Western University of Health Sciences

College of Pharmacy

Doctor of Philosophy in Biotechnology and Pharmaceutical Sciences (PhD-BPS)
2024/2025 Catalog

Response to Global and Local Disasters

The contents of this 2024-2025 catalog reflect standard operating conditions for the academic year. However, global pandemics and local disasters may result in a rapidly changing environment for higher education, and Western University of Health Sciences will respond to those changes in the interest of the health and well-being of all our students, faculty, staff, and administration. These changes may supplement and supersede any inconsistent provisions found in this Catalog, and published using typical communication channels, including mail, email, publication to the university web site, press releases, and other channels as deemed appropriate.

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College of Pharmacy

Doctor of Philosophy in Biotechnology and Pharmaceutical Sciences (PhD-BPS)

Accreditation

Western University of Health Sciences is accredited by the WASC Senior College and University Commission (WSCUC). WSCUC's statement of accreditation status can be found at https://www.wscuc.org/institutions/western-university-of-health-sciences/. You may contact WSCUC at 985 Atlantic Avenue, Suite 100, Alameda, CA 94501. Phone: (310) 748-9001, Fax: (310) 748-9797, or by visiting https://www.wscuc.org/contact/. WSCUC is a non-profit organization that evaluates the quality and educational effectiveness of schools, colleges, and universities. WSCUC is one of six regional accreditation agencies in the United States. While it is not officially regulated by the government, it is regularly reviewed by the US Department of Education and the Council for Higher Education Accreditation.

Complaints Regarding WSCUC Accreditation Standards

Western University of Health Sciences is committed to meeting and exceeding the standards for accreditation of colleges and universities as described by the Accrediting Commission for WASC Senior College & University Commission (WSCUC). It is the policy of Western University of Health Sciences that a student, employee, or other constituent of the University that believes that the University may not be in compliance with the standards of accreditation has a right to file a complaint. The complaint submission process can be accessed through the following link:
https://www.wscuc.org/resources/comments/.

General Information

Program Mission & Goals

The mission of the PhD-BPS program is to produce biotechnologists and pharmaceutical scientists who discover and advance scientific knowledge that leads to improved human health and quality of life.

The following are the programmatic goals:

- To build a quality student body
- To deliver a unique and innovative curriculum consisting of focused coursework and advanced research training that prepare students for careers in biotechnology and pharmaceutical sciences
- To contribute to the advancement of science and the understanding, prevention, and treatment of disease

Program Overview

A minimum of 73 semester credit hours is required for completion of the PhD-BPS program. This includes 25 credit hours of didactic study and 48 hours of research credits, leading to a dissertation. The program emphasizes research in biotechnology and pharmaceutical sciences.

Program Faculty

Program faculty are members of the Department of Biotechnology and Pharmaceutical Sciences in the College of Pharmacy. Their areas of research emphasis include pharmacology, physiology, pharmaceutics, pharmacokinetics, drug metabolism, pharmacogenomics, molecular immunology, cancer immunology, immunotherapy, virology, antimicrobial agents, neuroscience, neuropharmacology, pharmaceutical formulation and drug design.

Personal Competencies for Admission and Matriculation

A candidate for admission to the PhD-BPS program must possess, or be able to achieve through a reasonable accommodation, certain intellectual, social, behavioral, and physical abilities, that would enable the individual to acquire the knowledge and technical skills needed to complete program curriculum and formulate a culminating dissertation within their specific field of study. Upon matriculation to the program, the student must continue to possess, or be able to achieve through a reasonable accommodation, the personal competencies outlined below throughout their progression in the program. Graduates of the program are eligible for a myriad of possible futures including postdoctoral training, working in the pharmaceutical and biotech sectors, working in academia, or pursue a professional degree. As a result, it is expected that students have the intellectual ability to learn, integrate, analyze, and synthesize numerical, visual, and textual information within the field of biotechnology and pharmaceutical sciences. They should also be able to effectively and accurately integrate this information and communicate it via oral and written means.

The PhD-BPS program requires the performance of specific essential functions that fall into the broad skill categories, which include but are not limited to the areas below. For candidates or students who require a reasonable accommodation to meet the competencies outlined below, please contact the Harris Family Center for Disability and Health Policy (^{HF}CDHP) at Disability Accommodations (e-mail) or (909) 469-5297 or visit the ^{HF}CDHP web site.

Under all circumstances, a candidate or student will be expected to perform the following in a reasonably independent manner, with or without a reasonable accommodation:

Intellectual and Cognitive Abilities

A candidate or student is expected to demonstrate abilities in measurement, reasoning, analysis, and synthesis of acquired data and knowledge.

Communication

A candidate or student is expected to demonstrate oral and written communication skills, which include generating clear articulations of their research and formulating scientific arguments.

Collaboration

A candidate or student is expected to demonstrate the ability to participate in an inclusive learning community such as working within a team amongst other students and laboratory staff.

Laboratory and Research Experience

A candidate or student is preferred to have prior hands-on laboratory experience.

Ethical Standards

A candidate or student is expected to demonstrate the ability to reason through ethically questionable situations

Admissions Policies and Procedures

Non-Discrimination, Anti-Harassment and Non-Retaliation Policy

In accordance with all applicable federal, state, and local laws, Western University of Health Sciences (WesternU) is committed to ensuring a campus community free from unlawful discrimination. Accordingly, WesternU prohibits unlawful discrimination on the basis of race, color, national origin ancestry, citizenship, ethnicity, creed, religion or religious creed, sex or gender (including gender identity), marital status, sexual orientation, disability (both physical and mental) including HIV and AIDS, medical condition (cancer and genetic characteristics), pregnancy (which includes childbirth, breastfeeding and medical conditions related to pregnancy, childbirth or breastfeeding), age, genetic information, military and veteran status, or any other characteristic protected under applicable law, in the administration of its programs or activities. WesternU also prohibits unlawful harassment, including Sexual Harassment (see below pertaining to Sexual and Gender-Based Harassment, Interpersonal Violence, and other Sexual Misconduct (SIM) policy and procedure). Lastly, WesternU is committed to providing equal access to and equal opportunities to all members of its campus community, and applicants, in accordance with all applicable laws.

