

**Notice of Change for B.S. Pharmaceutical Sciences (B.S.P.S.) and Doctor of Pharmacy (PharmD)  
Date: 3/23/2016**

**A. PROGRAM INFORMATION**

**1. Name of institution**

University of Rhode Island

**2. Name of department, division, school or college**

College: Pharmacy (PHARM)

**3. Intended initiation date of program change. Include anticipated date for granting first degrees or certificates, if appropriate.**

Initiation date: Fall 2016, new freshmen enrollees.

First degree date: of revised degree program, May 2020 (BSPS) and May 2022 (PharmD).

**4. Intended location of the program**

Kingston, RI: No change

**5. Summary description of proposed program (not to exceed 2 pages).**

Summary: PharmD; no change to degree credits or required courses, change catalog language and curriculum map to reflect the newly approved General Education Program and minor inconsistencies in catalog language. BSPS: Substituting 19 credits of coursework; no change to 120 total credits for degree, changing catalog language and curriculum map to reflect the newly approved General Education Program.

Appended pages:

1. BSPS Curriculum-Course Summary
2. Proposed BSPS Advising Sheets (curriculum map; for new students effective Fall 2016)
3. Proposed PharmD Advising Sheets (curriculum map; for new students effective Fall 2016)
4. Final Catalog Language [includes revisions to BSPS and PharmD]
5. Catalog Language showing revisions marked in blue (additions) and red strikethrough (deletions) [includes revisions to BSPS and PharmD]

Rationale:

BSPS Changes:

The BS Pharmaceutical Sciences degree program was approved by the Faculty Senate in March, 2009. Our first recruited freshman class from Fall 2010 graduated in May 2014 (19 graduates). Prior to 2014, we had a total of 12 students complete the degree, all of whom transferred into the upper levels of the program from other degree programs. We had an additional 32 graduates in May 2015. During the full-implementation process of the program we determined a number of modifications to the original approved program were necessary and beneficial and request these changes as described in this Notice of Change.

In the requested revision, nine credits were *substituted* during the freshman & sophomore curriculum. Notably, the physics requirement (PHY111,185, General Physics I, 4 cr) are being removed as faculty have determined that the content of this first of a two-semester sequence was not essential as a pre-requisite for the upper-level BSPS curriculum. Three of these 4 credits were replaced by including MTH111 Pre-calculus (3 cr) as a specific required course for those not fulfilling criteria for placement into MTH131 Calculus directly from high school. Students placing directly into MTH131 have 3 cr of free electives to replace MTH111. The 4th credit was filled by a new required course, BPS250 (1 cr) Professional Development and Careers in Pharmaceutical Science. This course was developed to ensure that students recognize early the multiple career opportunities afforded by the degree and assist students in developing a sequence of elective courses and/or internships targeted towards their career aspirations within the pharmaceutical field.

The remaining credits changed during freshman and sophomore curriculum simply adjusted for changes made by the host departments in course coding: General Biology I and lab now listed as separate courses, BIO101 (3) and BIO 103 (1); STA308 now listed with 1 additional credit for the recitation now required by the statistics department. In addition, the degree requirements were modified to include language previously approved by faculty senate for the new General Education Program.

In the requested revision, ten-credits of course *substitutions* were made to the junior and senior curriculum. We removed BPS311 (2), BPS321 (2), PHP580 (3) and BPS587 (3) from the major. We added to the major the new courses BPS345 (3), BPS401 (3), BPS402 (3), BPS446 (3) and BPS460 (3). [Note: BPS345x and BPS446x are in the process of conversion to permanent courses. BPS460 is in the process of new course approval.] The new courses were designed specifically for the BSPS program to replace 500-level graduate courses (PHP580, BPS587), to replace courses in the PharmD curriculum (BPS311, BPS321), and to further strengthen the curriculum offerings in BSPS.

Lastly, we removed the language for the four named specializations because many of these courses were obsolete and not currently being taught. The specializations were replaced with a two-tiered plan, Required Core Courses in the Major (23 credits) and Additional Courses in the Major (Professional Electives, 24 credits). To maintain student choice, we added language allowing

substitution of up to a maximum of 12 credits of the Professional Electives. List of approved alternative courses will be maintained by the College of Pharmacy Associate Dean for Academic Affairs with consultation of the Chair of BPS Department and BPS Program Coordinator so that the list can be updated regularly to reflect new and obsolete courses.

