

# **MEMORANDUM OF UNDERSTANDING BETWEEN MARSHALL UNIVERSITY AND MOREHEAD STATE UNIVERSITY LEADING TO A BACHELOR OF SCIENCE (IN BIOMEDICAL SCIENCES OR CHEMISTRY) FROM MOREHEAD STATE UNIVERSITY AND A DOCTOR OF PHARMACY DEGREE FROM MARSHALL UNIVERSITY**

Marshall University School of Pharmacy (MUSOP) and Morehead State University establish this memorandum of understanding (MOU) leading to the Bachelor of Science degree (in Biomedical Sciences or Chemistry) at Morehead State University and the Doctor of Pharmacy degree to be granted by Marshall University. Students who have satisfactorily completed the program of study outlined in this agreement and who meet admission requirements for the School of Pharmacy may be admitted to the Marshall University School of Pharmacy to complete the requirements for the Pharm.D. This arrangement enables the first year at Marshall University to count toward both the B.S. at Morehead and toward the Pharm.D. at Marshall, allowing a student to earn both degrees in an accelerated 7 year time frame rather than the traditional 8 years.

Marshall University and Morehead State University agree to monitor and support the provisions of this agreement to ensure the consistency, quality, and transferability of students interested in pursuing a Pharm.D. degree. Marshall University and Morehead State University agree to coordinate changes in the course content and/or requirements for any courses listed in the MOU for the purpose of ensuring continued comparability between the courses offered on each campus. Marshall University and Morehead State University agree to renegotiate this agreement when changes to the B.S. or the Pharm.D. curriculum occur or when changes in the graduation requirements for either institution become necessary. This process will be the responsibility of the appropriate deans at both institutions.

## **I. CURRICULUM**

Marshall and Morehead agree that the courses listed in *Appendix A* are equivalent regarding content and student learning objectives. The successful completion of these courses are required for admission to the Pharm D program. Morehead faculty and staff will advise students working toward the dual B.S. and Pharm.D. degrees to ensure their courses fulfill the requirements listed herein.

Students attending Morehead who elect to pursue the Pharm.D. will complete the courses listed in either *Appendix B or Appendix C* through Morehead. Upon admission to Marshall's School of Pharmacy and successful completion of the Year 4 curriculum outlined in *Appendix B or Appendix C*, students will receive a Bachelor of Science in Biomedical Sciences or a Bachelor of Science in Chemistry from Morehead University. Completion of the Year 4 curriculum also fulfills the requirements for the first year of the PharmD curriculum.

## **II. Process**

Students attending Morehead State University who elect to pursue the Pharm.D. degree program at Marshall University will take the first three years of course work listed in either *Appendix B* (B.S. in Biomedical Sciences) or *Appendix C* (B.S. in Chemistry) through Morehead State

University. Students will then transfer to the Marshall University School of Pharmacy for the 4<sup>th</sup> year of the curriculum.

MUSOP will grant interviews to all Morehead State University students who elect to transfer to the Pharm.D. program and meet the minimum transfer requirements. The minimum transfer requirements are:

1. Completion of all course work (years 1-3) in *Appendix B or Appendix C*.
2. Selection for receipt of preferential consideration by the appropriate Morehead State University Dean or group. Morehead State University will submit a list of students deserving preferential consideration for admission to the Marshall University School of Pharmacy prior to December 15th of each year.
3. Minimum GPA of 3.0 at Morehead State University for all prerequisite courses listed in *Appendix A*.
4. Application to the Marshall University School of Pharmacy through the online Pharmacy College Application Service (PharmCAS, at <http://www.pharmacas.org>).
5. Submission of the Marshall University School of Pharmacy supplemental application and Marshall University Graduate College application and required applications fees;
6. Successful completion of an on-campus admissions interview.
7. Submission of an approved graduation plan (signed by MSU officials) that specifies the courses at Marshall that will be transferred back to MSU to allow the student to receive their B.S. All general education requirements must be finished prior to transfer since these courses will not back-transfer.