WesternU also prohibits any form of retaliation against a person, who under good faith, reported a violation under the policy or who participated in any investigation or proceeding under the policy. Violations of the policy will lead to prompt and appropriate administrative action, including and up to termination of employment or expulsion from the University.

Reasonable Accommodation for Disabilities

Candidates and students must be able to perform all the essential functions of the program with or without reasonable accommodation. A student who discloses a disability and requests accommodation will be referred to the ^{HF}CDHP. The student will be asked to provide documentation of the disability for the purpose of determining appropriate accommodations. The College of Pharmacy will provide reasonable accommodations, but is not required to make modifications that would substantially alter the nature or requirements of the program. A student with questions regarding reasonable accommodation can contact the ^{HF}CDHP office.

Application Requirements

Graduates with a Bachelor of Science or Arts degree in chemistry, biology, pharmacy, or a related scientific area are eligible for application.

Minimum criteria to receive consideration for admission are as follows. Meeting these criteria, however, does not guarantee admission into the program. All admissions decisions are considered final and not subject to appeal.

- A completed WesternU Graduate Application form (including all supplemental information for international applicants).
- Official transcripts of all undergraduate and graduate coursework.
- Cumulative GPA of 3.00 or greater on a 4-point scale.

- Personal Statement (500 words or less) describing (1) their educational background, (2) their areas of interest in biotechnology and pharmaceutical sciences, and (3) additional information that would strengthen the application, such as achievements or overcoming adversity.

- Three letters of reference from individuals who are familiar with the applicant's scholarship and research potential.

- All applicants submitting course work from foreign universities are required to pass English language requirements before they are eligible for financial assistance. A minimum score of 89 on the internet Based TOEFL (iBT) or 6.5 on the IELTS is recommended. Only scores less than 2 years old from the application deadline will be considered.

Application Deadline

Applications must be received (including all supporting application materials) no later than December 15 for the fall semester start of the program.

Applicants with Foreign Coursework

Applicants who wish to use coursework completed outside the United States must submit their transcripts for evaluation to a WesternU Approved Service at the candidate's expense. A course-by-course evaluation is required, and all coursework must be designated as undergraduate, graduate or professional. WesternU only honors evaluations from an approved service. The official evaluation must be included with the supplemental application packet.

International Students

International students and any other applicants who are not U.S. citizens and who are living in the U.S. must provide proof of legal U.S. residency upon matriculation. For detailed information, please visit our web page for https://www.westernu.edu/international/http://www.westernu.edu/international-welcome.

Transfer of Credits

Graduate level credits in which the student has earned "B" or higher grade from an equivalent program from another accredited U.S. university may be honored on a case-by-case basis for students transferring into WesternU. Applicants that have earned the MSBPS degree from WesternU may receive credit for most, if not all coursework. The Director of Graduate Education (program director) and the Graduate Program Committee (GPC) must approve all transfer of credits. The decision of the Program is final.

Transferability of Courses Taken at WesternU

Whether WesternU course credits transfer to another institution is at the complete discretion of the institution to which you may seek to transfer. Acceptance of the degree or certificate you earn at WesternU is also at the complete discretion of the institution to which you may seek to transfer. Further information regarding the transferability of courses taken at WesternU can be found in the University catalog.

Admission Deferment

Applicants who have been admitted to the PhD-BPS program and have not matriculated may defer their admission status for one year (to the next admission cycle), subject to approval from their respective dissertation advisor. They are required to reapply if the one-year mark has passed.

Registration

All WesternU students are required to register by the registration deadlines specified by the University Registrar. Registration dates are posted on the Registrar's Office website. Failure to register by the deadline may be grounds for administrative withdrawal. All students registering after the posted deadline will be assessed a $30.00 per business day late fee.

Full tuition and fees and all prior debts must be paid in full on or by posted deadlines each academic year. Matriculation is subject to the satisfactory completion of all academic requirements and payment of all outstanding debts to the University. The receipt of the final transcript(s) from all colleges/universities attended and a physical examination with documentation of required immunizations (if applicable) prior to registration are additional requirements for incoming students.

Registration Late Fee Appeals

If you are assessed late fees for a registration period, you may submit an appeal to the Registrar. For additional information on the appeal process, please see the Registration Late Fees page on the Registrar's Office website.

Student Health Insurance Requirement

All full-time students at WesternU are required to have active health insurance while enrolled. All students are automatically assessed half of the entire year's insurance premium and will be enrolled in the student health insurance plan until they submit proof of coverage that meets the University's requirements. For additional information on student health insurance requirements and/or waiving out of the student health insurance plan, please see the Student Health Insurance page on the Registrar's Office website.

New Student Orientation/Welcome Week

There is a New Student Orientation/Welcome Week at the beginning of the fall term. New students must be on campus for the first day of the orientation unless prior approval by the GPC is granted due to extenuating circumstances.

Continuous Registration

Students are required to maintain continuous registration until all requirements for the degree have been met, including defense and publication of Dissertation.

Student Initiated Changes in Enrollment Status

Course Drop/Withdrawal

Students may voluntarily drop a class by working with the program director and completing the necessary paperwork. Course drops are processed as follows:

0-20% of Course Completed (Based on Course Start/End Dates)	Course is removed from student's registration and will not appear on student's academic transcript.
20-99% of Course Completed (Based on Course Start/End Dates)	Course is assigned a grade of 'W' to indicate the student withdrew from the course. 'W' grades will appear on the student's academic transcript, but will not be included in the student's GPA calculation.
100% of Course Completed (Based on Course Start/End Dates)	Course is assigned the grade earned.