PharmD Changes:

The degree requirements were modified to include language previously approved by faculty senate for the new General Education Program. Other minor changes were made for editorial consistency.

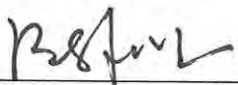
**If applicable, please include the existing URI catalog language and proposed catalog language changes that relate to your request.**

Please see appended pages.


**6. Signature of the President**

\_\_\_\_\_  
David M. Dooley

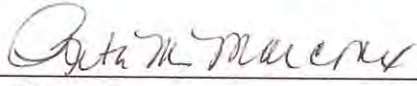
**Additional Approvals:**

  
\_\_\_\_\_  
Bingfang Yan,  
Chair, Department of Biomedical and Pharmaceutical Sciences

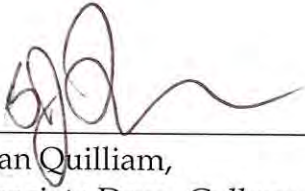
Date: 04-04-2016

  
\_\_\_\_\_  
Marilyn Barbour,  
Chair, Department of Pharmacy Practice

Date: 4/5/2016

  
\_\_\_\_\_  
Rita Marcoux,  
Chair, College of Pharmacy Curriculum Committee

Date: 4/5/2016



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Brian Quilliam,  
Associate Dean, College of Pharmacy

Date: 4/4/2016

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**BS in Pharmaceutical Science (BSPS) degree program**  
**University of Rhode Island**  
**Course Summary**

**Required Pre-requisites (54 credits)**

General Biology I with lab	*BIO101 (3), BIO103 (1)
General Chemistry I, General Chemistry Lab I	*CHM101 (3), CHM102 (1)
Pre-calculus	MTH111 (3)
General Chemistry II, General Chemistry Lab II	CHM112 (3), CHM114 (1)
Human Anatomy with lab	BIO121 (4)
Applied Calculus I	*MTH131 (3)
Medical Microbiology with lab	MIC201 (4)
Organic Chemistry I & II, Organic Chemistry Lab	CHM227 (3), CHM228 (3), CHM226(2)
Human Physiology (lab is not required)	BIO242 (3)
Introductory Statistics	STA308 (4)
Introductory Biochemistry	BCH311 (3)
Communications, Writing, URI 101	*COM100 (3), *WRT106 (3), URI101 (1)
Microeconomics	*ECN201 (3)

**Completion of University General Education (40 credits)**

**Required Core Courses in the Major (23 credits)**

Professional Development and Careers in Pharmaceutical Sciences	BPS250 (1)
Dosage Forms I, II, III	BPS301, 303, & 305 (6)
Introduction to Medicinal Chemistry	BPS313 (2)
Drug Metabolism and Bioanalysis	BPS325 (2)
Pharmaceutical Pharmacology I	BPS401 (3)
Pharmaceutical Pharmacology II	BPS402 (3)
Formulation and Manufacturing Lab	BPS443 (2)
Medicinal Chemistry & Molecular Biology Lab	BPS451 (4)

**Additional Courses in the Major (Professional Electives) (24 credits)**

The following 25 credits are recommended for most students. However, individual students may **substitute** up to a maximum of 12 credits of the following 25 credits with approved alternative courses. List of approved alternative courses will be maintained by the College of Pharmacy Associate Dean for Academic Affairs with consultation of the Chair of BPS Department and BSPS Program Coordinator.

Introduction to Pharmaceutical Research	BPS345 (3)
Good Manufacturing Practices (GMP)	BPS425 (3)
Pharmacogenomics and Pharmacogenetics	BPS442 (3)
Natural Products Drugs	BPS445 (3)
Biotechnology, Biologics, and Biosimilars	BPS446 (3)
Internship in Pharmaceutical Sciences	BPS460 (3)
Special Problems in BPS (Independent Study)	BPS497/498 (4)
Pharmacokinetics for Scientists	BPS503 (3)

## General Education Requirements

All students enrolled in the Doctor of Pharmacy Program and the Bachelors of Science in Pharmaceutical Sciences Program are required to meet the University requirements for general education. General education consists of 40 credits. Each of the twelve outcomes (A1-D1) must be met by at least 3 credits. A single course may meet more than one outcome, but cannot be double counted towards the 40-credit total. At least one course must be a Grand Challenge (G designation). No more than twelve credits used to meet general education may be from the same course code, with the exception of honors HPR courses, which may have more than 12 credits. General education courses may also be used to meet requirements of the major or minor when appropriate.

