. (1,2)

ENG 101. English Prose Styles (3). Analysis of literary, philosophical, scientific, and other styles of prose works written in English. 3 hrs (class). PR. ENG 5 or ENG 100. (1)

ENG 104. Argumentative Writing (3). Application of principles and tools of argument in writing argumentative papers. 3 hrs (class). PR. None. (1,2)

ENG 151 (formerly ENG 103). Critical Writing (3). Principles of writing applicable to the evaluative paper. 3 hrs (class). PR. ENG 5 or ENG 100. (1,2)

ENG 152 (formerly ENG 106). Creative Writing (3). Composition of narrative and other literary forms. 3 hrs (class.). PR. ENG 100. (1)

ENG 153 (formerly HUM 150). Philippine Literature in English (3). Literature in English produced by Filipino writers since the Commonwealth up to contemporary period. 3 hrs (class). PR. None. (1)

ENG 154 (formerly HUM 160). Science and Technology in Literature (3). A study of writers' perception of science and technology in selected literary pieces. 3 hrs (class). PR. None. (2)

ENG 155. Writing Creative Nonfiction (3). Literary and extra-literary techniques in writing creative nonfiction. 3 hrs (class). PR. ENG 101. (2)

ENG 156 (formerly ENG 107). Mythology and Folklore (3). Study of selected myths and legends from various cultures. 3 hrs (class). PR. ENG 100. (2)

ENG 157. Reading Young Adult Narratives (3). Survey and criticism of emergent and trending literature of young adults. 3 hrs (class). PR. None. (2)

ENG 158 (formerly ENG 105). Playwriting (3). Principles of dramaturgy; writing the one-act play; practice in writing adaptations. 3 hrs (class). PR. ENG 100. (2)

ETHICS

ETHICS 1 (GE). Ethics and Moral Reasoning in Everyday Life (3). The nature and development, sources and frameworks of ethics and moral reasoning and their application to various issues and contexts. 3 hrs (class). PR. None. (1,2)

Filipino

FIL 150. Ang Pagsulat ng Kwentong Popular (3). Ang estetikong pamantayan at mga kalakaran/ kumbensiyon sa pag-sulat ng kuwentong popular, tulad ng romansa, detektib, sayens piksyon, atbp. 3 oras (klase). PR. Junior standing. (1,2)

FIL 155. Teorya at Praktika ng Pagsasalin (3). Pagsasalin ng mga teksto mula sa iba't-ibang akademikong larang. 3 oras (klase). PR. None. (2)

FRENCH

FRCH 10. Elementary French I (3). Fundamental elements of the French language within a cultural context with emphasis on pronunciation, vocabulary building, and conversation. 3 hrs (class). PR. None. (1)

FRCH 11. Elementary French II (3). Fundamental elements of the French language within a cultural context with emphasis on composition, reading, and conversation. 3 hrs (class). PR. FRCH 10. (2)

JAPANESE

JAP 10. Elementary Japanese I (3). Basic Japanese grammar and vocabulary. 3 hrs (class). PR. None. (1)

JAP 11. Elementary Japanese II (3). Basic Japanese grammar and vocabulary with emphasis on coversational Japanese. 3 hrs (class). PR. JAP 10. (2)

HUMANITIES

HUM 3 (GE). Reading Film, TV, and the Internet (3). Critical reading of film, TV, and the internet from a literary perspective. 3 hrs (class). PR. None. (1,2)

HUM 100. Critical Theories (3). Critical theories in the analysis of cultural texts and practices. 3 hrs (class). PR. None. (1,2)

HUM 101. Visual Culture (3). Cultural perspectives in analyzing the visuality of culture. 3 hrs (class). PR. None. (1,2)

HUM 102. New Media Art (3). Digital, multimedia, and interactive art in contemporary visual culture. 5 hrs (2 class, 3 lab). PR. None. (1,2)

HUM 104. Culture and Arts Management (3). Critical and interdisciplinary perspectives on cultural and creative industries with special focus on the role and sustainability of art and cultural organizations. 3 hrs (class). PR. HUM 100 or SOC 100 or COI. (1,2)

HUM 170. Philippine Art and Society (3). The nature and development of Philippine Art in all major historical periods up to the present as it reflects Filipino culture and identity. 3 hrs (class). PR. Junior standing. (1,2)

PHILIPPINE ARTS

PHILARTS 1 (GE). Philippine Arts and Culture (3). Approaches and issues in Philippine Arts and Culture. 3 hrs (class). PR. None. (1,2)

