



Gandhinagar Institute of Pharmacy

Academic Regulations & Curriculum

For

Diploma in Pharmacy (D.Pharm) Program

w.e.f.

AY 2024-25

Preamble

The Diploma in Pharmacy (D. Pharm.) is a professional program designed to meet the growing need for qualified pharmacy professionals in healthcare, pharmaceutical industries, research, and regulatory sectors. Rooted in the philosophy of scientific excellence, ethical practice, and patient-centred care, the program provides a strong foundation in pharmaceutical sciences and their practical applications. It aims to develop competent pharmacists capable of ensuring the safe, effective, and rational use of medicines while contributing to the public health. The program envisions producing skilled, socially responsible, and lifelong learners who can adapt to evolving healthcare and technological advancements. Through its implementation, the institution seeks to prepare pharmacy professionals who can effectively bridge the gap between pharmaceutical science, healthcare delivery, and societal well-being.

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1. Vision & Mission

Vision

To become frontrunner institute committed to nurture pharmacy professionals by disseminating advanced knowledge and entrepreneurial skills through state of art infrastructure and faculty resources.

Mission

To strive for bridging the gap between pharmaceutical industries and academia by fostering academic excellence and research.

2. Objectives of the Program

PEO 1: Apply fundamental knowledge of pharmaceutical sciences to work effectively in pharmacy practice, pharmaceutical industry, and related healthcare fields.

PEO 2: Demonstrate practical skills in drug formulation, manufacturing, pharmaceutical analysis, quality control, and pharmacy practice.

PEO 3: Use scientific reasoning and problem-solving skills to address challenges related to medicines, drug development, and patient care.

PEO 4: Practice pharmacy with ethical responsibility, good communication, teamwork, and concern for patient safety and public health.

PEO 5: Pursue continuous learning and professional development to keep pace with advances in pharmaceutical sciences and healthcare.

3. Program Outcomes (POs)

PO1. Review the Prescriptions

The student should receive and handle the prescriptions in a professional manner and be able to check for its completeness and correctness. Also, the prescribers should be contacted for any clarifications and corrections in the prescriptions with suggestions if any.

PO2. Dispense Prescription / Non-Prescription Medicines

The student should be able to dispense the various scheduled drugs / medicines as per the implications of the Drug & Cosmetics Act and Rules thereunder. Also, the non-prescription medicines (over-the-counter drugs) should be dispensed judiciously to the patients as required.

PO3. Provide Patient Counselling / Education

The student should be able to effectively counsel / educate the patients / caretakers about the prescription / non-prescription medicines and other health related issues. Effective communication includes using both oral and written communication skills and various communication techniques.

PO4. Hospital and Community Pharmacy Management

The student should be able to manage the drug distribution system as per the policies and guidelines of the hospital pharmacy, good community pharmacy practice and the recommendations of regulatory agencies. Also, be able to manage the procurement, inventory and distribution of medicines in hospital / community pharmacy settings.

PO5. Expertise on Medications

The student should be able to provide an expert opinion on medications to the health care professionals on safe and effective medication-use, relevant policies and procedures based on available evidences.

PO6. Proficiency on Pharmaceutical Formulations

The student should be able to describe the chemistry, characteristics, types, merits and demerits of both drugs and excipients used in the pharmaceutical formulations based on her/his knowledge and scientific resources.

PO7. Entrepreneurship and Leadership

The student should be able to acquire the entrepreneurial skills in the dynamic professional environments. Also, be able to achieve leadership skills through teamwork and sound decision making skills.

PO8. Deliver Primary and Preventive Healthcare

The student should be able to contribute to various healthcare programs of the nation including disease prevention initiatives to improve public health. Also contribute to the promotion of national health policies.

PO9. Professional, Ethical and Legal Practice

The student should be able to deliver professional services in accordance with legal, ethical and professional guidelines with integrity.

PO10. Continuing Professional Development

The student should be able to recognize the gaps in the knowledge and skills in the effective delivery of the professional services from time to time and be self-motivated to bridge such gaps by attending continuing professional development programs.

4. Program Details**4.1 Program Structure & Duration**

- Duration: 2 Years
- Mode: Offline & Full Time
- Credit Structure: 56
- Medium of Instruction: English
- Intake: 60
- Fees: As per FRC.

4.2 Eligibility Criteria for Admission

Candidate must have passed 12th science with Physics, Biology, and Biology (or Maths),

4.3 Admission Procedure**4.3.1 First year D. Pharm:**

- i. A candidate shall have passed the 10+2 examination conducted by the respective State or Central Government authorities, or any equivalent examination recognized by bodies such as

the Association of Indian Universities (AIU) or the Council of Boards of School Education in India (COBSE), including wings such as IGNOU and NIOS, with English as one of the subjects and with Physics and Chemistry as compulsory subjects, along with either Mathematics or Biology.

ii. Any other qualification approved by the Pharmacy Council of India as equivalent to any of the above examinations.

Admission process is fully governed by the Admission Committee for Professional Courses (ACPC), Ahmedabad in the ratio of 50:50. GIP strictly follow the guidelines of ACPC. Students are enrolled in B.Pharm course based on final list provided by ACPC.

4.4 Credit framework

D.Pharm curriculum has a total of 56 credit points in which Year I consists of 27.5 points and Year II consists of 28.5 points.

5. Curriculum Structure

The course of study for D. Pharm shall include year wise Theory & Practical as given in Tables - I to II. The number of hours allotted to each theory and practical course in any years shall not be less than that shown in Tables - I to II.

Table-I: Course of study for Year I

Course Code	Name of the course	No. of hours per week (L/P)	Credit points
DP101T	Pharmaceutics (Theory)	4	4
DP102T	Pharmaceutical Chemistry (Theory)	4	4
DP103T	Pharmacognosy (Theory)	4	4
DP104T	Human Anatomy and Physiology (Theory)	4	4
DP105T	Social Pharmacy (Theory)	4	4
DP101P	Pharmaceutics (Practical)	3	1.5
DP102P	Pharmaceutical Chemistry (Practical)	3	1.5
DP103P	Pharmacognosy (Practical)	3	1.5
DP104P	Human Anatomy and Physiology (Practical)	3	1.5
DP105P	Social Pharmacy (Practical)	3	1.5
Total		35	27.5

Table-II: Course of study for Year II

Course Code	Name of the course	No. of hours per week (L/P)	Credit points
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DP201T	Pharmacology (Theory)	4	4
DP202T	Community Pharmacy & Management (Theory)	4	4
DP203T	Biochemistry & Clinical pathology (Theory)	4	4
DP204T	Pharmacotherapeutics (Theory)	4	4
DP205T	Hospital & Clinical Pharmacy (Theory)	4	4
DP206T	Pharmacy Law & Ethics (Theory)	4	4
DP201P	Pharmacology (Practical)	2	1
DP202P	Community Pharmacy & Management (Practical)	3	1.5
DP203P	Biochemistry & Clinical pathology (Practical)	2	1
DP204P	Pharmacotherapeutics (Practical)	1	0.5
DP205P	Hospital & Clinical Pharmacy (Practical)	1	0.5
Total		33	28.5

Note: Earning total credits [56] as mentioned above are mandatory for award of the degree. However, Institute/University has the liberty to offer additional courses as per their mandates or may also offer additional credits through various MOOCs upon approval of their respective academic council.

