

Bachelor of Science in Pharmaceutical Sciences Degree Requirements

In response to the increasing demand for scientists, researchers, administrators, and professional sales representatives in the pharmaceutical fields, The University of Toledo College of Pharmacy offers the bachelor of science in pharmaceutical sciences degree program as one of the first in Ohio. The bachelor of science in pharmaceutical sciences degree is a four-year baccalaureate program. Pharmaceutical sciences represent the collective basic sciences that underlie pharmacy. There are four majors under this degree program – medicinal and biological chemistry, pharmacology/toxicology, pharmaceutics, and pharmacy administration.

This degree program is designed for students who wish to pursue careers related to the pharmaceutical industry, pharmaceutical science and research, pharmacy administration and sales, the biomedical industry, forensic science, as well as health-care administration. It also prepares students to pursue graduate studies or enter professional schools including medicine, dentistry, law and physician assistant programs.

General Program Requirements

A minimum of 126 semester hours is required for graduation with all the bachelor of science in pharmaceutical sciences non-Pharm.D. majors.

Preprofessional Division Requirements

In the preprofessional division, the first two years of the bachelor of science in pharmaceutical sciences program, students will be broadly trained in the arts, humanities and social sciences – although the natural sciences will receive emphasis. The curriculum of the preprofessional division of the College of Pharmacy is the same for the Pharm.D. and the B.S.P.S. degrees.

First Year

First Semester

BIOL	2150	Fundamentals of Life Sci. I	4
BIOL	2160	Fundamentals of Life Sci. Lab I.....	1
CHEM	1230	General Chemistry I.....	4
CHEM	1280	General Chemistry Lab I	1
MATH	1750	Calculus for the Life Sciences I	4
PHPR	1000	Orientation	1
UT Core Requirement (ENGL 1110)*			3

Second Semester

BIOL	2170	Fundamentals of Life Sci. II.....	4
BIOL	2180	Fundamentals of Life Sci. Lab II.....	1
CHEM	1240	General Chemistry II	4
CHEM	1290	General Chemistry Lab II.....	1
MATH	1760	Calculus for the Life Sciences II	3
UT Core Requirement (ENGL 1130 or equivalent)*			3

Second Year

First Semester

CHEM	2410	Organic Chemistry I	3
CHEM	2460	Organic Chemistry Lab I.....	1
PHCL	2600	Funct. Anat. & Pathophysiology I.....	4
PHYS	1750	Introduction to Physics or equiv.....	4
UT Core Requirement (PSY 1010 or SOC 1010)*			3
UT Core Requirement (Diversity/Multicultural)*			3

Second Semester

CHEM	2420	Organic Chemistry II.....	3
CHEM	2470	Organic Chemistry Lab II.....	1
PHCL	2620	Funct. Anat. & Pathophysiology II	4
UT Core Requirement (ECON 1200)*			3
UT Core Requirement (Humanities/Fine Arts)*			3
UT Core Requirement (Humanities/Fine Arts)**			3

*Suggested sequence

**Select a course that will simultaneously fulfill a UT diversity studies Core Curriculum requirement.

Bachelor of Science in Pharmaceutical Sciences Professional Division Requirements

In the professional division of the bachelor of science in pharmaceutical sciences degree program, the last two years of the program, advanced courses of study and internship in each major lead to a unique concentration in the pharmaceutical fields. Admission requirements are listed under General Criteria for Admission to the professional divisions.

Medicinal and Biological Chemistry (MBC) Major

Medicinal and biological chemistry is an interdisciplinary science. This major focuses on synthetic organic chemistry, biochemistry, molecular biology, biotechnology, pharmacology and pharmaceutical chemistry underlying the design, synthesis and development of drugs.

Medicinal and Biological Chemistry Professional Division Curriculum

P1 Year

First Semester

MBC	3310	Medicinal Chemistry I.....	2
MBC	3330	Applied Drug Design.....	2
PHCL	3700	Pharmacology I.....	3
MBC	3550	Physiological Chemistry I.....	or
CHEM	3510	Biochemistry I.....	3
Major Elective (Recommend MBC 3880) ¹			2
Major Elective (Recommend CHEM 3310) ¹			2
Major Elective (Recommend CHEM 3710) ¹			3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	or
CHEM	3520	Biochemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
Major Elective (Recommend MBC 3100) ¹			1
Major Elective (Recommend MBC 3880) ¹			2
Major Elective (Recommend CHEM 3360) ¹			2
Major Elective (Recommend CHEM 3720) ¹			3

P2 Year

First Semester

MBC	4710	Targeted Drug Design ²	3
Major Elective (Recommend MBC 4850) ¹			1-10
Major Elective (Recommend MBC 4870) ¹			1-10
Major Elective (Recommend MBC 4880) ¹			1-10

Second Semester

MBC	4780	Internship in Med. & Biol. Chem ³	6-12
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¹To be chosen from the MBC electives list.

