

Butler University
Pharmaceutical Sciences
Program



Student Handbook
2026-2027

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Pharmaceutical Sciences

Program Handbook, 2026 - 2027 Academic Year

BSPS Overview

The College of Health Professions at Butler University offers a bachelor's program in Pharmaceutical Sciences (BSPS). The Pharmaceutical Sciences major comprises 126 total credit hours. This program prepares students to be independent leaders in pharmaceutical sciences, equipping them with marketable and transferable skills, training, and practice in informatics (analytics tools), the application of genetics and genomics, precision medicine, a fundamental understanding of the pharmacological mechanisms of action of drugs, regulatory approvals, and drug delivery. Students will build a foundation to work in various pharmaceutical, biopharmaceutical, and biotechnology industry careers, pursue advanced degrees in pharmaceutical sciences, or seek professional healthcare degrees. The program stands out for its integration of pharmaceutical sciences with data analytics and its experiential education, which allows students to engage in on-the-job training through co-op positions, internships, or research experiences.

Butler's location in Indianapolis- a healthcare, biotech, and pharma hub- will provide ample opportunities for internships and experiential learning. You'll be well-prepared for jobs in pharma and biotech, regulatory agencies, marketing, clinical trials, or pursuing advanced degrees such as PhD, MD, PharmD, or PA.

Program Contact Information

Bachelor of Science in Pharmaceutical Sciences

Butler University College of Health Professions

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Indianapolis, IN 46208

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Introduction

As a student in the Pharmaceutical Sciences program, you'll be exposed to the latest advances in pharmaceutical sciences, AI, cheminformatics, bioinformatics, pharmaceuticals, and regulatory science through a curriculum that merges chemistry, biology, pharmacology, and informatics. You'll also be able to participate in undergraduate research in precision medicine, gene therapy, genomics, and more.

Mission

To inspire and empower undergraduate and professional students in the application of contemporary scientific principles for innovation, problem-solving, and decision-making and engage in research that shapes the future of the health sciences.

Pharmaceutical Sciences Student Learning Outcomes

PSLO 1: Integrate the principles of drug discovery, drug development, drug delivery, and drug approval to processes and data decisions in pharmaceutical sciences.

PSLO 2: Integrate the foundational principles and practice of data analytics in biology and chemistry related to pharmaceutical sciences.

PSLO 4: Effectively communicate to diverse audiences about potential topics and issues impacting informatics and pharmaceutical sciences.

PSLO 5: Apply professional, culturally sensitive, and ethical behaviors to decision-making and problem-solving to support personalized medicine and diminish health disparities.

PSLO 6: Demonstrate independent learning and self-awareness in experiential education.

PSLO 7: Formulate the research design process to examine scientific issues and assess appropriate decision-making and problem-solving approaches within the pharmaceutical sciences field.

Program of Study

The current curricula within the Bachelor of Science in Pharmaceutical Sciences with Informatics (PSI) have two distinctive components: one integrates Big Data tools into several

program courses, and the other focuses on experiential learning, either through research experiences with faculty or external internships for which students can receive elective credits.

Departmental Distinction and University Honors

University Honors

Qualifying students participating in the University Honors Program may earn the Latin Honors of Cum Laude, Magna Cum Laude, or Summa Cum Laude upon graduation. Details of the University Honors Program are located at <https://www.butler.edu/academics/honors/>

Departmental Distinction

Qualifying students within the BSPS program may earn graduation honors via departmental distinction. Qualification for departmental distinction is based on a combination of the following factors:

- Departmental (cumulative) GPA in required BSPS courses
- Departmental distinction exam results
- Successful completion of research that:
 - Is approved by an Institutional Review Board, if necessary
 - Is approved by the BSPS Department Distinction Committee or another department's corresponding distinction committee
 - Results in:
 - A reviewed presentation at a professional conference (may include the Butler Undergraduate Research Conference, the conference at the end of the Butler Summer Institute, or any appropriate professional conference in the area in which the research is conducted)
 - An approved thesis submitted as part of the University Honors Program to the Butler University Undergraduate Research Journal or a manuscript submission to any professional peer-reviewed journal in the respective discipline

Levels of Departmental Distinction

- *"In Pharmaceutical Sciences with Distinction"* may be awarded to individuals who have a GPA of at least 3.6 in their academic major at the time of graduation.
- *"In Pharmaceutical Sciences with High Distinction"* may be awarded to individuals who earn a GPA of at least 3.7 in their academic major AND pass a comprehensive departmental distinction exam OR complete approved research that is presented at a professional conference OR results in a thesis or manuscript submission.
- *"In Pharmaceutical Sciences with Highest Distinction"* may be awarded to individuals who earn a GPA of at least 3.8 in their academic major AND pass the departmental distinction exam AND complete research that results in a thesis or manuscript submission.