6. Teaching, Learning & Evaluation

6.1 Teaching Methodology

The D. Pharm program follows a student-centred teaching methodology that combines theoretical knowledge with practical learning. Lectures, laboratory experiments, and interactive classroom discussions are used to enhance understanding of pharmaceutical sciences. Modern teaching aids such as presentations, e-learning resources, and case studies support effective learning. Industrial visits, seminars, workshops, and project-based activities provide exposure to real-world pharmaceutical practices. Continuous assessment through assignments, quizzes, and practical evaluations helps monitor student progress. The methodology emphasizes critical thinking, problem-solving skills, professional ethics, and lifelong learning.

6.2 Attendance Rules

A candidate must maintain a minimum of 75% attendance in each individual course. Attendance for theory and practical components shall be considered separately. Only candidates who satisfactorily complete the prescribed course requirements shall be eligible to appear for the respective examinations. Attendance marks will be included in the final compiled marksheet of internal examination of each practical subject

6.3 Examination and Evaluation System

6.3.1 Evaluation Components

The evaluation consists of Internal Evaluation and End Semester Examination (ESE) Internal Evaluation include Continuous mode of internal assessment (in practical) and Sessional examination shall be awarded as per the scheme given below.

Table–III: Scheme for awarding internal assessment: Continuous mode and Sessional
a. Theory

Theory – Internal assessment pattern of marks distribution

Theory	Internal assessment pattern of marks distribution		
Credit Type	Max. Marks	Total Internal Marks	Internal 2 hrs
4	100	20	Exam Marks 40 - converted in to 20 Marks Average of Best 2 sessional marks out of 3 exam (of 40 M) will be considered.

Three Sessional exams shall be conducted for theory and one exam shall be conducted for practical course as per the schedule fixed by the college(s)/University. The scheme of question paper for theory and practical Sessional examinations is given in Table IV – V below. The average marks of three internal exams shall be computed for internal assessment as per the requirements given in Table – IV.

Table–IV: Internal Assessment Question Paper Pattern (Theory)

Type of questions	4 Credit Course
I. Multiple Choice Questions (MCQs) Or Objective Type Questions	10×1 Mark each (Compulsory)
II. Short Answers	5×3 Marks each (5 out of 6)
III. Long Answers	3×5 Marks each (3 out of 4)
Max. Marks	20
Duration	2 Hour

Table – V: Internal Assessment Question Paper Pattern (Practical)

Type of questions	0.5, 1 or 1.5 Credit Course
Synopsis	10
Major Experiment	35
Minor Experiment	15
Viva voce	20
Max. Marks	80 converted to 10 + 10 CME (Assignment, Field report, Quiz, etc.) = 20
Duration	As per the allotted hours in scheme

6.3.2 Suggested Weightage

The weightage of Internal and External Marks has been mentioned in the table VI.

Table VI: Weightage of Internal and External Marks

Theory				
Sr. No.	Credit	Internal Marks	External Marks	Total Marks
1	4	20	80	100
Practical				
1	0.5, 1, 1.5	20	80	100

6.3.3 Passing Standards

- Minimum 40% marks in total internal and external marks in theory and practical examinations.
- Separate passing in the internal and external is not required in theory and practical examinations.

6.4 Grading System

Based on the performances, each student shall be awarded a final letter grade at the end of the year for each course. The letter grades and their corresponding grade points are given in Table – VII.

Table–VII: Letter grades and grade points equivalent to percentage of marks and performance

Percentage of Marks Obtained	Letter Grade	Grade Point
85 – 100	AA	10
75.00 – 84.99	AB	09
65 – 74.99	BB	08
55 – 64.99	BC	07
45 – 54.99	CC	06
40 – 44.99	CD	05
Less than 40	FF	00

A student who remains absent for any end semester examination shall be assigned a letter grade of AB and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

6.7 Dissertation / Project Work

NA

7. Rules & Regulations

7.1 Rules for Promotion

- A student shall be declared PASS and eligible to receive a grade in a course of the D. Pharm. programme if he/she secures at least 40% marks in that particular course, including internal assessment. For example, to be declared PASS and to receive a grade, the student must secure a minimum of 40 marks out of a total of 100, inclusive of internal assessment marks (continuous

internal assessment and sessional examination marks) and the end-semester theory examination marks as applicable

ii. Carry forward of internal assessment marks: In case a student fails to secure the minimum 40% in any Theory or Practical course as specified in 7.1.1, then he/she shall reappear for the end semester examination of that course. However, his/her marks of the Internal Assessment shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.

iii. Improvement of internal assessment: A student shall have the opportunity to improve his/her performance only once in the Sessional exam component of the internal assessment. The re-conduct of the Sessional exam shall be completed within that particular semester only. The re-conduct of sessional examinations for failed candidates shall be conducted only once for the purpose of improving their sessional marks, without changing their continuous internal assessment.

7.2 Maximum Duration for Completion

The maximum period permitted for completion of the Programme shall be twice the prescribed duration of the Programme. Any student who fails to complete the Programme within this stipulated period shall be required to discontinue the course.

A candidate seeking re-admission to the programme after a break in studies must obtain approval from the university by paying the prescribed condonation fee. Condonation will not be granted if the break in study exceeds two years or if the student fails to complete the programme within the maximum permitted duration ($N \times 2$).

7.3 Internship Guidelines

Every candidate shall be required to complete a minimum of 500 hours of practical training, spread over a period of not less than three months, in a Pharmaceutical/ Cosmetics/ Medical Devices/ Food Industry, or in a Hospital/Community Pharmacy, or any other relevant field as per the prescribed course content. He/she has to submit two internship reports which will be evaluated separately.

7.4 Discipline Rules

Students shall maintain discipline, professional ethics, and proper conduct within the institution, during field visits, internships, industry interactions, examinations, and all academic activities. Students are expected to attend classes regularly, follow institutional rules and regulations, respect faculty members, staff, fellow students, and institutional property, and maintain academic integrity in assignments, projects, and examinations.

Any form of misconduct, ragging, indiscipline, use of unfair means in examinations, damage to institutional property, harassment, or behaviour affecting the academic environment shall be treated seriously and may result in disciplinary action including warning, suspension, cancellation of examination, withholding of results, or expulsion from the program as per University rules and UGC regulations. Students shall also comply with all safety, ethical, and professional standards prescribed by the institution from time to time.

7.5 Anti-Ragging Policy

The program shall strictly follow:

- UGC Anti-Ragging Regulations

- Anti-Ragging Affidavit requirements
- Institutional disciplinary procedures

Ragging in any form is strictly prohibited.

