

# PHARMACEUTICAL SCIENCES, B.S.

The B.S. in Pharmaceutical Sciences **is not a major**, but is a milestone degree granted to current Doctor of Pharmacy (Pharm.D.) students while working toward the Pharm.D. degree. In order to qualify for the B.S. in Pharmaceutical Sciences, students must have attended UW–Madison prior to entering the School of Pharmacy, and must meet all degree requirements. More detailed information about this degree may be found on the school website (<https://pharmacy.wisc.edu/programs/pharmd/curriculum/bs-ps/>).

Information about our Doctor of Pharmacy program (Pharm.D.) can be found at <https://pharmacy.wisc.edu/programs/pharmd/>. The Pharm.D. is required to be eligible to take the North American Pharmacist Licensure Examination (NAPLEX) and be registered and licensed as a pharmacist.

Students interested in pursuing an **undergraduate** degree offered by the School of Pharmacy may want to investigate the B.S. Pharmacology and Toxicology (<http://guide.wisc.edu/undergraduate/pharmacy/pharmacy/pharmacology-toxicology-bs/>) program. This interdisciplinary major in the biomedical sciences can serve as a foundation for further education in graduate or professional degree programs, or for entry-level scientific employment.

## HOW TO GET IN

The B.S. in Pharmaceutical Sciences is a non-admitting milestone degree. Students earn this credential once degree requirements have been met while working toward their Doctor of Pharmacy (Pharm.D.) degree. For more information on how to apply, see the Doctor of Pharmacy Program's Admissions (<https://pharmacy.wisc.edu/academics/pharmd/#Admissions>).

## REQUIREMENTS

### UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetext>) section of the *Guide*.

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| General Education | <ul style="list-style-type: none"> <li>• Breadth—Humanities/Literature/Arts: 6 credits</li> <li>• Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits</li> <li>• Breadth—Social Studies: 3 credits</li> <li>• Communication Part A &amp; Part B *</li> <li>• Ethnic Studies *</li> <li>• Quantitative Reasoning Part A &amp; Part B *</li> </ul> |
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\* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

### MAJOR REQUIREMENTS

The bachelor's degree will be awarded once all Pharmaceutical Sciences major requirements are met, as well as the University General Education Requirements and other coursework totaling at least 120 credits.

Code	Title	Credits
ANAT&PHY 335	Physiology	5
PATH 404	Pathophysiologic Principles of Human Diseases	3
PHM SCI 432	Pharmaceutical Biochemistry	4
PHM SCI 420	Physicochemical Principles of Drug Formulation and Delivery	3
PHM SCI 421	Introduction to Biopharmaceutics and Pharmacokinetics	3
PHM SCI 531	Medicinal Chemistry I	3
PHM SCI 541	Pharmaceutical Calculations, Dispensing and Compounding	3
S&A PHM 411	Pharmacy in the Health Care System	3
S&A PHM 414	Social and Behavioral Aspects of Pharmacy Practice	3
PHARMACY 423	Pharmacy Integrated Learning Laboratory	1
PHM PRAC 426	Pharmacy Practice Experience I	1
PHM PRAC 461	Pathways in Pharmacy Practice	1
PHM PRAC 462	Professional Development and Engagement I- Developing Your Professional Identity	1
<b>Total Credits</b>		<b>34</b>

### ADDITIONAL NOTES

Foreign language coursework can count towards the "Humanities/Literature/Arts" gen ed requirement.

AP, IB, retro-credits, and credit-granting transfer coursework from other institutions (including coursework completed while in high school) all count toward the elective credit requirement.

### QUALITY OF WORK

Students must have a minimum 2.000 cumulative grade point average.

School of Pharmacy academic policies (regarding matters such as academic and professional conduct, academic progress/probation, honor

roll, pass/fail registration, and independent study coursework) are found in the PharmD student policy handbook.

resources involved in providing patient care; and patient-specific and population-based therapeutic outcomes.

## UNIVERSITY DEGREE REQUIREMENTS

**Total Degree** To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

**Residency** Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

**Quality of Work** Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

## LEARNING OUTCOMES

1. Drug factors. Apply knowledge of the physical, chemical, pharmacologic, and formulation properties of drugs and relate how these properties influence drug parameters (such as kinetics, pharmacodynamics, stability, dosage form design, and treatment-related outcomes). Differentiate among the major therapeutic drug classes based on mechanisms of action, clinical use and adverse effects, contraindications, drug interactions, dosage forms, and dosing regimens.
2. Patient factors. Collect, integrate and apply knowledge of a patient's biochemistry, anatomy, physiology, genomics, culture, socio-behavioral characteristics, and pathophysiologic states to develop an individualized patient care plan using drug factors that will improve therapeutic outcomes, minimize drug reactions, reduce adverse events, and increase adherence.
3. Drug kinetics. Design or modify dosage regimens using patient-specific or population pharmacokinetic data, plasma concentration-time profile of drugs, and factors that alter them.
4. Product preparation. Compound parenteral and non-parenteral drug products using appropriate calculations, pharmaceutical components, and techniques. Demonstrate a commitment to patient safety by assuring total accuracy in calculation, preparation, labeling and dispensing of prescription and medication orders.
5. Teamwork. Collaborate effectively with pharmacy colleagues, other healthcare professionals, scientists, and patients and/or their caregivers.
6. Health disparities. Identify causes of health disparities and incorporate principles of cultural awareness, sensitivity, and competence into plans to address these issues.
7. Professional awareness. Identify emerging health-related issues, products, and services and analyze their potential implications for: disease prevention and/or treatment services; management of human, physical, medical, information, and technological