PHILIPPINE STUDIES

PS 21 (GE). Wika, Panitikan, at Kultura sa Ilalim ng Batas Militar sa Pilipinas. Pagsusuri ng mga akdang pangwika, pampanitikan, at pangkulltura sa ilalim ng Batas Militar sa Pilipinas. 3 oras (klase). PR. Wala. (1,2)

PHILOSOPHY

PHLO 1 (GE). Understanding Philosophy (3). Basic concepts, skills, principles, and knowledge drawn from the major branches of philosophy and their application. 3 hrs (class). PR. None. (1,2)

PHLO 11. Fundamental Approaches to Philosophy (3). Philosophy as a subject and as an academic discipline in the context of the Analytic and Continental traditions. 3 hrs (class). PR. None. (1,2)

PHLO 12 (formerly PHLO 9). Logic (3). Introduction to logical methods and principles. 3 hrs (class). PR. None. (1,2)

PHLO 100*. Mathematical Logic I (3). A formalization of propositional and first-order predicate logic; extensions of first-order predicate logic and proofs of some properties of these systems. 3 hrs (class). (2)

PHLO 102*. Mathematical Logic II (3). First-order recursive arithmetic; arithmetization of syntax and Goedel's incompleteness

theorem. 3 hrs (class). (2)

PHLO 110*. Ancient Philosophy (3). Major philosophical ideas from pre-Socratics to the neo-Platonists. 3 hrs (class). PR. PHLO 11. (1)

PHLO 111*. Medieval Philosophy (3). Major philosophical ideas from Augustine to William of Ockham. 3 hrs (class). PR. COI. (2)

PHLO 112*. Modern Philosophy (3). Major philosophical ideas from the rationalists to the German and British idealists. 3 hrs (class). PR. COI. (1)

PHLO 113*. Contemporary Philosophy (3). Major philosophical ideas from the logical positivists to the present. 3 hrs (class). PR. COI. (2)

PHLO 120*. Philosophical Reasoning (3). Methods and techniques as applied to philosophical problems. 3 hrs (class). (2)

PHLO 126*. Chinese Philosophy (3). Philosophies of China from Confucius to Hu Shih. 3 hrs (class). (2)

PHLO 150*. Epistemology (3). Problems concerning the sources, nature, and validation of knowledge. 3 hrs (class). PR. PHLO 11. (2)

PHLO 151. Intellectual Vices (3). Analysis of intellectual character traits that obstruct knowledge. 3 hrs (class). PR. None. (1, 2)

PHLO 160*. Philosophy of Science (3). Nature of scientific inquiry; problems of demarcation, explanation, prediction, concept formation, and validation. 3 hrs (class). PR. COI and senior standing. (2)

PHLO 171*. Ethics (3). Problems and theories of moral values. 3 hrs (class). (2)

PHLO 172*. Philosophy of Religion (3). Nature of religious experience, language and knowledge. 3 hrs (class). (2)

PHLO 173*. Practical Ethics (3). Moral issues in practical situations and the application of ethical theories. 3 hrs (class). (1)

PHLO 174*. Biomedical Ethics (3). Moral issues in medicine and the biological sciences. 3 hrs (class). (1)

PHLO 175*. Philosophy of Law (3). Theories on the nature of law and legal reasoning, as well as issues on the relationship between law, morality and society. 3 hrs (class). (2)

PHLO 176*. Social and Political Philosophy (3). Problems and theories concerning man, society and the state. 3 hrs (class). (1)

PHLO 178. Environmental Ethics (3). An ethical examination of environmental issues. 3 hrs (class). PR. COI. (2)

PHLO 181*. Aesthetics (3). Theories of aesthetic experience and values. 3 hrs (class). PR. COI. (1)

PHLO 182. Philosophy and Semiotics (3). Application of philosophical methods in semiotics. 3 hrs (class). PR. PHLO 120 or COI. (2)

PHLO 183. Philosophy for Children (3). Exploring the history, developments, and debates on Philosophy for Children as an educational and a philosophical movement. 3 hrs (class). PR. None. (1, 2)

PHLO 184. Feminist Philosophy (3). Fundamental feminist philosophies and women issues. 3 hrs (class). PR. COI. (2)

PHLO 185. Critical Perspectives on Filipino Philosophy (3). A discourse on the foundations of Filipino philosophy. 3 hrs (class). PR. PHLO 11. (1)

