

COLLEGE OF PHARMACY

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COLLEGE OF PHARMACY

Accreditation

The College of Pharmacy holds membership in the American Association of Colleges of Pharmacy, is recognized as an institution in good standing by the Ohio State Board of Pharmacy and is accredited by the Accreditation Council for Pharmacy Education (ACPE).

Programs in Pharmacy and the Pharmaceutical Sciences

The College of Pharmacy prepares students for careers in both the pharmaceutical sciences and the profession of pharmacy. Those who do not seek professional licensure may work in the medical, legal and biomedical professions. Those who enter the profession of pharmacy provide direct patient care services.

Doctor of Pharmacy - Pharmacy Licensure Program

All students seeking a degree that will lead to pharmacy licensure will need to complete two years of course work in the preprofessional division of the College of Pharmacy. Following the completion of a core set of required courses, students will apply to the professional division during their second year. Admission to the professional division of the college (year 3) is competitive.

The program of study leading to pharmacy licensure for entering freshman is the entry-level doctor of pharmacy (Pharm.D.). Students who have already completed a bachelor of science in pharmacy (B.S.P.) degree may enroll in the post-baccalaureate Pharm.D. degree program in order to gain additional skills and knowledge in various therapeutic areas.

Pharmaceutical Sciences

The College of Pharmacy offers a four-year bachelor of science in pharmaceutical sciences degree (B.S.P.S.) to prepare students for a variety of careers in the pharmaceutical and biotechnological industries. Students seeking the B.S.P.S. degree will need to complete two years of course work in the preprofessional division of the College of Pharmacy. Following the completion of a core set of required courses, students will apply to the professional division during their second year. Admission to the professional division of the college is competitive. The B.S.P.S. will not prepare students for state board licensure, nor will it prepare students to practice pharmacy.

Contingent Admission

A small group of academically exceptional high school graduates may be offered contingent admission to the professional division of either the Pharm.D. or the B.S.P.S. programs. Automatic admission to the third year of the curriculum will be contingent upon successful completion of the first and second preprofessional years, while maintaining specific scholastic standards.

Pharmacy Graduate Degree Programs

The College of Pharmacy offers several non-licensure graduate degrees: the master of science in pharmaceutical sciences degree with program

options in pharmacology/toxicology, industrial pharmacy and administrative pharmacy; the master of science in medicinal chemistry degree; and the doctor of philosophy in medicinal chemistry degree. Students should contact the College of Pharmacy for admission and curricular requirements.

A graduate certificate program is available to any qualifying student holding a B.S. degree in natural science who wishes to take graduate level courses in pharmacology and toxicology. Students completing this 15 semester hour program will be awarded a certificate in pharmacology/toxicology.

Admission to the College

New Students

All new students admitted to the College of Pharmacy will begin their studies in the preprofessional division. All undergraduate students in the College of Pharmacy will be considered preprofessional division students until admitted to the professional divisions of the Pharm.D. or B.S.P.S. program. For the entry-level Pharm.D. and the four-year B.S.P.S. programs, the College of Pharmacy limits student enrollment into the professional division (third year) in accordance with its facilities.

Transfer and Change-of-College Students

In order for a student to transfer from other Ohio universities into any of the baccalaureate programs of the College of Pharmacy or change from another college within The University of Toledo to the College of Pharmacy, the student must have a higher education cumulative grade point average (HEd GPA) of at least 2.7 (the HEd GPA is based on all letter grades attained at all institutions of higher learning and uses the point average scale of A = 4 pt.), be in good standing at the University, and be eligible to return. Evaluation of transcripts from other institutions is not done until a student is admitted into the College of Pharmacy. The student may be required to take placement tests in English, chemistry and/or algebra. A student who has attended another Ohio college of pharmacy must have a cumulative HEd GPA of 2.7, be in good standing at the university and be eligible to return to the college of pharmacy previously attended. Transfer students who wish to apply to the professional division must have been enrolled in The University of Toledo College of Pharmacy and registered for 16 semester hours (a letter grade must be received in each course) prior to application to the professional division.

Students with course work from non-Ohio institutions will be evaluated on an individual basis. After a student is admitted, the student may be asked to supply non-returnable college catalogs so that course equivalencies can be determined. The student also may be required to take placement tests in English, chemistry and/or algebra. All international transcripts submitted by transfer students must be evaluated by a College of Pharmacy-designated independent agency, at the applicant's expense, for letter grade equivalency. Transfer students are only admitted to the preprofessional division of the B.S. in pharmaceutical sciences or the Pharm. D. program. For a transfer student to be accepted into the second year of the program, all criteria and prerequisites for second-year class standing must be met. Second-year class standing begins only in the fall semester.

General Criteria for Admission to the Professional Divisions of the Doctor of Pharmacy and the B.S. in Pharmaceutical Sciences

Students are admitted to the professional divisions for the fall semester. The number of students who receive final acceptance into the professional divisions will be limited to the space available. Because the number of applicants usually exceeds the number of spaces available, students are admitted on the basis of the following general criteria.

Eligibility for Application

To be eligible to apply for admission into the professional divisions, all applicants must complete the following or their equivalents:

- BIOL 2150, 2160, 2170, 2180
- CHEM 1230, 1240, 1280, 1290, 2410, 2460
- MATH 1750
- PHCL 2600
- PHPR 2010
- PHYS 1750 or 2070
- A minimum of 44 earned semester hours
- A minimum 2.7 of both cumulative grade point average (GPA) and science GPA
- Currently matriculated in The University of Toledo College of Pharmacy

Application

Applicants to the Pharm.D. program will provide the Admissions Committee with a personal essay to be written at a designated time, date and location as indicated on the College of Pharmacy Internal Admissions Web site. At the time of the writing of the personal essay, all application materials must be submitted. These include the following:

- Signed confirmation form
- Pending grade change form (if applicable)
- Two signed letters of recommendation

Note: The letters may be from professors, employers, clergy, close family friends and family health professionals (pharmacist, dentist and physician), or others. Letters from relatives or The University of Toledo College of Pharmacy faculty or staff are not acceptable.

Applicants to the B.S.P.S. programs will submit the following by the deadline published on the College of Pharmacy Internal Admissions Web site:

- Signed confirmation form
- Pending grade change form (if applicable)

There are no exceptions to the deadlines.

