

This template is to be used only by programs that have received specific written approval from the Provost's office to proceed with internal proposal development and review. The proposal template should be completed in full and submitted to the University Provost's Office [mailto: curriculumplanning@asu.edu ]. It must undergo all internal university review and approval steps including those at the unit, college, and university levels. A program **may not** be implemented until the Provost's Office notifies the academic unit that the program may be offered.

**College/School/Institute:** New College of Interdisciplinary Arts and Sciences  
**Department/Division/School:** School of Mathematical and Natural Sciences  
**Proposing Faculty Group (if applicable):**  
**Is this an official joint degree program?** No, this is not a joint degree program

*If "Yes" List all the additional college(s)/school(s)/institute(s) that will be involved in offering the degree program and providing the necessary resources. Note: All units offering this program must have collaborated in the proposal development and completed the appropriate unit and college/school approvals.*

**Degree type:** BS-Bachelor of Science  
 If other; provide degree type title and proposed abbreviation:  
**Name of degree program (major):** Pharmacology and Toxicology  
**Are any concentrations to be established under this degree program?** No, concentrations will not be established.  
**Is a program fee required?** No, a program fee is not required.  
**What is the first catalog year available for students to select on the undergraduate application for this this program?** 2017-18  
**Delivery method:** On-campus only (ground courses and/or iCourses)  
*Note: Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online.*

**Campus/Locations:** indicate all locations where this program will be offered.

Downtown Phoenix       Polytechnic       Tempe       West      Other:


**Proposal Contact**

**Name:** Pamela A. Marshall      **Title:** Associate Professor  
**Phone number:** 3-6143      **Email:** pamela.marshall@asu.edu

**DEAN APPROVAL(S)**

**This proposal has been approved by all necessary unit and College/School levels of review.  
 I recommend implementation of the proposed organizational change.**

**College/School/Division Dean name:** Marlene Tromp

**Signature**  **Date:** 6/29 /2016

**College/School/Division Dean name:**  
 (if more than one college involved)

**Signature** \_\_\_\_\_ **Date:** / /20

*Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.*

## 1. Purpose and Nature of Program

Provide a brief program description. Include the distinctive features of the program that make it unique.

This degree includes core classes in pharmacology and toxicology to give students the breadth and depth to comprehend the physiological, molecular, and cellular mechanisms of drug and toxicants. These courses provide the conceptual foundation for understanding the interactions of chemicals in the biological system. The pharmacology segment of the degree will cover the basic principles of dose-response, absorption processes, and metabolism pathways as well as the mechanism of action for some common pharmaceuticals. The toxicology focus will focus on lethal-dose (LD) estimates, types of toxic action and common poisons/pollutants. Taken together, the degree builds a strong background needed for an understanding of pharmacology and toxicology.

This is a unique undergraduate program at ASU. There are only four undergraduate toxicology courses at ASU and three of them are currently offered in the proposed home school of this major (School of Mathematical and Natural Sciences) while the last one is a Fulton Schools of Engineering class. Likewise, only three undergraduate pharmacology classes are listed for ASU with two of them being offered in the college of this program. Lastly, the School of Mathematical and Natural Sciences recently created a Pharmacology and Toxicology concentration within the Biology degree. Therefore, this new major seeks to take existing unique strengths of the School of Mathematical and Natural Sciences and build upon them to create a new major that will benefit students planning future careers in pharmacology, toxicology (both medicinal and environmental), and medicine.

## 2. Student Learning Outcomes and Assessment Methods

### A. Knowledge, competencies, and skills

List the knowledge, competencies, and skills students should have when they graduate from the proposed degree program. You can find examples of program Learning Outcomes at (<https://uoeee.asu.edu/plan-outcomes>).

Graduates with a degree in pharmacology and toxicology will demonstrate knowledge of the principles of pharmacology and toxicology, which include dose-response relationships, metabolism pathways and mechanisms of action for common pharmaceuticals and poisons.

### B. Assessment

Describe the plan and methods to assess whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes. You can find examples of assessment methods at (<https://uoeee.asu.edu/creating-plan>).

75% of students in PTX 301 Basics of Pharmacology and Toxicology will pass the cumulative final exam with 70% or better. 75% of students in PTX 475 Principles of Toxicology will pass the cumulative final exam with scores of 70% or better. 75% of students in PTX 342 Fundamentals of Pharmacology will pass the term paper covering a pharmaceutical and its mechanism of action, excretion, etc. with scores of 70% or better. 75% of students in PTX 450 Pharmacology and Toxicology Laboratory will earn a 75% or greater on their final lab report covering an in-class experiment analyzing dose/response curves of a toxicant.

## 3. Academic Curriculum and Requirements

### A. Major Map.

Attach a copy of the “proposed” major map for this degree program and each concentration(s) to be offered. Instructions on how to create a “proposed major map” in BAMB can be found in the Build a Major Map Training Guide.

### B. Summary of credit hours required for this program

Total credit hours must be 120 and include first year composition, general studies, core/required courses, program specific electives, and any additional requirements (e.g., concentration credits).