PHLO 190. Special Problems (3). PR. COI. (1,2)

PHLO 195*. Philosophy Of Language (3). A survey of the major controversies in the philosophy of language. 3 hrs (class). PR. None. (1)

PHLO 197*. Philosophic Problems (3). An in-depth study of the basic problems in the various areas of philosophy. 3 hrs (class). PR. COI. (1)

PHLO 200. Undergraduate Thesis (6). (1,2)

**adopted from UP Diliman*

SPANISH

SPAN 10 (formerly SPAN I). Elementary Spanish I (3). Fundamental elements of the Spanish language within a cultural context with emphasis on pronunciation, vocabulary building, and conversation. 3 hrs (class). PR. None. (1)

SPAN 11. (formerly SPAN II). Elementary Spanish II (3). Fundamental elements of the Spanish language within a cultural context with emphasis on conversation, reading, and composition. 3 hrs (class). PR. SPAN 10. (2)

SPECULATIVE THOUGHT

SPEC. Reading in Speculative Thought (3). Modern man's heritage in speculative thought and philosophic method. Selected works. 3 hrs (class). (2)

SPEECH COMMUNICATION

SPCM 101. Rhetoric (3). Rhetorical theories in selected classical and modern works. 3 hrs (class). PR. COMA 101. (1,2)

SPCM 102. Voice and Diction (3). The voice as an aid in effective communication; production, articulation, inflexion and stress. 3 hrs (class). PR. None. (1,2)

SPCM 104. Occasional Speeches (3). Speeches for special occasions. 3 hrs (class). PR. SPCM 102 or COI. (1,2)

SPCM 151 (formerly SPCM 103). Oral Interpretation (3). Principles of oral interpretation and their application to the different types of literature. 3 hrs (class). PR. SPCM 102 or COI. (2)

SPCM 152 (formerly SPCM 105). Philippine Public Address (3). Selected speeches on vital issues in their historical milieu. 3 hrs (class). PR. SPCM 104 or COI. (1,2)

SPCM 153 (formerly SPCM 106). Group Discussion and Leadership (3). Principles of group discussion and their application. 3 hrs (class). PR. SPCM 102 or COI. (1)

SPCM 154 (formerly SPCM 107). Communication in Public Relations (3). Principles of communication as they apply to various publics. 3 hrs (class). PR. SPCM 101. (2)

SPCM 155. Rhetorical Criticism (3). Theories and perspectives in the practice of rhetorical criticism. 3 hrs (class). PR. SPCM 101. (2)

SPCM 156. Speech Communication Startegies for Classroom Instruction (3). Preparation, design, and application of speech communication startegies for effective teaching. 3 hrs (class). PR. None. (1)

SPCM 157. Speech Making and Evaluation (3). Process of speechmaking, delivery, and evaluation. 3 hrs (class). PR. SPCM 101. (2)

SPCM 158. Speech Communication in Conflict Resolution (3). Effective speech communication strategies in conflict resolution. 3 hrs (class). PR. COMA 102. (1)

SPCM 159. Nonverbal Communication (3). Nature of nonverbal communication and its effective use in various contexts. 3 hrs (class). PR. COMA 102. (1)

THEATER ARTS

THEA 101. History of the Theater (3). The origin and development of the theater and drama; a survey of theatrical architecture and stagecraft. 3 hrs (class). PR. ENG 100 or COI. (1,2)

THEA 102 (formerly THEA 107). Theater Communication (3). Theater as a composite of all the arts; analysis of the elements of theater and their multifarious components and how they contribute to form a medium of communication; an introduction to theater aesthetics. 3 hrs (class). PR. ENG 100. (1,2)

THEA 103. Philippine Theatre (3). Theatre forms in the Philippines from pre-colonial to contemporary times. 3 hrs (class). PR. None. (1,2)

THEA 151 (formerly THEA 108). Acting (3). Fundamental mechanics of mime and acting, studies in body movement and voice production for characterization; exercises in imagination, relaxation, concentration and improvisation. 3 hrs (class). PR. THEA 102 or SPCM 151. (1)

THEA 152 (formerly THEA 109). Directing (3). Principles of directing, qualifications of a director, choosing the play, casting, reading, blocking, rehearsals and staging. 3 hrs (class). PR. THEA 102. (2)

THEA 153. Asian Theatre (3). Asian dramatic works and theatrical traditions. 3 hrs (class). PR. THEA 101. (1)