Leave of Absence

A student may request a Leave of Absence (LOA) with the occurrence of a medical emergency or illness, personal issues, financial hardship, or military service. For additional information on requesting a Leave of Absence, please see 'Student Initiated Changes in Enrollment Status' in the University Catalog, General Academic Policies and Procedures section.

Withdrawal from University/Academic Program

Matriculation at the University is a privilege granted in consideration of specified levels of performance and of maintaining the established standards of scholarship and personal and professional conduct. The University reserves the right to require withdrawal at any time it deems necessary to safeguard its standards of scholarship, conduct, and orderly operation. The student concedes this right by act of matriculation. For additional information on withdrawing from the PhD-BPS program, please see 'Student Initiated Changes in Enrollment Status' in the University Catalog, General Academic Policies and Procedures section.

Full-Time/Half-Time Status

All students enrolled in at least four credit hours of coursework are considered full-time students in the PhD-BPS program. Students enrolled in 0.5 – 3.99 credit hours of coursework are considered half-time students in the PhD-BPS program. The PhD-BPS is a full-time program and requires full-time continuous registration. Intention for part-time registration can be made to the program director at least 30 days prior to the registration deadline for consideration. Permission for half-time registration is not guaranteed and is handled on a case-by-case basis.

Time Limits

The requirements for the degree must be fulfilled within seven (7) years from the date of matriculation to the program. Students wishing to extend their stay into the seventh year must be in good academic standing as described in the Standards of Academic Progress section and have demonstrated satisfactory engagement and progression in their dissertation project. Approval to remain in the program for the seventh year is not guaranteed.

For the seventh year, students must agree to a graduation plan with the program. The plan is designed to set clear expectations, define tasks to be completed, and set deadlines for program completion and graduation by the end of the seventh year. The plan must be approved by the faculty advisor, the Dissertation Advisory Committee, and the program director no later than 45 days before the start of the

seventh year in the program. Failure to meet agreed-upon expectations, tasks, and deadlines will be considered a violation of academic standards, and the student would be referred to the Graduate Student Performance Committee (GSPC) for appropriate administrative action, up to and including dismissal or administrative withdrawal from the program.

Students who are unable to meet the 7-year time limit for the PhD-BPS program and/or who are not approved to remain in the program for the seventh year may be referred to the Graduate Student Performance Committee (GSPC) for appropriate action, up to and including administrative withdrawal. For further information related to the GSPC, including the review process, see Evaluation of Student Academic Performance (Academic Hearing Process) section.

Tuition and Fees

In estimating costs for one academic year of study in the PhD-BPS program, you should include tuition and fees, books and supplies, room and board, and other miscellaneous expenses. By action of the Board of Trustees, PhD-BPS tuition and fees for the 2024/2025 academic year (subject to change) are as follows:

Institutional Fees

$893.00	Per Credit Hour
$350.00	Graduation Fee

Non-institutional Fees

$30.00	Registration Late Fee (Per Business Day)
$50.00	Late Payment Fee (Per Month)
$470.00	Annual Parking Permit (Automobile)
$235.00	Annual Parking Permit (Motorcycle)
$40.00	Locker Key Replacement Fee
$10.00	Official Transcript (Each)*
$11.75	Official PDF Transcript (Each)*
$21.00	Rush Transcript, First Class Mail (Each)*
$25.00	Rush Transcript, Federal Express (Each)*
$10.00	Student ID Replacement Fee
$TBD	Breakage Fee (Replacement Cost)

*Does not include National Student Clearinghouse (NSC) processing fee

Financial Support

Financial support, which includes a stipend in the form of a teaching assistantship and full payment of tuition, is available to qualified applicants on a limited and competitive basis. Support is for 12 months (including summers) and is limited to six years for any student. Students may also receive a travel stipend, which allows for travel to a national meeting, and research supplies funds.

Computer Requirement

All students enrolled in the PhD-BPS program are required to have a laptop computer for academic and research activities. Laptop specifications can be found at https://support.westernu.edu - Laptop Requirements

General Academic Policies and Procedures

Protocol for Input on Matters of Student Concern

When an issue or dispute arises between students, the issue/dispute resolution process starts with communication among the involved students. If a satisfactory resolution is not arrived at that level, the matter should then be addressed with the faculty advisor. If the problem is not resolved at the faculty advisor/course director level, the matter should be brought to the appropriate college's Student Affairs personnel, then the College Dean, or Dean's designee. If the matter has not been resolved at those levels, the final arbiter is the Provost.

When an incident arises involving a student and faculty member, the first step in the issue/dispute resolution process is discussion with the faculty member. If the matter is not satisfactorily resolved at that level, then the matter should be referred to the program director and department chair, then Dean, or Dean's designee, in that order. The final arbiter is the Provost. Please note that grade appeals cannot be handled under this protocol.

When an incident arises involving a student and staff member, the dispute resolution process begins with the Supervisor/Department Chair followed by the Dean, or Dean's designee. The Office of Human Relations is the final arbiter.

Failure to follow this sequence of steps will only serve to delay the appropriate resolution of the issue or dispute as the matter will only be referred back to the correct level in this chain of responsibility.

Attendance and Absences

Attendance is required at all scheduled instructional periods and for satisfying research expectations. Absence from instructional periods for any reason does not relieve the student from responsibility for the material covered during the periods missed.

Vacation and Emergencies

Students receive two weeks' vacation each year during winter recess. Under special circumstances, a student may arrange a brief 1-3 days off at the discretion of the program director and their faculty advisor in advance. It is the program director's and faculty advisor's prerogative whether to grant the time off and is not guaranteed. All decisions related to time-off requests, under this policy, are final and not subject to appeal. Students must submit a time off request at least 3 weeks prior to their time off dates. The form must be approved by the program director, their faculty advisor, any course instructors, and the Student Services Coordinator.

