

A.Y : 2017-18

### 9. Course of study

The course of study for B. Pharm shall include Semester Wise Theory & Practical as given in Table – I to VIII. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than that shown in Table – I to VIII.

**Table-I: Course of study for semester I**

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP101T	Human Anatomy and Physiology I – Theory	3	1	4
BP102T	Pharmaceutical Analysis I – Theory	3	1	4
BP103T	Pharmaceutics I – Theory	3	1	4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
BP105T	Communication skills – Theory *	2	-	2
BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	-	2
BP107P	Human Anatomy and Physiology – Practical	4	-	2
BP108P	Pharmaceutical Analysis I – Practical	4	-	2
BP109P	Pharmaceutics I – Practical	4	-	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
BP111P	Communication skills – Practical*	2	-	1
BP112RBP	Remedial Biology – Practical*	2	-	1
<b>Total</b>		<b>32/34<sup>s</sup>/36<sup>#</sup></b>	<b>4</b>	<b>27/29<sup>s</sup>/30<sup>#</sup></b>

<sup>#</sup>Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

<sup>s</sup>Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

\* Non University Examination (NUE)



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**Table-II: Course of study for semester II**

Course Code	Name of the course	No. of hours	Tutorial	Credit points
BP201T	Human Anatomy and Physiology II – Theory	3	1	4
BP202T	Pharmaceutical Organic Chemistry I – Theory	3	1	4
BP203T	Biochemistry – Theory	3	1	4
BP204T	Pathophysiology – Theory	3	1	4
BP205T	Computer Applications in Pharmacy – Theory *	3	-	3
BP206T	Environmental sciences – Theory *	3	-	3
BP207P	Human Anatomy and Physiology II –Practical	4	-	2
BP208P	Pharmaceutical Organic Chemistry I– Practical	4	-	2
BP209P	Biochemistry – Practical	4	-	2
BP210P	Computer Applications in Pharmacy – Practical*	2	-	1
<b>Total</b>		<b>32</b>	<b>4</b>	<b>29</b>

\*Non University Examination (NUE)



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# OSMANIA UNIVERSITY

## Faculty of Pharmacy

### SCHEME OF INSTRUCTION, EXAMINATION AND EVALUATION

(Effective for Batches Admitted from 2016 – 17 Academic Year Onwards)

Program Code: 881

B. Pharmacy (Second Year)

### SEMESTER - III

Course Code	Description	Course Title	Hours/Week			Credits	Marks		Duration of Exam
			L	T	P		Internal	End Exam	
PY.06.881.3.1.T	PS, CORE	Pharmaceutical Organic Chemistry-II	4	0	-	4	30	70	3
PY.06.881.3.2.T	PS, CORE	Pharmaceutical Analysis-I (Chemical Analysis)	4	0	-	4	30	70	3
PY.06.881.3.3.T	BS, FC	Pharmaceutical Microbiology	3	0	0	3	30	70	3
PY.06.881.3.4.T	PS, CORE	Pharmaceutical Engineering-I	4	0	0	4	30	70	3
PY.06.881.3.5.T	BS, FC	Environmental Sciences	3	0	-	3	30	70	3
PY.06.881.3.6.P	PS, CORE	Pharmaceutical Organic Chemistry-II - Practical	0	0	4	2	30	70	4
PY.06.881.3.7.P	PS, CORE	Pharmaceutical Analysis-I (Chemical Analysis) - Practical	0	0	4	2	30	70	4
PY.06.881.3.8.P	BS, FC	Pharmaceutical Microbiology - Practical	0	0	4	2	30	70	4
			18	0	12	24	240	560	

Note: Candidates admitted through lateral entry into B.Pharm. III Semester directly from Diploma Stream should study and qualify the papers of Mathematics (Only

for those Candidates Admitted to Diploma in Pharmacy from Biology Stream at +2 Level) and Basic Computer Applications (Theory and Practicals) as Bridge Course for B. Pharm Program and will not be part of CGPA.