THEA 154 (formerly THEA 115). Drama for Children (3). Creative drama and the fundamentals of theater production for children. 3 hrs (class). PR. THEA 102 or COI. (2)

THEA 155. Theatre Space and Stage Design (3). Principles and aesthetics of stage design. 3 hrs (class). PR. THEA 101. (1)

THEA 156 (formerly THEA 114). The Dynamics and Aesthetics of Community Theater (3). The theory and practice of community-based theater. 5 hrs (2 class, 3 lab). PR. THEA 151 or THEA 152 or COI. (2)

THEA 157. Play Production (3). Concepts and practices in staging plays. 3 hrs (class). PR. THEA 102. (2)

WIKA

WIKA 1 (GE). Wika, Kultura, at Lipunan (3). Pagsusuri sa ugnayan ng wika, kultura, at lipunan. 3 oras (klase). PR. None. (1,2)

DEPARTMENT OF HUMAN KINETICS

HUMAN KINETICS

HK 11. Wellness and Basic Injury Management (2). Theoretical and practical concepts of physical conditioning and injury prevention as applied to stress management, first aid, and safety. 2 hrs (class). PR. None. (1,2)

HK 12 (formerly PE 2). Human Kinetics Activities (2). (1,2,M)

HK 13 (formerly PE 3). Advanced Human Kinetics Activities (2). (1,2)

PEd 9* (Major). Fundamental Rhythms (3). Study of musical form and structure in relation to rhythm and movement. 3 hours PR None (1,2)

PEd 92* (Core). Philippine games (3). Selection, conduct and supervision of Philippine games suitable for elementary, high school and college levels. 3 hours PR None (1,2)

PEd 93* (Major). Philosophy of Sports and Physical Education (3). Philosophical issues affecting sports and physical education throughout their historical development. 3 Hours PR None (1,2)

PEd 100* (Major). Introduction to Physical Education and Exercise and Sport Sciences (3). Introduction to concepts, principles and foundations of physical education, exercise and sport sciences. 3 Hours PR None (1,2)

PEd 120.1* (Elective). Basic Basketball (3). Theory and practice of the fundamental skills and rules of the sport. 3 Hours PR None (1,2)

PEd 120.2* (Elective). Avanced Basketball (3). Theory and practice of the advanced skills and officiating of the sport. 3 Hours PR PEd 120.1 (1,2)

PEd 130.1* (Core). Basic Aquatics (3). Development course for appreciation for different physical activity water activities from traditional swimming, practical swimming, to different modern water sports while assessing risk and learning to teach multiple swimming

sports and activities. 3 Hours PR None (2)

PEd 130.2* (Elective). Advanced Swimming (3). Theory and practice of teaching the advanced skills of the sport and officiating of the sport. 3 Hours PR 130.1 (1)

PEd 131.1* (Elective). Basic Track and Field (3). Theory and practice of the fundamental skills and rules of the sport. 3 Hours PR None (1,2)

PEd 131.2* (Elective). Advanced Track and Field (3). Theory and practice of the advanced skills and officiating of the sport. 3 Hours PR PEd 131.1 (1,2)

PEd 133.1* (Elective). Basic Badminton (3). Theory and practice of the fundamental skills and rules of the sport. 3 Hours (1,2)

PEd 133.2* (Elective). Advanced Badminton (3). Theory and practice of the advanced skills and officiating of the sport. 3 Hours PR PEd 133.1 (1,2)

PEd 151* (Core). Folk Dance (3). Methods and materials of folk dance instruction in the elementary, secondary, and college levels. 3 Hours PR None (2)

PEd 158* (Elective). History of Dance (3). The development of dance from the primitive to contemporary society. 3 Hours PR None (1,2)

PEd 172* (Core). Community Recreation (3). Recreation activities in music, sports, camping, social recreation, arts and crafts, hobbies; methods and techniques in leadership and programming for community recreation. 3 Hours PR None (2)

PEd 174* (Core). Outdoor Recreation (3). Basic knowledge and skills in camping and outdoor activities. 3 Hours PR None (1)

PEd 176* (Core). Recreation for Special Groups (3). Recreation programs for special groups. 3 Hours (1,2)

PEd 196* (Core). AASS Internship (3). Field experience as an activity leader in recreation, health and fitness settings, and sports organizations. 3 Hours PR Second Year Standing (2)