Emergencies, including health conditions or serious personal/family issues, which result in less than 15 academic days (three calendar weeks) away from campus, may be granted upon approval by a student's faculty advisor and the program director. Documentation demonstrating the emergency is required and must be provided to the program director and faculty advisor no later than the day of return to the program. Any missed course material is the responsibility of the student, and students may be required to complete alternative assignments, at the discretion of course faculty.

Students with emergencies resulting in more than 15 academic days (three calendar weeks) away from campus must apply in writing for a LOA to the appropriate College Dean or their designee. Please see the

University Catalog's "Student Initiated Changes in Enrollment Status" for more specific information on a LOA.

Qualifying Exam

Students are required to pass the qualifying exam in order to advance to candidacy and proceed with completing their dissertation and remaining degree requirements. To be eligible to participate in the qualifying exam, students must have successfully completed their required pre-candidacy coursework (PHSC 5001-5500, four credits of PHSC 6000, and at least fifteen credits of PHSC 7999 or an equivalent research based course), and be in good academic standing as described in the Standards of Academic Progress section below. Thus, in most cases, the qualifying exam will take place in the summer between the second and third years in the program). Requests for delaying the qualifying exam can be submitted by the student to the program director, and the decision will be made by the program director and the GPC on a case-by-case basis. The qualifying exam will consist of two components: a knowledge component assessing the material covered in the required coursework, and a research grant component. The research grant component requires students to write a small grant application (data optional), perform an oral presentation and defend the project. The research component will be evaluated by the Dissertation Advisory Committee. To pass the qualifying exam, students must pass the knowledge component, and the written, oral presentation, and defense component of the grant application.

Students entering the program with a master's degree will be required to take the qualifying exam at the first possible opportunity upon completing all required pre-candidacy coursework but no earlier than six months after entering the program (to allow sufficient time to write the grant application).

If the qualifying exam is not passed, students will have an opportunity to remediate the failed component(s) by retaking a knowledge test or a second attempt to the research component within four months from the initial date of the qualifying exam. Failure to pass the remediation of the qualifying exam will lead the student to receive a terminal Master of Arts degree in Biotechnology and Pharmaceutical Sciences and depart the program without the opportunity to continue in the PhD-BPS program.

Dissertation

The dissertation will be based on a research project that the student will undertake in the PhD-BPS program. The faculty advisor will help the student select a topic and mentor the student in their progress. Completion of the dissertation will require a dissertation proposal presentation (oral presentation) to the dissertation advisory committee mid-way through the dissertation process (third year in the program or within one year of advancing to candidacy). The dissertation proposal will require preliminary data, hypotheses, and aims for the completion of the dissertation. Subsequent dissertation reviews by the Dissertation Advisory Committee is optional and may be initiated/requested by the students or the advisor. The dissertation defense will occur upon completion of the dissertation project. The defense will consist of an oral presentation of the completed project followed by a defense of project to the dissertation advisory committee.

Students are allowed two opportunities to defend their dissertation. In case of an unsatisfactory initial dissertation defense, the Dissertation Advisory Committee will provide a detailed list of areas within 10 working days from the date of the initial dissertation defense needing improvement/remedy. The student is expected to work with their advisor to prepare for the remediation. The defense remediation must occur no later than one year from the date of the initial defense, so long as the maximum duration of stay in the program is not breached. The student will be referred to the GSPC for review and may be subject to dismissal from the program if satisfactory completion is not achieved during the second dissertation defense.

Upon satisfactorily passing all requirements, students must submit their dissertation to WesternU's library depository CONTENTdm. Submitting to CONTENTdm will make students' dissertation available on the Internet and to everyone associated with WesternU.

In order to submit a dissertation to CONTENTdm, the dissertation must be completed and approved by the Dissertation Advisory Committee. If published figures are incorporated into a dissertation, students need to obtain permission from the published sources and cite the figures appropriately within the figure legends.

Once these steps have been taken, students must turn in the electronic PDF file of the dissertation including a dissertation signature page signed by all members of the Dissertation Advisory Committee, and a signed WesternU Publishing Agreement form to the graduate program Student Services Coordinator, who will send the electronic dissertation to CONTENTdm, the Dean, or Dean’s designee, and all members of the Dissertation Advisory Committee.

Faculty Advisor and Dissertation Advisory Committee

The faculty advisor serves as the Chair of the student’s Dissertation Advisory Committee, and helps the student in their choice of electives and research projects/dissertation topic. Further, the advisor may also assist the student in obtaining a research assistantship if funds are available. The Chair is responsible for the satisfactory academic progress of the student and may hold committee meetings with the student on a regular basis.

Each student will be assigned a faculty advisor prior to admission to the program and must remain with that advisor for the duration of the degree program. The Dissertation Advisory Committee consists of at least four members (the faculty advisor,two other faculty members, and an outside member). The Chair and at least two of the committee members must be full-time faculty in the Program of Biotechnology and Pharmaceutical Sciences.

Standards of Academic Integrity, Professionalism, and Student Conduct ("Standards of Student Conduct")

The University Standards of Academic Integrity, Professionalism, and Student Conduct, can be located in the University section of the catalog. Students are expected to be aware of, and abide by, both University and College policies.

Evaluation of Student Conduct (Student Conduct Hearing Process)

For a full account of the hearing process applicable to allegations of the Standards to Student Conduct and associated College conduct policies and procedures, please refer to "Information for Students about Hearings Involving Alleged Violations of the Standards of Conduct", located in the General Section of the University Catalog.

Standards of Academic Progress

Only grades in WesternU courses approved for graduate credit will be used in determining the overall grade point average (GPA) for continuation in the PhD-BPS program. If, at the end of any semester, the cumulative GPA falls below 3.00, the student will be placed on academic probation, and financial support may be discontinued. A 2.00 ("C") grade earned in any class may be applied toward graduation only if the cumulative GPA at the time of application for graduation continues at a minimum 3.00 ("B"). Any grade below a 2.00 ("C") may not be applied toward graduation. Students must maintain a cumulative GPA of 3.0 or higher and have successfully completed non-graded (CR/NCR) courses to be in good academic standing.