General Education encompasses the following four key objectives (A-D), met by the following twelve outcomes:

**A-Build knowledge** of diverse peoples and cultures and of the natural and physical world through the following four outcomes:

**A1** - Understand and apply theories and methods of the **science, technology, engineering, and mathematical (STEM) disciplines**

**A2** - Understand theories and methods of the **social and behavioral sciences**

**A3** - Understand the context and significance of the **humanities** using theoretical, historical, and experiential perspectives

**A4**- Understand the context and significance of **arts and design**

**B-Develop intellectual and interdisciplinary competencies** for academic and lifelong learning through the following four outcomes:

**B1 - Write effective** and precise texts that fulfill their communicative purposes and address various audiences

**B2- Communicate effectively** via listening, delivering oral presentations, and actively participating in group work

**B3** - Apply the appropriate **mathematical, statistical, or computational strategies** to problem solving

**B4** Develop **information literacy** to independently research complex issues

**C-Exercise individual and social responsibilities** through the following three outcomes:



- C1-** Develop and engage in **civic knowledge and responsibilities**
- C2-** Develop and exercise **global responsibilities**
- C3-** Develop and exercise **diversity and inclusion responsibilities**

**D-Integrate and apply** abilities and capacities developed under each of the 3 above areas, adapting them to new settings, questions, and responsibilities

**D1** Demonstrate the ability to synthesize multiple knowledge perspectives, competencies and responsibilities

**G-Grand Challenge** – Exploration of multiple perspectives of areas of contemporary significance, including their ethical implications

**G-** At least one course must have the “G” designation for Grand Challenge

### **Six-year Entry Level Pharm.D. Curriculum Requirements**

**Six-year Entry Level Pharm.D. Curriculum Requirements.** A total of 203 credits is required for graduation. Proficiency in American Red Cross standard first aid, and community CPR, ~~and physical assessment (PHP 900) is~~ are also expected of each student prior to initiating advanced pharmacy practice experiences.

Experiential Rotations. Introductory and advanced pharmacy practice experiential rotations may be scheduled at a distance from the Kingston campus. These rotations contribute importantly to the depth and breadth of the experiential program. While the college makes every effort to accommodate student requests regarding rotations, students should anticipate having some rotations assigned at a distance. For these rotations, students are responsible for their costs of transportation and housing if needed.

Criminal Background Checks. All students must undergo a criminal background check annually during the professional (P1 to P4) years of the program using the College’s approved vendor. The criminal background check must be completed prior to the fall semester of each professional year and before any Introductory Pharmacy Practice Experience (IPPE) is initiated. Many hospitals, clinical facilities, and other professional sites that participate in both the IPPE and advanced pharmacy practice experience (APPE) programs require certification that students have a clear criminal record (or a criminal record which, due to the timing or nature of the criminal behavior, or the relevant circumstances, does not, in the judgment of the site preclude the student’s

participation in the practicum experience at their site) prior to initiating pharmacy practice experiences. Students with criminal records, therefore, should be aware that their criminal record may preclude their participation in clinical experiences at some sites, and as a result, their progression to meet the degree requirements may be impeded.

**Drug Testing.** Many hospitals, clinical facilities, and other professional sites that participate in both the introductory practice experiences (IPPE) and advanced practice experiences (APPE) require students to undergo a drug test. Students who test positive for an illegal drug will be denied positions at these sites. As a result, their progression to meet the degree requirements will be impeded.

**Intern License Requirement.** Registration as an intern pharmacist is a requirement of the program; therefore all students in the professional PharmD program must hold a valid Rhode Island intern license when they enter the fall semester of their first professional year and before any Introductory Pharmacy Practice Experience (IPPE) is initiated. The Rhode Island intern license must be maintained throughout the professional program (P1 to P4 years). Students completing IPPE or APPE experiences in other states must obtain an intern license through the board of pharmacy of the state(s) in which they have those practice experiences. Intern licensure in Massachusetts is recommended for all students, but not required.

To be eligible for an intern license, students must be currently enrolled in a pharmacy program. Intern licenses must be returned to the board if a student withdraws or takes a leave of absence from the college.