7.6 Ethical use of Technology and AI Tools

Students are encouraged to use various digital tools with academic integrity and ethically.

8. Student Support

Gandhinagar Institute of Pharmacy provides support to D.Pharm students through academic mentoring, remedial coaching, career guidance, competitive exam preparations and placement assistance. Students benefit from industrial visits, internships, and access to well-equipped laboratories and library resources. The institute also offers counseling services, soft-skill development programs, and a robust mentor-mentee system to ensure holistic growth. Various co-curricular, extracurricular, and community engagement activities help students develop leadership, professional competence, and social responsibility. These initiatives collectively prepare students for successful careers in pharmacy, research, healthcare, and entrepreneurship.

8.1 Industry Collaboration

Gandhinagar Institute of Pharmacy actively collaborates with pharmaceutical industries, healthcare organizations, and research institutions to bridge the gap between academia and industry. These collaborations provide D.Pharm students with industrial visits, internships, hands-on training, expert lectures, and placement opportunities, enhancing their employability and professional skills. Faculty members benefit through collaborative research projects, industrial training, consultancy activities, and knowledge exchange programs. Such partnerships strengthen the institute's academic and research ecosystem, promote innovation, and ensure that the curriculum remains aligned with current industry requirements and emerging pharmaceutical trends.

8.2 Research and Consultancy

NA

8.3 Library and Laboratory Facilities

Gandhinagar Institute of Pharmacy provides a very rich library and modern well-equipped laboratory facilities to support effective teaching, learning, and research.

The library houses a rich collection of textbooks, reference books, national and international journals, and digital resources that facilitate continuous academic enrichment for students and faculty.

This includes 1026 Titles (D.Pharm- 403 & B.Pharm-623) and 3320 volumes (D.Pharm- 1233 & B.Pharm- 2087) (Table VIII).

Table VIII: Library book details subject wise

Subject	D.Pharm		B.Pharm	
	Title	Volume	Title	Volume
Pharmaceutics	110	373	170	579
Pharmaceutical Chemistry	106	279	141	551

Pharmacology	75	206	143	381
Pharmacognosy	33	124	58	187
Pharmaceutical Analysis	43	109	51	214
Other(Environmental Science, Computer Application in Pharmacy, Communication Skills, Remedial Mathematics etc.)	20	84	30	92
Microbiology & Bio-Technology	11	40	20	54
Social Pharmacy	5	18	5	24
Reference			5	5
Total	403	1233	623	2087

GIP is having advanced laboratories with modern instruments enable hands-on training, practical skill development, and research activities in various pharmaceutical disciplines. These resources foster scientific inquiry, enhance academic performance, and contribute significantly to the professional growth of students, faculty development, and the overall excellence of the institute (Table IX).

Table IX: Infrastructure details

Laboratory			
Sr. No.	Room no.	Particulars	Course
1	B102	P'cology	B.Pharm
2	B103	Pharmaceutics	B.Pharm
3	B104	Pharmaceutics	D.Pharm
4	B105	Machine room	B.Pharm
5	B201	P'cognosy	B.Pharm
6	B202	Bioichem/CP/HPCP	D.Pharm
7	B203	Model Pharmacy	D.Pharm
8	B204	P' Analysis	B.Pharm
9	B205	Computer lab	B.Pharm
10	B206	P'Chemistry	D.Pharm
11	B207	P'Chemistry	B.Pharm
12	B301	Pharmaceutics	B.Pharm
13	B302	Central instrument room	B.Pharm
14	B303	P'Chemistry	B.Pharm
15	B304	P'cology	B.Pharm
Classroom			
Sr. No.	Room no.	Particulars	Course
1	B305	Classroom-I	B.Pharm
2	B306	Classroom-II	B.Pharm
3	B307	Classroom-I	D.Pharm
4	B308	Classroom-II	D.Pharm
5	B208	Smart classroom	B.Pharm

8.4 Student Counselling and Mentoring

It is necessary to monitor the personality of students (Behaviour, Interest, Attitude, performance, Goals, career objectives and hidden skills properly to develop the healthy and holistic environment for the education. This favourable environment can be developed through mentorship.

The purpose of a mentorship is to help the students to grow as a person and become the best version of them. This may involve helping students achieve their personal or career goals, introducing them to new ways of thinking, challenging their limiting assumptions, sharing valuable life lessons, and much more.

At Gandhinagar Institute of Pharmacy, we are following a unique mentoring system through mentorship system. All mentors are informed to take follow up of mentorship activities regularly. The department facilitate academic counselling, mentoring, career guidance, research support, and skill development activities to assist students in their academic progression and professional growth. Opportunities for interaction with industry experts, participation in workshops, seminars, field visits, training programs, and extracurricular activities aimed at enhancing employability, leadership qualities, communication skills, and overall personality development are also provided to the students. Necessary support mechanisms for addressing academic and personal concerns also be made available as per institutional policies.

For the effectiveness of the mentorship program, following steps are being followed.

- Distribution of students to mentors.
- Updation of the data in specified formats and files.
- Regularly updation of the mentor-mentee meeting details. At least 2 meetings/month is conducted to observe the behavior and performance of students regularly.
- Maintenance of all the records of meetings and steps taken if any.

The Mentoring system and student support system is as follow.

- Students will be allocated for mentoring to a faculty at the beginning of the academic year. This faculty acts as a mentor and takes the responsibility of mentoring students till the completion of the course.
- During mentoring faculty focus on overall development of students and students can discuss his/her interests, idea, suggestions, and problems if any during academic sessions.
- A file with all related documents known as Mentor file is maintained by each mentor for each student which includes their personal record, leave reports, suggestions, remarks, student documents, mid-Sem marks, class test marks, achievements, and apology letter.
- A Mentor-Mentee meeting will be carried out once or twice in a month with various Point of discussion regarding curricular, co-curricular and extra-curricular activities with students and regular updates.
- Mentors will continuously observe the mentee's overall performance and contact their parents if required.
- Mentors encourage students to participate in different Research, Social, Extra & co-curricular activities.
- Academic and moral support is given to slow learners.

8.5 Placement and Career Development

The department also promotes placement assistance and career development activities for students through industry interaction, professional networking, training programs, internships, and campus engagement initiatives. Various efforts also made to establish linkages with related industries/institutions to facilitate internships, live projects, industrial exposure, and employment opportunities for students. Career development activities such as aptitude training, resume preparation, soft skill development, entrepreneurship guidance, certification programs, expert sessions, and placement-oriented workshops organized to enhance professional competency and employability of students.

9. Program Credibility

The D.Pharm program at Gandhinagar Institute of Pharmacy is designed in accordance with the guidelines of the Pharmacy Council of India and affiliated university requirements, ensuring high academic standards and professional relevance. The curriculum integrates theoretical knowledge, practical work, and industry-oriented training learning to prepare competent pharmacy professionals. Continuous quality improvement through outcome-based education, stakeholder feedback, and academic audits enhances program effectiveness. The credibility of the program strengthens students' career prospects, supports faculty excellence, and contributes to the institute's reputation as a center for quality pharmaceutical education.