Final Admission

In order to be finally admitted into the professional division, an applicant must have completed the following or their equivalents:

- BIOL 2150, 2160, 2170, 2180
- CHEM 1230, 1240, 1280, 1290, 2410, 2420, 2460, 2470
- MATH 1750 and 1760
- ECON 1200
- PHCL 2600 and 2620

- PHPR 2010
- PHYS 1750 or 2070/2080
- A minimum of 63 earned semester hours
- Maintain a minimum 2.0 GPA (cumulative and semester) for the spring and, if applicable, summer semesters

If an applicant is accepted into the professional division, the acceptance will be provisional pending the completion of the above requirements. All course prerequisites for the professional divisions must be completed two weeks before the first day of professional division classes in the fall semester for which the application is made. If the applicant fails to meet the deadline for the completion of prerequisite courses, he/she will lose provisional admission status and must apply again for admission to the professional divisions in a subsequent year. It is the student's responsibility to contact the coordinator of internal admissions in the Office of Student Affairs if he/she plans to complete requirements over the summer prior to the start of the third year. A preprofessional division student will not be allowed to fulfill requirements for the professional divisions by enrollment in both organic chemistry and physics during the summer prior to the first professional division year.

Evaluation

Each application will be evaluated on the basis of the applicant's:

- Personal essay (for Pharm.D. applicants only)
- Cumulative GPA
- Science GPA in the following specified courses:
 - CHEM 1230, 1240 and 2410
 - BIOL 2150 and 2170
 - MATH 1750
 - PHYS 1750 or 2070
 - PHCL 2600

The Admissions Committee will use the best grade for the first two of all attempts for any science course used in the calculation of the science GPA. This rule applies to all applicants, including transfer students. All transfer or quarter courses equivalent to these specified courses will be evaluated for their respective equivalent semester hours. All applicants must have a cumulative GPA based upon a minimum of 16 semester hours at The University of Toledo (a letter grade must be received in each course). If a student has taken fewer than 30 hours at The University of Toledo, the higher education GPA (HEd GPA, which is based on all letter grades attained at all institutions of higher learning) will be used in the evaluation in place of the UT cumulative GPA, if the HEd GPA value is less than the UT cumulative GPA. If the HEd GPA is greater than the UT cumulative GPA, the latter will be used.

Students to be admitted provisionally to the Pharm.D. program will be selected by the Admissions Committee based on the above criteria. A portion of the students will also be interviewed by the Admissions Committee.

Transfer Students

Specific criteria have been approved by the faculty of the College of Pharmacy for the admission of transfer students or of change-of-college students into the professional divisions. These are outlined as follows:

- a) Transfer students who wish to apply to the professional division must have been enrolled in The University of Toledo College of Pharmacy and registered for 16 hours (a letter grade must be received in each course) prior to application.

- b) The general criteria for admission to the professional divisions will be applied to the transfer student in the same manner as for the continuing College of Pharmacy student; i.e., cumulative GPA, science GPA, essential courses or their equivalents through the fall semester of the second year, personal essay (for Pharm. D. applicants) and an accumulation of at least 44 earned semester hours. The applicant's cumulative GPA from The University of Toledo or HEd GPA (as determined above), science GPA based on equivalent specified courses (UT or otherwise) as stated above, and personal essay (for Pharm.D. applicants) will be used in determining admission.
- c) The essential courses for final admission to the professional divisions consist of those listed above. Equivalencies must be determined and appear on the student's transcript and/or in the student's degree audit prior to application. In general, a three-quarter course sequence is necessary to fulfill a two-semester course sequence. See an adviser for further information.
- d) In surveying the essential courses, the Admissions Committee has observed that equivalency is almost automatic for courses in general chemistry, general biology, organic chemistry and physics. Difficulty in determining equivalency has occurred with Introduction to Patient Care, the mathematics sequence and the functional anatomy and pathophysiology sequence.
- e) The only pharmacy courses a preprofessional student is permitted to take through the College of Pharmacy are PHPR 1000, PHPR 2010, PHCL 2600 and PHCL 2620 until final admission to the professional divisions is achieved.

College of Pharmacy Honors Program

The College of Pharmacy offers an Honors Program for eligible students in all its undergraduate programs as part of the University-wide Honors Program.

Highly qualified students entering the University in the College of Pharmacy will be considered for advanced placement and for entry into honors courses and honors sections of major courses offered in the first two years. Decisions regarding entry of students into the University Honors Program or into specific honors courses will be made after evaluation of the honors application by the University Honors Program director and the College of Pharmacy Honors advisers. Normally, entering students with an ACT composite score of 28 and above, coupled with a 3.75/4.00 high school GPA, will be considered for entry into honors courses. During the first two years of study, the College of Pharmacy offers courses that orient the student toward the profession of pharmacy and the pharmaceutical sciences and toward the moral and ethical responsibilities of pharmacists and pharmaceutical scientists. Many honors students take most of their honors coursework (both required and elective courses) in the first two years of the curriculum.

A variety of required and elective courses are also offered with honors sections in the professional divisions. A specific honors seminar course and an honors thesis option are offered for some of the very best students in the program. These courses can fulfill requirements for electives. In addition to the overall college requirement, specific departmental requirements, on file in the respective department offices, also must be met for graduation from the College of Pharmacy with honors.

The B.S.P.S. with College Honors is attainable by all students who complete at least 33 semester hours of honors course work with a grade of B or better and who have a cumulative GPA of 3.3 or better. In addition, at least five hours of the 33 noted above must be taken within the honors thesis project and honors seminar. These courses are to be taken within the departments of medicinal and biological chemistry, pharmacology or pharmacy practice. Graduation with Departmental Honors is also available to students who are not members of the university Honors Program, but who meet departmental requirements.

Academic Policies

The College of Pharmacy adheres to all of The University of Toledo policies and procedures. Please refer to the General Section of this catalog for academic policies governing all students enrolled at the University. In any case where University, college and/or departmental policies conflict, the most stringent policy applies unless waived by the college. Students should consult with the college for a complete listing of all policies and procedures specifically related to the College of Pharmacy.

Attendance Requirements

Students in a professional school, as responsible individuals, are expected to attend all class meetings. The maximum number of permissible absences in a course is at the discretion of the individual faculty member. The penalty for excessive absences will be determined by the faculty member.

Withdrawal, Grade Deletion and Audit Policy

Refer to the University General Academic Policies in the General Information section of this catalog for Drop, Withdrawal, Grade Deletion and Audit policies that apply to all students.

Pass/No Credit (P/NC) Grade Option

Refer to the University General Academic Policies in the General Section of this catalog for General Academic Policies that apply to all students. P/NC grading is not available for courses taught in the College of Pharmacy. In addition to courses for which P/NC grading is used exclusively, a student may elect P/NC grading for an additional seven credit hours excluding course work in the natural sciences (biology, chemistry, physics and mathematics with the exception of MATH 0980). These seven P/NC hours are applicable only to courses in the humanities/fine arts, multicultural studies and social sciences. Once the petition is filed, the request is irrevocable.

