



**Jordan University of Science and Technology**

**Faculty of Pharmacy**

---

**Study Plan of Bachelor Degree  
Pharmaceutical and Biological Manufacturing**

---

## Important Contacts

### Jordan University of Science and Technology

P.O. Box: 3030 Irbid, 22110 Jordan

Tel: (962)-2-7201000

Fax: (962)-2-7095141

E-mail: [prsdj@just.edu.jo](mailto:prsdj@just.edu.jo)

### Faculty of Pharmacy

Tel: (962)-2-7201000 Ext. 23521

Fax: (962)-2-701075

E-mail: [Pharmacy@just.edu.jo](mailto:Pharmacy@just.edu.jo)

### International Students Office

Tel: (962)-2-7201000 Ext: 23040

Fax: (962)-2-7201025

E-mail: [iso@just.edu.jo](mailto:iso@just.edu.jo)

### Deanship of Students affairs

Tel: (962)-2-7201000 Ext: 22543

Fax: (962)-2-7201043

E-mail: [studentaffairs@just.edu.jo](mailto:studentaffairs@just.edu.jo)

### Admission and registration unit

Tel: (962)-2-7201000 Ext: 27164

Fax: (962)-2-7201027

E-mail: [register@just.edu.jo](mailto:register@just.edu.jo)

### International Students Office

Tel: (962)-2-7201000 Ext: 23040

Fax: (962)-2-7201025

E-mail: [iso@just.edu.jo](mailto:iso@just.edu.jo)

**Key Features:**

1. **Hands-on Training:** The program emphasizes practical skills through laboratory work, industrial visits, and an extensive internship to provide students with real-world manufacturing experience.
2. **Industry-Relevant Curriculum:** Courses are designed in collaboration with industry experts, ensuring alignment with current Good Manufacturing Practice (cGMP) guidelines and industry standards.
3. **Regulatory Compliance:** The curriculum includes a focus on understanding and adhering to regulatory requirements, preparing students for roles in compliance and quality assurance.
4. **Global Perspective:** The program incorporates international best practices, allowing graduates to compete in the global pharmaceutical market.
5. **Career Development:** Students receive career guidance and support, enhancing their employment through networking opportunities and collaboration with industry partners.

Upon completion of the Bachelor of Science program in Pharmaceutical and Biological Manufacturing, graduates will be well-positioned for careers in pharmaceutical manufacturing, quality control, regulatory affairs, and research and development, contributing to the advancement of the pharmaceutical sector in Jordan and beyond.

## Study Plan of Bachelor’s Degree in Pharmaceutical and Biological Manufacturing

**Numbering and coding system of courses of the study plan.**

### **Course Coding**

The following codes are used to designate courses:

Faculty Specialization	Level/year	Field	Sequence
MANU	x	y	Z

### **Course Numbering**

- The Pharmaceutical and Biological Manufacturing courses are tabled and numbered in such a manner to recognize each course regarding its, subject area, year or level and semester offered.

Ex. **MANU** xyz: The MANU symbol in the course number denotes Pharmaceutical and Biological Manufacturing and (xyz) is a 3-digits number:

A. The first digit denotes the year level of the course according to student’s study plan as follows:

Code	Level/year
1	First
2	Second
3	Third
4	Fourth

B. The second digit denotes the course field subject as follows:

<b>Number</b>	<b>Specialization</b>
0	Basic Pharmaceutical and Biological Sciences
1	Clinical Pharmacy
2	Medicinal Chemistry
3	Pharmaceutical Technology
4	Pharmaceutical Biotechnology
5	Industrial Pharmacy
6	Special topics and internship

C. The third digit denotes sequence of the semester during which the course is offered according to the study plan. In a way, that the odd numbers are given to the first and summer semesters while even numbers are given to the second semesters.

**Example:** MANU 453 Biopharmaceutical Analysis means:

Course Name	3	5	6
Biopharmaceutical Analysis	Level (Third year)	Field (Industrial Pharmacy)	Sequence number (6)

A Bachelor of Science (B.Sc.) degree in Pharmaceutical and Biological Manufacturing at JUST is awarded in accordance with the statute stated by JUST regulations for B.Sc. awarding issued by the Dean’s Council based on the law for awarding scientific degrees and certifications at JUST after completing (132) credit hours successfully.