Applications for an intern license also normally require the applicant to disclose, and provide an explanation of, any criminal conviction (or any plea or other form of admission or acceptance of responsibility for criminal conduct, including driving under the influence), as well as any state disciplinary action involving or affecting the applicant's license to practice, any other pending state charges or investigations relating to the applicant, and any adverse proceeding or action relating to the applicant's membership in a professional society.

### **Pharm.D. Pre-professional Curriculum**

First Year First semester: 15-16 credits CHM 101 (3), 102 (1); COM 100 or WRT 106 (3); BIO 101/103 (4); one ~~3-credit elective~~ general education course (3-4) or PHL 212 (3); and URI 101 (1).

Second semester: 17-18 credits CHM 112 (3), 114 (1); MTH 131 (3); COM 100 or WRT 106 (3); BIO 121 (4), and one ~~3-credit elective~~ general education course (3-4) or PHL 212 (3).



Second Year First semester: 17-18 credits CHM 227 (3); ECN 201 (3); ~~MHC~~ CMB 201 (4); BIO 242 (3), 244 (1), and one ~~3-credit elective~~ general education course (3-4).

Second semester: 17-18 credits ~~BCH~~ CMB 311 (3); CHM 228 (3), 226 (2); STA 307 (3), and ~~6 credits of electives~~ two general education courses (6-7).

### **Professional Curriculum**

#### First Professional Year (P1)

First semester: 16 credits

PHP/BPS 311 (2); BPS 301 (2), 303 (2), 305 (2), 313 (2), 318 (1), 321 (2); PHP 317 (3).

Second semester: 18 credits

PHP/BPS 310 (2); BPS 325 (2), 334 (2); PHP 305 (3), 316 (3), 332 (3), 340 (1); PHC 316 (1), 327 (1)\*.

Second Professional Year (P2) First semester: 15 credits

PHP/BPS 409 (2), 418 (3); BPS 421 (2); PHP 401 (3), 413 (3), 450 (0); PHC 415 (1), 417 (1)\*.

Second semester: 17 credits

PHP/BPS 412 (2); BPS 432 (2), 403 (3); PHP 424 (2), 451 (0); NFS 444 (3); one professional elective (3); PHC 416 (1), 427 (1)\* .

#### Third Professional Year (P3)

First semester: 16 credits

PHP/BPS 410 (2); BPS 422 (2), 504 (3); PHP 414 (3); one professional elective (3); PHC 515 (2), 517 (1)\*.

Second semester: 16 credits

PHP/BPS 526 (2); BPS 521 (3); PHP 504 (3), 513 (2); one professional elective (3); PHC 516 (2), 527 (1)\*.

#### Fourth Professional Year (P4)

Combined summer, first, and second semester: 36 credits

To complete the curriculum, students must complete six 6-week advanced pharmacy practice experiences in community (PHP 591), ambulatory care (PHP 595), inpatient (PHP 592), institutional (PHP 594), and two different elective areas (PHP 593) for a total of 36 credits. The rotations will take place over summer, fall, and spring semesters in any order and are all capstone requirements in the program.

\* Interactive learning courses and integrated laboratory courses will be shared by PHP and BPS under the code of PHC.

### **Doctor of Pharmacy Professional Electives**

**Doctor of Pharmacy Professional Electives.** As part of the College's professional curriculum, students must complete three courses (minimum of 3 credits each) to improve their knowledge and understanding in a variety of practice areas. Students must complete a minimum of two of the three courses within the College of Pharmacy (BPS, PHC or PHP designation at the 300 level or higher; excluding BPS 497, BPS 498, PHP 497, and PHP 498). Students may use a 3-credit independent study (BPS 497, BPS 498, PHP 497 or PHP 498) or an approved course outside of the college for their third required elective. All requests for non-approved courses as professional electives must be reviewed and approved by the Associate Dean for Student and Academic Affairs.