9.1 Executive Summary

Gandhinagar Institute of Pharmacy is committed to provide quality pharmaceutical education through a blend of academic excellence, practical training, and industry interaction. The institute focuses on developing competent, ethical, and industry-ready pharmacy professionals through modern teaching methodologies and state-of-the-art infrastructure. Strong emphasis on student support, innovation, community engagement, and continuous quality improvement contributes to the holistic development of students and the overall growth of the institution.

9.2 Scope and Career Opportunities

□ **Graduates of the program may work in:**

A. Pharmaceutical Manufacturing and Research Companies

1. Sun Pharmaceutical Industries
2. Dr. Reddy's Laboratories
3. Cipla limited
4. Lupin pharma
5. Torrent Pharmaceuticals
6. Zydus Lifesciences
7. Aurobindo Pharma
8. Intas Pharmaceuticals
9. Abbott Laboratories
10. Pfizer
11. Novartis pharmaceuticals
12. Sanofi

B. Hospitals and Healthcare Institutions

1. Government Hospitals

2. Private Multi-specialty Hospitals
3. Community Health Centres
4. Clinical Pharmacies
5. Hospital Pharmacy Departments

C. Biotechnology and Healthcare Companies

1. Biocon
2. Serum Institute of India
3. Bharat Biotech
4. Panacea Biotec

D. Entrepreneurship and Start-ups

1. Wholesale Drug Distribution
2. Retail and Community Pharmacies
3. Pharmaceutical Marketing Organizations

Potential Job Roles

D.Pharm candidate can work as Production Pharmacist, Quality Control Analyst, Quality Assurance Assistant, Hospital Pharmacist, Community Pharmacist, Entrepreneur, Laboratory Technician.

☐ **Higher Study & Professional Opportunities**

D.Pharm candidate has opportunity for the higher studies like B. Pharm.

☐ **Government Sector**

D.Pharm candidate can work as junior pharmacist in Hospital/Dispensary Pharmacist, ESIC (Employees' State Insurance Corporation) Pharmacist, Railway Pharmacist, Defense Services Pharmacist, etc.

10. Collaborative Field Work / Experimental Work

The Institute of Pharmacy promotes collaborative fieldwork and experimental learning through industrial visits, hospital training, community pharmacy activities, and health awareness programs. These experiential learning opportunities enable D.Pharm students to apply theoretical concepts in real-world settings, enhancing their practical skills and professional competence. Faculty members actively guide students in experimental studies and field-based projects, fostering innovation and scientific inquiry. Such initiatives strengthen industry and community engagement, enrich the teaching-learning process, and contribute to the academic growth and reputation of the institute.

11. Market Survey

Gandhinagar Institute of Pharmacy promotes market survey activities to help students understand pharmaceutical industry trends, consumer behavior, healthcare needs, and emerging market opportunities. Through field-based surveys and data analysis projects, students develop communication and problem-solving skills. These activities enhance industry awareness, support

evidence-based decision-making, and strengthen the institute's connection with the healthcare and pharmaceutical sectors.

12. Review and Revision of Regulation

The University reserves the right to interpret, modify, revise, amend, or update any provision, rule, regulation, curriculum structure, evaluation pattern, academic requirement, or operational guideline related to the program from time to time in accordance with University regulations, statutory requirements, industry developments, and academic needs.

In case of any ambiguity or dispute regarding interpretation of any provision of this manual, the decision of the University/Competent Authority shall be final and binding on all stakeholders. Any amendments, additions, or revisions approved by the appropriate academic or statutory bodies of the University shall automatically become applicable to the program.

Annexure I. Detailed Syllabus of D.Pharm Year I

Subject DP101T	Code:	Subject Title: Pharmaceutics (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge and skills on the art and science of formulating and dispensing different pharmaceutical dosage forms.

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:

Upon successful completion of this course, the students will be able to

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 & good manufacturing practices.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	- History of the profession of Pharmacy in India in relation to Pharmacy education, industry, pharmacy practice, and various professional associations. - Pharmacy as a career - Pharmacopoeia: Introduction to IP, BP, USP, NF and - Extra Pharmacopoeia. Salient features of Indian Pharmacopoeia	7	9.33
2	Packaging materials: Types, selection criteria, advantages and disadvantages of glass, plastic, metal, rubber as packaging materials	5	6.66
3	Pharmaceutical aids: Organoleptic (Colouring, flavouring, and sweetening) agents Preservatives: Definition, types with examples and uses	3	3.99
4	Unit operations: Definition, objectives/applications, principles, construction and workings of: Size reduction: hammer mill and ball mill Size separation: Classification powder according to IP, Cyclone separator, Sieves and standards of sieves Mixing: Double cone blender, Turbine mixer, Triple roller mill and Silverson mixer homogenizer Filtration: Theory of filtration, membrane filter and sintered glass filter Drying: working of fluidized bed dryer and process of freeze drying Extraction: Definition, Classification, method and applications	9	12.00
5	Tablets - coated and uncoated, various modified tablets (sustained release, extended-release, fast dissolving, double layered etc.)	8	10.66
	Capsules - hard and soft gelatine capsules	4	5.33
	Liquid oral preparations - solution, syrup, elixir, emulsion, suspension, dry powder for reconstitution	6	7.99
	Topical preparations - ointments, creams, pastes, gels, liniments and lotions, suppositories and pessaries	8	10.66
	Nasal preparations, Ear preparations	2	2.66
	Powders and granules - Insufflations, dusting powders, effervescent powders and effervescent granules	3	3.99
	Sterile formulations – Injectables, eye drops and eye ointments	6	7.99
	Immunological products: Sera, vaccines, toxoids and their manufacturing methods.	4	5.33
6	Basic structure, layout, sections and activities of pharmaceutical manufacturing plants Quality control and quality assurance: Definition and concepts of quality control & quality assurance, current good manufacturing practice (cGMP), Introduction to concept of calibration and validation	5	6.66
7	Novel drug delivery systems: Introduction, Classification with examples, advantages and challenges	5	6.66

Subject Code: DP101P	Subject Title: Pharmaceutics (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students in formulating and dispensing common pharmaceutical dosage forms.

Course Objectives:

This course will discuss and train the following aspects of preparing and dispensing various pharmaceutical dosage forms:

1. Calculation of working formula from the official master formula.
2. Formulation of dosage forms based on working formula.
3. Appropriate Packaging and labelling requirements.
4. Methods of basic quality control tests.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Calculate the working formula from the given master formula.
2. Formulate the dosage form and dispense in an appropriate container.
3. Design the label with the necessary product and patient information.
4. Perform the basic quality control tests for the common dosage forms.