²MBC 4720, Advances in Drug Design, when offered, will also fulfill the requirement.

³Internship can be taken in the summer before the P2 year. The internship sites require students to have an average GPA of 3.0 in all chemistry courses (CHEM and MBC).

MBC Electives

A total of 25 hours of course work must be selected from the list of elective courses below. Other electives require approval of the MBC adviser.

BIOL	3010	Molecular Genetics.....	3
BIOL	3020	Molecular Genetics - Lab.....	2
BIOL	3030	Cell Biology.....	3
BIOL	3040	Cell Biology Lab.....	2
BIOL	4010	Molecular Biology.....	3
BIOL	4030	Microbiology.....	3
BIOL	4050	Immunology.....	3
BIOL	4110	Human Genetics.....	3
BIOL	4330	Parasitology.....	3

CHEM	3310	Analytical Chemistry	2
CHEM	3360	Analytical Chemistry Lab.....	2
CHEM	3560	Biochemistry Lab	1
CHEM	3610	Inorganic Chemistry	3
CHEM	3710	Physical Chemistry for the Biosciences I.....	3
CHEM	3720	Physical Chemistry for the Biosciences II	3
CHEM	3730	Physical Chemistry I.....	3
CHEM	3740	Physical Chemistry II	3
CHEM	3860	Advanced Laboratory I.....	3
CHEM	3870	Advanced Laboratory II	3
CHEM	4300	Instrumental Analysis	2
CHEM	4620	Inorganic Chemistry II	3
CHEM	4880	Advanced Laboratory III	2
CHEM	4980	Advanced Organic Chemistry	2
EEES	4150	Evolution.....	3
EEES	4300	Field Botany.....	3
EEES	4450	Hazardous Waste Management	3
EEES	4510	Environmental Microbiology	3
EEES	4800	Plant Physiological Ecology.....	4
MATH	2600	Introduction to Statistics.....	3
MBC	3100	Practices in Pharmaceutical Research	1
MBC	3800	Microbiology & Immunology	3
MBC	3880	Medicinal & Biological Chem Lab	1-4
MBC	4300	Chemotherapy and Immunotherapy	2
MBC	4470	Advanced Immunotherapeutics	2
MBC	4720	Advances in Drug Design.....	3
MBC	4850	Adv Immunology & Tissue Culture Lab.....	1-10
MBC	4870	Biomedical Chem Lab.....	1-10
MBC	4880	Medicinal Biotech Lab	1-10
MBC	4900	Hrs Seminar in Medic/Bio Chem	1-3
MBC	4910	Problems in Bio-medicinal Chem	1-3
MBC	4950	Research in Medicinal Chemistry	6-8
MBC	4950	Research in Medicinal Chemistry –Honors	6-8
MBC	4960	Hrs Thesis in Medicinal Chem.....	2-5
MBC	4980	Special Topics in Drug Design.....	1-4
PHCL	4140	Interpretation of Pharmaceutical Data.....	3
PHCL	4150	Biopharmaceutics/Pharmacokinetics	4
PHCL	4630	Cancer chemotherapy	3
PHCL	4810	BSPS Pharmacology III.....	3
PHCL	4820	BSPS Pharmacology IV	3
PHCL	4730	Toxicology I.....	3
PHCL	4750	Toxicology II	3
PHCL	4760	Toxicokinetics.....	3
PHCL	4800	Human-Xenobiotic Interactions	3

Pharmaceutics (PHAR) Major

Pharmaceutics is a multidisciplinary applied science that studies the physical and chemical attributes of drugs. It places a strong emphasis on the design and evaluation of drug delivery systems and dosage forms and also on the understanding and control of the factors influencing clinical response to drug therapy.