Students desiring to expand their understanding in biomedical, pharmaceutical, and pharmacy research may select professional electives that focus learning on the theory and practice of laboratory research techniques, the evaluation and quantification of results, and on the understanding and interpreting of scientific literature. They will develop skills for oral and written communication of hypotheses, methods, and interpretations, and will carry out basic scientific research in one of the following four areas of specialization: medicinal chemistry and pharmacognosy, pharmaceuticals and pharmacokinetics, pharmacoepidemiology and pharmacoconomics, or pharmacology and toxicology. Students focusing their elective professional courses in this manner may also be able to apply and work toward an M.S. degree with a focus in one of the following areas:

**Medicinal Chemistry and Pharmacognosy:** Molecular mechanisms of chemical carcinogenesis; combinatorial chemistry; solid-phase peptide synthesis; screening, isolation, and structure elucidation of physiologically-active natural products; biosynthesis of microbial and plant natural products; herbal medicine.

**Pharmaceuticals and Pharmacokinetics:** Design, development, production, evaluation, and regulatory approval of pharmaceutical and self care products as well as pharmacokinetic and pharmacodynamic studies using virtual, clinical, and preclinical data, often with an emphasis on population approaches.

Pharmacoepidemiology and Pharmacoeconomics: Health and economic outcomes research pertaining to pharmacotherapy as used in human populations. Specializations include medication adherence, decision and cost-effectiveness analyses, post-marketing surveillance, epidemiologic methods, and quality improvement and measurement.

Pharmacology and Toxicology: Research projects explore the mechanisms involved in various disease states and their pharmacological intervention, and mechanisms of toxicity of various environmental agents. Ongoing topics include the effects of hormonal imbalances and antihypertensive agents on cardiac function and metabolism in hypertension, diagnosis and treatment of arthritis, effect of septic shock on drug metabolism, developmental neurotoxicity of environmental agents, hepatotoxicity and nephrotoxicity of heavy metals, interindividual variation in metabolism of heterocyclic amine carcinogens, regulation and genetic heterogeneity of enzymes involved in drug and xenobiotic metabolism, calcium- and non-calcium mediated pathways of cell death, and the development of inhibitors to cell signaling events.

### **Pharmacy and French**

**Pharmacy and French.** Qualified students can graduate in six years with both a Pharm.D. degree and a B.A. degree in French. It is recommended that students wishing to double major come to URI with four years of high school French and advanced placement credits.

### **B.S. in Pharmaceutical Sciences (B.S.P.S.)**

The four-year program offers students a solid foundation in the basic sciences, broad exposure to the liberal arts, and expertise ~~in one of several areas of specialization~~ within the pharmaceutical **and biomedical** sciences. It is designed to provide educational and training experiences that prepare students for careers in the pharmaceutical, consumer product, and health care industries. Graduates of the B.S.P.S. program will be qualified to seek a diverse range of career options that include: research and development, manufacturing, product marketing, sales, testing, and administrative positions within the pharmaceutical industry; research and regulatory oversight careers within government agencies; and research and teaching positions in academia. As a prelude to many of these career opportunities, the program prepares students for graduate studies in the expanding fields of pharmaceutical and biomedical sciences.

~~The first two years of the program include rigorous basic science requirements plus a broad exposure to the humanities, arts, and social sciences.~~ The science component of the curriculum is consistent with the admission requirements of ~~most~~ **many** basic science graduate programs and professional schools. **Pharmaceutical Sciences** ~~€~~ courses offered in the third and fourth year will be drawn primarily from our existing curriculum, and will be taught by Department of Biomedical and Pharmaceutical Sciences (BPS) and Department of Pharmacy Practice (PHP) faculty. They provide solid, fundamental training in the pharmaceutical sciences. ~~The fourth-year curriculum also includes BPS~~

~~course offerings and selected electives from other departments on campus, such as the basic sciences and business. Students may also elect to obtain course credits for laboratory research performed under the guidance of a faculty mentor. These fourth-year offerings will present students with the opportunity, under the supervision of the B.S.P.S. program advisor,~~ Students have the option to tailor their academic program to prepare them for the specific career paths that they choose by substituting up to 12 credits of B.S.P.S. courses with pre-approved Professional Electives. The Associate Dean in consultation with the BPS Department Chair and the B.S.P.S. Program Coordinator will maintain a list of approved Professional Electives so that the list can be updated regularly to reflect new and obsolete courses. The ~~120-credit requirement for graduation~~ four-year curriculum provides education and training comparable to that offered by similar B.S.P.S. programs, and conforms to University credit requirements for four-year degree programs.