Personal Fitness

The emotional and psychological stability of those practicing or preparing to practice pharmacy is considered to be very important for the proper performance of professional responsibility as a member of the health team. The faculty of the College of Pharmacy recognizes that, if a student exhibits behavior suggesting an emotional or psychological abnormality bearing a reasonable relation to that student's ability to function competently in health care delivery systems, such behavior may present a hazard not only to the student, but to patients as well. If any behavior pattern provides reason to believe that a student's psychological or emotional state may have rendered that student incompetent or unsafe, the dean of the college shall meet with that student and attempt to resolve the situation by referral to the University Health Service, University Counseling Center and/or

withdrawal from the pharmacy program.

Ethical Responsibility

The most serious offense with which pharmacy students may become involved is the misuse of and/or dependence upon dangerous drugs. The College of Pharmacy views the admitted or proven personal abuse of such drugs, their transmittal or sale to other individuals or the use of drug documents to illegally obtain controlled or legend drugs as unprofessional conduct, which may result in dismissal from the College of Pharmacy. In addition, Boards of Pharmacy may revoke the internship license and/or deny licensure for various drug offenses. Since a current internship license is necessary for entrance into the experiential rotations in the required component of the College of Pharmacy curriculum, students without an internship license will be denied admission into these classes. Drug abuse in any form and/or misuse of drug documents must be totally avoided.

Academic Performance Standards

Please refer to the General Section of this catalog for General Academic Policies governing all students enrolled at the University.

For students entering into the professional division of the B.S.P.S. Pharm. D. major program:

- a) Students must maintain a cumulative pharmacy core-curriculum GPA of ≥ 3.0 . Beginning in the first year of the professional division, students whose semester or cumulative pharmacy core-curriculum (see below) GPA falls below 3.0 will be given an academic warning, and allowed one semester to restore their GPA to a semester or cumulative pharmacy core-curriculum level of ≥ 3.0 . A student with two or more consecutive semesters with a semester or cumulative pharmacy core-curriculum GPA < 3.0 will undergo a record review by the College of Pharmacy Academic Performance Committee that may result in dismissal from the Pharm.D. program.
- b) A grade below a C (2.0) in any pharmacy core-curriculum course is unsatisfactory and will not be considered a passing grade for the course in the Pharm.D. curriculum (i.e., courses for which grades of less than a C are earned must be repeated).
- c) Grade deletion for undergraduate courses will be allowed, in accordance with the policies of The University of Toledo.

For all undergraduate students in the preprofessional division and in the professional division of the B.S.P.S., pharmacology/toxicology, medicinal and biological chemistry, pharmaceuticals, and pharmacy administration majors in the College of Pharmacy:

- a) Any student who fails to achieve a semester or cumulative GPA of 2.0 or greater at the end of any semester will automatically be placed on probation.
- b) Any student who fails to achieve a semester or cumulative GPA of 1.0 or greater at the end of any semester will automatically be placed on probation, will undergo a record review by the College of Pharmacy Academic Performance Committee, and may be suspended (see section on suspension below) from the University without a preliminary probationary semester.
- c) Any student who fails to achieve a semester or cumulative GPA of 2.0 or greater for any two of three consecutive semesters in attendance will undergo a record review by the College of Pharmacy Academic Performance Committee, and may be suspended (see section on suspension below) from the University.

For students entering the post-B.S.P.S. (graduate) portion of the Pharm. D. curriculum:

- a) Students must maintain a GPA of 3.0. This GPA will be computed beginning from the first semester of the post-B.S.P.S. (graduate) coursework, and will include all graduate level courses (see below). Students whose semester or cumulative pharmacy core-curriculum GPA falls below 3.0 will be given an academic warning, and allowed one semester to restore their GPA to a semester or cumulative pharmacy core-curriculum level of ≥ 3.0 . A student with two or more consecutive semesters with a semester or cumulative pharmacy core-curriculum GPA < 3.0 will undergo a record review by the College of Pharmacy Academic Performance Committee that may result in dismissal from the Pharm.D. program.
- b) A grade below a C (2.0) in any pharmacy core-curriculum course is unsatisfactory and will not be considered a passing grade for the course in the Pharm.D. curriculum (i.e., courses for which grades of less than a C are earned must be repeated).
- c) Grade deletion for graduate courses is not allowed by the University.

Suspension

Suspension is made by the dean on advice from the College of Pharmacy Academic Performance Committee, which reviews the performance of all students periodically. Suspension is from the University. The period of suspension is at least one semester, exclusive of the summer terms. A student who is suspended must petition the dean for readmission, in writing (with a copy to the associate dean for student affairs), at least five weeks prior to the beginning of the semester to which the petition is directed. If the petition is accepted, the college will determine the conditions under which the student will be permitted to reenroll. If a student is readmitted and does not perform satisfactorily, permanent dismissal from the College of Pharmacy may result. A student who is on academic or disciplinary probation or suspension will be required to relinquish the duties of any office in the College of Pharmacy organizations until the student is in "Good Standing," as defined below.

If a student is suspended, and therefore is ineligible to attend classes in a subsequent semester, that student must drop all of the courses for that semester.

Good Standing

The College of Pharmacy defines "good academic standing" in the following manner:

- a) For all preprofessional students, and professional division students in the B.S.P.S. program (pharmacology/toxicology, medicinal and biological chemistry, pharmaceuticals and pharmacy administration majors): a cumulative GPA of 2.0 and a GPA of 2.0 for the semester.
- b) For all professional division students in the B.S.P.S. Pharm.D. major and all students in the graduate portion of the Pharm.D. program: a cumulative pharmacy core-curriculum GPA of 3.0 and a GPA of 3.0 for the semester.

Pharmacy Core-Curriculum

Undergraduate core-curriculum courses taught in the College of Pharmacy beginning in the first year of the professional division:

MBC	3310	PHPR	3010
MBC	3320	PHPR	3070
MBC	3550	PHPR	3080
MBC	3560	PHPR	3510
MBC	3800	PHPR	3940
MBC	3850	PHPR	4400
MBC	4300	PHPR	4410
PHCL	3700	PHPR	4420
PHCL	3720	PHPR	4430
PHCL	4150	PHPR	4440
PHCL	4700	PHPR	4450
PHCL	4720	PHPR	4520

Post-B.S.P.S. (graduate) core-curriculum courses taught in the College of Pharmacy beginning in the first year of the post-B.S.P.S. (graduate) portion of the program:

PHCL	5140	PHPR	6510
PHPR	6160	PHPR	6550
PHPR	6210	PHPR	6610
PHPR	6230	PHPR	6940
PHPR	6240	PHPR	8260
PHPR	6250	PHPR	8390
PHPR	6370	PHPR	8470
PHPR	6380	PHPR	8480
PHPR	6420	PHPR	8500
PHPR	6430	PHPR	8620
PHPR	6440	PHPR	8630
PHPR	6490		

Experiential Performance Standards

Any student who fails to pass a single clerkship rotation or is dismissed from a single clerkship rotation (for reasons other than an action detrimental to patient care and/or to the clinical service) will be placed on academic probation immediately upon completion or dismissal from the rotation. The student will continue on academic probation for the duration of his/her clerkship rotation experience.