Pharmaceutics Professional Division Curriculum

P1 Year

First Semester

MBC	3310	Medicinal Chemistry I.....	2
MBC	3330	Applied Drug Design.....	2
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I.....	3
PHPR	3010	Pharmaceutical Calculations	2
PHPR	3020	Pharmaceutical Technology I.....	4

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
MBC	3800	Microbiology & Immunology	3
PHCL	3730	BSPS Pharmacology II.....	3
PHPR	3030	Pharmaceutical Technology II	4
Pharmaceutical or General Electives ¹ (Recommended MBC 3100)....			1

Summer between P1 and P2 Year

PHPR	4880	Internship in Pharmaceutics	6-12
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P2 Year

First Semester

CHEM	3310	Analytical Chemistry.....	2
PHPR	4160	Pharmacokinetics.....	3
PHCL	4810	BSPS Pharmacology III.....	3
Pharmaceutical or General Electives ¹			2-5

Second Semester

CHEM	3360	Analytical Chemistry Lab.....	2
PHCL	4820	BSPS Pharmacology IV	3
BIOL	3030	Cell Biology.....	3
BIOL	3040	Cell Biol. Lab.....	2
Pharmaceutical or General Electives ¹			2-6

¹To be chosen from the pharmaceutics or general electives list below.

PHAR Electives

Other electives require approval of the PHAR major adviser.

Pharmaceutics Electives (at least 2 hours)

MATH	2600	Introduction to Statistics.....	3
PHPR	4010	Modern Drug Delivery	2
PHPR	4250	Sterile Products.....	2
PHPR	4680	Parenteral Manufacturing*	2
PHPR	4690	Dosage Form Design*	3
PHPR	4710	Selected Topics in Pharm. Tech.*	2
PHPR	4720	Pharmaceutical Rate Process*	2
PHPR	4900	Honors Seminar Pharmaceutics.....	1-3
PHPR	4910	Pharmacy Practice Problems	1-3
PHPR	4960	Honors Thesis Pharmacy Practice	2-5

General Electives (at least 2 hours)

BIOL	3010	Molecular Genetics.....	3
BIOL	3020	Molecular Genetics Lab	2
BIOL	4110	Human Genetics	3
BIOL	4330	Parasitology	3
CHEM	3710	Physical Chemistry for Bioscience I	3
CHEM	3720	Physical Chemistry for Bioscience II.....	3
CHEM	3730	Physical Chemistry I.....	3
CHEM	3740	Physical Chemistry II	3
CHEM	4300	Instrumental Analysis	2
CHEM	4880	Advanced Laboratory III	2
ECON	4750	Health Economics	3
MBC	4300	Medicinal Chemistry III	2
MBC	3100	Practices in Pharmaceutical Research	1
PHCL	4140	Interpretation of Pharmaceutical Data.....	3
PHCL	4630	Cancer Chemotherapy	3

*Taught every other year for those undergraduates not planning to apply to UT's industrial pharmacy graduate program.

Pharmacology/Toxicology (PTOX) Major

Pharmacology and toxicology are biomedical sciences that study how to develop safe, effective drugs and prevent the harmful effects of chemicals. Pharmacology focuses on the way drugs interact with various living systems, including the properties, effects and mechanisms of drug action. Toxicology focuses on the interaction of toxic compounds in the body, including exposure assessment, dose response assessment and hazard identification.

Pharmacology/Toxicology Professional Division Curriculum

P1 Year

First Semester

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I.....	3
PHCL	4730	Toxicology I.....	3
Major Electives (Recommend BIOL 3010 & 3020 MBC 3330) ¹			5-6

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II	3
PHCL	3810	Pharmacology & Toxicology Lab ²	1
PHCL	4750	Toxicology II	3
Major Elective (Recommended MBC 3100) ¹			1
Major Elective			3

P2 Year

First Semester

MBC	4710	Targeted Drug Design	3
PHCL	4810	BSPS Pharmacology III.....	3
Major Elective ¹			9

Second Semester

PHCL	4780	Internship in Pharmacology/Toxicology ³ ... 6-12	
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¹To be chosen from the PTOX electives list.

²Required for internship and only offered in spring.

³Internship can be taken in the summer before the P2 year.

PTOX Electives

A total of 18 hours of course work must be selected from the list of elective courses below. Other electives require approval of the PTOX adviser.

