

# PHARMACEUTICAL MANUFACTURING (AS)

## Associate of Science

### Transfer Program

#### Interest Areas:

Healthcare

Science, Tech., Engr. and Math

The Pharmaceutical Manufacturing program is designed for students who desire careers in the research and production of pharmaceutical and medicine products. These products are used to treat disease and for the betterment of life. The production of these products requires a fundamental understanding of biology, chemistry, and manufacturing processes.



Upon completion of this program students shall have demonstrated the ability to:
























- Be familiar with the language of biotechnology production.
- Be able to articulate, read and follow a standard operating procedure.
- Be able to understand and apply the regulatory requirements of current good manufacturing practices.
- Understand the basic biology and chemistry behind the manufacturing processes.
- Demonstrate the ability to perform laboratory skills and work in team settings.

Completion of the following courses results in an Associate of Science Degree with an area of emphasis in pharmaceutical manufacturing. It will ready the students for entry- to mid-level positions in a biotechnology environment. The required coursework also supports baccalaureate degree requirements in biology, chemistry, and other scientific disciplines. When advanced degrees are desired, course selection should be tailored to match requirements defined by intended transfer institution.

Program Website ([https://www.nic.edu/programs/viewprogram.aspx?program\\_id=61](https://www.nic.edu/programs/viewprogram.aspx?program_id=61))

## Program Requirements

Code	Title	Credits
<b>General Education Requirements</b>		
GEM 1	Written Communication	6
GEM 2	Oral Communication	3
GEM 3	Mathematical Ways of Knowing <sup>1</sup>	0
GEM 4	Scientific Ways of Knowing <sup>1</sup>	0
GEM 5	Humanistic and Artistic Ways of Knowing <sup>2</sup>	3
GEM 6	Social and Behavioral Ways of Knowing	6
GEM 7	Institutionally Designated	4-6
<b>Program Requirements</b>		
BACT-250	General Microbiology 	4
BIOL-115	Introduction to Life Sciences 	4
BMGT-256	Problem Solving/Team Dynamics	3

or BUSA-211	Principles of Management	
CHEM-111	Principles of General College Chemistry I   	5
CHEM-112	Principles of General College Chemistry II   	5
HCIT-210	Health IT Customer Service	3
PHIL-103	Ethics  	3
PHMF-100	Pharmaceutical Manufacturing Principles	3
PHMF-105	Pharmaceutical Quality Systems and Regulations	2
Select one course from the following:		3-4
MATH-143	College Algebra   	
MATH-160	Survey of Calculus   	
MATH-170	Analytic Geometry and Calculus I   	
Select one of the following series:		7-8
BTNY-203 & CHEM-275	General Botany    and Carbon Compounds	
CHEM-277 & CHEM-278	Organic Chemistry I and Organic Chemistry I Lab	
& CHEM-287 & CHEM-288	and Organic Chemistry II and Organic Chemistry II Lab	
PHYS-111 & PHYS-112	General Physics I    and General Physics II	
Total Credits		64-68

- <sup>1</sup> This General Education Requirement is met by the Program Requirements.
- <sup>2</sup> This General Education Requirement is partially met by the Program Requirements.

### Course Key

				
GEM	WCHE	AAS	Gateway	Milestone
		Institutionally Designated		

## Program Outcomes

Upon completion of the program, students will be able to:

- Use the language of biotechnology production.
- Articulate, read and follow a standard operating procedure.
- Apply the regulatory requirements of current good manufacturing practices.
- Describe the basic biology and chemistry behind the manufacturing processes.
- Perform laboratory skills and work in team settings.

In addition to the program outcomes, students will meet the North Idaho College General Education (GEM) Requirements.