Research may be conducted within or outside the BSPS department. Students must submit a research proposal to the BSPS Departmental Distinction Committee if the research is not part of the University Honors Program or does not receive the necessary approvals through that process. If the research is being reviewed and conducted in another department on campus, that department's approval will be accepted by the Pharmaceutical Sciences department, and dual submission is not required; however, the BSPS Departmental Distinction Committee should be informed of this approval. All necessary ethical research and safety precautions must be taken if research is conducted through an outside organization. If approved by an IRB outside of Butler, a copy of that IRB approval must be submitted to the Departmental Distinction Committee. Suppose a research student is not listed as an author on a manuscript accepted for publication before graduation. In that case, a departmental thesis must be prepared, reviewed, and approved by their Butler mentor and a second Butler reviewer by the deadline to qualify for Highest Distinction.

Professional and Ethical Conduct

Anyone wishing to qualify for departmental distinction must complete a form either attesting that they have no conduct violations or disclose the outcome of any conduct violation that has been addressed at any University level, or any misdemeanor or felony conviction or pending charge. These will be reviewed on an individual basis. Individuals with severe conduct violations or violations related to academic dishonesty may be disqualified.

Academic Policies

University Policies

In addition to program-specific academic policies, all University academic and graduation policies apply. For detailed information on University academic probation, the course repeat policy, and other academic policies, see the Butler University Student Handbook Academic Policies section (<https://www.butler.edu/student-life/student-handbook/academic/>).

Refer to the policies outlined in the Butler Bulletin (<https://bulletin.butler.edu/>), particularly those regarding Graduation Requirements (<https://bulletin.butler.edu/content.php?catoid=3&navoid=191>). Keep in mind that a minimum of 45 credit hours of coursework must be completed at Butler to obtain a Butler undergraduate degree, with at least 30 of these hours being from the college that confers the undergraduate degree. Additionally, at least 40 hours of the total curriculum must consist of courses numbered at the 300 level or above.

Satisfactory Academic Progress within the BSPS program

Any student with a cumulative GPA below 2.0 will be placed on University probation. CHP students on University probation will be reviewed and monitored by the respective program's Academic Progression Committee for academic progress.

Students on academic probation are not eligible to graduate. Furthermore, students cannot graduate if they have an F, I, or X in any course required for a BSPS major, or if they have a pass/fail or noncredit/audit in a course that is typically graded.

All policies concerning academic performance and professional conduct specified in the CHP Student Handbook, including sanctions imposed by the Academic Progression Committee, will apply to BSPS students. (policy updated 2/16/2023)

Academic Dismissal from the BSPS Program

A student will be dismissed from the BSPS program for any of the following:

- Failure to satisfy probation stipulations.
- Earning a failing grade in the same course twice.

Appeals regarding dismissals or other academic or professional issues are governed by relevant CHP policies. Please refer to the CHP Student Handbook for more details.

BSPS Student Responsibilities

All BSPS students are expected to conduct themselves respectfully, be good University citizens, and act in accordance with federal and state laws, College, and the University student handbook (available at <https://www.butler.edu/student-life/student-handbook/>). They are expected to do their part to make this a safe and welcoming environment.

Additionally, all BSPS students are expected to:

- Communicate and interact respectfully and effectively with peers, professors, and other members of the Butler community.
 - Ask questions and seek assistance as appropriate.
 - Respond to professors, advisors, and peers promptly.
 - Make and keep appointments.
- Understand and appropriately utilize campus resources designed to improve student success, including but not limited to:
 - Your academic advisor within CHP
 - Pre-health advising services, if applicable to your career path
 - The Career and Professional Success Office (CaPS), <https://www.butler.edu/internships-careers/>
 - Student Success Center, <https://www.butler.edu/academic-services/student-success-center/learning/>
 - Well-being resources such as Health Services, Counseling and Consultation Services, Advocacy and Prevention Services, <https://www.butler.edu/well-being/>
 - If appropriate, Student Disability Services (SDS), <https://www.butler.edu/diversity-equity-inclusion/student-disability-services/>, for long-term or the Office of the Dean of Students for temporary disabilities
- Explore and discern your optimal career path and actively participate in professional development activities and opportunities provided.
 - Research and understand optimal preparation for your career path (i.e., what skillsets & experiences are necessary, internships/jobs, prerequisite coursework, standardized test preparation, certifications, research, etc.)
 - Network with professionals and connect with alumni
 - Personally track all professional development and experiential education activities
- When applicable, understand how (mis)conduct could impact professional certifications, licensure, graduate school admission, and future employment.