Any student on probation who fails to pass a clerkship rotation or is dismissed from a clerkship rotation will be immediately removed from the clerkship program, receive a record review by the Academic Performance Committee, and be subject to dismissal from the doctor of pharmacy program. All previously scheduled clerkship sites will become available for other clerkship students.

If the situation leading to the dismissal of a student from a clerkship rotation is related to an action that is detrimental to patient care and/or the clinical service, the student will be immediately removed from the clerkship program. The Academic Performance Committee will review the situation and the student may be subject to dismissal from the doctor of pharmacy program. All previously scheduled clerkship sites will become available for other clerkship students.

Actions that are subject to dismissal are outlined in the Experiential Dismissal Policy.

Experiential Dismissal Policy

Pharmacy students may be dismissed from a clerkship site at any time during the rotation by the clerkship site and/or preceptor through the initiation of the dismissal procedure described below.

Actions Subject to Dismissal

Following are circumstances or actions under which clerkship students may be dismissed using the dismissal procedure described below:

- * Failure to adhere to clerkship site policy and/or procedure.
- * Failure to adhere to UT clerkship program policy and/or procedure.
- * Failure to meet a UT clerkship program requirement.
- * Blatantly unacceptable or continuously unacceptable clerkship program performance.
- * Mistreatment of University of Toledo and/or clerkship site employees.
- * The performance of an action that is detrimental to the care of a patient.
- * The performance of an action that is detrimental to the clinical service provided by the site and/or preceptor.

Dismissal Procedure

When a circumstance or action that is determined to be grounds for dismissal occurs, the clerkship preceptor will inform the student and director of experiential programs of the situation. The situation will then be handled as follows:

- If the situation is related to failure to meet a requirement, failure to follow policy or procedure, improper behavior or inadequate clerkship performance, the student will be given a specific outline by the clerkship preceptor as to how his/her performance must improve and/or meet expectations within five class days. A copy of this outline will be sent to the director of experiential programs. If after five class days such performance has not been achieved, the student will be removed from the clerkship site and will receive either a grade of U or IN as determined by the director of experiential programs.
- If the situation is related to an action that is detrimental to patient care and/or to the clinical service, upon discussion of the situation between the clerkship preceptor and clinical coordinator, the student shall be subject to immediate removal from the clerkship site and shall receive a grade of U.

If a student has any question over the handling of his/her dismissal procedure by the director of experiential programs and/or preceptor, he/she should contact the chair of the department of pharmacy practice.

Student Grievances

Student complaints specifically related to Accreditation Council for Pharmacy Education (ACPE) standards should be submitted on the appropriate form to the College of Pharmacy Office of Student Affairs (WO 1227). Forms and a copy of the ACPE Standards are available in the Office of Student Affairs. Students can also find the ACPE Standards at the following Web site: <http://www.acpe-accredit.org/standards/default.asp>.

Administrators responsible for review and response to specific ACPE standards for accreditation are the following:

Standards for curriculum (standards 8-14) - assistant dean for

academic affairs

Standards for students (standards 15-22) - associate dean for student affairs

All other standards (if applicable) - associate dean for student affairs

Student issues or complaints regarding specific courses should be resolved via discussion with the course instructor. If further resolution is required, the department chair should be consulted. Refer to the Academic Grievance section in the General Section of this catalog for further information.

College Level Examination Program Credit (CLEP)

The College of Pharmacy grants up to a maximum of 30 semester CLEP credits. Credits earned in the natural sciences and mathematics section of the CLEP examination will count toward the degree as free electives but do not replace the requirement for any specific course in biology, chemistry, physics or mathematics. Credits earned in the humanities and social sciences examination will count only toward meeting the additional humanities and social science requirements.

Credit by Exam

Refer to the General Section of this catalog for Credit by Exam policies that apply to all students.

Criteria for Class Standing

Year	Criteria
First	Earned less than 30 semester hours.
Second	Earned at least 30 semester hours, have a HEd GPA (as previously defined) of 2.5 or greater (based on the point average scale of A = 4.0) and enrolled for or completed organic chemistry, physics and functional anatomy and pathophysiology.
Third	Earned at least 63 semester hours and officially accepted into the professional division.

Note: The student is responsible for the correct selection of the program of study each semester and for the fulfillment of the requirements given here. Although advisers will assist wherever possible, the final responsibility rests with the student. The College of Pharmacy reserves the right to change its policies and procedures at any time. These changes will be binding on the date they are approved by faculty action. Courses taken at other colleges of pharmacy will not substitute for professional division courses. The only pharmacy courses a preprofessional student is permitted to take through the College of Pharmacy are PHPR 1000, PHPR 2010, PHCL 2600 and PHCL 2620. Only students admitted to the professional division will be allowed to take 3000- or 4000- level courses in the college.

Degree Requirements

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 (B.S.P.S.) degree program as one of the first in Ohio and one of the few in the nation. 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, pharmaceutical administration and sales, the biomedical industry, forensic science, as well as health care administration. It also prepares students to pursue medical school, law school or graduate studies. It does not prepare or qualify students for state board licensure in the practice of pharmacy. The degree that prepares students for professional practice and licensure is the doctor of pharmacy (Pharm.D.) degree.

General Program Requirements

A total of 132 semester hours are required for graduation with all the B.S.P.S. - non-Pharm.D. majors.

Preprofessional Division Requirements

In the preprofessional division, the first two years of the B.S.P.S 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

<i>First Semester</i>		
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	Mathematics for the Life Sci. I 4
PHPR	1000	Orientation 1
		UT Core Requirement (ENG 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	Mathematics for the Life Sci. II 3
		UT Core Requirement (ENG 1130 or equivalent)* 3

Second Year

<i>First Semester</i>		
CHEM	2410	Organic Chemistry I..... 3
CHEM	2460	Organic Chemistry Lab I 1
PHCL	2600	Funct. Anat. & Pathophysiology I..... 4
PHPR	2010	Intro to Patient Care 2
PHYS	1750	Introduction to Physics or equiv. 4
		UT Core Requirement (PSY 1010 or SOC 1010)* 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 Multicultural Studies Core Curriculum requirement.

B.S.P.S. Professional Division Requirements

In the professional division of the B.S.P.S. degree program, the last two years of the program, advanced courses of study and a practicum 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.

