THE UNIVERSITY OF ARIZONA

Request for Substantial Changes to an Existing Program

I. Program Details
   a) **Name (and Degree Type) of Academic Program:** Bachelor of Science in Pharmaceutical Sciences
      i) **Emphases (if applicable):** N/A
   b) **Academic Unit(s)/College(s):** Department of Pharmacology & Toxicology, College of Pharmacy

II. **Primary Contact and Email:**

Richard Vaillancourt, PhD
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Associate Department Head, Department of Pharmacology & Toxicology
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III. **Planned start term for changes**: Fall 2023

IV. **Describe the proposed changes to the program as well as the rationale for making the specific changes and include any relevant supporting data.**

The Bachelor of Science in Pharmaceutical Sciences (BSPS) first launched in fall 2018. The major curriculum was designed with a core of 10 mandatory major courses, which have required students to progress through the curriculum in a very structured way. Although this curriculum has provided students with a solid education in pharmaceutical sciences, the lack of flexibility has prevented students from focusing on areas of personal interest within the field. The structured curriculum has also presented problems for students who fall off track in course sequencing or are faced with a course conflict in a given semester; these students may need to extend their graduation timelines in order to access all required courses.

The department has rolled out a variety of new courses in recent semesters, so we are now able to build more flexibility into the major curriculum. Students will still complete a core of seven common courses, but they will be able to choose courses of interest from sub-core and elective categories for their remaining major units. This change is expected to enhance student interest in pharmaceutical sciences, both for students enrolled in the major and those looking for elective courses, while promoting graduation in a timely fashion.

As part of this curriculum update, major units are being increased from 32 to 35. This is due to the addition of PCOL 200 – Drugs and Humanity as a new required course. The major does not currently offer an introductory pharmaceutical sciences course and instead requires students to jump directly into upper-

division major courses, often not until their junior year. PCOL 200 will serve as a foundation for the program and will allow students to engage with their major curriculum as early as their freshman year. The additional major units will not impact students' ability to graduate in four years, as the unit total for all major, general education, and foundation requirements remains below 120.

In addition to adding flexibility to the major curriculum, we are also adding MATH 119A as an alternate to MATH 113 for completion of the foundation math requirement.

Finally, we are eliminating our Advanced Standing requirements, as the process has been deemed unnecessary. Progression through the major curriculum can be managed in a more straightforward and transparent way through course prerequisites.

V.

UNDERGRADUATE	Existing Major Requirements	Requirements For Modified Major
Name of major, emphasis (if applicable) and degree*	BS	BS
CIP Code –lookup here or contact the Office of Curricular Affairs for assistance, if needed	51.2010 Pharmaceutical Sciences	51.2010 Pharmaceutical Sciences
Total units required to complete the degree* (Note: this is for the entire degree, not just the major)	120	120
Upper division units required to complete the degree	42	42
Total CC transfer units that may apply to this degree*	64	64
Foundation courses		
Math	Moderate Strand: MATH 113	Moderate Strand: MATH 113 OR 119A
Second Language	Second Semester Proficiency	Second Semester Proficiency
General Education		
Introduction to General Education course (1 unit)	Introduction to General Education course (1 unit)	Introduction to General Education course (1 unit)
GE Exploring Perspectives: Choose one course from each domain. (12 units total)	Artist (1 course) Humanist (1 course) Natural Scientist (1 course) Social Scientist (1 course)	Artist (1 course) Humanist (1 course) Natural Scientist (1 course) Social Scientist (1 course)
GE Building Connections: Choose three courses (9 units) from two or more disciplines and/or perspectives.	GE Building Connections: Complete 3 courses, 9 units total.	GE Building Connections: Complete 3 courses, 9 units total.

GE Capstone course (1 unit)	GE Capstone course (1 unit)	GE Capstone course (1 unit)
Pre-major? (Yes/No)	No	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	Continuing students must have a GPA of 2.0 or higher to declare the major.	Continuing students must have a GPA of 2.0 or higher to declare the major.
Minimum # of units required in the major (units counting towards major units and major GPA)	32	35
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	32	32
Minimum # of residency units to be completed in the major	18	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include prefix, number, units, and title. Include any limits/restrictions in place/needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	MATH 113 Elements of Calculus (3) or MATH 122B Functions for Calculus (4) or MATH 125 Calculus I (3) PHYS 102 (3) & 181 (1) Intro Physics I and Intro lab or PHYS 141 Intro Mechanics (4) CHEM 151 or 141&143 or 161&163 General Chemistry I (4) CHEM 152 or 142&144 or 162&164 General Chemistry II (4 units) CHEM 241A or 242A or 246ALectures in Organic Chemistry I (3) CHEM 243A (1) or 247A (2) Organic Chemistry Laboratory I CHEM 241B or 242B or 246B Lectures in Organic Chemistry (3) CHEM 243B (1) or 247B (2) Organic Chemistry Laboratory II MCB 181R/L Introductory Biology I (3) and Introductory Biology Lab I (1)	MATH 113 Elements of Calculus (3) or MATH 119A Mathematics of Biological Systems or MATH 122B Functions for Calculus (4) or MATH 125 Calculus I (3) PHYS 102 (3) & 181 (1) Intro Physics I and Intro lab or PHYS 141 Intro Mechanics (4) CHEM 151 or 141&143 or 161&163 General Chemistry I (4) CHEM 152 or 142&144 or 162&164 General Chemistry II (4 units) CHEM 241A or 242A or 246ALectures in Organic Chemistry I (3) CHEM 243A (1) or 247A (2) Organic Chemistry Laboratory I CHEM 241B or 242B or 246B Lectures in Organic Chemistry (3) CHEM 243B (1) or 247B (2) Organic Chemistry Laboratory II MCB 181R/L Introductory Biology I (3) and Introductory Biology Lab I (1)