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**OSMANIA UNIVERSITY**  
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**SCHEME OF INSTRUCTION, EXAMINATION AND**  
**EVALUATION**

(Effective for Batches Admitted from 2016 – 17 Academic Year Onwards)

Program Code: 881                      B. Pharmacy (Second Year)  
**SEMESTER - IV**

Course Code	Description	Course Title	Hours/Week			Credits	Marks		Duration of Exam
			L	T	P		Internal	End Exam	
PY.06.881.4.1.T	PS, CORE	Pharmaceutical Chemistry (Chemistry of Natural Products)	4	0	-	4	30	70	3
PY.06.881.4.2.T	PS, CORE	Pharmaceutical Engineering-II	4	0	-	4	30	70	3
PY.06.881.4.3.T	BS, FC	Pharmaceutical Biochemistry	3	0	-	3	30	70	3
PY.06.881.4.4.T	BS, FC	Biostatistics (Pharmacostatistics)	3	0	-	3	30	70	3
PY.06.881.4.5.T	Open Elective	Pathophysiology / Green Chemistry	4	0	-	4	30	70	3
PY.06.881.4.6.P	PS, CORE	Pharmaceutical Chemistry (Chemistry of Natural Products) Ptacticals	0	0	4	2	30	70	4
PY.06.881.4.7.P	PS, CORE	Pharmaceutical Engineering Ptacticals	0	0	4	2	30	70	4
PY.06.881.4.8.P	BS, FC	Pharmaceutical Biochemistry Ptacticals	0	0	4	2	30	70	4
			18	0	12	24	240	560	

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**SCHEME OF INSTRUCTION AND EXAMINATION  
FOR  
B. PHARMACY - III YEAR 1ST SEMESTER**

COURSE NO.	SUBJECTS	PERIODS/WEEK (50 Mts.)		MARKS	DURATION OF EXAM.	
		Theory	Practicals	Sessionals	Exams.	Hrs.
PYT.3.101	Medicinal Chemistry – I	4	--	30	70	3
PYT.3.102	Pharmaceutical Technology (Pharmaceutics – II)	4	--	30	70	3
PYT.3.103	Physical Pharmacy – I	4	--	30	70	3
PYT.3.104	Pharmacognosy – II	4	--	30	70	3
PYT.3.105	Pharmacology – I	4	--	30	70	3
PYP.3.106	Pharmaceutical Technology (Pharmaceutics – II) Lab	--	4	25	50	4
PYP.3.107	Pharmacognosy Lab	--	6	25	50	4
PYP.3.108	Multimedia Aided Language Lab	--	4	25	50	4
		34		225	500	

**SCHEME OF INSTRUCTION AND EXAMINATION  
FOR  
B. PHARMACY - III YEAR IIND SEMESTER**

COURSE NO.	SUBJECTS	PERIODS/WEEK (50 Mts.)		MARKS	DURATION OF EXAM.	
		Theory	Practicals	Sessionals	Exams.	Hrs.
PYT.3.201	Pharmaceutical Chemistry (Chemistry of Natural Products)	4	--	30	70	3
PYT.3.202	Pharmacology – II	4	--	30	70	3
PYT.3.203	Physical Pharmacy – II	4	--	30	70	3

  
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<b>PYT.3.204</b>	Forensic Pharmacy (Pharmaceutical Jurisprudence)	4	--	30	70	3
<b>PYT.3.205</b>	Biostatistics (Pharmacostatistics)	4	--	30	70	3
<b>PYP.3.206</b>	Pharmaceutical Chemistry (Chem. of Natural Products) Lab	--	6	25	50	6
<b>PYP.3.207</b>	Pharmacology Lab	--	4	25	50	4
<b>PYP.3.208</b>	Physical Pharmacy Lab	--	4	25	50	4
			34	225	500	

## MEDICINAL CHEMISTRY – I

Subject Code : PYT 3.101      Sessional : 30  
 Periods/week : 4      Examination : 70  
 Nature of Exam: Theory      Exam Duration: 3 Hrs