Requirements	Credit Hours
<b>First Year Composition</b>	<b>6</b>
<b>ASU 101 (or Equivalent)</b>	<b>1</b>
<b>General Studies</b>	<b>27</b>
<b>Core/required courses</b>	<b>69</b>
<b>Program specific electives</b>	<b>7</b>
<b>Additional requirements</b>	<b>6</b>
<b>Other; please explain : electives</b>	<b>4</b>
<b>Total</b>	<b>120</b>

**C. Core/Required Courses.**

- i. Total required and/or core course credit hours:

69

- ii. List the name, prefix, and credit hours for each required/core course for this program

**LOWER DIVISION CLASSES**

BIO 181 General Biology I	4
BIO 182 General Biology II	4
BIO 201 Human Anatomy and Physiology I + lab	4
BIO 202 Human Anatomy and Physiology II + lab	4
CHM 113 General Chemistry I	4
CHM 116 General Chemistry II	4
CHM 233, 237 General Organic Chemistry I + lab	4
CHM 234, 238 General Organic Chemistry II + lab	4
MAT 210 Brief Calculus	3
PHY 111, 113 General Physics + lab	4
PHY 112, 114 General Physics + lab	4
STP 226 Elements of Statistics	3

**UPPER DIVISION CLASSES**

BCH 371, 372 Modern Concepts in Biochemistry + lab	4
BIO 353, 354 Cell Biology + lab	4
LSC 347, 348 Fundamentals of Genetics + lab	4
PTX 301 Basics of Pharmacology and Toxicology (New)	3
PTX 432 Fundamentals of Pharmacology	3
PTX 450 Pharmacology and Toxicology Lab (New)	2
PTX 475 Principles of Toxicology	3

**D. Program Specific Electives.**

- i. Total required program elective credit hours:

Students must select a minimum of 2 courses for 7 to 9 credit hours. One course must be a minimum of 4 credit hours.

- ii. List the name, prefix, and credit hours for any program specific electives for this program:

CHM 302 Environmental Chemistry	3
FOR 401 Forensic Toxicology	3
LSC 388 Research Fundamentals for the Natural Sciences	4
LSC 425, 426 Analytical Chemistry for Life Sciences + lab	5
LSC 430 Environmental and Human Toxicology	4

LSC 499 Individualized Instruction	4
MIC 443, 444 The Microbial Universe + lab	4
PSY 470 Psychopharmacology	3

**E. Additional Program Requirements, if any:**

List and describe any capstone experiences, milestone, and/or additional requirements.

Upper division Language and Cultures requirement      6

**F. Concentrations**

- i. Are any concentrations to be established under this degree program? **No, concentrations will not be established.**
- ii. If yes, are concentrations required? (Select One)
- iii. List courses & additional requirements for the proposed concentration (s):

Concentration Name	Total credit hours	Core/Required Courses for Concentration (Prefix, # & Title)	Total Core credit hours	Program Specific Electives (include course name and prefix)	Total Elective credit hours	Additional Requirements (i.e. milestones, capstones)

#### 4. New Course Development

##### A. Will a new course prefix (es) be required for this degree program? Yes

If yes, list prefix name(s) (i.e. ENG- English) PTX - Pharmacology and Toxicology

*Note: A request for a New Prefix form must be completed for each new prefix required and submitted with this proposal: [http://provost.asu.edu/files/shared/curriculum/Prefix\\_Request.doc](http://provost.asu.edu/files/shared/curriculum/Prefix_Request.doc).*

##### B. New Courses Required for Proposed Degree Program.

List all new courses required for this program, including course prefix, number and course description.

PTX 301 -Introduction to Pharmacology and Toxicology

Human pharmacology and toxicology, focusing on mechanisms of drug action, clearance systems and dose response. Lecture. Prerequisite(s): BIO 181, 182; CHM 234

PTX 450 - Pharmacology and Toxicology Laboratory

Provides experimental and laboratory experience in conducting toxicology tests to determine the ED50 and LD50 for chemicals. Covers the pragmatic considerations of experimental design, implementation and data analysis. Experiments include whole organism tests as well as cell assays and numerical modeling experiments. Integrated lecture/lab. Pre- or corequisite(s): FOR 475 (or LSC 432 or LSC 475 or PTX 432 or PTX 475)

*Note: New course requests must be submitted electronically via Curriculum ChangeMaker and undergo all internal university review and approval steps including those at the unit, college, and university levels.*

#### 5. Program Need

Explain why the university needs to offer this program (include target audience and market).