Ad-Hoc Graduate Student Performance Committee

The GSPC is an *ad-hoc* committee that can be activated by the GPC to: (1) recommend policies and standards for students' academic performance; (2) review student performance and professional conduct, and advise, as appropriate; and (3) review all cases involving grade appeals and allegations of student misconduct. All policy recommendations from the GSPC are forwarded to the GPC and reported to the Department Committee; all recommendations concerning academic or disciplinary action are forwarded to the Dean or Dean's designee.

Evaluation of Student Academic Performance (Academic Hearing Process)

An issue related to student academic performance can be brought forward by faculty, student, or staff and reported to the program director. Upon receipt of the report and supporting material, the program director will review the issue and forward the case to the GPC. The GPC will consider the report and determine whether the case warrants activation of the GSPC, according to GSPC roles and responsibilities as described in this catalog. If the case/issue involves the program director, they will be recused, and the department Chair will serve in place of the program director.

The GSPC will review the report and the supporting material provided and may require further fact-finding of additional material as needed from all parties involved. In the event fact-finding is needed, the student will be provided an opportunity to submit a written response pertaining to the matter.

Upon the referral of a matter to the GSPC, the GSPC will provide the student with an opportunity to present their perspective on the academic performance issue.. The GSPC, as part of their review of a student matter, may call, individually and separately, at their discretion other relevant parties as part of their review process.

All recommendations of the GSPC will be made in writing to the program director (or department Chair when needed due to recusal of the program director) and shared with the GPC. In consultation with the GPC, the program director will decide on the matter. If the decision involves administrative withdrawal or dismissal from the program, the program director will forward a recommendation to the Dean of the College of Pharmacy, or their designee, who will make a decision and inform the student in writing, typically within five working days of receipt of recommendations. The Dean, or their designee, may schedule a meeting with the student before making a final decision. All efforts must be made to consider the case in a reasonable timeline, not to exceed twenty working days from the beginning to the final decision, whenever possible.

Graduation

A student will be recommended for the PhD-BPS degree provided they:

1. Are not on probation and have completed all prescribed academic requirements with a cumulative GPA of 3.00 or above and have no outstanding grade of “I”, “NCR,” or “U”. A 2.00 (C) grade earned in any class may be applied toward graduation only if the overall GPA at the time of application for graduation continues at a minimum 3.00 (B) cumulative GPA.

2. Have satisfactorily completed and orally defended a written dissertation.

3. Have completed the HSRT-N Assessment.

4. Have demonstrated no serious deficiencies in ethical, professional, or personal conduct, as defined in University Catalog, “General Academic Policies and Procedures” section, which would make it inappropriate to award the PhD-BPS degree.

5. Have complied with all the legal and financial requirements of the University as stated in the University Catalog.

6. Have attended in person and participated in the Commencement ceremony at which time the PhD-BPS degree is conferred. Unless special permission has been granted by the Dean, or their designee, each student must participate in their respective commencement ceremony. Requests for excusal will only be granted for extenuating circumstances, such as a prior military commitment.

Students may participate in commencement activities provided they will complete all requirements of the program by December 31 of that calendar year. No student will receive their degree until the student has completed all requirements for graduation. Degrees will be dated as appropriate to completion date.

Adverse Actions

Academic Probation

The program director on behalf of the College Dean, or Dean's designee, may place students on academic probation for the following reasons (these are in addition to the reasons listed in the Satisfactory Academic Progress section of the University Catalog):

1. Inadequate academic progress as determined by the GPC or the GSPC. This includes, but is not limited to, receiving a "U" grade in any course or system.

2. A cumulative GPA below 3.00.

A student on academic probation for receiving a grade of "U" or for a cumulative GPA less than 3.00 will be removed from academic probation after one semester provided, they have regained a cumulative GPA of at least 3.00 and/or have remediated the failed course.. Students on academic probation must remove themselves from all leadership roles in co-curricular activities associated with the University and/or with professional associations. Decisions related to the imposition of academic probation and any associated terms/conditions of such probation are considered final and not appealable to the Provost (See University Catalog, Student Appeal Process).

Conduct Probation

The program director on behalf of the College Dean, or Dean's designee, subject to the Student Conduct Hearing Process, may place students on conduct probation due to a failure to perform in a professional manner and/or serious deficiencies in ethical or personal conduct. A student on conduct probation due to unprofessional, unethical, or personal conduct issues will be removed from conduct probation when the specified terms of conduct probation are met. Students on conduct probation must remove themselves from all leadership roles in co-curricular activities associated with the University and/or with professional associations

Course Remediation

A student who has taken all course assessments but has received a grade of "U" for a course, will be permitted to remediate by way of taking a cumulative exam at a date determined by the GPC. The remediation exam must be taken within six (6) months from the date of the official grade submission of the course to the Registrar's Office. The remediation exam must be passed (>= 70%) for the "U" grade to be replaced by a "C" grade. Failure to pass the remediation exam will make a student eligible for dismissal from the Program. In such cases, a failure to pass the remediation exam will result in a referral to the GSPC for appropriate review and action.

Financial Aid Warning Policy (Title IV and Title VII)

Academic Probation Policy

If a student is not making Satisfactory Academic Progress (SAP) they will be placed on "Financial Aid Warning" status for the next payment period and continue to receive financial aid for that period. Financial Aid is any financial assistance offered to the student for paying for their education, such as loans,

scholarships, Federal Work-Study, Grants and stipends (based on the criteria of the stipend). Students who fail to make SAP by the end of that payment period lose financial aid eligibility.