### **B.S.P.S. Curriculum Requirements.**

**B.S.P.S. Curriculum Requirements.** A total of 120 credits is required for graduation. The curriculum ~~contains four~~ can be described in three distinct components. The first component consists of ~~35~~ 40 credits of general education requirements ~~that will provide broad exposure to the humanities, arts, and social sciences.~~ The second component consists of ~~41 credits of basic~~ science and mathematics pre-requisite courses that will deliver a firm foundation in the life and physical sciences, and satisfy admission requirement for ~~most~~ many basic science graduate programs and professional schools. The third component is the B.S.P.S. ~~core requirement, consisting of 38 credits of new and existing BPS/PHP courses,~~ upper level courses and labs in the Major ~~which will~~ offering students a strong, basic, and applied understanding of the pharmaceutical and biomedical sciences. Within the third component, students have the option to tailor their academic program by substituting up to 12 credits of B.S.P.S. courses with pre-approved Professional Electives. ~~The fourth component of 6 credits, comprising B.S.P.S. electives, is drawn from upper level B.S.P.S. courses and selected electives from other programs on campus, particularly those from the basic sciences and business.~~ These courses allow our students to tailor a program of study to suit their specific career goals.

**Freshman** First Year First semester: 15-16 credits

CHM 101 (3), 102 (1); BIO 101/103 (4); COM 100 (3); URI 101 (1); MTH 111 (3) or general education ~~elective course~~ (3-4).

Second semester: 14-~~or~~ 15 credits

CHM 112 (3), 114 (1); BIO 121 (4); MTH 131 (3) or 141 (4); WRT 106 (3).

**Sophomore** Second Year First Semester: 17-18 credits

BPS 250 (1); CHM 227 (3); ~~MIC CMB 201 (4)~~; BIO 242 (3); ~~PHY 111 (3), 185 (1)~~; ECN 201 (3); and one general education course (3-4).

Second semester: 17 credits

CHM ~~226 (2)~~, 228 (3); ~~BCH CMB 311 (3)~~; STA 307 or 308 (~~34~~); CHM 226 (2) and one general education ~~electives~~ course OR two general education courses (65-7)

~~Junior~~ Third Year First semester: ~~15~~ 14-17 credits

BPS 301/303/305 (6); ~~311 (2)~~; 313 (2); ~~321 (2)~~ 401 (3); CHM 226 (2); ~~B.S.P.S. or one~~ general education ~~elective~~ course (3-4)

Second semester: ~~13~~ 16 credits

BPS 325 (2); ~~402 (3)~~; 425(3); 443 (2); ~~445 (3)~~; 498 (3); one general education ~~electives~~ course (~~6~~3-4)

Fourth Year First semester: 16-17 credits

BPS 345 (3); 442 (3); 451 (4); 503 (3); one general education course (3-4)

Second semester: 12-17 credits

BPS 445 (3); 446 (3); 460 (3); one to two general education courses (3-8)

~~Pharmaceutics Specialization Senior Year First semester: 15 credits~~

~~BPS 425 (3), 487/587 (3), 503 (3); PHP 580 (3); CHM 522 (3)~~

~~Second semester: 13 credits~~

~~BPS 405 (3), 442 (3), 451 (4); B.S.P.S. or general education elective (3)~~

~~Natural Products Specialization Senior Year First semester: 15 credits~~

~~BPS 425 (3), 487/587 (3), 503 (3); PHP 580 (3); CHM 551 (3)~~

~~Second semester: 13 credits~~

~~BPS 442 (3), 451 (4), 535 (3); B.S.P.S. or general education elective (3)~~

~~Cosmetic Specialization Senior Year First semester: 15 credits~~

~~BPS 425 (3), 487/587 (3), 503 (3), 530 (3); PHP 580 (3)~~

~~Second semester: 13 credits~~

~~BPS 442 (3), 451 (4), 560 (3); B.S.P.S. or general education elective (3)~~

~~Pharmacology/Toxicology Specialization Senior Year First semester: 15 credits~~

~~BPS 425 (3), 487/587 (3), 503 (3), 551 (3); PHP 580 (3)~~

~~Second semester: 13 credits~~

~~BPS 442 (3), 451 (4), 533 (3); B.S.P.S. or general education elective (3)~~



**ABOUT THE PHARMACEUTICAL SCIENCE BS DEGREE:**

The Bachelor of Science in Pharmaceutical Sciences prepares you for careers in the pharmaceutical, consumer products, and healthcare industries. As B.S.P.S. graduate you will be qualified for a range of career options, including research and development, manufacturing, product marketing, and administrative positions within the pharmaceutical industry, as well as careers in research and regulatory oversight within government agencies.