This degree program would be the only bachelor's level program in Arizona in Pharmacology/Toxicology, save for the school's less intensive BS in Biology with a Pharmacology/Toxicology concentration. The current pharmacology/toxicology concentration in Biology will be maintained, as we believe there is a market for both programs. Undergraduate pharmacology and toxicology programs are also rather rare around the United States since these are very intensive programs that require extensive class work prior to the culminating classes in pharmacology and toxicology. The program is primarily designed to serve the needs of three groups of students. The first set is the students who plan to attend a pharmacy program (PharmD). While the extensive and laboratory-focused course work outlined in this concentration is not required for admission, the course work would dramatically increase the competitiveness of our graduates for admittance to a pharmacy program. Furthermore, a strong and extensive background provided by this degree will enhance the success of the students admitted into a pharmacy program by introducing them to many of the concepts that they will encounter. The second group of students served by this degree is those students who have aspirations of attending a medical program who are looking for a competitive advantage by thoroughly understanding the biochemistry and pharmacology of drugs in humans. The defined degree will also give recognition to students who have accepted a more challenging undergraduate degree. The last main group of students served by this program is students who intend to continue on to graduate school and conduct research in biochemistry, pharmacology or toxicology. Students taking this path are not limited to medical research; they can also pursue many opportunities to perform bench-based research such as in environmental chemistry (e.g., effects of pollution), in natural products chemistry, and in forensics. An additional population of students who may be interested in this degree are those who wish to begin working in a lab environment directly after graduation. This degree, with its hands-on approach to learning science, is an excellent choice for these students as well.

#### 6. Impact on Other Programs

List other academic units that might be impacted by the proposed program and describe the potential impact (e.g., how the implementation of this program might affect student headcount/enrollment, student recruitment, faculty participation, course content, etc. in other programs). Attach letters of collaboration/support from impacted programs.

College of Liberal Arts and Sciences, College of Letters and Sciences, College of Health Solutions

**7. Projected Enrollment**

How many new students do you anticipate enrolling in this program each year for the next five years?

<b>5-YEAR PROJECTED ANNUAL ENROLLMENT</b>					
	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b> (Yr 1 continuing + new entering)	<b>3<sup>rd</sup> Year</b> (Yr 1 & 2 continuing + new entering)	<b>4<sup>th</sup> Year</b> (Yrs 1, 2, 3 continuing + new entering)	<b>5<sup>th</sup> Year</b> (Yrs 1, 2, 3, 4 continuing + new entering)
Number of Students Majoring (Headcount)	20	40	60	80	87

**8. Accreditation or Licensing Requirements**

If applicable, provide the names of the external agencies for accreditation, professional licensing, etc. that guide your curriculum for this program, if any. Describe any requirements for accreditation or licensing.

Not applicable.

**9. Faculty & Staff**
**A. Current faculty**

List the name, rank, highest degree, area of specialization/expertise and estimate of the level of involvement of all current faculties who will teach in the program.

Thomas Cahill, Associate Professor, PhD, Chemistry, teaching and new course development  
 Charles Deutch, Professor Emeritus & Faculty Associate, PhD, Biochemistry, teaching and new course development  
 Emma Farrell, Instructor, PhD, Biochemistry, teaching  
 Peter Jurutka, Associate Professor, PhD, Biochemistry, teaching and new course development  
 Pamela Marshall, Associate Professor, PhD, Biology, teaching and new course development  
 Karen Watanabe, Associate Professor, PhD, Mathematical modelling, teaching and new course development

**B. New Faculty:**

Describe the new faculty hiring needed during the next three years to sustain the program. List the anticipated hiring schedule and financial sources for supporting the addition of these faculty members.

In order to fully staff this program we will need two T/TT hires, one with a specialization in pharmacology and one with a specialization in toxicology. Hiring of these two individuals would commence in fall of 2017 for an anticipated start date of fall 2018. We will also need more faculty to teach the supporting courses, such as BIO 181/182 and CHM 113/116. We anticipate needed one more lecturer in biology and a lecturer in chemistry to support our growth. We anticipate the college will fund these.

**C. Administration of the program.**

Explain how the program will be administered for the purposes of admissions, advising, course offerings, etc. Discuss the available staff support.

The program will be administered through the existing structures of the School of Mathematical and Natural Sciences. Staff support is adequate for the first few years of the program. Additional advisors will be needed to support student needs as our program grows.

**10. Resources (necessary to launch and sustain the program)****A. Required resources:**

Describe any new resources required for this program's success, such as new support staff, new facilities, new library resources, new technology resources, etc.

The program can be administered without new resources. Depending on enrollment, additional advisors may need to be considered in the future.

**B. Resource acquisition:**

Explain how the resources to support this program will be obtained.

The college and class fees will support our continued growth.

APPENDIX  
OPERATIONAL INFORMATION FOR UNDERGRADUATE PROGRAMS  
(This information is used to populate the Degree Search/catalog website.)**1. Program Name (Major):** Pharmacology and Toxicology BS**2. Program Description** (150 words maximum)

The School of Mathematical and Natural Sciences offers a BS degree in pharmacology and toxicology in the New College of Interdisciplinary Arts and Sciences at the West campus of Arizona State University.

This program provides the conceptual foundation for understanding the interactions of chemicals in the biological system. The degree approaches the study of biology and chemistry in an integrative fashion, giving students the breadth and depth to comprehend the physiological, molecular and cellular mechanisms of drug and toxicant action. The degree utilizes experiential learning, and all required core courses have laboratories. Undergraduates have the opportunity to conduct independent research under the mentorship of faculty members or in internships outside the school.

