



**BSBchE/MS Pharmacy (Non-thesis)  
Effective FALL 2023**

**YEAR FOUR**

Fall Courses		Hours	Spring Courses		Hours
BCHE 4910	BCHE Capstone Design I	2	BCHE 4180L	Adv Biochem Engineering Lab	3
BCHE 6550*	Bioprocess Design and Simulation	3	BCHE 4911	Capstone Design II	2
PMCY 6500*	Pharm Drug Development	3	BCHE 4360	Biochemical Eng Process Control	3
XXXX	Elective	3	BCHE 6650*	Animal Cell Biomanufacturing	3
XXXX	Elective	3	PMCY 6510*	Adv Drug Delivery Systems	3
			XXXX	Elective	1
<b>Total</b>		<b>6/14</b>	<b>Total</b>		<b>6/15</b>

\*For DD program - only 12 credit hours will be counted towards MS, you can choose the remaining as 4XXX level

Summer Courses		Hours
PHRM 7080	Pharmaceutical Sciences Internship	3
<b>Total</b>		<b>3</b>

**YEAR FIVE**

Fall Courses		Hours	Spring Courses		Hours
BCHE 6520	Biochemical Separation Process	3	PMCY 6600	Biological Therapeutics	3
PHRM 6800	Applied Project in Pharm Biomed Sci	3	PHAR 6030E	Current Good Manufacturing Practices	4
PHRM 7230E	Ethical Issues in Research <b>OR</b>	3	PHRM 6950	Applied Project Writing and Defense	3
BIOE 6780	Regulations and Ethics of BIOE		PMCY XXXX	Elective Group 1	2
PHAR 6010E	Intro to Drugs, Biologics Dev FDA	4	XXXX	Elective Group 2	3
PHAR 6120E	Process Control & Validation	3			
GRSC 7001	GradFIRST Seminar	1			
<b>Total</b>		<b>17</b>	<b>Total</b>		<b>15</b>

**TOTAL CREDIT HOURS FOR MS - 6 + 6 + 3 + 17 + 15 = 47**

Selection of a major advisor and PHRM 6800 Master's Applied Project needs to be discussed with the Major Advisor in **YEAR FOUR**. MS project work to be completed and presented in PHRM 6950 Spring Year FIVE.

**Elective Offerings (Must choose one elective from each group)**

**Group 1**

PMCY 6410E (2 credits) – Robotics in Drug Discovery  
 PMCY 6420E (2 credits) – Drug Discovery and Toxicology  
 PMCY 6430E (2 credits) – Biopharm. and PK  
 PHAR 6xxxE (2 credits) – Reg. Sci. Cell Manufacturing

**Group 2**

BIOE 6615 (3 credits) – Soft Materials  
 BIOE 6740 (3 credits) – Biomaterials  
 BCHE 8159 (3 credits) – Heterogeneous Reactor Kinetics  
 BCHE 8210 (3 credits) – Fermentation Engineering