SS 102* (Major). Human Anatomy and Physiology 1 (3). Structure and function of the musculo-skeletal system with introduction to analysis of human motor activity. 3 Hours PR None (1,2)

SS 103* (Major). Human Anatomy and Physiology 2 (3).Structure and function of the cardiovascular, respiratory, digestive, nervous, endocrine, lymphatic, urinary, reproductive, and integumentary systems with introduction to the physiological effects of movement on the human body. 3 Hours PR SS102 (1,2)

SS 104* (Major). Tests & Measurement in Exercise and Sport Sciences (3). Principles, administration, and tests for health, fitness, and motor skills. 3 Hours PR None (1,2)

SS 110* (Major). Basic Weight Training (3). Theory and practice of the fundamental skills and rules of the sport (weightlifting and powerlifting). 3 Hours PR SS 102 (1,2)

SS 120* (Core). Basic Fitness Dance (3). Theory and practice of the basic skills and principles of fitness dance as a rhythmic group exercise. 3 hours (1,2)

SS 130* (Major). First Aid (3). Theory and practice of first aid measures for common accidents and emergencies in daily life activities under different environments. 3 Hours PR SS 102 (1,2)

**adopted from UP Diliman*

DEPARTMENT OF SOCIAL SCIENCES

ANTHROPOLOGY

ANTH 10. Introduction to Social and Cultural Anthropology (3). Basic concepts in the study of kinship and descent, social differentiation, marriage, production and exchange, politics, law and social control, and religion. 3 hrs (class). PR. None. (1,2)

ANTH 120. Economic Anthropology (3). Issues, concepts, and approaches of economic anthropolgy. 3 hrs (class). PR. None. (1)

ANTH 130 . Ecological Anthropology (3). Anthropological approach to the systematic study of changing human interactions with the environment. 3 hrs (class). PR. ANTH 10 or COI. (2)

ANTH 140. Applied Anthropology (3). Concepts, methods, and issues in applied anthropology. 3 hrs (class). PR. None. (2)

ANTH 150. Anthropology of Food and Eating (3). Comparative study of food and eating cultures. 3 hrs (class). PR. None. (1)

HISTORY / KASAYSAYAN

KAS 1 / HIST 1 (GE). Kasaysayan ng Pilipinas / Philipine History (3). Ang pampulitika, pang-ekonomiya, panlipunan, at pangkalinangang pagsulong ng Pilipinas. / The political, economic, social, and cultural development of the Philippines. 3 hrs (class). PR. None. (1,2)

KAS 4 (GE). Ang Kababaihan sa Kasaysayan ng Pilipinas (3). Ang karanasan, kalagayan, at pag-unlad ng kababaihan sa lipunang Pilipino sa perspektibo ng kababaihan. 3 oras (klase). PR Wala. (1,2,M)

HIST 10. Introduction to History (3). Philosophy and methodology of history as a discipline with emphasis on Philippine historiography. 3 hrs (class). PR. None. (1,2)

HIST 110.The Philippine Presidency (3). Biographies, platforms, and governance of Philippine Presidents for 19th century to the present. 3 hrs (class). PR. None. (2)

HIST 140. The Revolutionary Tradition in Philippine History (3). Philippine revolts, popular uprisings, and nativistic movements. 3 hrs (class). PR COI. (2)

HIST 150. Modern Imperialism and Nationalism (3). Colonial expansion in the 19th and 20th centuries, with special emphasis on the dynamics of modern imperialism and emergent nationalism. 3

hrs (class). PR. COI. (1)

HIST 151. American Colonialism and Imperialism in the Philippines (3). Philippine colonial history from the coming of the Americans up to contemporary times, with emphasis on subsequent Philippine-American relations. 3 hrs (class). PR. COI. (1)

PHILIPPINE INSTITUTIONS

PI 10. The Life and Works of Jose Rizal (3). Significance of the life and writings of Rizal in the life of the Filipino people. 3 hrs (class). PR. None. (1,2,M)

PHILIPPINE STUDIES

PS 21 (GE). Wika, Panitikan, at Kultura sa Ilalim ng Batas Militar sa Pilipinas (3). Pagsusuri ng mga akdang pangwika, pampanitikan, at pangkulltura sa ilalim ng Batas Militar sa Pilipinas. 3 oras (klase). PR. Wala. (1,2)