**3. Contact and Support Information**

Building Name, code and room number: ( <i>Search ASU map</i> )	FAB N100
Program office telephone number: ( <i>i.e. 480/965-2100</i> )	602/543-3000
Program Email Address:	<a href="mailto:mnsadvising@asu.edu">mnsadvising@asu.edu</a>
Program Website Address:	<a href="https://newcollege.asu.edu/mathematical-natural-sciences-degree-programs">https://newcollege.asu.edu/mathematical-natural-sciences-degree-programs</a>

**4. Delivery/Campus Information Delivery:** On-campus only (ground courses and/or iCourses)

*Note: Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online.*

**5. Campus/Locations:** indicate all locations where this program will be offered.

Downtown Phoenix     Polytechnic     Tempe     West    Other:

**6. Additional Program Description Information**

- A. Additional program fee required for this program?    No  
B. Does this program have a second language requirement?    No

**7. Career Opportunities & Concentrations**

Provide a brief description of career opportunities available for this degree program. If program will have concentrations, provide a brief description for each concentration. (150 words maximum)

The pharmacology and toxicology degree program prepares students for a number of career paths including:

- laboratory researcher
- pharmacist
- physician
- physician's assistant
- veterinarian

Graduates also may work at governmental agencies or at private companies in areas such as:

- Arizona Department of Environmental Quality
- city government
- clinical trials



- Department of Transportation
- Environmental Protection Agency
- product safety evaluation
- regulatory affairs
- teaching

**8. Additional Admission Requirements**

If applicable list any admission requirements (freshman and/or transfer) that are higher than and/or in addition to the university minimum undergraduate admission requirements.)

None

**9. Keywords**

List all keywords used to search for this program. Keywords should be specific to the proposed program.

Pharmacology, Pharmacy, Pre-Health, Toxicology, Toxics, Biochemistry, Health, Pre-Medicine, Veterinary Medicine

**10. Advising Committee Code**

List the existing advising committee code to be associated with this degree. UGNC02

*Note: If a new advising committee needs to be created, please complete the following form:*  
[Proposal to create an undergraduate advising committee](#)

**11. First Required Math Course**

List the first math course required in the major map. MAT 210

**12. WUE Eligible:**

Has a request been submitted to the Provost by the Dean to consider this degree program as eligible for WUE? Yes

*Note: No action will be taken during the implementation process with regards to WUE until approval is received from the Provost.*

**13. Math Intensity:**

- a. List the highest math course required on the major map. (This will not appear on Degree Search.) MAT 210
- b. What is the math intensity as indicated by the highest math required on the major map? Math intensity categorization can be found here: <https://catalog.asu.edu/mathintensity> Moderate

**14. CIP codes**

Identify CIP codes that should be displayed on Degree Search. CIP codes can be found at: <http://www.onetonline.org/crosswalk/CIP/>.

26.1001 .....	26.1004
26.1002 .....	26.1005
26.1007 .....	26.1006
26.1009 .....	60.0316
.....	

Are any specific career codes (SOC/ONET codes) to be omitted from the CIP codes selected above?  
 (i.e. "Omit 25-10312.00 Engineering Teachers, Postsecondary from CIP code 14.0501 Bioengineering and Biomedical Engineering.")

.....

**15. Area(s) of Interest**

A. Select **one (1)** primary area of interest from the list below that applies to this program.

- |  |  |
|--|--|
| <input type="checkbox"/> Architecture & Construction | <input type="checkbox"/> Health & Wellness                         |
| <input type="checkbox"/> Arts                        | <input type="checkbox"/> Humanities                                |
| <input type="checkbox"/> Business                    | <input type="checkbox"/> <a href="#">Interdisciplinary Studies</a> |
| <input type="checkbox"/> Communications & Media      | <input type="checkbox"/> Law, Justice & Public Service             |
| <input type="checkbox"/> Computing & Mathematics     | <input checked="" type="checkbox"/> <a href="#">STEM</a>           |
| <input type="checkbox"/> Education & Teaching        | <input type="checkbox"/> <a href="#">Science</a>                   |
| <input type="checkbox"/> Engineering & Technology    | <input type="checkbox"/> Social and Behavioral Sciences            |
| <input type="checkbox"/> Entrepreneurship            | <input type="checkbox"/> Sustainability                            |
| <input type="checkbox"/> <a href="#">Exploratory</a> |  |

B. Select **one (1)** secondary area of interest from the list below that applies to this program.

- |  |  |
|--|--|
| <input type="checkbox"/> Architecture & Construction | <input checked="" type="checkbox"/> Health & Wellness              |
| <input type="checkbox"/> Arts                        | <input type="checkbox"/> Humanities                                |
| <input type="checkbox"/> Business                    | <input type="checkbox"/> <a href="#">Interdisciplinary Studies</a> |
| <input type="checkbox"/> Communications & Media      | <input type="checkbox"/> Law, Justice & Public Service             |
| <input type="checkbox"/> Computing & Mathematics     | <input type="checkbox"/> <a href="#">STEM</a>                      |
| <input type="checkbox"/> Education & Teaching        | <input type="checkbox"/> <a href="#">Science</a>                   |
| <input type="checkbox"/> Engineering & Technology    | <input type="checkbox"/> Social and Behavioral Sciences            |
| <input type="checkbox"/> Entrepreneurship            | <input type="checkbox"/> Sustainability                            |
| <input type="checkbox"/> <a href="#">Exploratory</a> |  |

The following fields are to be completed by the Office of the University Provost.