- Complete program, course, and instructor evaluations/surveys when asked, including the 6-month post-graduation survey.
- Report potentially unsafe situations to campus police.
- Accept responsibility for your decisions and actions.

Laboratory Safety Policy

These are the minimum safety requirements for our department- individual instructors may establish more stringent guidelines.

CLOTHING, ACCESSORIES, AND PERSONAL DEVICES

Clothing should protect you from accidental spills and splashes. Your clothing should cover the body from the neck to at least the knees. Laboratory coats should be always worn when conducting experiments. Shoes with closed toes and that cover the entire top of the foot are required. Heels are not recommended in the lab. Shorts, short skirts, crop tops, muscle shirts, and sandals (ESPECIALLY flip flops!) are unacceptable attire for laboratory. Pants, a shirt that completely covers the torso, and leather shoes provide the most protection. It is also a good idea to wear older clothing in the event of a chemical spill. There is always the possibility of ruining a favorite shirt or pants in the laboratory. Spatial awareness of hair and/or accessories should be considered when reaching over potentially chemically contaminated surfaces and addressed (*i.e. tie back long hair, roll up long sleeves, tuck in lanyards, etc.*). Avoid contaminating personal items or devices by taking measures to prevent inadvertent contact (*wipe off bench surfaces before placing personal items and remove gloves before using phones and laptops*).

EYE PROTECTION

No one should be in a laboratory, even as a casual visitor for only a "minute or two," without protection for the eyes. Safety glasses or goggles which are ANSI approved must be worn! Recent studies have indicated that there is no significant increase in risk for those people who wear contact lenses in the laboratory, so long as proper protective eyewear is worn. Please note that regular glasses do not provide adequate eye protection in the laboratory. All eye protection not purchased through our stockroom or bookstore must be approved by the faculty member for that laboratory as not all laboratories carry the same risks.

GLOVES

Appropriate gloves should be worn in the laboratory when handling hazardous or corrosive materials. Under no circumstance should anyone touch common spaces (*doorknobs, light switches, etc.*) while wearing gloves. If gloves must be worn outside of the lab, only one glove should be worn or someone with ungloved hands should accompany the transport. Gloves should be removed from the wrist outward as to turn the glove inside out and be properly disposed.

FIRE

Acetone, alcohol, ether, and hexane are some of the most commonly used solvents in the laboratory. They are all extremely flammable and therefore hazardous. In the event of a fire, immediately notify the faculty/staff in charge. Do not attempt to extinguish a large fire yourself. Leave the laboratory immediately and pull the fire alarm if instructed to do so by the instructor.

TRANSPORTATION OF CHEMICALS

Removal of chemicals from any laboratory is prohibited unless directed to do so by an instructor. All containers must remain closed when not in use and must be closed for transport. In order to properly transport chemicals outside of a laboratory, regardless of amount or type of compound, appropriate secondary containment is required to contain any breakage or spills. Corrosive compounds should be transported in an approved rubber bucket or closed wall plastic cart. Approved containers for all other compounds include: buckets; carts with closed walls to contain spills; compatibly-shaped transportation trays; original shipping boxes with all packing materials. Carrying chemicals in hallways using open containers, unsafe carts, etc. is unacceptable.

WORKING ALONE

Students may NEVER work alone in the laboratory without permission and supervision of a faculty or staff member. The supervising faculty member must be notified and available on campus for the duration of the shift. Working alone in the laboratory is only permissible by faculty/staff outside of normal working hours if another faculty/staff member or BUPD has been notified. It is the responsibility of the laboratory worker to convey the nature of the work and any hazardous substances that will be used.