The study plan composed of the following:

**Table 1: Credit Hours Distribution for Pharmaceutical & Biological Manufacturing Major**

Requirement	Credit hours		
	Compulsory	Elective/Internships	Total
University requirement	16	9	25
Faculty requirement	20	0	20
Program requirements	75	15	90
Total	111	24	135

**1. University Requirements (25 CHs) classified as:**

- a) University Mandatory Courses (16 CHs).
- b) University Elective Courses (9 CHs)

**2. Faculty Compulsory Requirements: (20 credit hours) distributed as follows:**

Table )2(: Faculty Compulsory Requirements

Course Number	Course Title	Credit Hours	Weekly Hours		Prerequisite
			Lecture	Lab	
HSS103BT	General Biology	3	3	-	-
HSS 107 BT	General Biology Lab	1	-	2	HSS103BT Pre- or Co-requisite
HSS103CHEM	General Chemistry	3	3	-	-
HSS 107 CHEM	General Chemistry Lab	1	-	2	HSS103CHEM Pre- or Corequisite
HSS 102 MATH A	Calculus 2 (for biological sciences)	3	3	-	-
HSS 262 CHEM	Biochemistry	3	3	-	HSS217CHEM
HSS 266 CHEM	Biochemistry Lab	1	-	2	HSS262CHEM Pre- or Co-requisite
MANU102	Analytical Chemistry	3	3	-	HSS103CHEM
PH311	Biostatistics	2	2	-	HSS102 MATH A



**3. Program Requirements (Pharmaceutical & Biological Manufacturing) Classified as follows:****A) Program Compulsory Requirements (75 CHs):****Table (3): Program Compulsory Requirements**

Course Number	Course Title	Credit Hours	Weekly Hours		Prerequisite
			Lecture	Lab	
HSS217CHEM	Organic Chemistry	3	3	-	HSS103CHEM
CHEM218	Organic Chemistry Lab	1	-	2	HSS217CHEM Pre- or Corequisite
MANU201	Organic Chemistry II	3	3	-	HSS217CHEM
PHAR252	Pharmaceutics I	3	3	-	MANU102
MANU231	Drug Manufacturing Lab I	1	-	2	PHAR252 Pre- or Co-requisite
BT451	Molecular Biology	3	3	-	HSS 262 CHEM
MANU202	Microbiology	3	3	-	HSS 262 CHEM
MANU204	Microbiology Lab	1	-	2	MANU202 Pre- or Co-requisite
MANU242	Biotechnology & Biopharmaceutics I	3	3	-	HSS 262 CHEM
PHAR354	Pharmaceutics II	3	3	-	PHAR252
MANU232	Drug Manufacturing Lab II	1	-	2	PHAR354 Pre- or Co-requisite

MANU221	Instrumental Analysis	3	3	-	MANU1-2
MANU223	Pharmaceutical Analysis Lab	1	-	2	MANU221 Pre- or Co-requisite
MANU311	Drug Discovery and Development	3	3	-	MANU242
MANU351	Industrial Pharmacy	3	3	-	PHAR354
MANU353	Industrial Pharmacy Lab	1	-	2	MANU351 Pre- or Co-requisite
MANU341	Biotechnology & Biopharmaceuticals II	3	3	-	MANU242
MANU343	Biotechnology & Biopharmaceuticals Lab	1	-	2	MANU341 Pre- or Co-requisite
MANU321	Medicinal Chemistry I	2	2	-	PHAR354
MANU313	Immunology	2	2	-	MANU202
MANU312	Pharmaceutical Research Methodology	3	3	-	MANU341
MANU352	Quality Control & Assurance	3	3	-	MANU351
MANU354	Drug Stability	2	2	-	MANU351
MANU322	Medicinal Chemistry II	3	3	-	MANU321
MANU356	Biopharmaceutical Analysis	3	3	-	MANU341
MANU332	Drug Delivery Systems	3	3	-	MANU351

MANU451	Sterilization & Aseptic Processing	3	3	-	MANU461
MANU453	Principles of Management and Project Management	2	2	-	MANU461
MANU455	Good Manufacturing Practice (GMP)	3	3	-	MANU461
MANU457	Regulatory Affairs	3	3	-	MANU461
MANU459	Supply Chain Systems	2	2	-	MANU461
MANU 463	Technical Writing	1	-	-	MANU461

**B) Mandatory Internship/Projects/Dual studies (15 CHs):**

<b>Course No.</b>	<b>Course Title</b>	<b>Credit hours</b>	<b>Prerequisite</b>
MANU361	Industry Internship I	3	School Approval (Enrollment in the Dual- study Track)
MANU461	Industry Internship II	3	MANU361
MANU462	Industry Internship III	6	MANU453
MANU464	Capstone/Graduation project	3	MANU453

### Guidance Study Plan

FIRST YEAR											
First semester						Second semester					
Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite	Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite
		Theoretical	Practical					Theoretical	Practical		
HSS103 BT	General Biology	3	-	-	-	HSS217 CHEM	Organic Chemistry	3	-	-	HSS103CHEM
HSS 107 BT	General Biology Lab	-	1	2	HSS103BT Pre- or Corequisite	CHEM218	Organic Chemistry Lab	0	1	2	HSS217CHEM Pre- or Corequisite
HSS103 CHEM	General Chemistry	3	-	-	-	MANU102	Analytical Chemistry	3	-	-	HSS103CHEM
HSS107 CHEM	General Chemistry Lab	-	1	2	HSS103CHEM Pre- or Corequisite	PH311	Biostatistics	2	-	-	MATH102A
HSS102 MATH A	Calculus 2 (for biological sciences)	3	-	-	-	ARB 101	Communication Skills in Arabic	3	-	-	
HSS110	Leadership and Social Responsibility	3	-	-	-	HSS119	Entrepreneurship and innovation	2	-	-	-
LG 101	Communication Skills in English	3	-	-	Passing English Exam with 50% or Passing LG 99\$	LG103	Life Skills	2	-	-	-

<b>Total</b>	<b>15</b>	<b>2</b>	<b>4</b>		<b>Total</b>	<b>15</b>	<b>1</b>	<b>2</b>	
--------------	-----------	----------	----------	--	--------------	-----------	----------	----------	--

\$. Or scoring 50% or more in the English Language Level Exam.