CIP Code: \_\_\_\_\_

Plan Code:



**MEMO**

Date: June 27, 2016

To: Marlene Tromp  
Dean, New College of Interdisciplinary Arts and Sciences

From: Lara Ferry  
Interim Director, School of Mathematical and Natural Sciences

On behalf of the School of Mathematical and Natural Sciences, I am submitting our proposal to establish a BS in Pharmacology/Toxicology.

The proposal has received faculty approval through appropriate governance procedures in the School of Mathematical and Natural Sciences as well as relevant academic units throughout the university.

I have reviewed the proposal and verified that the proposal is complete and all supplemental materials are included.

Attachments: Proposal to Establish Undergraduate Program, Impact Statement from College of Liberal Arts and Sciences, College of Letters and Sciences, College of Health Solutions, and a copy of the draft major map.

**NEW COLLEGE OF INTERDISCIPLINARY ARTS & SCIENCES**

*MAILING ADDRESS:* PO BOX 37100, PHOENIX, AZ 85069-7100

*STREET/SHIPPING ADDRESS:* 4701 W. THUNDERBIRD ROAD, GLENDALE, AZ 85306-4908

**(602) 543-6000 FAX: (602) 543-6004**

**Stacey Kimbell**

---

**Subject:** FW: Pharmacology and Toxicology major/minor

Begin forwarded message:

**From:** Michael Angilletta <[ma@asu.edu](mailto:ma@asu.edu)>

**Subject: Pharmacology and Toxicology major/minor and Biomedical Research Certificate**

**Date:** May 9, 2016 at 11:40:55 AM MST

**To:** Lara Ferry <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)>

Hi Lara,

After conferring with my advisors, I have concluded that the proposed programs in Pharmacology and Toxicology major/minor and Biomedical Research Certificate will have little or no negative impacts on our undergraduate programs in the School of Life Sciences. Thus, we wish you success in your effort to develop these programs.

Best regards,  
Mike Angilletta

-----  
**Michael J. Angilletta Jr.**

Professor & Senior Sustainability Scholar  
Associate Director of Undergraduate Programs

School of Life Sciences  
Arizona State University  
Tempe, AZ 85287

## Stacey Kimbell

---

**From:** Lara Ferry  
**Sent:** Wednesday, April 13, 2016 8:23 AM  
**To:** Stacey Kimbell  
**Subject:** Fwd: FOLLOW-UP -- Impact Statement Request for Pharmacology/Toxicology BS and BioMedical Research BS  
**Attachments:** PTX.pdf; BioMedRes\_Cert.pdf

Begin forwarded message:

**From:** Paul LePore <[Paul.Lepore@asu.edu](mailto:Paul.Lepore@asu.edu)>  
**Subject:** FOLLOW-UP -- Impact Statement Request for Pharmacology/Toxicology BS and BioMedical Research BS  
**Date:** April 7, 2016 at 11:17:17 AM MST  
**To:** Lara Ferry <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)>, Neal Woodbury <[NWoodbury@asu.edu](mailto:NWoodbury@asu.edu)>, Bertram Jacobs <[bjacobs@asu.edu](mailto:bjacobs@asu.edu)>, Anne Jones <[Anne.Katherine.Jones@asu.edu](mailto:Anne.Katherine.Jones@asu.edu)>, Michael Angilletta <[Michael.Angilletta@asu.edu](mailto:Michael.Angilletta@asu.edu)>  
**Cc:** Jenny Smith <[jenny.smith@asu.edu](mailto:jenny.smith@asu.edu)>, Kenro Kusumi <[Kenro.Kusumi@asu.edu](mailto:Kenro.Kusumi@asu.edu)>, "P.F. Lengel" <[PFLengel@asu.edu](mailto:PFLengel@asu.edu)>, Kyle Rader <[kwrader@asu.edu](mailto:kwrader@asu.edu)>, Ferran Garcia-Pichel <[ferran@asu.edu](mailto:ferran@asu.edu)>, Patrick Kenney <[pkenny@asu.edu](mailto:pkenny@asu.edu)>, Paul LePore <[Paul.Lepore@asu.edu](mailto:Paul.Lepore@asu.edu)>

Dear Neal/Anne and Bert/Mike,

New College is proposing two new degrees on the West Campus that may have an impact on your existing degrees.