POLITICAL SCIENCE

POSC 10. Principles of Government and Politics (3). The principles and concepts of political science especially as they apply to the Philippines; the historical development of political institutions from pre-Spanish times to the present; special emphasis on the new constitution. 3 hrs (class). (1,2)

POSC 14. Philippine Government and Politics (3). Development, organization, and operation of the Philippine political system, with emphasis on the present. 3 hrs (class). (2)

POSC 112. Politics of Development (3). The political implications of development; the process of political growth in developing countries; the relationship between the nature, organization, dynamics of government, and development. 3 hrs (class). PR. POSC 10 or COI. (2)

POSC 141. Contemporary Ideologies (3). Theoretical foundations of democracy, socialism, communism, political elitism, and nationalism relevant to contemporary political problems. 3 hrs (class). PR. None. (1)

POSC 161. Political Parties and Interest Groups (3). The types and structures of political parties and interest groups; their functions in the political system; their strategy and tactics, particularly in aggregating and articulating interests and controlling governmental power and public policy. 3 hrs (class). PR. POSC 10. (2)

POSC 165. Contemporary Philippine Politics (3). Analysis of current issues and problems in Philippine politics. 3 hrs (class). PR. POSC 10 or COI. (1)

POSC 180. Global Politics (3). Structures, dynamics and issues in global politics. 3 hrs (class). PR. POSC 10 or COI. (1)

PSYCHOLOGY

PSY 10. Foundations of Psychology (3). Influences, history, and developments in psychology. 3 hrs (class). PR. None. (1,2)

PSY 101. Filipino Psychology (3). Indigenous psychology based on Filipino culture and society; concepts, theories and methodologies. 3 hrs (class). PR. COI. (1)

PSY 140. Psychology of Learning (3). A study of elementary principles of behavior derived from experimental studies in the laboratory and fundamental issues and controversies emanating from theoretical positions and consequent empirical findings about human and animal learning process. 3 hrs (class). PR. None. (1)

PSY 148. Cognitive Psychology (3). Principles and theories of human cognitive processes. 3 hrs (class). PR. None. (2)

PSY 155. Abnormal Psychology (3). Nature, origin, and treatment of abnormal behavior. 3 hrs (class). PR. None. (2)

SCIENCE, TECHNOLOGY, AND SOCIETY

STS 1 (GE). Science, Technology, and Society (3). Analyses of the past, present, and future of science and technology in society (including their nature, scope, role, and function) and the social, cultural, political, economic, and environmental factors affecting the development of science and technology, with emphasis on the Philippine setting. 3 hrs (class). PR. None. (1,2)

SELF AND SOCIETY

SAS 1 (GE). Self and Society (3). Understanding the self and appreciating human agency and the emergence of the self in different social contexts. 3 hrs (class). PR. None. (1,2)

SOCIAL SCIENCE

SOSC 3 (GE). Exploring Gender and Sexuality (3). A cross-cultural survey of gender and sexuality, applying perspectives from the different social sciences. 3 hr (class). PR. None. (1,2)

SOCIOLOGY

SOC 10. General Principles of Sociology (3). Principles and basic concepts of Sociology; social groups and institutions, collective behavior and social classes. 3 hrs (class). (1,2)

SOC 100. Social Organization (3). Structure, functions, and dynamics of the different forms of social grouping in human society. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 107. Gender Relations (3). Structure, dynamics, and issues on gender relations. 3 hrs (class). PR. SOC 10 or COI. (1)

SOC 110. Sociology of the Family (3). The family as a social institution, patterns by region, race, and social classes; problems and issues in contemporary family life. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 112. Sociology of Politics (3). The analysis of social bases of power and policy formulation. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 114. Sociology of Economic Life (3). Analysis of the relationship between the economy and other bases of the social structure; interdependence between economic institutions and the individual and society. 3 hrs (class). PR. SOC 10 or COI. (1)

SOC 115. Social Gerontology (3). A sociological approach to the study of aging. 3 hrs (class). PR. SOC 10 or COI. (1)

SOC 116. Sociology of Religion (3). Analysis of religion as a base of social structure in itself and in its relations with other basic social institutions. 3 hrs (class). PR. SOC 10 or COI. (1)

SOC 120. Urban Sociology (3). The development patterns, social structure, spatial characteristics, institutions, processes, problems and issues associated with urban areas; implications for policy planning. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 130. Social Psychology (3). An empirical approach to the study of the individual in small groups; person perception, group structure and processes, attitudes, and communication influences on group behavior. 3 hrs (class). PR. SOC 10 or COI. (1,2)

