

Diploma in Pharmacy
Curriculum & Syllabus
based on
Education Regulations 2020

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“Revamping the curriculum, teaching, assessment, and student support” is one of the vision statements and recommendations of the National Education Policy (NEP) of Govt. of India for attaining enhanced learning experiences by the students

Pharmacy Council of India, the apex body regulating the pharmacy education in the country, committed to revise the education regulations of Diploma in Pharmacy (D.Pharm.) program by act and thus, the 'Education Regulations 2020' (ER-2020) has been notified in the gazette of India in October, 2020.

Number of subjects

- * Total number of courses(subjects) across the program remain 21 as that of ER-91,
- * Number of theory courses(subjects) is reduced from 12 to 11 in the new regulation, while
- * Number of practical courses(subjects) is increased from 9 to 10.

Teaching Hours

Theory teaching hours across the program have been reduced from 850 to 825 hours, while the practical hours have been increased from 750 to 800 hours in the new regulation.

Further, about 275 hours have been assigned for the first time in D.Pharm. curriculum for 'Tutorial' activities

Theory and Practical courses

- * **Theory Courses:** The theory courses basically provide concepts and explain the relationships between the concepts.
- * **Practical Courses:** The practical courses are designed for applying the theoretical knowledge in the given experimental / simulated conditions.

Field visits

Field Visits:

- * The purpose of field visits is to provide the real-world experience to the students.
- * The field visits will help them to realize that what they learn within the walls of the classroom / laboratory can help them to solve the problems they see in the world around them.

Practical training

- * **Practical Training:** helps them to apply their acquired knowledge and skills in the professional working environment.
- * The practical training intensively prepares the students with adequate competencies and qualifications required for the career opportunity in the future.

ER-2020 D.Pharm. Syllabus-Part-I

S. NO	Course Code	Name of the Course	Total T/P hours	Total Tutorial hours	T/P hours per week	Tutorial hours per week
1	ER20-11T	Pharmaceutics-Theory	75	25	3	1
2	ER20-11P	Pharmaceutics-Practical	75	-	3	-
3	ER20-12T	Pharmaceutical Chemistry-Theory	75	25	3	1
4	ER20-12P	Pharmaceutical Chemistry-Practical	75	-	3	-
5	ER20-13T	Pharmacognosy-Theory	75	25	3	1
6	ER20-13P	Pharmacognosy-Practical	75	-	3	-
7	ER20-14T	HAP- Theory	75	25	3	1
8	ER20-14P	HAP-Practical	75	-	3	-
9	ER20-15T	Social Pharmacy-Theory	75	25	3	1
10	ER20-15P	Social Pharmacy-Practical	75	-	3	-

ER-2020 D.Pharm. Syllabus-Part-II

S. NO	Course Code	Name of the Course	Total T/P hours	Total Tutorial hours	T/P hours per week	Tutorial hours per week
1	ER20-21T	Pharmacology-Theory	75	25	3	1
2	ER20-21P	Pharmacology-Practical	50	-	2	-
3	ER20-22T	Community Pharmacy & Management-Theory	75	25	3	1
4	ER20-22P	Community Pharmacy & Management	75	-	3	-
5	ER20-23T	Biochemistry & Clinical pathology-Theory	75	25	3	1
6	ER20-23P	Biochemistry & Clinical pathology-Practical	50	-	2	-

ER-2020 D.Pharm. Syllabus-Part-II

S. NO	Course Code	Name of the Course	Total T/P Hours	Total Tutorial hours	T/P hours per week	Tutorial hours per week
7	ER20-24T	Pharmacotherapeutics-Theory	75	25	3	1
8	ER20-24P	Pharmacotherapeutics-Practical	25	-	1	-
9	ER20-25T	Hospital & Clinical pharmacy-Theory	75	25	3	1
10	ER20-25P	Hospital & Clinical Pharmacy- Practical	25	-	1	-
11	ER20-26T	Pharmacy Law & Ethics	75	25	3	1