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	Handling and referring the official references: Pharmacopoeias, Formularies, etc. for retrieving formulas, procedures, etc.
2.	Formulation of the following dosage forms as per monograph standards and dispensing with appropriate packaging & labelling • Liquid Oral: Simple syrup, Piperazine citrate elixir, Aqueous Iodine solution

Sr. No.	Title of Experiment
	• Emulsion: Castor oil emulsion, Cod liver oil emulsion • Suspension: Calamine lotion, Magnesium hydroxide mixture • Ointment: Simple ointment base, Sulphur ointment • Cream: Cetrimide cream • Gel: Sodium alginate gel • Liniment: Turpentine liniment, White liniment BPC • Dry powder: Effervescent powder granule, Dusting powder • Sterile Injection: Normal Saline, Calcium gluconate Injection • Hard Gelatine Capsule: Tetracycline capsules • Tablet: Paracetamol tablets
3.	Formulation of at least five commonly used cosmetic preparations – e.g. cold cream, shampoo, lotion, toothpaste etc.
4.	Demonstration on various stages of tablet manufacturing processes.
5.	Appropriate methods of usage and storage of all dosage forms including special dosage such as different types of inhalers, spacers, insulin pens
6.	Demonstration of quality control tests and evaluation of common dosage forms viz. tablets, capsules, emulsion, sterile injections as per the monographs

Assignments:

The students shall be asked to submit written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. Various systems of measures commonly used in prescribing, compounding and dispensing practices.
2. Market preparations (including Fixed Dose Combinations) of each type of dosage forms, their generic name, minimum three brand names and label contents of the dosage forms mentioned in theory/practical.
3. Overview of various machines / equipments / instruments involved in the formulation and quality control of various dosage forms / pharmaceutical formulations.
4. Overview of extemporaneous preparations at community / hospital pharmacy vs. manufacturing of dosage forms at industrial level.
5. Basic pharmaceutical calculations: ratios, conversion to percentage fraction, alligation, proof spirit, isotonicity.

Field Visit:

The students shall be taken for an industrial visit to pharmaceutical industries to witness and understand the various processes of manufacturing of any of the common dosage forms viz. tablets, capsules, liquid orals, injectables, etc. Individual reports from each student on their learning experience from the field visit shall be submitted.

Subject DP102T	Code:	Subject Title: Pharmaceutical Chemistry (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on the chemical structure, storage conditions and medicinal uses of organic and inorganic chemical substances used as drugs and pharmaceuticals. Also, this course discusses the impurities, quality control aspects of chemical substances used in pharmaceuticals.

Course Objectives:

This course will discuss the following aspects of the chemical substances used as drugs and pharmaceuticals for various disease conditions:

1. Chemical classification, chemical name, chemical structure.
2. Pharmacological uses, doses, stability and storage conditions.
3. Different types of formulations / dosage form available and their brand names.
4. Impurity testing and basic quality control tests.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the chemical class, structure and chemical name of the commonly used drugs and pharmaceuticals of both organic and inorganic nature.
2. Discuss the pharmacological uses, dosage regimen, stability issues and storage conditions of all such chemical substances commonly used as drugs.
3. Describe the quantitative and qualitative analysis, impurity testing of the chemical substances given in the official monographs.
4. Identify the dosage form & the brand names of the drugs and pharmaceuticals popular in the marketplace.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Introduction to Pharmaceutical chemistry: Scope and objectives Sources and types of errors: Accuracy, precision, significant figures Impurities in Pharmaceuticals: Source and effect of impurities in Pharmacopoeial substances, importance of limit test, Principle and procedures of Limit tests for chlorides, sulphates, iron, heavy metals	8	10.66

Sr. No.	Topic	Hours	Weightage (%)
	and arsenic.		
2	Volumetric analysis: Fundamentals of volumetric analysis, Acid-base titration, non-aqueous titration, precipitation titration, complexometric titration, redox titration Gravimetric analysis: Principle and method.	8	10.66
3	Inorganic Pharmaceuticals: Pharmaceutical formulations, market preparations, storage conditions and uses of	7	9.33
	• Haematinics: Ferrous sulphate, Ferrous fumarate, Ferric ammonium citrate, Ferrous ascorbate, Carbonyl iron • Gastro-intestinal Agents: Antacids: Aluminium hydroxide gel, Magnesium hydroxide, Magaldrate, Sodium bicarbonate, Calcium Carbonate, Acidifying agents, Adsorbents, Protectives, Cathartics • Topical agents: Silver Nitrate, Ionic Silver, Chlorhexidine Gluconate, Hydrogen peroxide, Boric acid, Bleaching powder, Potassium permanganate • Dental products: Calcium carbonate, Sodium fluoride, Denture cleaners, Denture adhesives, Mouth washes • Medicinal gases: Carbon dioxide, nitrous oxide, oxygen		
4	Introduction to nomenclature of organic chemical systems with particular reference to heterocyclic compounds containing up to three rings	2	2.66
Study of the following category of medicinal compounds with respect to classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names			
5	Drugs Acting on Central Nervous System • Anaesthetics: Thiopental Sodium*, Ketamine Hydrochloride*, Propofol • Sedatives and Hypnotics: Diazepam*, Alprazolam*, Nitrazepam, Phenobarbital* • Antipsychotics: Chlorpromazine Hydrochloride*, Haloperidol*, Risperidone*, Sulpiride*, Olanzapine, Quetiapine, Lurasidone • Anticonvulsants: Phenytoin*, Carbamazepine*, Clonazepam, Valproic Acid*, Gabapentin*, Topiramate, Vigabatrin, Lamotrigine • Anti-Depressants: Amitriptyline Hydrochloride*, Imipramine Hydrochloride*, Fluoxetine*, Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine	9	11.99
6	Drugs Acting on Autonomic Nervous System • Sympathomimetic Agents: Direct Acting: Nor- Epinephrine*, Epinephrine, Phenylephrine, Dopamine*, Terbutaline, Salbutamol (Albuterol), Naphazoline*, Tetrahydrozoline. Indirect Acting Agents: Hydroxy Amphetamine, Pseudoephedrine. Agents With Mixed Mechanism: Ephedrine, Metaraminol • Adrenergic Antagonists: Alpha Adrenergic Blockers: Tolazoline, Phentolamine • Phenoxybenzamine, Prazosin. Beta Adrenergic Blockers: Propranolol*, Atenolol*, Carvedilol	9	11.99