Career Opportunities: Professional chemists are in demand in industry, education, business, research organizations and the public sector. Students graduating from this major will be ideal for a variety of careers, such as drug analysts, research chemists, technical writers, sales representatives, biochemistry technical officers and forensic scientists. Employers include large and small pharmaceutical companies, biotechnology companies, hospital laboratories, government laboratories and the chemical industry. The broad base on which the major is structured does not limit employment to pharmaceutical or biotechnology options and also allows students to compete for positions requiring a knowledge of chemistry, such as in the petrochemical industry, wine industry, polymer industry, paint industry, etc. Graduates are also able to move on to graduate programs in the field, medical school or other professional schools.

MBC Professional Division Curriculum

Third Year

First Semester

MBC	3310	Medicinal Chemistry I	3
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I	3
Major Elective (Recommend BIOL 3010/3020) ¹			3-5
Major Elective (Recommend CHEM 3310) ¹			2-3

Second Semester

MBC	3320	Medicinal Chemistry II	3
MBC	3560	Physiological Chemistry II	3
PHCL	3720	Pharmacology II	3
Major Elective (Recommend CHEM 3360) ¹			2-3
Major Elective (Recommend MBC 3880) ¹			3
UT Core Requirement (Multicultural Studies)*			3

Fourth Year

First Semester

MBC	4710	Targeted Drug Design (fall)	or
MBC	4720	Advances in Drug Design (spring)	3

Major Elective (Recommend MBC 4880, or 4850, or 4870) ¹		3
Major Elective ¹		3
Major Elective ¹		3
Major Elective ¹		3
Major Elective ¹		3

Second Semester

MBC	4780	Practicum in Med. & Biol. Chem. ²	6-12
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¹ Electives to be chosen with faculty adviser from the MBC Electives list.

² Practicum can, as an alternative, be taken in the summer before the fourth year, allowing the student to graduate a semester earlier. If the practicum is taken in the fall of the 4th year, the listed courses will be taken in the spring. The practicum sites require students to have an average GPA of 3.0 in all chemistry courses (CHEM and MBC).

* Suggested sequence

MBC Electives

A total of 25 hours of course work must be selected from the list of elective courses below.

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	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	3
CHEM	4620	Inorganic Chemistry II	3
CHEM	4880	Advanced Laboratory III	2
CHEM	4980	Advanced Organic Chemistry	2
MBC	3800	Microbiology & Immunology	3
MBC	3880	Medicinal & Biological Chem. Lab	1-4
MBC	4300	Chemotherapy and Immunotherapy	3
MBC	4420	Neuroscience	2
MBC	4430	Biochemistry of Disease	2
MBC	4450	New Drug Development	2
MBC	4470	Advanced Immunotherapeutics	2
MBC	4480	Chemical Defense Mechanisms in Plants	2
MBC	4710	Targeted Drug Design	3
MBC	4720	Advances in Drug Design	3
MBC	4760	Biochemical Toxicology	2
MBC	4770	Molecular Modeling in Drug Design	3
MBC	4800	Quantitative Structure Activity Relationships	2
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	4700	Pharmacology III	3
PHCL	4720	Pharmacology IV	3
PHCL	4730	Toxicology I	3
PHCL	4750	Toxicology II	3
PHCL	4760	Toxicokinetics	3
PHCL	4770	Toxicological Risk Assessment	3
PHCL	4800	Human-Xenobiotic Interactions	3
PHCL	4850	Drug Disposition	2

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.

Career Opportunities: The breadth and depth of the program prepare students for a wide range of career opportunities. Graduates can work as drug analysts, manufacturing/production technologists, quality control inspectors, technical writers, sales representatives and research associates in the pharmaceutical industry, cosmetic industry, hospitals and university settings. Graduates can also move on to graduate studies in the field, medical school or other professional school.

PHAR Professional Division Curriculum

Third Year

First Semester

MBC	3310	Medicinal Chemistry I	3
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I	3
PHPR	3010	Pharmaceutical Calculations	2
PHPR	3070	Pharmaceutics I	4

Second Semester

MBC	3320	Medicinal Chemistry II	3
MBC	3560	Physiological Chemistry II	3
MBC	3800	Microbiology & Immunology	3
PHCL	3720	Pharmacology II	3
PHPR	3080	Pharmaceutics II	4

Summer between Third and Fourth Year

PHPR	4880	Practicum in Pharmaceutics	6-12
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Fourth Year

First Semester

CHEM	3310	Analytical Chemistry	2
PHCL	4150	Biopharmaceutics & Pharmacokinetics	4
PHCL	4700	Pharmacology III	3
		Pharmaceutics Electives ¹	2-3
		UT Core Requirement (Multicultural Studies)*	3

Second Semester

BIOL	3030	Cell Biology	3
BIOL	3040	Cell Biol. Lab	2
CHEM	3360	Analytical Chemistry Lab	2
PHCL	4720	Pharmacology IV	3
		General Electives ²	2-4

¹ To be chosen from the Pharmaceutics Electives list below.

² To be chosen from the General Electives list below.

* Suggested sequence

PHAR Electives

Pharmaceutics Electives (at least 2 hours)

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	3
PHPR	4910	Pharmacy Practice Problems	1-3
PHPR	4960	Honors Thesis Pharmacy Practice	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	4390	Genes and Proteins in Therapy	2
MBC	4450	New Drug Development	2
PHCL	4140	Interpretation of Pharmaceutical Data	3
PHCL	4850	Drug Disposition	2

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

Pharmacology/Toxicology Major (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.

Career Opportunities: This major prepares students to work as a pharmacologist and toxicologist in the biomedical industry, pharmaceutical industry, nutritional industries, environmental conservation and pollution control, scientific civil service, governmental agencies, forensic sciences and research institutes. Graduates can also work as sales representatives or move on to graduate studies in the field, medicine, veterinary medicine and in most biomedical fields.

PTOX Professional Division Curriculum

Third Year

First Semester

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

Second Semester

MBC	3320	Medicinal Chemistry II	3
MBC	3560	Physiological Chemistry II	3
PHCL	3720	Pharmacology II	3
PHCL	3810	Pharmacology & Toxicology Lab ²	1
Major Elective (Recommend PHCL 4750) ¹			3
UT Core Requirement (Multicultural Studies)*			3

Fourth Year*First Semester*

MBC	4710	Targeted Drug Design (fall)	or
MBC	4720	Advances in Drug Design (spring)	3
PHCL	4700	Pharmacology III	3
Major Elective ¹			3
Major Elective ¹			3
Major Elective ¹			3
Major Elective ¹			3

Second Semester

PHCL	4780	Practicum in Pharmacology/Toxicology ³	6-12
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¹ To be chosen with faculty adviser from the PTOX Electives list.

² Required for practicum and only offered in spring.

³ If the practicum is completed in the summer before the 4th year, student can graduate a semester earlier.

* Suggested sequence

PTOX Electives

A total of 24 hours of course work must be selected from the list of elective courses below.