### Unit – I

#### Basic Considerations of Drug Activity

Physico chemical properties of drug molecules in relation to biological activity - Solubility, lipophilicity, partition-coefficient, Ionization, hydrogen bonding, Chelation, Redox potential and Surface activity. Bioisosterism and Steric features of drugs, drug distribution and protein binding; Introduction to Pro and Soft drug approach in drug design; Drug metabolism and factors affecting on drug metabolism

**NOTE:** Introduction, definition, nomenclature, chemical classification (other types of classification wherever relevant), structure, synthesis, general mechanism, mode of action (wherever known), SAR including physicochemical and stereo chemical aspects, metabolism and therapeutic uses of the drugs from each category shall be studied for the following units. An outline of synthetic procedure and metabolism of only the drugs, which are official as per Indian pharmacopoeia and British pharmacopoeia and mentioned in brackets against each category.

### Unit – II

**Adrenergic agents** - (Isoproterenol and Salbutamol)

**Adrenergic blocking agents** - (Prazocin and Atenolol)

Cholinergic drugs and Acetyl Choline esterase inhibitors - (Carbachol, Physostigmine).

Cholinergic blocking agents - (Pyridinium bromide and Dicyclomine HCl)

Ganglionic blocking agents and neuromuscular blocking agents -(Mecamylamine HCl and Pentolinium Tartarate). Skeletal muscle relaxants -Neuromuscular - (meprobromate)

### Unit – III

Cardio Vascular Drugs - Anti-hypertensive drugs - (Captopril and Clonidine) Anti-arrhythmic drugs - (Verapamil, Nifedipine and Diltiazem),

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**SCHEME OF INSTRUCTION AND EXAMINATION  
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SEMESTER**

COURSE NO.	SUBJECTS	PERIODS/WEEK (50 Mts.)	MARKS		DURATION OF EXAM.
			Theory/Practicals	Sessionals Exams.	
PYT.4.101	BioPharmaceutics & Pharmacokinetics	4	30	70	3
PYT.4.102	Pharmaceutical Analysis – II (Instrumental Analysis)	4	30	70	3
PYT.4.103	Medicinal Chemistry – II	4	30	70	3
PYT.4.104	Dosage formulation Design (Pharmaceutics – III)	4	30	70	3
PYT.4.105	Ph.Business Management	4	30	70	3
PYP.4.106	Pharmaceutical Analysis – II (Instrumental Analysis) Lab	4	25	50	4
PYP.4.107	Medicinal Chemistry Lab	6	25	50	4
PYP.4.108	Dosage formulation Design (Pharmaceutics – III) Lab	4	25	50	4
		34	225	500	

  
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**SCHEME OF INSTRUCTION AND EXAMINATION  
FOR B. PHARMACY - IV YEAR IIND**

## SEMESTER

COURSE NO.	SUBJECTS	PERIODS / WEEK (50 Mts.)	MARKS		DURATION OF EXAM.
			Th/Pr	Sessionals Exams	
PYT.4.201	Pharmaceutical Biotechnology	4	30	70	3
PYT.4.202	Hospital and Clinical Pharmacy	4	30	70	3
PYT.4.203	Cosmetic Technology	4	30	70	3
PYT.4.204	Pharmacoinformatics	4	30	70	3
PYP.4.205	Pharmaceutical Biotechnology Lab	4	25	50	4
PYP.4.206	Cosmetic Technology Lab	4	25	50	4
PYP.4.207	Pharmacoinformatics Lab	4	25	50	4
PYP.4.208	Seminar	2	A~B~C~D		
		30	195	430	

## BIOPHARMACEUTICS AND PHARMACOKINETICS

Subject Code: PYT. 4 .101      Sessional : 30  
 Periods/week 4      Examination : 70  
 Nature of Exam: Theory      Exam Duration: 3 Hrs

### Unit – I

#### Biopharmaceutics

Introduction & their role in formulation development & clinical settings, fate of drugs after administration.