Sr. No.	Topic	Hours	Weightage (%)
	• Cholinergic Drugs and Related Agents: Direct Acting Agents: Acetylcholine*, Carbachol, And Pilocarpine. Cholinesterase Inhibitors: Neostigmine*, Edrophonium Chloride, Tacrine Hydrochloride, Pralidoxime Chloride, Echothiopate Iodide • Cholinergic Blocking Agents: Atropine Sulphate*, Ipratropium Bromide • Synthetic Cholinergic Blocking Agents: Tropicamide, Cyclopentolate Hydrochloride, Clidinium Bromide, Dicyclomine Hydrochloride*		
7	Drugs Acting on Cardiovascular System • Anti-Arrhythmic Drugs: Quinidine Sulphate, Procainamide Hydrochloride, Verapamil, Phenytoin Sodium*, Lidocaine Hydrochloride, Lorcaïnide Hydrochloride, Amiodarone and Sotalol • Anti-Hypertensive Agents: Propranolol*, Captopril*, Ramipril, Methyldopate Hydrochloride, Clonidine Hydrochloride, Hydralazine Hydrochloride, Nifedipine • Antianginal Agents: Isosorbide Dinitrate	5	6.66
8	Diuretics: Acetazolamide, Frusemide*, Bumetanide, Chlorthalidone, Benzthiazide, Metolazone, Xipamide, Spironolactone	2	2.66
9	Hypoglycemic Agents: Insulin and Its Preparations, Metformin*, Glibenclamide*, Glimepiride, Pioglitazone, Repaglinide, Gliflozins, Gliptins	3	3.99
10	Analgesic And Anti-Inflammatory Agents: Morphine Analogues, Narcotic Antagonists; Nonsteroidal Anti- Inflammatory Agents (NSAIDs) - Aspirin*, Diclofenac, Ibuprofen*, Piroxicam, Celecoxib, Mefenamic Acid, Paracetamol*, Aceclofenac	3	3.99
11	Anti-Infective Agents • Antifungal Agents: Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole*, Itraconazole, Fluconazole*, Naftifine Hydrochloride • Urinary Tract Anti-Infective Agents: Norfloxacin, Ciprofloxacin, Ofloxacin*, Moxifloxacin • Anti-Tubercular Agents: INH*, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide, Rifampicin, Bedaquiline, Delamanid, Pretomanid* • Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir*, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir • Antimalarials: Quinine Sulphate, Chloroquine Phosphate*, Primaquine Phosphate, Mefloquine*, Cycloguanil, Pyrimethamine, Artemisinin • Sulfonamides: Sulfanilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide*, Mafenide Acetate, Cotrimoxazole, Dapsone*	8	10.66
12	Antibiotics: Penicillin G, Amoxicillin*, Cloxacillin, Streptomycin, Tetracyclines: Doxycycline, Minocycline, Macrolides: Erythromycin, Azithromycin, Miscellaneous: Chloramphenicol*	8	10.66

Sr. No.	Topic	Hours	Weightage (%)
	Clindamycin		
13	Anti-Neoplastic Agents: Cyclophosphamide*, Busulfan, Mercaptopurine, Fluorouracil*, Methotrexate, Dactinomycin, Doxorubicin Hydrochloride, Vinblastine Sulphate, Cisplatin*, Dromostanolone Propionate	3	3.99

Subject Code: DP102P	Subject Title: Pharmaceutical Chemistry (Practical)
Pre-requisite: --	

Scope:

This course is designed to impart basic training and hands-on experiences to synthesis chemical substances used as drugs and pharmaceuticals. Also, to perform the quality control tests, impurity testing, test for purity and systematic qualitative analysis of chemical substances used as drugs and pharmaceuticals.

Course Objectives:

This course will provide the hands-on experience on the following aspects of chemical substances used as drugs and pharmaceuticals:

1. Limit tests and assays of selected chemical substances as per the monograph
2. Volumetric analysis of the chemical substances
3. Basics of preparatory chemistry and their analysis
4. Systematic qualitative analysis for the identification of the chemical drugs

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Perform the limit tests for various inorganic elements and report.
2. Prepare standard solutions using the principles of volumetric analysis.
3. Test the purity of the selected inorganic and organic compounds against the monograph standards.
4. Synthesize the selected chemical substances as per the standard synthetic scheme.
5. Perform qualitative tests to systematically identify the unknown chemical substances.

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	Limit test for: Chlorides; sulphate; Iron; heavy metals
2.	Identification tests for Anions and Cations as per Indian Pharmacopoeia
3.	Fundamentals of volumetric analysis: Preparation of standard solution and standardization of Sodium Hydroxide, Potassium Permanganate
4.	Assay of the following compounds • Ferrous sulphate- by redox titration • Calcium gluconate-by complexometric • Sodium chloride-by Modified Volhard's method • Ascorbic acid by cerimetry • Ibuprofen by alkalimetry
5.	Fundamentals of preparative organic chemistry Determination of Melting point and boiling point of organic compounds
6.	Preparation of organic compounds • Benzoic acid from Benzamide • Picric acid from Phenol
7.	Identification and test for purity of pharmaceuticals Aspirin, Caffeine, Paracetamol, Sulfanilamide
8.	Systematic Qualitative analysis experiments (4 substances)

Assignments

The students shall be asked to submit the written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. Different monographs and formularies available and their major contents.
2. Significance of quality control and quality assurance in pharmaceutical industries.
3. Overview on Green Chemistry.
4. Various software programs available for computer aided drug discovery.
5. Various instrumentations used for characterization and quantification of drug.

Subject DP103T	Code:	Subject Title: Pharmacognosy (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart knowledge on the medicinal uses of various drugs of natural origin. Also, the course emphasizes the fundamental concepts in the evaluation of crude drugs, alternative systems of medicine, nutraceuticals and herbal cosmetics.

Course Objectives:

This course will discuss the following aspects of drug substances derived from natural resources:

1. Occurrence, distribution, isolation, identification tests of common phytoconstituents.
2. Therapeutic activity and pharmaceutical applications of various natural drug substances and phytoconstituents.
3. Biological source, chemical constituents of selected crude drugs and their therapeutic efficacy in common diseases and ailments.
4. Basic concepts in quality control of crude drugs and various system of medicines.
5. Applications of herbs in health foods and cosmetics.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Identify the important/common crude drugs of natural origin.
2. Describe the uses of herbs in nutraceuticals and cosmeceuticals.
3. Discuss the principles of alternative system of medicines.
4. Describe the importance of quality control of drugs of natural origin.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Definition, history, present status and scope of Pharmacognosy	2	2.66
2	Classification of drugs: • Alphabetical • Taxonomical • Morphological • Pharmacological • Chemical • Chemo-taxonomical	4	5.33
3	Quality control of crude drugs:	6	7.99