SOC. 135. Attitudes and Persuasion (3). Classic and contemporary approaches to attitude change and persuasion. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 140. Introduction to Demography (3). Basic demographic concepts and processes, determinants and consequences of population change; historical and contemporary trends; differentials in regional and world population growth. 3 hrs (class) PR. SOC 10 or COI. (1,2)

SOC 151. Classical Sociological Theories (3). History of sociological thought and analysis of classical sociological theories. 3 hrs (class). PR. SOC 10. (1)

SOC 152. Contemporary Sociological Theories (3). Current developments in sociological theory. 3 hrs (class). PR. SOC 151. (2)

SOC 160. Social Change (3). Analysis of the social dynamics leading to change; the impact of change on the affected structural components; and the possible consequences, trends, and patterns of change. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 165. Sociology of Development (3). Sociological elements of modernization; process of technological change; emergence and accommodation of institutions to change. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 166. Social Program Evaluation (3). Nature and process of social program evaluation. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 170. Social Problems (3). Analysis of the problems of modern society, their social consequences; forms and processes of social control. 3 hrs (class). PR. SOC 10 or COI. (2)

SOC 175. Deviance (3). Creation, explanation, control, and transformation of deviant categories, actors, and structures. 3 hrs (class). PR. SOC 10 or COI.

SOC 180. Collective Behavior (3). Analysis of spontaneous, transitory, and non-institutionalized group action, social context, processes, phases; effects on society. 3 hrs (class). PR. SOC 10 or COI. (1)

SOC 191. Special Topics (1-3). 1-3 hrs (class). PR. COI. (1)

SOC 192. Introduction to Qualitative Social Research (3). Perspectives, design, and methods of qualitative social research. 3 hrs (class). PR. SOC 10 or COI. (1,2)

SOC 195. Research Methodologies in the Social Sciences (2). Perspectives, design, and methods of quantitative social research. 2 hrs (class). PR. STAT 166. Co-requisite: SOC 195.1. (1,2)

SOC 195.1. Research Methodologies in the Social Sciences Laboratory (1). 3 hrs (lab). PR. STAT 166. Co- requisite: SOC 195. (1,2)

SOC 198. Internship (3). Minimum of 150 hours. PR. COI. (M)

SOC 199. Undergraduate Seminar (1). 1 hr (class). PR. COI. (1,2)

SOC 200. Undergraduate Thesis (6). PR. SOC 192, SOC 195 and SOC 195.1. (1,2,M)

MATHEMATICS AND SCIENCE TEACHING PROGRAM

MATHEMATICS AND SCIENCE TEACHING

MST 40 / DEVC 40. Fundamentals of Educational Communication and Technology (3). Theories, principles, and concepts of educational communication and technology; practice in planning and designing of media-based learning systems. 3 hrs (lect/recit). PR. DEVC 11 or COI. (1,2)

MST 101a. Field Study I (1). Observation of the interaction of student's learning and management of both classroom-based and non-classroom-based learning environment. 48 hrs/sem (lab). PR. None. (1)

MST 101b. Field Study II (1). Examination of diverse learners' characteristics including learning styles, interpretation of classroom practices as they relate to designing/planning lessons and assessments. 48 hrs/sem (lab). PR. None. (2)

MST 101c. Field Study III (1). Reflection on and analysis of teaching assessment practices including non-traditional assessments. 48 hrs/sem (lab). PR. None. (1)

MST 101d. Field Study IV (1). Observation and reflection on classroom management and how classroom discipline is implemented. 48 hrs/sem (lab). PR. None. (2)

MST 123. The Teaching of Mathematics and Science (5). Principles, trends, and methods of teaching mathematics and science. 7 hrs (4 class, 3 lab). PR. MST 40 / DEVC 40 and EDUC 122. (2)

MST 190. Special Problems (3). PR. COI. (1,2)

MST 191. Special Topics (3). PR. COI. (1,2)

MST 195. Research Methodologies in Education (3). Research design, data collection and analysis techniques, and dissemination

of educational research. 5 hrs (2 class, 3 lab). PR. STAT 166. (1,2,M)

MST 199. Undergraduate Seminar (1). PR. COI. (1,2)

MST 200a. Student Teaching I (on campus) (3). PR. MST 123 and MST 101d. (1,2)

MST 200b. Student Teaching II (off campus) (3). PR. MST 200a. (1,2)