**GENERAL EDUCATION GUIDELINES:** General education is 40 credits. Each of the twelve outcomes (A1-D1) must be met by at least 3 credits. A single course may meet more than one outcome, but cannot be double counted towards the 40 credit total. At least one course must be a Grand Challenge (G). No more than twelve credits can have the same course code (note- HPR courses may have more than 12 credits). General education courses may also be used to meet requirements of the major or minor when appropriate.

General Education Credit Count			
At least 40 cr., no more than 12 credits with the same course code.			
Course	Cr.	Course	Cr.
Total Gen Ed credits		≥ 40	

General Education Outcome Audit	
	Course
<b>KNOWLEDGE</b>	
A1. STEM	
A2. Social & Behavioral Sciences	
A3. Humanities	
A4. Arts & Design	
<b>COMPETENCIES</b>	
B1. Write effectively	
B2. Communicate effectively	
B3. Mathematical, statistical, or computational strategies	
B4. Information literacy	
<b>RESPONSIBILITIES</b>	
C1. Civic knowledge & responsibilities	
C2. Global responsibilities	
C3. Diversity and inclusion	
<b>INTEGRATE &amp; APPLY</b>	
D1. Ability to synthesize	
<b>GRAND CHALLENGE</b>	
G. Check that at least one course of your 40 credits is an approved "G" course	

**SEE OPPOSITE SIDE FOR SPECIFIC PROGRAM REQUIREMENTS.**

**Note to all students** This worksheet is a snapshot of your entire curriculum. You must work with your advisor each term to discuss requirements to keep you on course for timely progress to complete this major. Official requirements for graduation are listed in the University Catalog.

<b>Basic Non-Science Requirements</b> (these courses also fulfill general education requirements)	<b>Course</b>	<b>Grade</b>	<b>Cr.</b>
Careers in Pharmaceutical Science	BPS 250		1
Communication	COM 100*		3
Microeconomics	ECN 201*		3
Research Writing	WRT 106*		3
Introduction to URI	URI 101		1

<b>Basic Science /Math Requirements</b>	<b>Course</b>	<b>Grade</b>	<b>Cr.</b>
General Chemistry I	CHM 101*		3
General Chemistry I Lab	CHM 102		1
General Chemistry II	CHM 112		3
General Chemistry II Lab	CHM 114		1
Organic Chemistry Lab	CHM 226		2
Organic Chemistry I	CHM 227		3
Organic Chemistry II	CHM 228		3
General Biology	BIO 101*		3
General Biology Lab	BIO 103		1
Anatomy	BIO 121		4
Physiology	BIO 242		3
Microbiology	CMB 201		4
Biochemistry	CMB 311		3
Biostatistics	STA 308		4
Calculus	MTH 131 or 141*		3

\* Course approved for General Education

<b>Major Requirements</b>			
<b>3rd Year- 1st Semester</b>	<b>Course</b>	<b>Grade</b>	<b>Cr.</b>
Dosage I	BPS 301		2
Dosage II	BPS 303		2
Dosage III	BPS 305		2
Medicinal Chemistry	BPS 313		2
Pharmacology I	BPS 401		3
General Education Course	Record on Page 1		3-4
General Education Course (optional)	Record on Page 1		3-4
<b>3rd Year-2nd Semester</b>			
Drug Metabolism	BPS 325		2
Pharmacology II	BPS 402		3
cGMP Processes	BPS 425		3
Formulations and Manufacturing Lab	BPS 443		2
Independent Study	BPS 498		3
General Education Course	Record on Page 1		3-4
<b>4th Year- 1st Semester</b>			
Intro to Pharmaceutical Research	BPS 345		3
Pharmacogenetics/genomics	BPS 442		3
Techniques Lab	BPS 451		4
Pharmacokinetics	BPS 503		3
General Education Course	Record on Page 1		3-4
<b>4th Year- 2nd Semester</b>			
Natural Products/Biotechnological Drugs	BPS 445		3
Biotech/Biologics/Biosimilars	BPS 446		3
Pharmaceutical Sciences Internship	BPS 460		3
General Education Course	Record on Page 1		3-4
General Education Course (optional)	Record on Page 1		3-4

<b>Approved Major Course Substitutions (Max 12 credits)</b>			
<b>Required Course Code</b>	<b>Substituted Course Code</b>	<b>Grade</b>	<b>Cr.</b>

\*\* Students have the option to tailor their academic program to prepare them for the specific career paths that they choose by substituting up to 12 credits of BSPPS courses with pre-approved Professional Electives.