Can please review and provide impact statements to these two new proposals (please send to Lara and cc the college on your responses)?

Thanks much.

PL

**PAUL C. LEPORE, Ph.D.**  
Associate Dean  
**College of Liberal Arts and Sciences**  
Foundation Building, Suite 110  
Arizona State University | P.O. Box 876605 | Tempe, Arizona 85287-6605  
480.965.6506 | Fax: 480.965.2110 | e-mail: [paul.lepore@asu.edu](mailto:paul.lepore@asu.edu)

**ASU College of Liberal Arts and Sciences** — *Transforming learning, discovery and lives*

---

**From:** Lara Ferry  
**Sent:** Thursday, April 07, 2016 11:09 AM  
**To:** Paul LePore  
**Subject:** Impact Statement Request for Pharmacology/Toxicology BS

Hello Paul-

I'm writing to solicit an impact statement regarding our proposed Pharmacology/Toxicology BS, which we are expanding from the existing concentration that exists within our Biology BS here in New College. We hope to launch the stand-alone BS degree and associated minor in the Fall of 2017.

I append here for your review the proposals and associated attachments. I have merged the BS and minor proposals into one PDF for ease.

Thank you kindly for your assistance!

Best,

Lara Ferry, PhD  
Interim Director & Professor, School of Mathematical & Natural Sciences  
Honors Faculty, Barrett The Honors College

Arizona State University  
Mailing Address (letters): PO Box 37100, MC 2352 • Phoenix, AZ 85069  
Shipping Address (packages): 4701 W. Thunderbird Rd, FAB N137 • Glendale, AZ 85306  
Office: FAB N153 • (602) 543-2817  
Research Website: <http://morphology.asu.edu>

## Stacey Kimbell

---

**From:** Lara Ferry  
**Sent:** Wednesday, April 13, 2016 8:23 AM  
**To:** Stacey Kimbell  
**Subject:** Fwd: Impact Statement Request for Pharmacology/Toxicology BS

Begin forwarded message:

**From:** Keith Lindor <[Keith.Lindor@asu.edu](mailto:Keith.Lindor@asu.edu)>  
**Subject: Re: Impact Statement Request for Pharmacology/Toxicology BS**  
**Date:** April 12, 2016 at 11:45:21 PM MST  
**To:** Lara Ferry <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)>

Lara, I got feedback from Mark Searle and we are supportive of moving this degree forward

Sent from my iPad

On Apr 11, 2016, at 10:50 PM, "Lara Ferry" <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)> wrote:

I seem to have missed you and my call went to your voice mail. Could we plan to chat tomorrow morning? I have availability from 10:30 on. Alternatively, on Wednesday I am free except for 10 - 11. On Thursday I am free from 9:30 until 2. Friday is a mess, but overall a remarkably open week!

On Apr 11, 2016, at 1:45 PM, Keith Lindor  
<[Keith.Lindor@asu.edu](mailto:Keith.Lindor@asu.edu)> wrote:

Sure  
507-250-1695

Sent from my iPad

On Apr 11, 2016, at 4:39 PM, "Lara Ferry"  
<[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)> wrote:

Of course. Are you available for a call?

On Apr 11, 2016, at 1:22 PM, Keith Lindor <[Keith.Lindor@asu.edu](mailto:Keith.Lindor@asu.edu)> wrote:

Can we discuss? We have proposed a School of Pharmacy and this could lead to confusion.

Sent from my iPad

On Apr 11, 2016, at 3:23 PM, "Lara Ferry" <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)> wrote:

Hello Dean Lindor-

I'm writing to solicit an impact statement regarding our proposed Pharmacology/Toxicology BS, which we are expanding from the existing concentration that exists within our Biology BS here in Math and Natural Sciences (at the West Campus). We hope to launch the stand-alone BS degree and associated minor in the Fall of 2017.

I append here for your review the proposals and associated attachments. I have merged the BS and minor proposals into one PDF for ease.

Thank you kindly for your assistance!

Best,



Lara Ferry, PhD  
Interim Director &  
Professor, School of  
Mathematical &  
Natural Sciences  
Honors Faculty,  
Barrett The Honors  
College

Arizona State  
University  
Mailing Address  
(letters): PO Box  
37100, MC 2352 •  
Phoenix, AZ 85069  
Shipping Address  
(packages): 4701 W.  
Thunderbird Rd, FAB  
N137 • Glendale, AZ  
85306  
Office: FAB N153 •  
(602) 543-2817  
Research  
Website: <http://morphology.asu.edu>

<PTX.pdf>

## Stacey Kimbell

---

**From:** Lara Ferry  
**Sent:** Wednesday, April 13, 2016 8:22 AM  
**To:** Stacey Kimbell  
**Subject:** Fwd: Impact Statement Request for Pharmacology/Toxicology BS

Begin forwarded message:

**From:** Duane Roen <[Duane.Roen@asu.edu](mailto:Duane.Roen@asu.edu)>  
**Subject:** RE: Impact Statement Request for Pharmacology/Toxicology BS  
**Date:** April 10, 2016 at 1:38:30 PM MST  
**To:** Lara Ferry <[Lara.Ferry@asu.edu](mailto:Lara.Ferry@asu.edu)>

Lara,

The College of Letters and Sciences is happy to support your proposal for a Pharmacology/Toxicology BS.