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
MBC	3800	Microbiology & Immunology	3
MBC	4300	Chemotherapy and Immunotherapy	3
MBC	4340	Contemporary Natural Remedies	2
MBC	4410	Nutrition in Health and Disease	2
MBC	4420	Neuroscience	2
MBC	4430	Biochemistry of Disease	2
MBC	4450	New Drug Development	2
MBC	4470	Advanced Immunotherapeutics	2
MBC	4480	Chemical Defense Mechanisms in Plants	2
MBC	4710	Targeted Drug Design	3
MBC	4720	Advances in Drug Design	3
MBC	4760	Biochemical Toxicology	2
MBC	4770	Molecular Modeling in Drug Design	3
MBC	4800	Quantitative Structure Activity Relationships	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	4710	Pharmacology - Toxicology Seminar	3
PHCL	4720	Pharmacology IV	3
PHCL	4730	Toxicology I	3
PHCL	4750	Toxicology II	3
PHCL	4760	Toxicokinetics	3
PHCL	4770	Toxicological Risk Assessment	3
PHCL	4800	Human-Xenobiotic Interactions	3
PHCL	4850	Drug Disposition	2
PHCL	4900	Hrs Seminar Pharmacology/Toxicology	3
PHCL	4910	Problems in Pharmacology/Toxicology	1-3
PHCL	4960	Honors Thesis Pharmacology/Toxicology	5

Pharmacy Administration (PHAM) Major

Pharmacy Administration focuses on the corporate and managerial aspects of the pharmacy profession. Students earn a minor in business administration, or professional sales, or both in addition to the B.S.P.S. degree. The business minor options under this major are: business administration minor option; professional sales minor option; business administration minor and professional sales minor option; business administration minor and M.B.A. track option; and professional sales/business administration minors and M.B.A. track option. With one year of additional graduate study, students in the two M.B.A. track options could receive a master of business administration degree.

Career Opportunities: Pharmaceutical sales is one of the fastest growing careers in the country. The pharmacy administration major prepares students for careers in pharmaceutical sales, and management positions in the pharmaceutical industry, corporate and retail pharmacy offices, pharmacy education, government agencies and health care administration. Students are encouraged to pursue graduate studies in business or pharmacy administration.

PHAM Professional Division Curriculum:

There are five options for this major.

Business Administration Minor Option**Third Year***First Semester*

BUAD	1020 or CMPT	1100 or placement ¹	0-3
BUAD	2060 or MATH	2630 or 2600 or equiv.	3
ECON	1150	Principles of Macroeconomics	3
MBC	3310	Medicinal Chemistry I	3
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I	3

Second Semester

BUAD	2040	Financial Acct. Info. ²	3
BUAD	3010	Principles of Marketing ²	3
MBC	3320	Medicinal Chemistry II	3
MBC	3560	Physiological Chemistry II	3
PHCL	3720	Pharmacology II	3

Summer between Third and Fourth Year

PHPR	4780	Practicum in Pharmacy Administration	6-12
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Fourth Year*First Semester*

BUAD	2050	Acct. for Bus. Decision-making ²	3
BUAD	3030	Manage. & Behav. Process in Orgs ²	3
BUAD	3040	Prin. of Financial Management ²	3
PHCL	4700	Pharmacology III	3

Second Semester

PHPR 4550	Analysis of Pharm. Environment ³	3
Minor Elective ⁴		3
Minor Elective ⁴		3
UT Core Requirement (Multicultural Studies)*.....		3

¹ This requirement will be waived with a passing score on the Microcomputer Placement test, which is available at www.business.utoledo.edu.

² A grade of C or higher is required for the minor.

³ PHPR 4520, MKTG 3880 or MKTG 4540 may be taken as an alternative.

⁴ Choose from business administration minor requirements listed by the College of Business Administration.

* Suggested sequence

Professional Sales Minor Option**Third Year***First Semester*

BUAD 2060 or MATH 2630 or 2600 or equiv.....		3
ECON 1150	Principles of Macroeconomics.....	3
MBC 3310	Medicinal Chemistry I.....	3
MBC 3550	Physiological Chemistry I.....	3
PHCL 3700	Pharmacology I.....	3

Second Semester

BUAD 2040	Financial Acct. Info.....	3
BUAD 3010	Principles of Marketing ¹	3
MBC 3320	Medicinal Chemistry II.....	3
MBC 3560	Physiological Chemistry II.....	3
PHCL 3720	Pharmacology II.....	3

Summer between Third and Fourth Year

PHPR 4780	Practicum in Pharmacy Administration.....	6-12
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Fourth Year*First Semester*

BUAD 2050	Acct. for Bus. Decision-Making.....	3
BUAD 3030	Manage. & Behav. Process in Orgs.....	3
PHCL 4700	Pharmacology III.....	3
PSLS 3440	Sales ¹	3
PSLS 3450	Acct. & Territory Management ¹	3

Second Semester

BUAD 3040	Prin. of Financial Management.....	3
PHPR 4550	Analysis of Pharm. Environment ²	3
PSLS 3080	Purch. & Busi. Rela. Mgmt ¹	or
PSLS 4710	Sales Force Leadership ¹	3
PSLS 4740	Advanced Sales ¹	3
UT Core Requirement (Multicultural Studies)*.....		3

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

² PHPR 4520, MKTG 3880 or MKTG 4540 may be taken as an alternative.

* Suggested sequence

Business Administration Minor and Professional Sales Minor Option**Third Year***First Semester*

BUAD 2060 or MATH 2630 or 2600 or equiv.....		3
CMPT 1100	or equiv. or placement test ¹	0-3
ECON 1150	Principles of Macroeconomics.....	3
MBC 3310	Medicinal Chemistry I.....	3
MBC 3550	Physiological Chemistry I.....	3
PHCL 3700	Pharmacology I.....	3

Second Semester

BUAD 2040	Financial Acct. Info. ²	3
BUAD 3010	Principles of Marketing ²	3
MBC 3320	Medicinal Chemistry II.....	3
MBC 3560	Physiological Chemistry II.....	3
PHCL 3720	Pharmacology II.....	3

Summer between Third and Fourth Year

PHPR 4780	Practicum in Pharmacy Administration.....	6-12
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Fourth Year*First Semester*

BUAD 2050	Acct. for Bus. Decision-Making ²	3
BUAD 3030	Manage. & Behav. Process Orgs. ²	3
PHCL 4700	Pharmacology III.....	3
PSLS 3440	Sales ²	3
PSLS 3450	Account & Territory Management ²	3

Second Semester

BUAD 3040	Prin. of Financial Management ²	3
PHPR 4550	Analysis of Pharm. Environment ³	3
PSLS 3080	Purch. & Busi. Rela. Mgmt. ²	or
PSLS 4710	Sales Force Leadership ²	3
PSLS 4740	Advanced Sales ²	3
Non-western Multicultural Studies* (IBUS 3150) ⁴		3

¹ This requirement will be waived with a passing score on the Microcomputer Placement test, which is available at www.business.utoledo.edu.

