

SCHOOL OF PHARMACY

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Website: <https://www.marshall.edu/pharmacy/>

The Marshall University School of Pharmacy strives to educate compassionate, ethical, and competent students to become innovative thinkers, problem solvers, and the future leaders of our profession. To accomplish these goals, the school has developed a curriculum that fuses local practice standards and vision to the evolving trends within our discipline. The school's vision of the skills, knowledge, and abilities required for the success of future pharmacists is central to its Pharm.D. curriculum.

3+4 Accelerated Pathways

The Marshall School of Pharmacy, Marshall College of Science, and Marshall College of Health Professions have partnered to provide Marshall undergraduate students with three opportunities to earn a joint Bachelor of Science or Bachelor of Health Science and Doctor of Pharmacy degree.

The three 3+4 pathways programs allow students to complete three years of undergraduate education and four years of pharmacy school enroute to earning a bachelor's and Pharm.D. degree. The Marshall College of Science and College of Health Professions will recognize the first year of the pharmacy curriculum as the student's senior year and will award students the bachelor's degree after the first year is successfully completed.

For more information please visit <https://www.marshall.edu/pharmacy/academic-partnerships/#marshall>.

- Pharmaceutical Sciences, B.S. (<http://catalog.marshall.edu/undergraduate/programs-az/pharmacy/pharmaceutical-sciences-bs-only/>)
- Pharmaceutical Sciences, B.S. to Pharm.D. (<http://catalog.marshall.edu/undergraduate/programs-az/pharmacy/pharmaceutical-sciences-bs/>)

Admission Requirements

- Prospective students must meet the Marshall University admission requirements. In addition, students shall have a minimum composite ACT score of 21 with a math score of 21, or a minimum SAT composite score of 1060 with a math section score of 530.
- Students that have not met the above requirements may gain admission to the BSPS program by completing all of the requirements below:
 - Completion of MTH 127 or 130 and ENG 101 with a grade of C or higher; and
 - Completion of at least 15 credit hours of college coursework with a GPA of 3.0 or higher
- Enrolled students are required to complete all coursework with a minimum grade of C. Grades of D and F will not be counted toward graduation requirements and must be replaced with a grade of C or higher before graduation.
- Students in the 3+4 accelerated program must complete the first 3 years with an undergraduate overall GPA and a GPA within the major of at least 3.30 in order to be eligible to enter the Pharm.D. program in year 4.

- Students must complete a capstone experience (BSPS 471) consisting of either a research project or internship
- Candidates for graduation from the B.S.P.S. program must complete 120 CR of study. Students in the accelerated 3+4 program must complete 138 credit hours, since the university only allows 18 credit hours of graduate-level coursework to count toward both the undergraduate and doctoral degrees.
- Students can complete a minor in Pharmaceutical Sciences by completing 14 credit hours of courses with BSPS or PHAR course numbers.

Degree Requirements

Degree requirements for the B.S.P.S. program include prerequisites courses for admission to U.S. Pharm.D. programs (e.g., biology, chemistry, calculus, physics) including the Pharm.D. program at the Marshall University School of Pharmacy.

- Elective courses enable B.S.P.S. students to take courses to meet prerequisite requirements for entrance to specific graduate or professional programs or to pursue coursework in specific areas of interest (e.g., microbiology, molecular biology, cell biology, physics II, biochemistry)
- The core curriculum is composed of BSPS and PHAR coded courses of 55 credit hours that include:
 - Introductory pharmaceutical sciences courses (BSPS 201 and BSPS 202)
 - Courses in the six major sub-disciplines including pharmaceutics (PHAR 531, PHAR 532), pharmaceutical chemistry (PHAR 547), pathophysiology (PHAR 544), pharmacology (BSPS 333), Pharmacogenomics (PHAR 523), and pharmacokinetics (PHAR 537).
 - Two semesters of a seminar sequence in which students attend research presentations given by guest speakers, faculty, undergraduate, and graduate students (BSPS 442)
 - B.S.P.S. elective courses (Pharmaceutical Biotechnology, Methods in Pharmaceutical Chemistry, Directed Independent Research, Independent Study (BSPS 485), Problem Report (BSPS 486), Special Topics (BSPS 499)
 - A capstone research project or internship experience (BSPS 447).
- With the exception of B.S.P.S. Seminar (BSPS 442), student performance in BSPS-coded courses will be primarily evaluated by examinations, quizzes, and assignments. Select courses will use presentations (BSPS 442) or written assignments (BSPS 471) to assess students.
- Students who decide to only obtain the B.S.P.S. degree (and not the Pharm.D.) after the third year, may elect to not take the following courses (PHAR 501, 502, 512, 524, 533, 536, 538, 811) and still earn the undergraduate degree. Students may elect to take BSPS 442 in the fall semester of the fourth year instead of the third year.