**APPENDIX A: PREREQUISITE CURRICULUM FOR ADMISSION INTO THE MARSHALL UNIVERSITY PHARM.D. PROGRAM**

Course	Marshall	Morehead Equivalent
Calculus	MTH 229 (5)	MATH 175 (4)
Statistics	MTH 225 (3)	MATH 353 or MATH 356 (3)
General Biology I	BSC 120 (4)	BIOL 171/171L (4)
General Biology II	BSC 121 (4)	BIOL 380/380L (4)
Human Anatomy	BSC 227 (4)	BIOL 244/244L (4)
Human Physiology	BSC 228 (4)	BIOL 245/245L (4)
Microbiology	BSC 250 (4)	BIOL 317/317L (4)
Gen Chemistry I	CHM 211 (3)	CHEM 111 (4)
Gen Chemistry I Lab	CHM 217 (2)	
Gen Chemistry II	CHM 212 (3)	CHEM 112/112L (4)
Gen Chemistry II Lab	CHM 218 (2)	
Organic Chemistry I	CHM 355 (3)	CHEM 326/326L (4)
Organic Chemistry II	CHM 356 (3)	CHEM 327/327L (4)
Organic Chemistry II lab	CHM 361 (3)	
Physics I	PHY 201 (3)	PHYS 201 (3)
Physics I Lab	PHY 202 (1)	PHYS 201L (1)
Social Science	3 credit hour course in the social sciences	3 credit hour course in the social sciences

## Appendix B: BS Biomedical Sciences Area of Concentration – Morehead State University / Marshall University School of Pharmacy

For graduation at Morehead State University (MSU), (1) at least 120 credit hours are required with a minimum GPA of 2.0; (2) at least 42 hours must be at the 300-400 level; (3) a minimum GPA of 2.0 for the Area requirements.

FIRST YEAR COURSE SCHEDULE @ MSU					
<input type="checkbox"/>	Fall Semester	Credits	<input type="checkbox"/>	Spring Semester	Credits
	FYS 101, First Year Seminar	3		COMS 108, Fundamentals of Speech Communication	3
	BIOL 171/171L, Principles of Biology	4		BIOL 244/244L, Anatomy and Physiology I	4
	ENG 100, Writing I	3		CHEM 111/111L, Principles of Chemistry I	4
	MATH 174, Pre-Calculus	3		MATH 175	4
	Humanities – Art and Humanities Knowledge	3			
<b>Total Credit Hours</b>		<b>16</b>	<b>Total Credit Hours</b>		<b>15</b>

SECOND YEAR COURSE SCHEDULE @ MSU					
<input type="checkbox"/>	Fall Semester	Credits	<input type="checkbox"/>	Spring Semester	Credits
	ENG 200, Writing II	3		BIOL 301/301L, Fundamentals of Biochemistry	4
	BIOL 245/245L, Anatomy and Physiology II	4		BIOL 317/317L, Principles of Microbiology	4
	CHEM 112/112L, Principles of Chemistry II	4		PHYS 201/201L, Elementary Physics I	4
	SBS - Social Behavioral Sciences	3		SBS – Ethics & Civil Engagement	3
	BIOL 304/304L, Genetics	3			
<b>Total Credit Hours</b>		<b>17</b>	<b>Total Credit Hours</b>		<b>15</b>

### THIRD YEAR COURSE SCHEDULE @ MSU

<input type="checkbox"/> Fall Semester	Credits	<input type="checkbox"/> Spring Semester	Credits
BIOL 380/380L, Cell Biology	3	Biomedical Science Elective	3
MATH 353, Statistics (or MATH 365)	3	Biomedical Science Elective	3
CHEM 326/326L, Organic Chemistry I	4	CHEM 327/327L, Organic Chemistry II	4
PHYS 202/202L, Elementary Physics II (or PHYS 231/231L)	4	PHYS 202/202L, Elementary Physics II (or PHYS 232/232L)	3
		HUM – Global Culture	3
<b>Total Credit Hours</b>	<b>14</b>	<b>Total Credit Hours</b>	<b>16</b>