It is the policy of the Financial Aid Office (FAO) that once a student has been placed on academic probation for not meeting SAP standards as defined by the College, the Financial Aid Office will automatically place the student in a Financial Aid Warning status. During the next academic term if the student does not meet SAP standards and the College places the student on academic suspension the student will no longer be eligible for financial aid. If the student appeals the academic suspension and the appeal is approved, financial aid will be reinstated. If the student is directed to audit courses, those courses will not be charged tuition for the audited courses. Students that are required to repeat coursework are encouraged to meet with a financial aid counselor with respect to their financial aid eligibility.

Conduct Probation Policy

If a student has been placed on conduct probation by their College, the Financial Aid Office (FAO) will be informed and the student will be placed on "Financial Aid Warming" status as per FAO policy.

The financial aid warning for a conduct probation is a status that is assigned to the student who fails to meet the College's standards for professional/personal conduct, as defined by the College. If the student does not meet the College's professional/personal conduct standards and the College places the student on conduct suspension the student will no longer be eligible for financial aid. Financial Aid is any financial assistance offered to the student to pay for their education, such as loans, scholarships, Federal Work-Study, Grants, and stipends (based on the criteria of the stipend). If the student appeals the conduct suspension and the appeal is approved, financial aid will be reinstated.

Students are encouraged to meet with a financial aid counselor with respect to their financial aid eligibility.

Tutorial Assistance Program

A Tutorial Assistance Program (TAP) has been established to assist students experiencing academic difficulty or desiring content support. It is free to all students. Students can be recommended for this program by any faculty member or may self-identify to TAP to receive assistance. Tutors are experienced students who are in good academic standing and are identified through an on-line application process as well as faculty/staff recommendation. Group tutoring is the methodology most used by the TAP. To receive TAP services during a semester, students first must have a LEAD counseling appointment during the semester. For more information on academic counseling and the TAP program, contact the Office of Learning Enhancement and Academic Development (LEAD).

Conduct Suspension

A conduct suspension is a period of time when a student is barred from enrollment in an academic program because of a violation of applicable University or College conduct policies, as implemented through the procedures outlined in the University Catalog. A student may not receive financial aid during any time of suspension.

Summary Suspension

Actions that threaten or endanger, in any way, the personal safety, and/or well-being of self or others, or that disrupt or interfere with the orderly operation of the College or University are cause for immediate

disciplinary action. Either the University President, SVP/Provost, or Dean,or Dean's designee, has the authority to summarily suspend a student when the student admits to guilt or when, in the opinion of these entities, such action is appropriate to protect the health or safety of any individual, or to preserve the orderly operation of the University. Further details regarding the summary suspension action can be found in the University Catalog.

Dismissal

If the cumulative GPA remains below a 3.00 in the subsequent term after being placed on academic probation, the student will be dismissed from the program. The PhD-BPS program is a research and dissertation based program that places heavy emphasis and importance on student research training, aptitude, and progression. Thus, students who receive a No-Credit (NCR) grade for the PHSC 7999 (Research and Dissertation) course will be dismissed regardless of GPA or academic standing in the program.

Appeal Process

Students may appeal decisions regarding suspension, student conduct, academic progression/promotion, and graduation according to the regulations listed in the Student Appeal Process section of the University Catalog.

Evaluation and Grading

Program Learning Outcomes

1. Demonstrate in-depth knowledge of basic concepts and research in biotechnology and pharmaceutical sciences.
    - PhD-BPS graduates will demonstrate knowledge of the interdisciplinary field of Biotechnology and Pharmaceutical Sciences including drug target discovery, design of new drugs, drug delivery, pharmacodynamics, and pharmacokinetics.

2. Critically evaluate research methodology and findings of studies within biotechnology and pharmaceutical sciences.
    - PhD-BPS graduates will evaluate evidence through proper interpretation of data and by making logical and appropriate inferences.

3. Apply biotechnology and pharmaceutical science research methodology and advance research within a self-selected area of expertise in their own research projects.
    - PhD-BPS graduates will demonstrate research skills specific to their field of study.

4. Communicate biotechnological and pharmaceutical science concepts and research findings through oral and written presentations.
    - PhD-BPS graduates will demonstrate oral and written communication skills, which includes public speaking, generating clear presentations, and writing their research dissertation and manuscripts.

5. Demonstrate effective teamwork.
    - PhD-BPS graduates will work within a team as demonstrated through course work and working with their advisor on their dissertation project.

6. Conduct research adhering to standards for ethical and responsible research, and reason through ethically challenging situations.
    - PhD-BPS graduates will demonstrate ethical conduct and be able to reason through ethically questionable situations related to their scientific field.

Grading Scale

Final course grades are given based upon the traditional 4-point letter system, as follows:

Grade	Equivalent	GPA Points
A	Excellent	4.00
B	Good	3.00
C	Satisfactory	2.00
U	Unsatisfactory	0.00
CR	Credit	N/A
NCR	No Credit	N/A

ADMINISTRATIVE GRADES

Grade	Equivalent	GPA Points
AU	Audit	N/A
I	Incomplete	N/A
W	Withdrawal	N/A
M	Missing	N/A

Audit

An "AU" (Audit) is assigned to a student who pays tuition for the course and attends class activities but does not complete examinations and does not receive course credit. However, under certain circumstances, at the discretion of the College Dean, or Dean's designee, a student who is repeating or undergoing remediation may be required to complete course examinations and/or other required work products while auditing the course for no grade.

Missing Grades

A grade of "M" for Missing will be input by the Office of the Registrar if a student's grade is not available by the deadline for grade submission. An "M" grade is not included in the GPA calculation and will be replaced by the grade earned in the course once submitted by the course director/instructor. "M" grades should not be used by the program in place of an Incomplete ("I") grade.

Incomplete

An "I" grade will only be assigned to students whose professional commitments and/or personal responsibilities prevent them from completing the requirements of the course. A student may remove an "I" grade by completing course requirements within the following six calendar months or the final grade will be permanently recorded as a "U". This rule applies regardless of the student's enrollment status. A student not enrolled during the following six months must still successfully remove the "I" grade. The instructor must certify any grade changes.