B.S. in Pharmaceutical Sciences

BSPS 101 Intro to Careers in Pharm Sci

2 Credit hours

Careers in the Pharmaceutical Sciences will introduce students to the future career and educational opportunities available following the completion of a BS in the Pharmaceutical Sciences.

Grade Mode: Normal Grading Mode

- BSPS 201 Intro to Pharmaceutical Sci** **2 Credit hours**
 This course introduces students to the pharmaceutical sciences. Topics include an overview of drug discovery, development, basic principles of drug properties, drug structure, drug delivery, drug disposition, drug action and therapy.
Pre-req: CHM 212 with a minimum grade of C and BSC 121 with a minimum grade of C.
Grade Mode: Normal Grading Mode
- BSPS 202 Drug Regulatory Affairs** **3 Credit hours**
 This course provides an overview of pharmaceutical regulatory affairs, particularly USFDA's regulation of drug products approved in the United States.
Pre-req: BSPS 101 with a minimum grade of D and BSPS 201 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 301 Introduction to Pharmacology I** **3 Credit hours**
 This introductory pharmacology course covers basic principles of pharmacology. Mechanism of action, physiological effects and the rational basis for use of commonly used therapeutic drug classes are emphasized.
Pre-req: BSC 228 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 302 Cardiovascular Pharmacology** **3 Credit hours**
 This course is a survey of cardiovascular pharmacology. Emphasis is on the rationale for therapeutic drug use, mechanism of action, physiological effects, and contraindications of drugs in the cardiovascular system.
Pre-req: BSPS 301 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 320 Pharmaceutical Analysis** **3 Credit hours**
 This class covers analytical techniques commonly employed in pharmaceutical sciences, including traditional chemical analysis, spectrometric methods, and separation strategies along with the applications of proteomics and metabolomics to the pharmacy
Pre-req: CHM 355 with a minimum grade of D and CHM 356 with a minimum grade of D and CHM 212 with a minimum grade of D and CHM 218 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 330 Introduction to Cancer Biology** **3 Credit hours**
 Introduction to Cancer Biology covers current concepts and knowledge of cancer, including carcinogenesis (cancer pathogenesis) and cancer treatment.
Pre-req: BSC 120 with a minimum grade of D and BSC 121 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 340 Immunotherapeutics** **3 Credit hours**
 This course introduces students to the role of the immune system in the pathophysiology of inflammatory diseases including autoimmunity and allergies.
Pre-req: BSC 302 with a minimum grade of D or BSC 322 with a minimum grade of D or BSC 334 with a minimum grade of D or BSC 448 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 350 Pharmacology of Illicit Drugs** **3 Credit hours**
 Fundamentals of the interactions of illicit drugs with the human body. Provides scientific background in substance use disorder for students pursuing clinical or research careers.
Pre-req: BSC 121 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 360 Prin of Infectious Diseases** **4 Credit hours**
 This course focuses on the pathophysiology of infectious diseases and the pharmacology of antimicrobials used in treatment.
Pre-req: BSC 250 with a minimum grade of D or BSC 302 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 401 Pharm Sciences Seminar** **1 Credit hour**
 This course is designed to teach critical literature search and evaluation skills, prepare and present pharmaceutical scientific material in written and oral format.
Grade Mode: Normal Grading Mode
- BSPS 444 Princ of Disease Drug Act** **4 Credit hours**
 Topics covered include the concepts and mechanisms of the basic processes underlying disease and pathophysiology, the general principles underlying drug action and therapeutics, including receptor pharmacology, enzyme inhibition and pharmacology, and the relationship between drug concentration at the target tissue and drug effect.
Pre-req: BSC 120 with a minimum grade of D and BSC 121 with a minimum grade of D and CHM 211 with a minimum grade of D and CHM 212 with a minimum grade of D and BSC 227 with a minimum grade of D and BSC 228 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 447 Pharmaceutical Chemistry** **4 Credit hours**
 Topics covered include functional groups found in drug structures and their chemical properties, drug solubility, absorption, metabolic pathways of drug molecules, biomolecules, enzymes and enzyme kinetics.
Pre-req: CHM 356 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- BSPS 470 Capstone Exper in Pharm Sci** **4 Credit hours**
 Capstone experience in Pharmaceutical Sciences provides students with the opportunity to apply their classroom knowledge by completing research project or internship at an approved experiential site.
Grade Mode: Credit/No Credit Grade Only