² A grade of C or higher is required for the minors.

³ PHPR 4520, MKTG 3880 or MKTG 4540 may be taken as an alternative.

⁴ If IBUS 3150 is not taken for non-western multicultural studies, students should take BUAD 2070 for the double minors.

* Suggested sequence

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

BUAD 1020 or CMPT 1100 or placement ²		0-3
BUAD 3030	Manage. & Behav. Process in Orgs.....	3
ECON 1150	Principles of Macroeconomics.....	3
MBC 3310	Medicinal Chemistry I.....	3
MBC 3550	Physiological Chemistry I.....	3
PHCL 3700	Pharmacology I.....	3

Second Semester

BUAD 2040	Financial Acct. Info.....	3
BUAD 2060 or MATH 2630 or 2600 or equiv.....		3
MBC 3320	Medicinal Chemistry II.....	3
MBC 3560	Physiological Chemistry II.....	3
PHCL 3720	Pharmacology II.....	3

Summer between Third and Fourth Year

PHPR 4780	Practicum in Pharmacy Administration.....	6-12
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Fourth Year*First Semester*

BUAD 2050	Acct. for Bus. Decision-Making.....	3
BUAD 2070	Appl. of Stats in Bus. Deci. Making.....	3
BUAD 3010	Principles of Marketing.....	3
PHCL 4700	Pharmacology III.....	3

Second Semester

BUAD	3020	Principles of Mfg. & Service Systems.....	3
BUAD	3040	Prin. of Financial Management.....	3
PHPR	4550	Analysis of Pharm. Environment.....	or
PHPR	4520	Pharmacy Management & Marketing.....	or
MKTG	3880	Mktg. Rsch. & Data-Based Mgmt.	or
MKTG	4540	Business Marketing.....	3
UT Core Requirement (Multicultural Studies)*.....			3

¹ This 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. Students who have satisfied all graduate admissions requirements and prerequisites will complete 33 semester hours at the 6000 graduate level for the M.B.A. at The University of Toledo.

² This requirement will be waived with a passing score on the Microcomputer Placement Test, which is available at www.business.utoledo.edu.

* Suggested sequence

Professional Sales/Business Administration Minors and M.B.A. Track Option¹

Third Year*First Semester*

BUAD	3030	Manage. & Behav. Process in Orgs.....	3
CMPT	1100	or equiv. or placement test ²	0-3
ECON	1150	Principles of Macroeconomics.....	3
MBC	3310	Medicinal Chemistry I.....	3
MBC	3550	Physiological Chemistry I.....	3
PHCL	3700	Pharmacology I.....	3

Second Semester

BUAD	2040	Financial Acct. Info.....	3
BUAD 2060 or MATH 2630 or 2600 or equiv.			3
BUAD	3010	Principles of Marketing.....	3
MBC	3320	Medicinal Chemistry II.....	3
MBC	3560	Physiological Chemistry II.....	3
PHCL	3720	Pharmacology II.....	3

Summer between Third and Fourth Year

PHPR	4780	Practicum in Pharmacy Administration.....	6-12
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Fourth Year*First Semester*

BUAD	2050	Acct. for Bus. Decision-making.....	3
BUAD	2070	Appl. of Stats in Bus Decision-making.....	3
PHCL	4700	Pharmacology III.....	3
PSLS	3440	Sales.....	3
PSLS	3450	Acct. & Territory Management.....	3

Second Semester

BUAD	3040	Prin. of Financial Management.....	3
PHPR	4550	Analysis of Pharm. Environment ³	3
PSLS	3080	Purch. & Busi. Rel. Mgmt.....	or
PSLS	4710	Sales Force Leadership.....	3
PSLS	4740	Advanced Sales.....	3
UT Core Requirement (Multicultural Studies)*.....			3

¹ This track will enable students to fulfill most of the prerequisites for the M.B.A.

program, except one course BUAD 3020, with grades of C (2.0) or higher in all BUAD and PSLS 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. Students who have satisfied all graduate admissions requirements and prerequisites will complete 33 semester hours at the 6000 graduate level for the M.B.A. at The University of Toledo.

² This requirement will be waived with a passing score on the Microcomputer Placement test, which is available at www.business.utoledo.edu.

³ PHPR 4520 may be taken as an alternative.

* Suggested sequence

Note: The student is responsible for the correct selection of the program of study each semester and for the fulfillment of the requirements given here. Although advisers will assist wherever possible, the final responsibility rests with the student. The College of Pharmacy reserves the right to change its policies and procedures at any time. These changes will be binding on the date they are approved by faculty action. Courses taken at other colleges of pharmacy will not substitute for professional division pharmacy courses. The only pharmacy courses a preprofessional student is permitted to take through the College of Pharmacy are PHPR 1000, PHPR 2010, PHCL 2600 and PHCL 2620. Only students admitted to the professional division will be allowed to take 3000- or 4000-level courses in the college.

Doctor of Pharmacy Degree Requirements

Following admission to the professional division, the entry-level Pharm. D. program students will complete a B.S.P.S. prior to admission to the graduate portion of the program. Students in the entry-level Pharm.D. track who have completed the B.S.P.S. at The University of Toledo with a 3.0 GPA for their professional division courses are eligible for admission to the graduate portion of the Pharm.D. program.

A formal preadmission decision to the graduate portion of the Pharm.D. program will be made at the end of the fall of the fourth year while in the professional division. The final decision is contingent upon completion of the B.S.P.S. degree, normally with a minimum GPA of 3.0 in third and fourth year pharmacy courses. In order to graduate with the doctor of pharmacy degree, students must maintain a minimum of a 3.0 GPA with no grade lower than a C (2.0) in graduate courses as required for all graduate students.

Only students who successfully complete the Pharm.D. degree will qualify for state board licensure in the practice of pharmacy.

A total of 137 semester hours is required for graduation with the B.S.P.S. - Pharm.D. track degree. Eligible students then may matriculate into the graduate portion of the Pharm.D. degree (see above statement). The curriculum is outlined below.

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	Mathematics for the Life Sci. I.....	4
PHPR	1000	Orientation.....	1
UT Core Requirement (ENG 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	Mathematics for the Life Sci. II	3
UT Core Requirement (ENG 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
PHPR	2010	Intro to Patient Care	2
PHYS	1750	Introduction to Physics or equiv	4
UT Core Requirement (PSY 1010 or SOC 1010)*			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 Multicultural Studies Core Curriculum requirement.