Grade Reports

Official grades are turned in to the Registrar from the Departmental Office, at which time the online student records system, Self-Service, is updated. Official grade reports and unofficial transcripts will be available on the Self-Service student records system throughout the academic year.

Appealing a Course Grade

Within five (5) working days from the receipt of the course grade, the student may appeal the grade in writing to the Dean of the College of Pharmacy, or Dean's designee. The Dean or Dean's designee, has the authority to make a decision regarding the appeal. The Dean, or Dean's designee, may request input from appropriate sources related to the course grade, including course facilitator, instructor(s), faculty, and/or appropriate committees. The Dean, or Dean's designee, will inform the student of their decision in writing within ten (10) working days from the time the appeal was submitted to the Dean, or Dean's designee. Dean's, or Dean's designee's, decisions related to grades are considered final and not appealable to the Provost (See University Catalog, Student Appeal Process).

Credit Hour Calculation

The PhD-BPS program awards one credit hours for every 15 hours of lecture or 30 hours of workshop/discussion/laboratory work.

Curriculum Organization

To graduate, students are required to complete a minimum of 73 credit hours, which includes PHSC 6000 Graduate Seminar each semester (see the list of required courses listed below).

Required Courses

Subject/Course #	Course Title	Credit Hours
PHSC 5001	Principles of Biomedical Ethics	1.00
PHSC 5002	Scientific Writing	1.00
PHSC 5201	Pharmacodynamics, Pharmacokinetics, & Pharmacogenomics	3.00
PHSC 5202	Pharmaceutics & Nanotechnology	3.00
PHSC 5203	Biotechnology	3.00
PHSC 5500	Biostatistics	2.00
PHSC 6000	Graduate Seminar (every semester)	≥8 x 1.00
Various Course #s	Electives	≥ 4.00
PHSC 7999	Research & Dissertation	≥48.00
	Total Required Credit Hours:	**73.00**

Elective Courses

Subject/Course #	Course Title	Credit Hours
PHSC 7100	Biomedical Sciences	2.00
PHSC 7101	Advanced Pharmacokinetics	2.00
PHSC 7102	Biomolecular Simulation and Drug Design	2.00
PHSC 7103	Neuropharmacology	2.00
PHSC 7104	Immunology	2.00
PHSC 7105	Drug Targets	2.00
PHSC 7106	Product Development	2.00
PHSC 7500	Special Topics in Biotechnology and Pharmaceutical Sciences	1.00 - 4.00

Continuous Registration

Subject/Course #	Course Title	Credit Hours
PHSC 7999A	Research & Dissertation Continuation	0.50

Course Descriptions

All courses are awarded letter grades, except when indicated otherwise.

PHSC 5001 Principles of Biomedical Ethics (1 credit hour)
This course consists of three topics within modern biomedical ethics. First, the course will survey the various moral philosophies that are used in society as well as the biomedical enterprise. Second, the course will utilize a small group format to discuss medical scenarios to tease apart ethical approaches and the conflict between various ethical theories. Lastly, the course will continue in the small group format to discuss research ethics and use real cases to examine the role that ethics and ethical theories play in laboratory science. Students are also expected to explore their own ethical philosophy and articulate this philosophy in line with the traditional philosophies that will be discussed in class. *Prerequisite: None*

PHSC 5002 Scientific Writing (1 credit hour)
Having the ability to communicate your research effectively and clearly through written prose is an essential skill for all scientific researchers. This course is designed to teach students the fundamentals of the writing process as well as the ability to successfully construct a thesis/dissertation, grant application, or manuscript. The course is a combination of lectured content, including discussion of the main key components of these various documents, such as introduction/background, methods, results, and discussion, as well as written assignments that will be graded by peers as well as the course facilitator. *Prerequisite: None*

PHSC 5201 Pharmacodynamics, Pharmacokinetics, & Pharmacogenomics (3 credit hours)
This course exposes students to fundamental principles underlying pharmacokinetics, pharmacodynamics, and pharmacogenomics. Specifically, students will learn about drug absorption, distribution, metabolism, and excretion (ADME), also known as “what the body does to a drug”. As well as generic mechanisms of drug action (dynamics), also known as “what the drug does to the body”. Lastly, the course will explore how ADME and dynamics are altered by the genomics of a patient. The topics in this course are to prepare students for advanced study in the field of biotechnology and pharmaceutical sciences. *Prerequisite: None*

PHSC 5202 Pharmaceutics & Nanotechnology (3 credit hours)
Pharmaceutics and Nanotechnology will cover topics in physical pharmacy, pre-formulation, formulation of basic and advanced drug delivery system designs. Specific topics such as thermodynamics, drug stability and solubility, protein, peptide formulations, liposomal and polymer-based nanotechnology products development will be covered extensively. *Prerequisite: None*

PHSC 5203 Biotechnology (3 credit hours)
This course will emphasize the principles and applications of modern biotechnology. The first half will focus on fundamental concepts, including the structures of DNA, RNA, proteins, and cells, and the mechanisms of transcription, translation, and protein expression and purification. The second half will concentrate on the applications of biotechnology in pharmaceutics, such as monoclonal antibody therapeutics, nucleotide therapeutics, gene editing and delivery, mRNA vaccines, immune cell engineering, and cancer immunotherapies. Upon completing this course, students should have developed a solid understanding of the fundamentals and applications of biotechnology, particularly in research and the development of pharmaceutical and medical therapies. *Prerequisite: None*

PHSC 5500 Biostatistics (2 credit hours)

This course is designed to provide fundamental principles of experimental design suitable for students in the biotechnological and pharmaceutical sciences. The fundamentals of experimental design consist of formulating a testable hypothesis, developing various measurement strategies, ethical treatment of research subjects, validity, experimental and correlational research strategies, decision making in data collection and data interpretation. *Prerequisite: None*