### FOURTH YEAR COURSE SCHEDULE @ MARSHALL

<input type="checkbox"/> Fall Semester	Credits	<input type="checkbox"/> Spring Semester	Credits
PHAR501 -Pharmacy Continuing Professional Development	0	PHAR502 -Pharmacy Continuing Professional Development	0
PHAR512 Pharmacy Skills 1	1	PHAR523 Pharmacogenomics	2
PHAR524 Drug Information and Communication	2	PHAR532 Biopharmaceutics II	3
PHAR531 Biopharmaceutics I	3	PHAR536 Intro to Pharmacy 2	3
PHAR533 Intro to Pharmacy	3	PHAR537 Pharmacokinetics	3
PHAR542 Immunology and Microbiology	4	PHAR538 Skills Lab 2	3
PHAR547 Pharmaceutical Biochemistry	4	PHAR544 Principles of Disease and Drug Action	4
		PHAR811 IPPE Community 1	1
<b>Total Credit Hours</b>	<b>17</b>	<b>Total Credit Hours</b>	<b>19</b>

**Notes:**

Students attending Morehead who elect to pursue the Pharm.D. Degree program at Marshall University will have completed all courses listed prior to matriculation within the pharmacy program through Morehead or have received transfer credit for courses completed at peer institutions. Upon transfer to Marshall University School of Pharmacy (MUSOP), the listed courses will be accepted by Marshall University as meeting the required pre-pharmacy course requirement indicated for that course.

The fourth year is completed at Marshall University School of Pharmacy and transferred back to Morehead State University to substitute for a fourth year at Morehead and to fulfill graduation requirements at Morehead State University for a B.S. degree in Biomedical Sciences.

## Appendix C BS Chemistry – Morehead State University / Marshall University School of Pharmacy

For graduation at Morehead State University (MSU), (1) at least 120 credit hours are required with a minimum GPA of 2.0; (2) a least 43 hours must be at the 300-400 level; (3) a minimum GPA of 2.0 for the Area requirements.

FIRST YEAR COURSE SCHEDULE @ MSU			
<input type="checkbox"/> Fall Semester	Credits	<input type="checkbox"/> Spring Semester	Credits
FYS 101, First Year Seminar	3	COMS 108, Fund. of Speech Communication	3
CHEM 111/111L, Principles of Chemistry I	4	CHEM 112/112L, Principles of Chemistry II	4
ENG 100, Writing I	3	BIOL 171/171L, Principles of Biology	4
Humanities 1 - Knowledge	3	MATH 175 Calculus I	4
Social and Behavioral Sciences 1- Knowledge	3		
<b>Total Credit Hours</b>	<b>16</b>	<b>Total Credit Hours</b>	<b>15</b>

SECOND YEAR COURSE SCHEDULE @ MSU			
<input type="checkbox"/> Fall Semester	Credits	<input type="checkbox"/> Spring Semester	Credits
ENG 200, Writing II	3	CHEM 327/327L, Organic Chemistry II	4
CHEM 326/326L, Organic Chemistry I	4	MATH 353, Statistics	3
BIOL 244/244A, Anatomy and Physiology I	4	BIOL 245/245A, Anatomy and Physiology II	4
Social Behavioral Science 2 - Ethics	3	CHEM 360/360L – Analytical Chemistry	3
ECON 202, Microeconomics	3		
<b>Total Credit Hours</b>	<b>17</b>	<b>Total Credit Hours</b>	<b>14</b>