Third Year**First Semester**

MBC	3310	Medicinal Chemistry I	3
MBC	3550	Physiological Chemistry I	3
PHCL	3700	Pharmacology I	3
PHPR	3010	Pharmaceutical Calculations	2
PHPR	3070	Pharmaceutics I	4
PHPR	3510	Pharmaceutic Dimensions of Hlth Care Sys	3

Second Semester

MBC	3320	Medicinal Chemistry II	3
MBC	3560	Physiological Chemistry II	3
MBC	3800	Microbiology & Immunology	3
MBC	3850	Microbiology & Immunology Lab	1
PHCL	3720	Pharmacology II	3
PHPR	3080	Pharmaceutics II	4
PHPR	3940	Early Practice Development*	1

Fourth Year**First Semester**

MBC	4300	Medicinal Chemistry III	3
PHCL	4150	Biopharmaceutics & Pharmacokinetics	4
PHCL	4700	Pharmacology III	3
PHPR	3940	Early Practice Development*	1
PHPR	4400	Human Interaction in Healthcare	2
PHPR	4410	Professional Practice Development I	3
PHPR	4430	Pathophysiology and Pharmacotherapy (PPT): Introduction	1

* Some students will take PHPR 3940 in the fall; others will take it in the spring.

Second Semester

PHCL	4720	Pharmacology IV	3
PHPR	4420	Professional Practice Development II	3
PHPR	4440	PPT: Immunology	2
PHPR	4450	PPT: Renal	3
PHPR	4520	Pharmaceutical Management and Marketing	3
UT Core requirement (Humanities/Fine Arts)			3

Note: At the end of the fourth year, students are candidates for a B.S. degree in pharmaceutical sciences leading toward a Pharm.D. degree.

Subsequent Graduate Courses in the Pharm.D. Program

First Semester: Summer between Fourth and Fifth Year

PHCL	5140	Interpretation of Pharm. Data	2
PHPR	6210	Introduction to Research Methods	2
PHPR	6940	Early Practice Exposure	2

(PHPR 6940 will consist of 80 hours of pharmacy practice)

Second Semester: Fall Semester-Fifth Year

PHPR	6160	Advanced Applied Pharmacokinetics	3
PHPR	6230	Patient Care Rounds I	3
PHPR	6420	PPT: Cardiology	4
PHPR	6430	PPT: Pulmonary	3
PHPR	6440	PPT: Infectious Disease	4

Third Semester: Spring Semester-Fifth Year

PHPR	6240	Patient Care Rounds II	3
PHPR	6250	Self Care	3
PHPR	6370	PPT: Nutrition	1
PHPR	6490	PPT: Hematology/Oncology	3
PHPR	6510	PPT: Poison Management	1
PHPR	6550	Management Topics for Clinical Practice	2
PHPR	6610	Seminar I	1
PHPR	8390	PPT: Gastroenterology	2
Graduate Professional Electives			2

Fourth Semester: Summer between Fifth and Sixth Year

PHPR	6380	PPT: Endocrinology	2
PHPR	8260	Jurisprudence & Ethics for Pharmacy	1
PHPR	8470	PPT: Rheumatology	1
PHPR	8480	PPT: Neurology and Psychiatry	3
PHPR	8500	PPT: Geriatrics and Pediatrics	2
PHPR	8620	Seminar II	1
PHPR	8640	PPT: Capstone	2
Graduate Professional Electives			3

Fifth Semester: Fall Semester-Sixth Year

PHPR	8630	Seminar III	2
PHPR	8940:001	Clinical Clerkship I	4
PHPR	8940:002	Clinical Clerkship II	4
PHPR	8940:003	Clinical Clerkship III	4
PHPR	8940:004	Clinical Clerkship IV	4

Sixth Semester: Spring Semester-Sixth Year

PHPR	8940:005	Clinical Clerkship V	4
PHPR	8940:006	Clinical Clerkship VI	4
PHPR	8940:007	Clinical Clerkship VII	4
PHPR	8940:008	Clinical Clerkship VIII	4

Note: At the end of the sixth year, students are candidates for a Pharm.D. degree.

Pharm.D. Graduate Professional Electives

The following is a list of recommended professional electives. Other electives may be chosen with the written approval of a faculty adviser.

MBC

MBC	5100/ 7100	Research Practices in Medicinal Chemistry	1
MBC	5380	Medicinal & Poisonous Plants	3
MBC	5620/ 7620	Biochemical Techniques	2

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MBC	6100/ 8100	Advanced Immunology.....	2
MBC	6190/ 8190	Advanced Medicinal Chemistry	4
MBC	6200/ 8200	Biomedical Chemistry	4
MBC	6420	Protein Chemistry/CHEM 6510/8510.....	2 or 4
MBC	6430/ 8430	Nucleic Acid Chemistry/CHEM 6530/8530.....	2 or 4
MBC	6440/ 8440	Enzymology/CHEM 6520/8520	2 or 4
MBC	6750/ 8750	Bioorganic Chemistry: Chemical Approaches to Enzymes.....	3
MBC	6800/ 8800	Methods in Biotechnology	3

PHCL

PHCL	5300	Selected Topics in Pharmacology	2
PHCL	5730	Toxicology I.....	3
PHCL	5750	Toxicology II.....	3
PHCL	5760	Toxicokinetics	3
PHCL	5900	Drug Disposition.....	2
PHCL	5990	Problems in Pharmacology	1 to 6
PHCL	6150	Advanced Pharmacokinetics.....	2
PHCL	6600	Seminar in Pharmacology	1
PHCL	6770	Toxicological Risk Assessment.....	3

PHPR - Administration

PHPR	5990	Problems in Pharmacy Practice	1 to 6
PHPR	6530	Research Methods in Pharmacy Practice.....	3
PHPR	6600	Seminar in Administrative Pharmacy	1
PHPR	6810	Hospital Pharmacy Administration	3
PHPR	6820	Selected Topics in Hospital Pharmacy.....	3
PHPR	6830	Advanced Community Pharmacy Administration	3
PHPR	6840	Selected Topics in Community Pharmacy	3
PHPR	6980	Special Topics	1 to 5

PHPR - Industrial

PHPR	5680	Parenteral Manufacturing.....	2
PHPR	5690	Dosage Form Design.....	3
PHPR	5710	Selected Topics in Pharmaceutical Technology.....	2 to 3
PHPR	5720	Pharmaceutical Rate Processes.....	3
PHPR	5990	Problems in Pharmacy Practice	1 to 6
PHPR	6950	Seminar in Industrial Pharmacy.....	1
PHPR	6980	Special Topics	1 to 5

PHPR - Clinical

PHPR	6800	Monitoring Therapy	1
PHPR	6980	Special Topics	1 to 5

College of Pharmacy Faculty

Department of Medicinal and Biological Chemistry

Paul W. Erhardt, 1994, professor
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Department of Pharmacology

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