BIOL	3010	Molecular Genetics.....	3
BIOL	3020	Molecular Genetics - Lab	2
BIOL	3030	Cell Biology.....	3
BIOL	3040	Cell Biology Lab	2
BIOL	4010	Molecular Biology.....	3
BIOL	4030	Microbiology	3
BIOL	4050	Immunology.....	3
BIOL	4110	Human Genetics	3
BIOL	4330	Parasitology	3
CHEM	3310	Analytical Chemistry.....	2
CHEM	3360	Analytical Chemistry Lab.....	2
CHEM	3710	Physical Chemistry for the Biosciences I.....	3
CHEM	3720	Physical Chemistry for the Biosciences II	3
CHEM	3730	Physical Chemistry I.....	3
CHEM	3740	Physical Chemistry II	3
CHEM	4300	Instrumental Analysis	2
CHEM	4880	Advanced Laboratory III	2

MATH	2600	Introduction to Statistics.....	3
MBC	3800	Microbiology & Immunology	3
MBC	3100	Practices in Pharmaceutical Research	1
MBC	3330	Applied Drug Design.....	2
MBC	4300	Medicinal Chemistry III	2
MBC	4470	Advanced Immunotherapeutics	2
MBC	4880	Medicinal Biotech Lab	1-10
MBC	4980	Special Topics in Drug Design.....	1-4
PHCL	4140	Interpretation of Pharmaceutical Data.....	3
PHCL	4150	Biopharmaceutics/Pharmacokinetics	4
PHCL	4300	Selected Topics in Pharmacology	2
PHCL	4630	Cancer Chemotherapy	3
PHCL	4720	Pharmacology IV	3
PHCL	4760	Toxicokinetics.....	3
PHCL	4800	Human-Xenobiotic Interactions	3
PHCL	4900	Hrs Seminar Pharmacology/Toxicology	1-3
PHCL	4910	Problems in Pharmacology/Toxicology	1-3
PHCL	4960	Honors Thesis Pharmacology/Toxicology ...	2-5

Pharmacy Administration (PHAM) Major

Pharmacy administration focuses on the corporate and managerial aspects of the pharmacy profession. Students may earn a minor in business administration, international business, or professional sales, in addition to the bachelor of science in pharmaceutical sciences degree. See below for options. With one year of additional graduate study, students in the M.B.A. track options can receive a master of business administration degree.

Pharmacy Administration Major Professional Division Curriculum:

The options for this major are shown below.

P1 Year

First Semester

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I.....	3
ECON	1150	Principles of Macroeconomics	3
PHPR	3260	Pharmacy Healthcare Administration I*	2
BUAD	2060	Data Analysis for Business..... or MATH 2630 or 2600 or equiv.....	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
PHPR	4550	Analysis of Pharm. Environment	3
ACTG	1040	Principals of Financial Accounting	or
BUAD	2040	Financial Accounting Information	3
Major Elective ¹		2-3

P2 Year

First Semester

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration	1
BUAD	3010	Principles of Marketing	3
BUAD	3030	Manage. & Behave. Process in Orgs.....	3
BUAD	3040	Prin. of Financial Management	3
ACTG	1050	Principle of Management Accounting.....	or
BUAD	2050	Accounting for Business Decision-Making	3
Major Elective ¹		2-3

Second Semester

PHPR 4780 Internship in Pharmacy Adm² 6-12

*This course is not required of students accepted to PHAM before Fall 2010.

¹ Major Electives : (a minimum of 5 hours of electives is required)

PHPR 4590 Readings in Access & Cultural Competence2

PHPR 4610 Pharmacoeconomics and Outcomes I2

PHPR 4630 Research Methods Pharmacy Administration.....3

Any course used to complete a minor degree in the

College of Business Administration

² Internship can be taken in summer before the P2 year.