Drug absorption: drug absorption mechanisms, factors affecting drug absorption (physiochemical, biological, metabolic, formulations and dosage form considerations).

### Unit – II

#### Drug distribution & protein binding of drugs

Distribution of drug through organ /tissue - factors affecting distribution (Physicochemical properties of drugs, organ/tissue size, blood flow to the organ, physiological barriers to the distribution of drugs, drug binding blood / tissue / macromolecules).

Protein /tissue binding of drugs- factors affecting protein binding of drugs, significance and kinetics, tissue binding of drugs.

### Unit – III

#### Drug metabolism & excretion of drugs

Biotransformation of drugs- drug metabolizing enzymes & organs, phase I & phase II reactions, factors affecting biotransformation, drug metabolism significance, extrahepatic metabolism, pharmacological activity of metabolite, deposition of metabolite.

Excretion of drugs - renal excretion of drug, factors affecting renal excretion of drugs, nonrenal

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Table – 2: Course of study for M. Pharm. (Pharmaceutics)

Course Code	Course	Credit Hours	Credit Points	Hrs./week	Marks
Semester I					
MPH101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPH102T	Drug Delivery System	4	4	4	100
MPH103T	Modern Pharmaceutics	4	4	4	100
MPH104T	Regulatory Affair	4	4	4	100
MPH105P	Pharmaceutics Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPH201T	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	4	4	4	100
MPH202T	Advanced Biopharmaceutics & Pharmacokinetics	4	4	4	100
MPH203T	Computer Aided Drug Delivery System	4	4	4	100
MPH204T	Cosmetic and Cosmeceuticals	4	4	4	100
MPH205P	Pharmaceutics Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650

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### SEMESTER – III

Course Code	Course Title	Hours /Week	Credits	Marks		Duration in Weeks
				Internal	External	
PY.10.885.31.P	Design Seminar	30	6	50	-	6
PY.10.885.32.P	Report on Progressive Seminar	30	10	50	-	10
		480	16	100		

### SEMESTER – IV

Course Code	Course Title	Hours /Week	Credits	Marks		Duration in Weeks
				Internal	External	
PY.10.885.41.P	Pre-Submission Seminar	30	10		50	10
PY.10.885.42.T	Submission and Adjudication	30	12		200	6
PY.10.885.43.T	Final Viva-voce	30	2		50	1
		510	24		300	17

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Table – 5: Course of study for M. Pharm. (Pharmaceutical Analysis)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPA101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPA102T	Advanced Pharmaceutical Analysis	4	4	4	100
MPA103T	Pharmaceutical Validation	4	4	4	100
MPA104T	Food Analysis	4	4	4	100
MPA105P	Pharmaceutical Analysis Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPA201T	Advanced Instrumental Analysis	4	4	4	100
MPA202T	Modern Bio-Analytical Techniques	4	4	4	100
MPA203T	Quality Control and Quality Assurance	4	4	4	100
MPA204T	Herbal and Cosmetic Analysis	4	4	4	100
MPA205P	Pharmaceutical Analysis Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650



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### SEMESTER – III

Course Code	Course Title	Hours /Week	Credits	Marks		Duration in Weeks
				Internal	External	
PY.10.885.31.P	Design Seminar	30	6	50	-	6
PY.10.885.32.P	Report on Progressive Seminar	30	10	50	-	10
		480	16	100		

### SEMESTER – IV

Course Code	Course Title	Hours /Week	Credits	Marks		Duration in Weeks
				Internal	External	
PY.10.885.41.P	Pre-Submission Seminar	30	10		50	10
PY.10.885.42.T	Submission and Adjudication	30	12		200	6
PY.10.885.43.T	Final Viva-voce	30	2		50	1
		510	24		300	17

Chairperson, BoS

Head of the Department

Dean of the Faculty

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b) Pharm.D. (Post Baccalaureate) Course -

A pass in B.Pharm from an institution approved by the Pharmacy Council of India under section 12 of the Pharmacy Act:

Provided that there shall be reservation of seats for the students belonging to the Scheduled Castes, Scheduled Tribes and other Backward Classes in accordance with the instructions issued by the Central Government/State Government/Union Territory Administration as the case may be from time to time.