THIRD YEAR COURSE SCHEDULE @ MSU			
<input type="checkbox"/> Fall Semester	Credits	<input type="checkbox"/> Spring Semester	Credits
PHYS 201/201L, Elementary Physics I	4	BIOL 317/317L, Principles of Microbiology	4
CHEM 301/301L, Fund. of Biochemistry	4	CHEM 351 – Bioinorganic Chemistry	3
BIOL 304/304L, Genetics	3	PHYS 202/202L, Elementary Physics II	4
Humanities 2 - Global	3	Elective	3
<b>Total Credit Hours</b>	<b>14</b>	<b>Total Credit Hours</b>	<b>14</b>

## FOURTH YEAR COURSE SCHEDULE @ Marshall University

☐	Fall Semester	Course	Credits		☐	Spring Semester	Course	Credits
	PHAR 501 Pharm Cont Prof Dev		0			PHAR 502 Pharm Cont Prof Dev		0
	PHAR 512 Pharmacy Skills Lab	GE	1			PHAR 523 Pharmacogenomics	GE	2
	PHAR 524 Drug Info Comm Skills	GE	2			PHAR 532 Biopharmaceutics II	CE	3
	PHAR 531 Biopharmaceutics I	CE	3			PHAR 536 Intro to Pharmacy II	GE	3
	PHAR 533 Intro to Pharmacy	Cap	3			PHAR 537 Pharmacokinetics	CR1	3
	PHAR 542 Immunology & Micro	BE	4			PHAR 538 Pharmacy Skills Lab II	GE	3
	PHAR 547 Pharm. Chemistry	CE1	4			PHAR 544 Prin of Disease and Drug Act.	GE	4
						PHAR 811 Pharm Prac Exp I		1
<b>Total Credit Hours</b>			17		<b>Total Credit Hours</b>			19

### Notes:

Students attending Morehead who elect to pursue the Pharm.D. Degree program at Marshall University will have completed all courses listed prior to matriculation within the pharmacy program through Morehead or have received transfer credit for courses completed at peer institutions. Upon transfer to Marshall University School of Pharmacy (MUSOP), the listed courses will be accepted by Marshall University as meeting the required pre-pharmacy course requirement indicated for that course.

The fourth year is completed at Marshall University School of Pharmacy and transferred back to Morehead State University to substitute for a fourth year at Morehead and to fulfill graduation requirements at Morehead State University for a B.S. degree in Chemistry.

The fourth year, at Marshall University, shows 36 semester hours of advanced coursework to complete the degree requirements at Morehead State University. Courses listed in the fourth year are completed at Marshall University and transferred back to Morehead State University. The courses listed in the fourth year are all the First-Year courses for the pharmacy program.

### Course codes MSU

GE – General Elective

BE – Biology Elective

CE – Chemistry Elective CHEM 399

CE1 – Chemistry Elective CHEM 429

Cap – CHEM 499e Capstone

CR1 – Chemistry Required CHEM 441 Physical Chemistry

<sup>1</sup>Assumes an integrated science minor. When General Electives are to be taken students should consider taking courses for their minor.

<sup>2</sup>Typically this is MATH 174, but it can be skipped if student is qualified for MATH 175. MATH 175 is required.

### Codes

(P) Pre-Requisite Course(s) must be successfully passed to be eligible to enroll in this course.

(U) Upper Division Course 300-400 level (you must have 42 hours)

(R) Required Course, (E) Elective, (S) Supplemental, (G) General Education Course

This curriculum map represents one potential arrangement of the requirements necessary to complete the Chemistry Major – Pharmacy Track taking into consideration course sequencing, choice of minor, prerequisites, and professional school requirements. Please note that the curriculum does not take into consideration any required developmental courses or transfer work. If developmental courses are required you may not be able to complete this program in four year period. If you have transfer work please forward all transcripts to the Office of the Register so that equivalences can be made and applied to your program evaluation in a timely fashion. Students should consult with their advisor.

The terms of this agreement are hereby approved by the respective administration of each school.

 11/3/2022

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Eric Blough, Ph.D.

Dean, Marshall University School of Pharmacy

 11/4/2022

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Wayne Miller, Ph.D.

Dean, Morehead State University College of Science