Business Administration Minor Option

P1 Year

First Semester

MBC 3310 Medicinal Chemistry I.....2

MBC 3550 Physiological Chemistry I3

PHCL 3700 Pharmacology I.....3

PHPR 3260 Pharmacy Healthcare Administration I*2

ECON 1150 Principles of Macroeconomics3

BUAD 2060 or MATH 2630 or 2600 or equiv.3

Second Semester

MBC 3320 Medicinal Chemistry II.....2

MBC 3560 Physiological Chemistry II3

PHCL 3730 BSPS Pharmacology II3

BUAD 3010 Principles of Marketing¹3

ACTG 1040 Principles of Financial Accounting¹ or

BUAD 2040 Financial Accounting Information¹3

Summer Between P1 and P2 Years

PHPR 4780 Internship in Pharmacy Administration6-12

P2 Year

First Semester

PHCL 4810 BSPS Pharmacology III.....3

PHPR 4600 Seminar in Pharmacy Administration1

BUAD 3030 Manage. & Behav. Process in Orgs¹3

BUAD 3040 Prin. of Financial Management¹3

BUAD 2050 Accounting for Business Decision Making¹.. or

ACTG 1050¹ Principles of Management Accounting¹3

BUAD 1020 or CMPT 1100 or equivalent.....3

Second Semester

PHPR 4550 Analysis of Pharm. Environment or

PHPR 4520 Pharmaceutical Management & Marketing.... or

MKTG 4540 Business Marketing3

Business Minor Elective²3

Major Elective (choose any business course or

PHPR 4590, 4610, or 4630)..... 2-3

*This course is not required of students accepted to PHAM before Fall 2010.

¹A grade of C or higher is required for the minor.

²Choose from business administration minor requirements listed by the College of Business administration. Recommend BUAD 3020 or 2070.

Professional Sales Minor Option

P1 Year

First Semester

MBC 3310 Medicinal Chemistry I.....2

MBC 3550 Physiological Chemistry I3

PHCL 3700 Pharmacology I.....3

PHPR	3260	Pharmacy Healthcare Administration I*	2
ECON	1150	Principles of Macroeconomics	3
BUAD	2060 or MATH 2630 or 2600 or equiv...	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
BUAD	3010	Principles of Marketing ¹	3
ACTG	1040	Principles of Financial Accounting	or
BUAD	2040	Financial Accounting Information	3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration	1
BUAD	3030	Manage. & Behav. Process in Orgs.....	3
PSLS	3440	Sales ¹	3
PSLS	3450	Acct. & Territory Management ¹	3
ACTG	1050	Principles of Management Accounting	or
BUAD	2050	Accounting for Business Decision-Making	3

Second Semester

BUAD	3040	Prin. of Financial Management	3
PSLS	4740	Advanced Sales ¹	3
PSLS	3080	Purchasing & Business Relation Mgmt.	or
PSLS	4710	Salesforce Leadership ¹	3
PHPR	4550	Analysis of Pharmaceutical Environment	3

*This course is not required of students accepted to PHAM before Fall 2010.

¹A grade of C or higher is required for the minor.

International Business Minor Option**P1 Year***First Semester*

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I.....	3
PHPR	3260	Pharmacy Healthcare Administration I*	2
ECON	1150	Principles of Macroeconomics	3
BUAD	2080	Global Environment of Business.....	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
ACTG	1040	Principles of Financial Accounting	or
BUAD	2040	Financial Accounting Information	3
BUAD	3030	Manage. & Behave. Process in Orgs.....	3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration	1
ACTG	1050	Principles of Management Accounting	or
BUAD	2050	Accounting for Business Decision-Making	3
BUAD	2060 or MATH 2600 or 2630 or equiv.	3
BUAD	3010	Principles of Marketing	3

BUAD 3040 Prin. of Financial Management3

Second Semester

PHPR 4550 Analysis of Pharmaceutical Environment3
 BUAD 2070 Application of Statistics3
 FINA 3500 International Business Finance¹3
 IBUS 3600 International Management¹3
 MKTG 3140 International Marketing¹3

*This course is not required of students accepted to PHAM before Fall 2010.

¹If IBUS 3150 is taken for non-U.S. culture diversity studies, students only need to take two of these courses.

Business Administration Minor and Professional Sales Minor Option

P1 Year

First Semester

MBC 3310 Medicinal Chemistry I2
 MBC 3550 Physiological Chemistry I3
 PHCL 3700 Pharmacology I3
 PHPR 3260 Pharmacy Healthcare Administration I*2
 ECON 1150 Principles of Macroeconomics3
 BUAD 2060 Data Analysis for Business or
 MATH 2630 or 2600 or equiv.3

Second Semester

MBC 3320 Medicinal Chemistry II2
 MBC 3560 Physiological Chemistry II3
 PHCL 3730 BPS Pharmacology II3
 BUAD 3010 Principles of Marketing¹3
 ACTG 1040 Principles of Financial Accounting¹ or
 BUAD 2040 Financial Accounting Information¹3
 BUAD 1020 Microcomputer Applications in Business or
 CMPT 1100 Computer Information Applications
 Or equivalent3