	MIC 205A General Microbiology (3) MIC 205L Biology of Microorganisms Lab (1) PSIO 380 Fundamentals of Human Physiology (4) (may also be fulfilled with PSIO 201 Human Anatomy & Physiology I (4) AND PSIO 202 Human Anatomy & Physiology II (4) BIOC 384 Foundations in Biochemistry (3 units) (may also be fulfilled with BIOC 385 Metabolic Biochemistry (3) or BIOC 462A Biochemistry (4) or BIOC 462B Biochemistry (4)	MIC 205A General Microbiology (3) MIC 205L Biology of Microorganisms Lab (1) PSIO 380 Fundamentals of Human Physiology (4) (may also be fulfilled with PSIO 201 Human Anatomy & Physiology I (4) AND PSIO 202 Human Anatomy & Physiology II (4) BIOC 384 Foundations in Biochemistry (3 units) (may also be fulfilled with BIOC 385 Metabolic Biochemistry (3) or BIOC 462A Biochemistry (4) or BIOC 462B Biochemistry (4)
Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements. Courses listed count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions in place/needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses being added and are not owned by your department. Recommend ordering requirements in the same order as your advisement report.	Complete the following ten courses: PCOL 305 Scientific Writing for Health Sciences (3) PCOL 310 Drug Approval: The 3 Billion Dollar Bet (2) PCOL 350 ADME: How the Body Changes Drugs (3) PCOL 355 Drug Delivery Systems (3) PCOL 390 Biomarkers: Analysis of Drug Effect & Toxicity (3) PCOL 406 Comprehensive Human Pharmacology (5) PCOL 410 Integrated Medicinal Chemistry (5) PCOL 440 Rigor & Reproducibility (2) PCOL 473: Pharmacogenomics (3 units) PHCL 460 Designing Drugs: From Chemistry to Cure (3)	Complete 7 core courses, and 2 sub-core courses, and 2 major elective courses. Course options are as follows: **CORE: Complete the following 7 courses:** PCOL 200 Drugs & Humanity (3) PCOL 305 Scientific Writing for Health Sciences (3) PCOL 310 Drug Approval: The 3 Billion Dollar Bet (2) PCOL 350 ADME: How the Body Changes Drugs (3) PCOL 406 Comprehensive Human Pharmacology (5) PCOL 410 Integrated Medicinal Chemistry (5) PCOL 440 Rigor & Reproducibility (2) **SUB-CORE: Complete 2 of the following 4 courses:**

		PCOL 355 Drug Delivery Systems (3) PCOL 390 Biomarkers: Analysis of Drug Effect & Toxicity (3) PCOL 473 Pharmacogenomics (3) PCOL 488 Drug Hunting for Beginners (3) **MAJOR ELECTIVES: Complete 2 of the following courses:** PCOL 300 Pharmacology of Cosmetics & Self-Care Products (3) PCOL 320 What's Your Poison? Toxicology of the Substances that Surround Us (3) PCOL 405 Current Techniques in Pharmaceutical Sciences (3) PCOL 418 Medicinal Chemistry of Natural Products (3) PCOL 434 Pharmacology of Sex (3) PCOL 445 Over the Counter Drug Information (3) PCOL 465 Infectious Disease Pharmacology (3) PCOL 467 Pharmacology of Anti-Cancer Drugs (3) Extra "Sub-Core" courses (beyond the two required) can be used as major electives
Internship, practicum, applied course requirements. (Yes/No). If yes, provide description.	No	No
Senior thesis or senior project required (Yes/No). If yes, provide description.	No	No

Additional requirements (provide description)	N/A	N/A
Minor (optional or required)	Optional	Optional

* These changes require Arizona Board of Regents (ABOR) approval.

VI. Faculty impact – will new faculty hires be required to deliver the new, proposed curriculum?

The courses being added to the major curriculum are already being taught as elective courses by existing faculty. Adding the courses to the major will not negatively impact faculty, and will in fact serve to more evenly distribute enrollment across courses.

VII. Budgetary impact – indicate new resources needed and source of funding to implement proposed changes. If reallocating resources, indicate where resources will be taken from and the impact this will have on students/faculty/program/unit.

The major courses can all be taught by current college faculty.

VIII. Required signatures

Program Director/Main Proposer (print name and title):
Richard Vaillancourt, Director of BSPS

Program Director/Main Proposer signature:

Date Sept 21, 2022

Department Head (print name and title): Xinxin Ding, Prof. and Head.

Department Head's signature:

Date: 9/19/2022

Associate/Assistant Dean (print name): Elizabeth Hall-Lipsy

Associate/Assistant Dean's signature:

Date: 9/20/2022

Dean (print name):

Dean's signature:

Date:

Graduate: For use by Curricular Affairs (for majors):

Committee	Approval date
GPERC	
Graduate Council	
College Academic Administrators Council	
Arizona Board of Regents (if applicable)	

For minors and certificates:

Committee	Approval date
GPERC	

UG: For use by Curricular Affairs (for majors):

Committee	Approval date
APC	
Undergraduate Council	
U-CAAC	

For minors and certificates:

U-CAAC	

For minors and certificates:

Committee	Approval date
APS	
Undergraduate Council	