Best,  
Duane

Duane Roen  
Vice Provost, Polytechnic campus  
Dean, College of Letters and Sciences  
Dean, University College  
Arizona State University  
480-727-6513  
[duane.roen@asu.edu](mailto:duane.roen@asu.edu)

---

**From:** Lara Ferry  
**Sent:** Thursday, April 7, 2016 11:07 AM  
**To:** Duane Roen <[Duane.Roen@asu.edu](mailto:Duane.Roen@asu.edu)>  
**Subject:** Impact Statement Request for Pharmacology/Toxicology BS

Hello Duane-

I'm writing to solicit an impact statement regarding our proposed Pharmacology/Toxicology BS, which we are expanding from the existing concentration that exists within our Biology BS. We hope to launch the stand-alone BS degree and associated minor in the Fall of 2017.

I append here for your review the proposals and associated attachments. I have merged the BS and minor proposals into one PDF for ease.

Thank you kindly for your assistance!

Best,

Lara Ferry, PhD  
Interim Director & Professor, School of Mathematical & Natural Sciences  
Honors Faculty, Barrett The Honors College

Arizona State University

Mailing Address (letters): PO Box 37100, MC 2352 • Phoenix, AZ 85069

Shipping Address (packages): 4701 W. Thunderbird Rd, FAB N137 • Glendale, AZ 85306



Office: FAB N153 • (602) 543-2817



Research Website: <http://morphology.asu.edu>

# 2016 - 2017 Major Map

## Pharmacology and Toxicology, (Proposed)

School/College:  
TAFNZXA

Term 1 0 - 15 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 <u>BIO 181: General Biology I (SQ) OR</u> <u>BIO 182: General Biology II (SG)</u>	4	C	<ul style="list-style-type: none"> <li>• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses.</li> <li>• ASU Mathematics Placement Test score determines placement in Mathematics course.</li> <li>• ASU 101 or college-specific equivalent First-Year Seminar required of all freshman students. NEW 101 satisfies this requirement.</li> <li>• IAS 300 (3 credit hours) is required for all transfer students in place of NEW 101.</li> </ul>
<u>CHM 113: General Chemistry I (SQ)</u>	4	C	
<u>ENG 101 or ENG 102: First-Year Composition OR</u> <u>ENG 105: Advanced First-Year Composition OR</u> <u>ENG 107 or ENG 108: First-Year Composition</u>	3	C	
<u>MAT 210: Brief Calculus (MA) OR</u> <u>STP 226: Elements of Statistics (CS)</u>	3	C	
<u>NEW 101: The ASU New College Experience</u>	1		
Term hours subtotal:	15		

Term 2 16 - 29 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 <u>BIO 181: General Biology I (SQ) OR</u> <u>BIO 182: General Biology II (SG)</u>	4	C	
<u>CHM 116: General Chemistry II (SQ)</u>	4	C	
<u>ENG 101 or ENG 102: First-Year Composition OR</u> <u>ENG 105: Advanced First-Year Composition OR</u> <u>ENG 107 or ENG 108: First-Year Composition</u>	3	C	

MAT 210: Brief Calculus (MA) OR  
STP 226: Elements of Statistics (CS)

3 C

❖ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).

Term hours subtotal: 14

Term 3 30 - 44 Credit Hours <u>Critical course signified by</u> ❖	Hours	Minimum Grade	Notes
---	-------	---------------	-------

❖ <u>PHY 111: General Physics (SQ) AND</u> <u>PHY 113: General Physics Laboratory (SQ)</u>	4	C	
<u>BIO 201: Human Anatomy and Physiology I (SG)</u>	4	C	
<u>CHM 233: General Organic Chemistry I AND</u> <u>CHM 237: General Organic Chemistry Laboratory I</u>	4	C	
<u>Literacy and Critical Inquiry (L)</u>	3		

❖ Complete CHM 113, CHM 116 course(s).  
 ❖ Complete First-Year Composition requirement.  
 ❖ Complete Mathematics (MA) requirement.  
 Complete BIO 181, BIO 182 course(s).