Summer Between P1 and P2 Years

PHPR 4780 Internship in Pharmacy Administration6-12

P2 Year

First Semester

PHCL 4810 BPS Pharmacology III3
 PHPR 4600 Seminar in Pharmacy Administration1
 PSLS 3440 Sales¹3
 PSLS 3450 Account & Territory Management¹3
 ACTG 1050 Principles of Management Accounting¹ or
 BUAD 2050 Accounting for Business Decision-Making¹3
 BUAD 3030 Manage. & Behav. Process Orgs¹3

Second Semester

PHPR 4550 Analysis of Pharmaceutical Environment3
 BUAD 2070 Application of Statistics²3
 BUAD 3040 Prin. of Financial Management¹3
 PSLS 4740 Advanced Sales¹3
 PSLS 3080 Purch. & Busi. Rela. Mgmt¹ or
 PSLS 4710 Sales Force Leadership¹3

*This course is not required of students accepted to PHAM before Fall 2010.

¹A grade of C or higher is required for the minors.

²If IBUS 3150 is taken for non-U.S. culture diversity studies, students don't need to take BUAD 2070.

International Business & Business Administration Minors Option

P1 Year*First Semester*

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I.....	3
PHCL	3700	Pharmacology I.....	3
PHPR	3260	Pharmacy Healthcare Administration I*.....	2
ECON	1150	Principles of Macroeconomics.....	3
BUAD	2080	Global Environment of Business.....	3
BUAD	1020	Microcomputer Applications in Business..... or	
CMPT	1100	Computer Information Appl. or Equiv.....	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
BUAD	3030	Manage. & Behave. Proces. in Orgs ¹	3
ACTG	1040	Principles of Financial Acct ¹ or	
BUAD	2040	Financial Accounting Information ¹	3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration.....	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration.....	1
BUAD	3010	Principles of Marketing ¹	3
BUAD	3040	Prin. of Financial Management ¹	3
ACTG	1050	Principles of Management Accounting ¹ or	
BUAD	2050	Accounting for Business Decision-Making ¹	3
BUAD	2060	Data Analysis for Business..... or	
MATH	2600 or 2630 or equiv.....		3

Second Semester

PHPR	4550	Analysis of Pharmaceutical Environment.....	3
BUAD	2070	Appl. of Stats in Bus Decision Making ¹	3
FINA	3500	International Business Finance ²	3
IBUS	3600	International Management ²	3
MKTG	3140	International Marketing ²	3

*This course is not required of students accepted to PHAM before Fall 2010.

¹A grade of C or higher is required for the Business Administration Minor.

²If IBUS 3150 is taken for non-U.S. culture diversity studies, students only need to take two of these three courses.

Business Administration Minor & M.B.A. Track Option¹**P1 Year***First Semester*

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I.....	3
PHCL	3700	Pharmacology I.....	3
PHPR	3260	Pharmacy Healthcare Administration I*.....	2
BUAD	3030	Manage. & Behav. Process in Orgs.....	3
ECON	1150	Principles of Macroeconomics.....	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
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MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
ACTG	1040	Principles of Financial Accounting.....	or
BUAD	2040	Financial Accounting Information.....	3
BUAD	2060	Data Analysis for Business.....	or
		MATH 2630 or 2600 or equiv.....	3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration.....	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration.....	1
BUAD	2070	Appl. of Stats in Bus Deci. Making.....	3
BUAD	3010	Principles of Marketing.....	3
ACTG	1050	Principles of Management Accounting.....	or
BUAD	2050	Accounting for Business Decision Making.....	3

Second Semester

PHPR	4550	Analysis of Pharm. Environment.....	3
BUAD	3020	Principles of Mfg. & Service Systems.....	3
BUAD	3040	Prin. of Financial Management.....	3
BUAD	1020	Microcomputer Applications in Business.....	or
CMPT	1100	Computer Information Applications.....	3

* This course is not required of students accepted to PHAM before Fall 2010.

¹This track will enable students to fulfill the prerequisites for the M.B.A. program with grades of C (2.0) or higher in all BUAD courses listed in this curriculum. To be admitted to the M.B.A. program in the College of Business Administration, students must successfully complete the GMAT prior to application.