Sr. No.	Topic	Hours	Weightage (%)	
	- Different methods of adulteration of crude drugs - Evaluation of crude drugs			
4	Brief outline of occurrence, distribution, isolation, identification tests, therapeutic activity and pharmaceutical applications of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins.	6	7.99	
5	Biological source, chemical constituents and therapeutic efficacy of the following categories of crude drugs.	34	45.33	
	Laxatives	Aloe, Castor oil, Ispaghula, Senna	30	39.99
	Cardiotonic	Digitalis, Arjuna		
	Carminatives and G.I. regulators	Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon		
	Astringents	Myrobalan, Black Catechu, Pale Catechu		
	Drugs acting on nervous system	Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca		
	Anti-hypertensive	Rauwolfia		
	Anti-tussive	Vasaka, Tolu Balsam		
	Anti-rheumatics	Colchicum seed		
	Anti-tumour	Vinca, Podophyllum		
	Antidiabetics	Pterocarpus, Gymnema		
	Diuretics	Gokhru, Punarnava		
	Anti-dysenteric	Ipecacuanha		
	Antiseptics and disinfectants	Benzoin, Myrrh, Neem, Turmeric		
	Antimalarials	Cinchona, Artemisia		
	Oxytocic	Ergot		
	Vitamins	Cod liver oil, Shark liver oil		
	Enzymes	Papaya, Diastase, Pancreatin, Yeast		
Pharmaceutical Aids	Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatine			
Miscellaneous	Squill, Galls, Ashwagandha, Tulsi, Guggul			
6	Plant fibres used as surgical dressings: Cotton, silk, wool and regenerated fibres. Sutures – Surgical Catgut and Ligatures	3	3.99	
7	Basic principles involved in the traditional systems of medicine like: Ayurveda, Siddha, Unani and Homeopathy Method of preparation of Ayurvedic formulations like: Arista, Asava, Gutika, Taila, Churna, Lehya and Bhasma	8	10.66	
8	Role of medicinal and aromatic plants in national economy and their export potential	2	2.66	
9	Herbs as health food: Brief introduction and therapeutic applications of: Nutraceuticals, Antioxidants, Pro-biotics, Pre-biotics, Dietary fibres, Omega-3-fatty	4	5.33	

Sr. No.	Topic	Hours	Weightage (%)
	acids, Spirulina, Carotenoids, Soya and Garlic		
10	Introduction to herbal formulations	4	5.33
11	Herbal cosmetics: Sources, chemical constituents, commercial preparations, therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil	4	5.33
12	Phytochemical investigation of drugs	2	2.66

Subject Code: DP103P	Subject Title: Pharmacognosy (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students in physical identification, morphological characterization, physical and chemical characterization and evaluation of commonly used herbal drugs.

Course Objectives:

This course will provide hands-on experiences to the students in:

1. Identification of the crude drugs based on their morphological characteristics.
2. Various characteristic anatomical characteristics of the herbal drugs studied through transverse section.
3. Physical and chemical tests to evaluate the crude drugs.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Identify the given crude drugs based on the morphological characteristics.
2. Take a transverse section of the given crude drugs.
3. Describe the anatomical characteristics of the given crude drug under microscopical conditions.
4. Carry out the physical and chemical tests to evaluate the given crude drugs.

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	Morphological Identification of the following drugs: Ispaghula, Senna, Coriander, Fennel, Cardamom, Ginger, Nutmeg, Black Pepper, Cinnamon, Clove, Ephedra, Rauwolfia, Gokhru, Punarnava, Cinchona, Agar.
2.	Gross anatomical studies (Transverse Section) of the following drugs: Ajwain,

Sr. No.	Title of Experiment
	Datura, Cinnamon, Cinchona, Coriander, Ashwagandha, Liquorice, Clove, Curcuma, Nuxvomica, Vasaka
3.	Physical and chemical tests for evaluation of any FIVE of the following drugs: Asafoetida, Benzoin, Pale catechu, Black catechu, Castor oil, Acacia, Tragacanth, Agar, Guar gum, Gelatine.

Assignments

The students shall be asked to submit the written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. Market preparations of various dosage forms of Ayurvedic, Unani, Siddha, Homeopathic (Classical and Proprietary), indications, and their labelling requirements.
2. Market preparations of various herbal cosmetics, indications, and their labelling requirements.
3. Herb-Drug interactions documented in the literature and their clinical significances.

Field Visit

The students shall be taken in groups to a medicinal garden to witness and understand the nature of various medicinal plants discussed in theory and practical courses. Additionally, they shall be taken in groups to the pharmacies of traditional systems of medicines to understand the availability of various dosage forms and their labelling requirements. Individual reports from each student on their learning experience from the field visit shall be submitted.

Subject DP104T	Code:	Subject Title: Human Anatomy and Physiology (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on the structure and functions of the human body. It helps in understanding both homeostasis mechanisms and homeostatic imbalances of various systems of the human body.

Course Objectives:

This course will discuss the following:

1. Structure and functions of the various organ systems and organs of the human body.
2. Homeostatic mechanisms and their imbalances in the human body.
3. Various vital physiological parameters of the human body and their significances.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the various organ systems of the human body.
2. Discuss the anatomical features of the important human organs and tissues.
3. Explain the homeostatic mechanisms regulating the normal physiology in the human system.
4. Discuss the significance of various vital physiological parameters of the human body.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Scope of Anatomy and Physiology Definition of various terminologies	2	2.66
2	Structure of Cell: Components and its functions	2	2.66
3	Tissues of the human body: Epithelial, Connective, Muscular and Nervous tissues - their sub-types and characteristics.	4	5.33
4	Osseous system: structure and functions of bones of axial and appendicular skeleton Classification, types and movements of joints, disorders of joints.	3 3	3.99 3.99
5	Haemopoietic system • Composition and functions of blood • Process of Hemopoiesis	8	10.66

Sr. No.	Topic	Hours	Weightage (%)
	• Characteristics and functions of RBCs, WBCs and platelets • Mechanism of Blood Clotting • Importance of Blood groups		
6	Lymphatic system • Lymph and lymphatic system, composition, function and its formation. • Structure and functions of spleen and lymph node.	3	3.99
7	Cardiovascular system • Anatomy and Physiology of heart • Blood vessels and circulation (Pulmonary, coronary and systemic circulation) • Cardiac cycle and Heart sounds, Basics of ECG • Blood pressure and its regulation	8	10.66
8	Respiratory system • Anatomy of respiratory organs and their functions. • Regulation Mechanism of respiration. • Respiratory volumes and capacities - definitions	4	5.33
9	Digestive system • Anatomy and Physiology of GIT • Anatomy and functions of accessory glands • Physiology of digestion and absorption	8	10.66
10	Skeletal muscles • Histology • Physiology of muscle contraction • Disorder of skeletal muscles	2	2.66
11	Nervous system • Classification of nervous system • Anatomy and physiology of cerebrum, cerebellum, mid brain • Function of hypothalamus, medulla oblongata and basal ganglia • Spinal cord-structure and reflexes • Names and functions of cranial nerves. • Anatomy and physiology of sympathetic and parasympathetic nervous system (ANS)	8	10.66
12	Sense organs - Anatomy and physiology of • Eye • Ear • Skin • Tongue • Nose	6	7.99
13	Urinary system • Anatomy and physiology of urinary system • Physiology of urine formation • Renin - angiotensin system • Clearance tests and micturition	4	5.33
14	Endocrine system (Hormones and their functions) • Pituitary gland • Adrenal gland	6	7.99

Sr. No.	Topic	Hours	Weightage (%)
	• Thyroid and parathyroid gland • Pancreas and gonads		
15	Reproductive system • Anatomy of male and female reproductive system • Physiology of menstruation • Spermatogenesis and Oogenesis • Pregnancy and parturition	4	5.33

Subject Code: DP104P	Subject Title: Human Anatomy and Physiology (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students and instil the skills for carrying out basic physiological monitoring of various systems and functions.