Term hours subtotal: 15

Term 4 45 - 60 Credit Hours <u>Critical course signified by</u> ❖	Hours	Minimum Grade	Notes
---	-------	---------------	-------

❖ <u>PHY 112: General Physics (SQ) AND</u> <u>PHY 114: General Physics Laboratory (SQ)</u>	4	C	
<u>BIO 202: Human Anatomy and Physiology II (SG)</u>	4	C	
<u>CHM 234: General Organic Chemistry II AND</u> <u>CHM 238: General Organic Chemistry Laboratory II</u>	4	C	
<u>Humanities, Arts and Design (HU)</u>	3		
<u>Elective</u>	1		

Term hours subtotal: 16

Term 5 61 - 76 Credit Hours <u>Necessary course signified by</u> ★	Hours	Minimum Grade	Notes
--	-------	---------------	-------

★ <u>LSC 347: Fundamentals of Genetics AND</u> <u>LSC 348: Fundamentals of Genetics Laboratory</u>	4	C	• IAS 300 (3 credit hours) is required for all transfer students.
★ <u>PTX 301: Basics of Pharmacology and Toxicology</u>	3	C	
<u>Cultural Diversity in the U.S. (C)</u>	3		
<u>Social-Behavioral Sciences (SB)</u>	3		

<u>Upper Division Literacy and Critical Inquiry (L) OR</u>	3
<u>IAS 300: Adult Career Development (L or SB)</u>	
Term hours subtotal:	16

<b>Term 6</b> 77 - 92 Credit Hours <u>Necessary course signified by</u> ★	Hours	Minimum Grade	Notes
★ <u>BIO 353: Cell Biology AND</u>	4	C	
<u>BIO 354: Cell Biology Laboratory</u>			
<u>Upper Division Pharmacology and Toxicology Elective</u>	3-5	C	
<u>Historical Awareness (H)</u>	3		
<u>Humanities, Arts and Design (HU)</u>	3		
<u>Social-Behavioral Sciences (SB)</u>	3		
Term hours subtotal:	16-18		

<b>Term 7</b> 93 - 106 Credit Hours <u>Necessary course signified by</u> ★	Hours	Minimum Grade	Notes
★ <u>BCH 371: Modern Concepts in Biochemistry AND</u>	4	C	<ul style="list-style-type: none"> <li>A total of 4 credit hours of LSC 499 may be taken to meet the Upper Division Pharmacology/Toxicology elective requirement.</li> </ul>
<u>BCH 372: Modern Concepts in Biochemistry Laboratory</u>			
<u>Upper Division Pharmacology and Toxicology Elective</u>	4	C	
<u>Upper Division Humanities, Arts and Design (HU) AND Global Awareness (G) OR</u>			
<u>Upper Division Social-Behavioral Sciences (SB) AND Global Awareness (G) ( ASB 353 OR SOC 353 recommended)</u>	3		
Upper Division Language and Cultures: Requirement satisfied through the following: * Completion of six semester hours of upper-division courses that have a Global Awareness (G) or Cultural Diversity (C) designation, in addition to the courses used to meet the University General Studies requirements or four (4) sequential semesters of one foreign language or two (2) semesters of a current computer language. Adjustment to upper division hours is required if lower division courses are used.	3	C	
Term hours subtotal:	14		

<b>Term 8</b> 107 - 120 Credit Hours <u>Necessary course signified by</u> ★	Hours	Minimum Grade	Notes
--	-------	---------------	-------

★ <a href="#">PTX 432: Fundamentals of Pharmacology</a>	3	C	<ul style="list-style-type: none"> <li>• General elective credit hours will be adjusted depending on the Pharmacology/Toxicology electives selected. Discuss with your advisor.</li> </ul>
★ <a href="#">PTX 450: Pharmacology and Toxicology Laboratory</a>	2	C	
<a href="#">PTX 475: Principles of Toxicology</a>	3	C	
Upper Division Language and Cultures: Requirement satisfied through the following:			
* Completion of six semester hours of upper-division courses that have a Global Awareness (G) or Cultural Diversity (C) designation, in addition to the courses used to meet the University General Studies requirements or four (4) sequential semesters of one foreign language or two (2) semesters of a current computer language. Adjustment to upper division hours is required if lower division courses are used.	3	C	<ul style="list-style-type: none"> <li>• A total of 4 credit hours of LSC 499 may be taken to meet the Upper Division Pharmacology/Toxicology elective requirement.</li> </ul>
Upper Division Elective	3		
Term hours subtotal:	14		

Hide Course List(s)/Track Group(s)

Pharmacology/Toxicology  
Elective

[CHM 302: Environmental  
Chemistry](#)

[FOR 401: Forensic Toxicology](#)

[LSC 388: Research  
Fundamentals for the Natural  
Sciences](#)

[LSC 425: Analytical Chemistry  
for Life Sciences AND LSC  
426: Analytical Chemistry for  
Life Sciences Lab](#)

[LSC 430: Environmental and  
Human Toxicology](#)

[LSC 499: Individualized  
Instruction](#)

MIC 443: The Microbial  
Universe AND MIC 444: The  
Microbial Universe Laboratory

PSY 470: Psychopharmacology

**Total Hours:** 120

**Upper Division Hours:** 45 minimum

**Major GPA:** 2.00 minimum

**Cumulative GPA:** 2.00 minimum

**Total hrs at ASU:** 30 minimum

**Hrs Resident Credit for**

**Academic Recognition:** 56 minimum

**Total Community College Hrs:** 64 maximum

**Total College Residency Hrs:** 12 minimum

**General University Requirements Legend**

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed on the major map are current for the 2016 - 2017 academic year.