5. Number of admissions in the above said programmes shall be as prescribed by the Pharmacy Council of India from time to time and presently be restricted as below -
- Pharm.D. Programme - 30 students.
  - Pharm.D. (Post Baccalaureate) Programme - 10 students.
6. Institutions running B.Pharm programme approved under section 12 of the Pharmacy Act, will only be permitted to run Pharm.D. programme. Pharm.D. (Post Baccalaureate) programme will be permitted only in those institutions which are permitted to run Pharm.D. programme.
7. Course of study. - The course of study for Pharm.D. shall include the subjects as given in the Tables below. The number of hours in a week, devoted to each subject for its teaching in theory, practical and tutorial shall not be less than that noted against it in columns (3), (4) and (5) below.

### TABLES

**First Year :**

S.No.	Name of Subject	No. of hours of Theory	No. of hours of Practical	No. of hours of Tutorial
(1)	(2)	(3)	(4)	(5)
1.1	Human Anatomy and Physiology	3	3	1
1.2	Pharmaceutics	2	3	1
1.3	Medicinal Biochemistry	3	3	1
1.4	Pharmaceutical Organic Chemistry	3	3	1
1.5	Pharmaceutical Inorganic Chemistry	2	3	1
1.6	Remedial Mathematics/ Biology	3	3*	1
	<b>Total hours</b>	<b>16</b>	<b>18</b>	<b>6 = (40)</b>

\* For Biology

  
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### Second Year:

S.No	Name of Subject	No. of hours of Theory	No. of hours of Practical	No. of hours of Tutorial
(1)	(2)	(3)	(4)	(5)
2.1	Pathophysiology	3	-	1
2.2	Pharmaceutical Microbiology	3	3	1
2.3	Pharmacognosy & Phytopharmaceuticals	3	3	1
2.4	Pharmacology-I	3	-	1
2.5	Community Pharmacy	2	-	1
2.6	Pharmacotherapeutics-I	3	3	1
	<b>Total Hours</b>	<b>17</b>	<b>9</b>	<b>6 = 32</b>

### Third Year:

S.No.	Name of Subject	No. of hours of Theory	No. of hours of Practical	No. of hours of Tutorial
(1)	(2)	(3)	(4)	(5)
3.1	Pharmacology-II	3	3	1
3.2	Pharmaceutical Analysis	3	3	1
3.3	Pharmacotherapeutics-II	3	3	1
3.4	Pharmaceutical Jurisprudence	2	-	-
3.5	Medicinal Chemistry	3	3	1
3.6	Pharmaceutical Formulations	2	3	1
	<b>Total hours</b>	<b>16</b>	<b>15</b>	<b>5 = 36</b>



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A.Y. 2018-19

### 9. Course of study

The course of study for B. Pharm shall include Semester Wise Theory & Practical as given in Table – I to VIII. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than that shown in Table – I to VIII.


**Table-I: Course of study for semester I**

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP101T	Human Anatomy and Physiology I – Theory	3	1	4
BP102T	Pharmaceutical Analysis I – Theory	3	1	4
BP103T	Pharmaceutics I – Theory	3	1	4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
BP105T	Communication skills – Theory *	2	-	2
BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	-	2
BP107P	Human Anatomy and Physiology – Practical	4	-	2
BP108P	Pharmaceutical Analysis I – Practical	4	-	2
BP109P	Pharmaceutics I – Practical	4	-	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
BP111P	Communication skills – Practical*	2	-	1
BP112RBP	Remedial Biology – Practical*	2	-	1
<b>Total</b>		<b>32/34<sup>s</sup>/36<sup>#</sup></b>	<b>4</b>	<b>27/29<sup>s</sup>/30<sup>#</sup></b>

<sup>#</sup>Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

<sup>s</sup>Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

\* Non University Examination (NUE)

  
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