\$\$: Non-Jordanian Arabic-speaking students are required to take a substitute for this course.

SECOND YEAR											
First semester						Second semester					
Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite	Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite
		Theoretical	Practical					Theoretical	Practical		
MANU201	Organic Chemistry II	3	-	-	HSS217CHEM	MANU202	Microbiology	3	-	-	HSS262 CHEM
PHAR252	Pharmaceutics I	3	-	-	MANU102	MANU204	Microbiology Lab	-	1	2	MANU202 pre-or Co-requisite
MANU231	Drug Manufacturing Lab I	-	1	2	PHAR252 Pre- or Co-requisite	MANU242	Biotechnology & Biopharmaceuticals I	3	-	-	HSS262 CHEM
MANU221	Instrumental Analysis	3	-	-	MANU102	PHAR354	Pharmaceutics II	3	-	-	PHAR252
MANU223	Pharmaceutical Analysis Lab	-	1	2	MANU221 pre-or Co-requisite	MANU232	Drug Manufacturing Lab II	-	1	2	PHAR354 pre-or Co-requisite
HSS262 CHEM	Biochemistry	3	-	-	HSS217CHEM	BT451	Molecular Biology	3	-	-	HSS262 CHEM
HSS266 CHEM	Biochemistry Lab	-	1	2	HSS262CHEM Pre- or Co-requisite	-	University Elective	3	-	-	-
MS 100	Military Sciences	3	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>15</b>	<b>3</b>	<b>6</b>		<b>Total</b>		<b>15</b>	<b>2</b>	<b>4</b>	

<b>Summer</b>			
<b>Course Number</b>	<b>Course Name</b>	<b>Credits Hours</b>	<b>Prerequisite</b>
MANU361	Industry Internship I	3	School Approval (Enrollment in the Dual-study Track)
<b>Total</b>	<b>3</b>		



THIRD YEAR											
First semester						Second semester					
Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite	Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite
		Theoretical	Practical					Theoretical	Practical		
MANU311	Drug Discovery and Development	3	-	-	MANU242	MANU312	Pharmaceutical Research Methodology	3	-	-	MANU341
MANU351	Industrial Pharmacy	3	-	-	PHAR354	MANU352	Quality Control & Assurance	3	-	-	MANU351
MANU353	Industrial Pharmacy Lab	-	1	2	MANU351 Pre- or Co-requisite	MANU354	Drug Stability	2	-	-	MANU351
MANU341	Biotechnology & Biopharmaceuticals II	3	-	-	MANU242	MANU322	Medicinal Chemistry II	3	-	-	MANU321
MANU343	Biotechnology & Biopharmaceuticals Lab	-	1	2	MANU341 Pre- or Co-requisite	MANU356	Biopharmaceutical Analysis	3	-	-	MANU341
MANU321	Medicinal Chemistry I	2	-	-	PHAR354	MANU332	Drug Delivery Systems	3	-	-	MANU351
MANU313	Immunology	2	-	-	MANU202	-	-	-	-	-	-
-	University Elective	3	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>16</b>	<b>2</b>	<b>4</b>		<b>Total</b>		<b>17</b>	<b>0</b>	<b>0</b>	

<b>Summer</b>			
<b>Course Number</b>	<b>Course Name</b>	<b>Credits Hours</b>	<b>Prerequisite</b>
MANU461	Industry Internship II	3	MANU361
<b>Total</b>	<b>3</b>		

<b>FOURTH YEAR</b>					
First semester					
Course No.	Course name	Total credits		Weekly practical hours	Prerequisite/ Co-requisite
		Theoretical	Practical		
MANU451	Sterilization and Aseptic Processing	3	-	-	MANU461
MANU453	Principles of Management and Project Management	3	-	-	MANU461
MANU455	Good Manufacturing Practice (GMP)	-	1	2	MANU461
MANU457	Regulatory Affairs	3	-	-	MANU461
MANU459	Supply Chain Systems	2	-	-	MANU461
MANU463	Technical Writing	3	-	-	MANU461

-	University Elective	3	-	-	-
<b>Total</b>		<b>14</b>	<b>1</b>	<b>2</b>	

<b>Second semester</b>			
<b>Course Number</b>	<b>Course Name</b>	<b>Credits Hours</b>	<b>Prerequisite</b>
MANU462	Industry Internship III	6	MANU455
MANU464	Capstone/Graduation Project	3	MANU455
<b>Total</b>		<b>9</b>	