**GENERAL EDUCATION GUIDELINES:** General education is 40 credits. Each of the twelve outcomes (A1-D1) must be met by at least 3 credits. A single course may meet more than one outcome, but cannot be double counted towards the 40 credit total. At least one course must be a Grand Challenge (G). No more than twelve credits can have the same course code (note- HPR courses may have more than 12 credits). General education courses may also be used to meet requirements of the major or minor when appropriate.

General Education Credit Count			
At least 40 cr., no more than 12 credits with the same course code.			
Course	Cr.	Course	Cr.
Total Gen Ed credits			≥ 40

General Education Outcome Audit	
	Course
<b>KNOWLEDGE</b>	
A1. STEM	
A2. Social & Behavioral Sciences	
A3. Humanities	
A4. Arts & Design	
<b>COMPETENCIES</b>	
B1. Write effectively	
B2. Communicate effectively	
B3. Mathematical, statistical, or computational strategies	
B4. Information literacy	
<b>RESPONSIBILITIES</b>	
C1. Civic knowledge & responsibilities	
C2. Global responsibilities	
C3. Diversity and inclusion	
<b>INTEGRATE &amp; APPLY</b>	
D1. Ability to synthesize	
<b>GRAND CHALLENGE</b>	
G. Check that at least one course of your 40 credits is an approved "G" course	

**SEE OPPOSITE SIDE FOR SPECIFIC PROGRAM REQUIREMENTS.**

**Note to all students** This worksheet is a snapshot of your entire curriculum. You must also complete remaining degree requirements to meet University requirements (GenEd, supporting electives, and free electives). You must work with your advisor each term to discuss requirements to keep you on course for timely progress to complete this major. Official requirements for graduation are listed in the University Catalog.

**ABOUT THE DOCTOR OF PHARMACY PROGRAM:**

The Doctor of Pharmacy curriculum is a ‘zero to six’ program, which means you begin as a freshman and complete the program in six years, graduating with a Doctor of Pharmacy degree. The program stresses critical thinking, active learning and clinical experience to prepare you for practice in a variety of professional settings.

Basic Non-Science Requirements (these courses also fulfill general education requirements)	Course	Grade	Cr.

Professional Requirements

<b>P1 First Semester</b>	<b>Course</b>	<b>Grade</b>	<b>Cr.</b>
Dosage I	BPS 301		2
Dosage II	BPS 303		2
Dosage III	BPS 305		2
Foundations I	BPS/PHP 311		2
Medicinal Chemistry	BPS 313		2
Pharm. Tech. Lab	BPS 318		1
Pharmacology	BPS 321		2
Pharm. Practice in Healthcare	PHP 317		3
<b>P1 Second Semester</b>			
Foundations II	BPS/PHP 310		2
Drug Metabolism	BPS 325		2
Pharmacology	BPS 334		2
Integrated Lab I	PHC 316		1
Interactive Learning IAL	PHC 327		1
Drug Information	PHP 305*		3
Pharmacy Law and Ethics	PHP 316*		3
Therapeutics	PHP 332		3
PHP Experience IPPE I	PHP 340 or 350		1

<b>P2 First Semester</b>			
Pharmacology	BPS 421		2
Integrated lab II	PHC 415		1
Interactive Learning IAL	PHC 417		1
Pharmacy Resource	PHP 401		3
Foundations III	PHP/ BPS409		2
Self-Care I	PHP/ BPS 418		3
Therapeutics	PHP 413		3
IPPE II	PHP 450 or 451(1)		2
<b>P2 Second Semester</b>			
Pharmacokinetics I	BPS 403		3
Pharmacology	BPS 432		2
Foundations IV	BPS/PHP 412		2
Nutrition in Health	NFS 444		3
Integrated lab III	PHC 416		1
Interactive Learning IAL	PHC 427		1
Therapeutics	PHP 424		2
Professional Elective			3

**You will take either 340 or 350 during the P1 second semester or the P2 first semester.**