PHSC 6000 Graduate Seminar (1 credit hour, CR/NCR)
Students enrolled in Graduate Seminar will present a journal article of their or their advisor's choosing to the department once during the semester. The presentation follows the format of a one-hour plenary session at scientific meetings. To get credit for the course the students must evaluate each presentation. Students are expected to read the articles and be prepared to ask questions of the presenter. *Prerequisite: None*

PHSC 7100 Biomedical Sciences (2 credit hours)
This course provides an introduction to Biomedical Sciences by focusing on the foundations of genetics, cell biology and organ system biology that are part of modern biomedical research. In addition, the course introduces different aspects of the pathology of diseases by exploring how diseases develop within a human. *Prerequisite: PHSC 5203*

PHSC 7101 Advanced Pharmacokinetics (2 credit hours)
This course introduces the student to the kinetic processes by which drugs are absorbed, distributed, and eliminated from the body, and to the mathematical methods of describing and quantitating these processes. These concepts will be used for the understanding of the factors which can influence the utilization profile of a drug. The design and implementation of pharmacokinetic studies and the analysis and interpretation of the data obtained will be emphasized. *Prerequisite: PHSC 5201.*

PHSC 7102 Biomolecular Simulations and Drug Design (2 credit hours)
Contemporary drug design and discovery draw upon many disciplines, requiring students to possess knowledge of chemistry, physics, molecular biology, pharmacology, and computer science. This course is tailored for graduate students majoring in biotechnology and pharmaceutical sciences, aiming to consolidate concepts and strategies in computational drug design. While addressing the thermodynamics principles underlying various methods, the course will emphasize practical aspects of molecular dynamics simulations, employing enhanced sampling algorithms and machine learning strategies. The hands-on training sections on molecular dynamics simulations and python notebook will be particularly beneficial for students seeking to leverage computer-based methods to boost their research productivity or to develop skills applicable to pharmaceutical industry R&D. *Prerequisite: None.*

PHSC 7103 Neuropharmacology (2 credit hours)
This course is designed to enable students to understand how drugs alter neuronal communication and how these events lead to a change in behavior or alter the physiological state. Students in particular will learn about the role of different neurotransmitter/neuropeptide systems, their receptor types, drugs interacting with the neurotransmitter/neuropeptide systems, receptor/drug-mediated signal transduction, and the effects of drugs in addiction and other neuropsychiatric disorders. *Prerequisite: PHSC 5201.*

PHSC 7104 Immunology (2 credit hours)

This course is designed to enable the students to understand basic principles of immunology and apply this knowledge to better immunotherapy development and the importance of immunology in biotechnology and pharmaceutical sciences. *Prerequisite: None.*

PHSC 7105 Drug Targets (2 credit hours)
This elective course is focused on the different types of drug targets that can be found within the human body, their signaling mechanisms, and how they regulate physiological processes. In addition, the control of their function by currently prescribed medications and how they are used to treat disease will be discussed. Scientific literature will be incorporated within the course to highlight potential new receptors that can be targeted in the future to more effectively a variety of pathophysiological conditions. *Prerequisite: PHSC 5201.*

PHSC 7106 Product Development (2 credit hours)
Pharmaceutical products range from conventional dosage forms such as tablets and capsules to more novel dosage forms such as nanoformulations and personalized formulations. Students in this didactic and laboratory-based course will engage with the teaching faculty to understand basic principles of product development and optimization (Design of Experiment, Quality by design etc.) and identify a product to be developed within the Pharmaceutics labs. Thereafter, students will conduct feasibility and optimization studies and develop a pharmaceutical product. The course will culminate with the writing of a product development paper in the manuscript style of a peer reviewed journal (TBD) and an oral presentation of findings. *Prerequisite: PHSC 5202.*

PHSC 7500 Special Topics in Biotechnology and Pharmaceutical Sciences (1-4 credit hours)
This course is designed to enable the students to understand advanced principles of their topic area through reading, analyzing and presenting research literature. *Prerequisite: as determined by course facilitator.*

PHSC 7999 Research & Dissertation (1-9 credit hours, CR/NCR)
In this course, students are expected to conduct mentor-guided research based on a conceptualized project. The mentor meets with the student on a regular basis to assess the progress of the laboratory research experiments and help guide the project. The student is expected to conduct literature search and evaluation based on their experimental work. Students will use the experimental findings to write a complete dissertation. The course is a pass/fail course. Final assessment occurs when the student presents their dissertation. *Prerequisite: None*

PHSC 7999A Research & Dissertation Continuation (0.5 credit hour, CR/NCR)
PHSC 7999A Research & Dissertation Continuation is a bridge between PHSC 7999 Research & Dissertation and completion of the PhD-BPS program. Students will take this course to satisfy enrollment requirements while completing their dissertation work after the sixth year in the program. *Prerequisite: PHSC 7999 Research & Dissertation.*

Honors and Awards

The following award is considered for presentation to PhD-BPS students annually:

Dean’ List

Academic Calendar

Fall 2024	
August 5, 2024	First Day of PhD-BPS Orientation Week
August 12, 2024	Fall Classes Begin
September 2, 2024	Labor Day – No Classes
October 14, 2024	Indigenous Peoples' Day – No Classes
November 11, 2024	Veterans Day Observed – No Classes
November 27, 2024	Thanksgiving Recess Begins @ 5:00 p.m.
December 2, 2024	Fall Classes Resume
December 20, 2024	Fall Classes End
December 21, 2024	Winter Recess Begins
Spring 2025	
January 6, 2025	Spring Classes Begin
January 20, 2025	Martin Luther King Jr. Day – No Classes
February 17, 2025	Presidents' Day – No Classes
March 24, 2025	Spring Break Begins
March 31, 2025	Spring Classes Resume
May 15, 2025	College of Pharmacy Commencement Ceremony
May 16, 2025	Spring Classes End