Professional Sales/Business Administration Minors and M.B.A. Track Option¹**P1 Year***First Semester*

MBC	3310	Medicinal Chemistry I.....	2
MBC	3550	Physiological Chemistry I.....	3
PHCL	3700	Pharmacology I.....	3
PHPR	3260	Pharmacy Healthcare Administration I*.....	2
BUAD	3030	Manage. & Behav. Process in Orgs.....	3
ECON	1150	Principles of Macroeconomics.....	3

Second Semester

MBC	3320	Medicinal Chemistry II.....	2
MBC	3560	Physiological Chemistry II.....	3
PHCL	3730	BSPS Pharmacology II.....	3
BUAD	3010	Principles of Marketing.....	3
ACTG	1040	Principles of Financial Accounting.....	or
BUAD	2040	Financial Accounting Information.....	3
BUAD	2060	Data Analysis for Business.....	or
MATH	2630 or 2600 or equiv.....		3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration.....	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III.....	3
PHPR	4600	Seminar in Pharmacy Administration.....	1

BUAD	2070	Appl. of Stats in Bus Decision-making	3
PSLS	3440	Sales	3
PSLS	3450	Acct & Territory Management	3
ACTG	1050	Principles of Management Accounting	or
BUAD	2050	Accounting for Business Decision Making	3

Second Semester

PHPR	4550	Analysis of Pharm. Environment	3
BUAD	3020	Principles of Mfg. & Service Systems	3
BUAD	3040	Prin. of Financial Management	3
PSLS	4740	Advanced Sales	3
PSLS	3080	Purch. & Busi. Rela. Mgmt	or
PSLS	4710	Sales Force Leadership	3
BUAD	1020	Microcomputer Applications in Business	or
CMPT	1100	Computer Information Appli or equivalent	3

* This course is not required of students accepted to PHAM before Fall 2010.

¹This track will enable students to have double minors and fulfill the prerequisites for the MBA program with grades of "C" (2.0) or higher in all BUAD and PSLS courses listed in this curriculum. To be admitted to the MBA program students must successfully complete the GMAT prior to application.

International Business/Business Administration Minors & MBA Track Option¹**P1 Year***First Semester*

MBC	3310	Medicinal Chemistry I	2
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I	3
PHPR	3260	Pharmacy Healthcare Administration I*	2
BUAD	2080	Global Environment of Business	3
ECON	1150	Principles of Macroeconomics	3

Second Semester

MBC	3320	Medicinal Chemistry II	2
MBC	3560	Physiological Chemistry II	3
PHCL	3730	BSPS Pharmacology II	3
BUAD	3030	Manage. & Behave. Process in Orgs.	3
BUAD	2040 or ACTG 1040		3
BUAD	1020 or CMPT 1100 or equivalent		3

Summer Between P1 and P2 Years

PHPR	4780	Internship in Pharmacy Administration	6-12
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P2 Year*First Semester*

PHCL	4810	BSPS Pharmacology III	3
PHPR	4600	Seminar in Pharmacy Administration	1
BUAD	3010	Principles of Marketing	3
BUAD	3040	Prin. of Financial Management	3
IBUS	3600	International Management ²	3
ACTG	1050	Principles of Management Accounting	or
BUAD	2050	Accounting for Business Decision Making	3
BUAD	2060	Data Analysis for Business	or
MATH	2630 or 2600 or equiv.		3

Second Semester

PHPR	4550	Analysis of Pharm. Environment	3
BUAD	2070	Appl. of Stats in Bus Decision Making	3
BUAD	3020	Principles of Mfg. & Services Sys.	3
FINA	3500	International Business Finance ²	3
MKTG	3140	International Marketing ²	3

* This course is not required of students accepted to PHAM before Fall 2010.

¹This track will enable students to fulfill the prerequisites for the MBA program with grades of C (2.0) or higher in all BUAD courses listed above.

To be admitted to the MBA program, students must successfully complete the GMAT prior to application.

²If IBUS 3150 is taken for non-U.S. culture diversity studies, students only need to take two of these three courses.

B.S.P.S. Internship Description

All four majors in the bachelor of science in pharmaceutical sciences degree program require real-life workplace internships in a variety of appropriate settings at local, regional, national and international sites. Most students schedule their internships in the summer after their P1 year. Students are generally assigned to ongoing projects at the site and are evaluated on their performance by the project supervisor. A brief paper describing their role in the project is submitted to the coordinator for their major following completion of the practicum.