Guidelines for the conduct of theory examinations

SESSIONAL EXAMINATION

DURATION : 90 MINUTES

I. Long Answers (Answer 3 out of 4) $3 \times 5 = 15$

II. Short Answers (Answer 5 out of 6) $5 \times 3 = 15$

III. Objective type Answers (Answer all 10 out of 10) $10 \times 1 = 10$
(Multiple Choice Questions / Fill-in the Blanks /
One word OR one Sentence questions)

Total = 40 marks

FINAL MARKS SHALL BE FOR 20 MARKS

Final Board / University Examinations

DURATION: 3 HOURS

- I. Long Answers (Answer 6 out of 7) = $6 \times 5 = 30$
- II. Short Answers (Answer 10 out of 11) = $10 \times 3 = 30$
- III. Objective type Answers (Answer all 20) = $20 \times 1 = 20$

ONE MARK QUESTION: 12

FILL IN THE BLANKS : 04

MATCH THE FOLLOWING: 04

. Guidelines for the conduct of practical examinations

Internal assessment:

I. Synopsis =	10
II. Experiments =	50
III. Viva voce =	10
IV. Practical Record Maintenance =	10

Total = 80 marks

80 marks should be reduced to 10 marks

Internal assessment:

Actual performance in the sessional examination = 10 marks

Assignment marks (Average of three) = 5 marks

Field Visit Report marks (Average for the reports) = 5 marks

Total = 20 marks

courses not having assignment and field visit, the whole 20 marks shall be calculated from the sessional marks.

Final Board / University Examinations

I. Synopsis = 10

II. Experiments = 60

III. Viva voce = 10

Total = 80 marks

* The marks for the experiments shall be divided into various categories, viz. major experiment, minor experiment, spotters, etc. as per the requirement of the course.

PHARMACEUTICS – THEORY

Course Objectives: This course will discuss the following aspects of pharmaceutical dosage forms

1. Basic concepts, types and need
2. Advantages and disadvantages, methods of preparation / formulation
3. Packaging and labelling requirements
4. Basic quality control tests, concepts of quality assurance and good manufacturing practices

Course Outcomes:

1. Describe about the different dosage forms and their formulation aspects
2. Explain the advantages, disadvantages, and quality control tests of different dosage forms
3. Discuss the importance of quality assurance and good manufacturing practices

PHARMACEUTICS THEORY

CHAPTER NO.	CONTENT	HOURS
1	<p>Introduction: History, profession of pharmacy in relation to Pharmacy education, industry, pharmacy practice, and various professional associations.</p> <p>Career options in pharmacy.</p> <p>Pharmacopoeia: Introduction to IP, BP, USP, NF and Extra Pharmacopoeia.</p> <p>Salient features of Indian Pharmacopoeia</p>	3 1 2 1

PHARMACEUTICS THEORY

CHAPTER NO.	CONTENT	HOURS
2	Packaging materials: Containers and closures, types and characteristics	2
	Types of packaging material-glass plastic metal and rubber, selection criteria.	2
	Advantages and disadvantages of glass, plastic, metal, and rubber as packaging materials	1

PHARMACEUTICS THEORY

CHAPTER NO.	CONTENT	HOURS
3	<p>Pharmaceutical aids:</p> <p>Organoleptic (colouring, flavouring, and sweetening) agents</p> <p>Preservatives: Definition, requirement of an ideal preservative, mode of action, types with examples, usual concentration employed in dosage forms and uses</p>	1 2

PHARMACEUTICS THEORY

CHAPTER NO.	CONTENT	HOURS
4	Unit operations: Definition, objectives/applications, principles, construction, and workings of: Size reduction: hammer mill and ball mill Size separation: Classification of powders according to IP, Cyclone separator, Sieves and standards of sieves Mixing: Double cone blender, Turbine mixer, Triple roller mill and Silverson mixer homogenizer	2 2 1

CHAPTER NO.	CONTENT	HOURS
4	<p>Filtration: Theory of filtration, filter aid and filter media membrane filter and sintered glass filter</p> <p>Drying: working of fluidized bed dryer and process of freeze drying</p> <p>Extraction: Definition, Classification, method, and applications: infusion, decoction, maceration, percolation and continuous hot extraction</p>	<p>1</p> <p>1</p> <p>2</p>