UNATTENDED EXPERIMENTS

If operations involving hazardous substances are carried out with no one present, it is the responsibility of the worker to design procedures to prevent the release of hazardous substances in the event of interruptions in utility services such as electricity, cooling water, and inert gas. Lights should be left on and an official form which identifies the nature of the operation, the hazardous substances in use, and emergency shutdown procedures must be posted on the door. If appropriate, arrangements should be made for other workers to periodically inspect the operation.

Similarly, if unattended experiments require the use of running water, the worker should develop procedures to make sure the experiment is checked periodically for water leaking from the system.

FOOD IN THE LABORATORY

Eating, drinking, smoking, and the application of cosmetics, including lip balm, are strictly prohibited in the laboratory. Because chewing gum or tobacco is effectively eating, these products are not allowed in the laboratory. Bottles of water or cups of coffee are not permitted in the lab. These should be left outside of the laboratory or disposed of upon entering the lab. Food or drinks may not be stored in a refrigerator or ice machine located in the laboratory. In addition, glassware, utensils, or dishes intended for the consumption of food or drinks are prohibited in the laboratory. Washing of hands is mandatory before any person leaves the laboratory area.

LABORATORY BEHAVIOR and HOUSEKEEPING

No horseplay is allowed in the laboratory at any time. Furthermore, laboratory workers should never sit on the benches and coats, bags, etc., should not be stored on or under the lab benches due to the possibility of contamination with hazardous materials. Personal items must be stored in appropriate areas during lab such that the aisles remain clear and unobstructed. After an experiment, the benches must be cleaned and all trash should be disposed of in the appropriate waste receptacles.

CHEMICAL SPILLS

In the event of a chemical spill, the instructor should be consulted immediately for proper clean up. In the interests of housekeeping and safety, it is most appropriate when using an analytical balance (0.001 g or better), to weigh all chemicals by difference in a closed container. However,

a more important rule is that no chemicals are to be transferred to a container while the container is sitting on the balance pan. Any chemical spills on or around the balance pan must be cleaned immediately with a damp cloth, followed by a dry cloth.

CHEMICAL WASTE

Chemical waste should be placed into an appropriate inert container (usually glass) labeled with an appropriate Unwanted Material label. Containers with labels can be found in the stockroom. Compatibility of contents should be verified before disposal. All of the items that are placed into the unwanted material containers need to be indicated on the container label (see Labeling below). These containers need to be disposed of within one year of first use.

The disposal cart for unwanted material can be found in the stockroom or other satellite locations as identified by your professor.

SHARPS DISPOSAL

There are two main categories for sharps disposal: glass and needles. Broken glass that is not contaminated with hazardous chemicals should be placed in the cardboard “broken glass” containers, not in the trash! Broken glass that is contaminated with hazardous chemicals should be disposed of in a solid Unwanted Material container. Broken glass contaminated with biohazardous material should be sterilized before placement in a broken glass container. If you have questions about which container to use, ask your professor/supervisor. Needles should be placed into a designated sharps container (special red, plastic boxes). Be aware of the fill lines for these containers.

LABELING

All glassware or storage bottles containing chemicals must have a label which describes the contents of the container. Both concentration and identity information should be written on the label. Please discuss appropriate labeling with your instructor. Bottles containing unwanted material must be dated at the moment of first use with the date and year clearly indicated. In addition, unwanted material bottles must have a label that describes, using words and not symbols, the contents and the name of the faculty/staff member/room number (whichever is appropriate).

These containers need to be disposed of within one year of first use.

ELECTRICAL EQUIPMENT

Any electrical equipment must be returned to its original state after use. Cords should be removed from the outlet by pulling on the plug and not on the cord. Do not use any electrical equipment with frayed cords or exposed wires. Many instruments make use of high voltage and require specific training before use.

INSTRUMENTATION

Departmental instrumentation is to be used only after an individual has been trained on the proper operation of the instrument, as well as any specialized safety considerations (*strong magnetic field of NMR*). The instrument must be reset to its initial conditions after use and a log-book entry must be made for each use. Problems with any instrument should be reported immediately to an appropriate faculty/staff member.

SAFETY INFORMATION

Anyone using or being exposed to chemicals in a laboratory or storage space has the right to know and understand any and all known hazards associated with these chemicals. A Safety Data Sheet (SDS) provides this information in a 16-section standardized format. An SDS for a particular chemical may be accessed by many different means, including from the manufacturer's website, from a Google search, or from <http://www.sigmaaldrich.com/united-states.html>.