CHAPTER NO.	CONTENT	HOURS
5	<p>Topical preparations - ointments, creams, pastes, gels, liniments and lotions, suppositories, and pessaries: formulation and preparation</p> <p>Nasal preparations: nasal drops, spray, Ear preparations :ear drops and ointment</p> <p>Powders and granules - Insufflations, dusting powders, effervescent powders, and effervescent granules: types, classification and preparation</p>	<p>8</p> <p>2</p> <p>3</p>

CHAPTER NO.	CONTENT	HOURS
5	<p>Tablets – coated and uncoated, various modified tablets (sustained release, extended-release, fast dissolving, multi-layered, etc.): advantages, types, excipients, production, tablet defects, sugar and film coating, evaluation.</p> <p>Capsules - hard and soft gelatin capsules : Advantages, formulation ,filling and evaluation</p> <p>Liquid oral preparations - solution, syrup, elixir, emulsion, suspension, dry powder for reconstitution: classification, formulation and preparation</p>	<p>8</p> <p>4</p> <p>6</p>

CHAPTE NO.	CONTENT	HOURS
5	<p>Topical preparations - ointments, creams, pastes, gels, liniments and lotions, suppositories, and pessaries: formulation and preparation</p> <p>Nasal preparations: nasal drops, spray, Ear preparations :ear drops and ointment</p> <p>Powders and granules - Insufflations, dusting powders, effervescent powders, and effervescent granules: types, classification and preparation</p>	<p>8</p> <p>2</p> <p>3</p>

CHAPTER NO.	CONTENT	HOURS
5	<p data-bbox="295 372 1644 596">Sterile formulations – Injectables, classification, routes of administration, formulation , production and evaluation</p> <p data-bbox="295 639 1619 772">Eye drops and eye ointments: pharmaceutical consideration, formulation.</p> <p data-bbox="295 822 1522 1286">Immunological products: Sera, vaccines, toxoids, and their manufacturing methods: Types of immunity and classification of immunological products, manufacture of bacterial, viral vaccine, toxoid and Diphtheria antitoxin(antiserum)</p>	<p data-bbox="1760 536 1792 572">4</p> <p data-bbox="1760 701 1792 736">2</p> <p data-bbox="1760 865 1792 901">4</p>

CHAPTER NO.	CONTENT	HOURS
6	<p>Basic structure, layout, sections, and activities of pharmaceutical manufacturing plants: Schedule M</p> <p>Quality control and quality assurance: Definition and concepts of quality control and quality assurance, current good manufacturing practice (cGMP), Introduction to the concept of calibration and validation.</p>	<p>2</p> <p>3</p>

CHAPTER NO.	CONTENT	HOURS
7	Novel drug delivery systems: Introduction, Classification with examples, advantages, and challenges: oral, transdermal and ophthalmic delivery	5

TOPIC WISE MARKS AND QUESTION WEIGHTAGE

TOPIC NO.	NAME OF THE TOPIC	TOTAL WEIGHTAGE IN MARKS	NO. OF 1 MARK QUESTIONS	NO. OF 3 MARK QUESTIONS	NO. OF 5 MARK QUESTIONS
1	*History of Profession of Pharmacy *Pharmacy as Career *Pharmacopoeia	2+3+5=10	2	1	1
2	Packaging Materials	2+3+5=10	2	1	1
3	Pharmaceutical aids	2+3=5	2	1	-
4	Unit Operations *Size Reduction *Size Separation *Mixing *Filtration *Drying *Extraction	5+9+10=24	5	3	2

TOPIC WISE MARKS AND QUESTION WEIGHTAGE

5	*Tablets *Capsules *Topical Preparation *Nasal Preparation *Powders and granules *Sterile formulations *Immunological products	$5+9=10=24$	5	3	2
6	*Pharmaceutical manufacturing plant * QA and QC	$2+3=5$	2	1	-
7	Novel drug delivery systems	$2+3+5=10$	2	1	1



Thank you