Course Objectives:

This course will provide hands-on experience in the following:

1. General blood collection techniques and carrying out various haematological assessments and interpreting the results.
2. Recording and monitoring the vital physiological parameters in human subjects and the basic interpretations of the results.
3. Microscopic examinations of the various tissues permanently mounted in glass slides.
4. Discuss the anatomical and physiological characteristics of various organ systems of the body using models, charts and other teaching aids.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Perform the haematological tests in human subjects and interpret the results.
2. Record, monitor and document the vital physiological parameters of human subjects and interpret the results.
3. Describe the anatomical features of the important human tissues under the microscopical conditions.
4. Discuss the significance of various anatomical and physiological characteristics of the human body.

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	Study of compound microscope

Sr. No.	Title of Experiment
2.	General techniques for the collection of blood
3.	Microscopic examination of Epithelial tissue, Cardiac muscle, Smooth muscle, Skeletal muscle, Connective tissue and Nervous tissue of ready / pre-prepared slides.
4.	Study of Human Skeleton-Axial skeleton and appendicular skeleton
5.	Determination of a. Blood group b. ESR c. Haemoglobin content of blood d. Bleeding time and Clotting time
6.	Determination of WBC count of blood
7.	Determination of RBC count of blood
8.	Determination of Differential count of blood
9.	Recording of Blood Pressure in various postures, different arms, before and after exertion and interpreting the results
10.	Recording of Body temperature (using mercury, digital and IR thermometers at various locations), Pulse rate/ Heart rate (at various locations in the body, before and after exertion), Respiratory Rate
11.	Recording Pulse Oxygen (before and after exertion)
12.	Recording force of air expelled using Peak Flow Meter
13.	Measurement of height, weight, and BMI
14.	Study of various systems and organs with the help of chart, models and specimens a) Cardiovascular system b) Respiratory system c) Digestive system d) Urinary system e) Endocrine system f) Reproductive system g) Nervous system h) Eye i) Ear j) Skin

Subject DP105T	Code:	Subject Title: Social Pharmacy (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on public health, epidemiology, preventive care and other social health related concepts. Also, to emphasize the roles of pharmacists in the public health programs.

Course Objectives:

This course will discuss about basic concepts of:

1. Public health and national health programs
2. Preventive healthcare
3. Food and nutrition related health issues
4. Health education & promotion
5. General roles and responsibilities of pharmacists in public health

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Discuss about roles of pharmacists in the various national health programs.
2. Describe various sources of health hazards and disease preventive measures.
3. Discuss the healthcare issues associated with food and nutritional substances.
4. Describe the general roles and responsibilities of pharmacists in public health.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Introduction to Social Pharmacy • Definition and Scope. Social Pharmacy as a discipline and its scope in improving the public health. Role of Pharmacists in Public Health. (2) • Concept of Health - WHO Definition, various dimensions, determinants, and health indicators. (3) • National Health Policy - Indian perspective (1) • Introduction to Millennium Development Goals, Sustainable Development Goals, FIP Development Goals (1)	9	11.99
2	Preventive healthcare – Role of Pharmacists in the following • Demography and Family Planning (3)	18	13.99

Sr. No.	Topic	Hours	Weightage (%)
	• Mother and child health, importance of breastfeeding, ill effects of infant milk substitutes and bottle feeding (2) • Overview of Vaccines, types of immunity and immunization (5) • Effect of Environment on Health - Water pollution, importance of safe drinking water, waterborne diseases, air pollution, noise pollution, sewage and solid waste disposal, occupational illnesses, Environmental pollution due to pharmaceuticals (7) • Psychosocial Pharmacy: Drugs of misuse and abuse - psychotropics, narcotics, alcohol, tobacco products. Social Impact of these habits on social health and productivity and suicidal behaviours (2)		
3	Nutrition and Health • Basics of nutrition – Macronutrients and Micronutrients (3) • Importance of water and fibres in diet (1) • Balanced diet, nutrition deficiency diseases, ill effects of junk foods, calorific and nutritive values of various foods, fortification of food (3) • Introduction to food safety, adulteration of foods, effects of artificial ripening, use of pesticides, genetically modified foods (1) • Dietary supplements, nutraceuticals, food supplements - indications, benefits, Drug-Food Interactions (2)	10	13.33
4	Introduction to Microbiology and common microorganisms (3) Epidemiology: Introduction to the terms Epidemiology, its applications, terms such as epidemic, pandemic, endemic, mode of transmission, quarantine, isolation, incubation period, contact tracing. Causative agents, epidemiology and clinical presentations and Role of Pharmacists in educating the public in prevention of the following communicable diseases: • Respiratory infections - chickenpox, measles, rubella, mumps, influenza (including Avian-Flu, H1N1, SARS, MERS, COVID-19), diphtheria, whooping cough, meningococcal meningitis, acute respiratory infections, tuberculosis, Ebola (7) • Intestinal infections - poliomyelitis, viral hepatitis, cholera, acute diarrheal diseases, typhoid, amebiasis, worm infestations, food poisoning (7) • Arthropod-borne infections - dengue, malaria, filariasis and, chikungunya (4) • Surface infections - trachoma, tetanus, leprosy (3) • STDs, HIV/AIDS (3)	28	37.33
5	Introduction to health systems and all ongoing National health programs in India, their objectives, functioning, outcome and the role of pharmacists.	8	10.66
6	Pharmacoeconomics - Introduction, basic terminologies, importance of Pharmacoeconomics	2	2.66

Subject Code: DP105P	Subject Title: Social Pharmacy (Practical)
Pre-requisite: --	

Scope:

This course is designed to provide simulated experience in various public health and social pharmacy activities.

Course Objectives:

This course will train the students on various roles of pharmacists in public health and social pharmacy activities in the following areas:

1. National immunization programs
2. Reproductive and child health programs
3. Food and nutrition related health programs
4. Health education and promotion
5. General roles and responsibilities of the pharmacists in public health
6. First Aid for various emergency conditions including basic life support and cardiopulmonary resuscitation.

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the roles and responsibilities of pharmacists in various National health programs.
2. Design promotional materials for public health awareness.
3. Describe various health hazards including microbial sources.
4. Advice on preventive measures for various diseases.
5. Provide first aid for various emergency conditions.

Note: Demonstration / Hands-on experience / preparation of charts / models / promotional materials / role plays / enacting / e-brochures / e-flyers / podcasts / video podcasts / any other innovative activities to understand the concept of various elements of social pharmacy listed here. (At least one activity to be carried out for each one of the following):

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	National immunization schedule for children, adult vaccine schedule, Vaccines not included in the National Immunization Program.
2.	RCH – reproductive and child health – nutritional aspects, relevant national health programmes.
3.	Family planning devices
4.	Microscopical observation of different microbes (readymade slides)
5.	Oral Health and Hygiene
6.	Personal hygiene and etiquettes - hand washing techniques, Cough and sneeze etiquettes.
7.	Various types of masks, PPE gear, wearing/using them, and disposal.
8.	Menstrual hygiene, products used
9.	First Aid - Theory, basics, demonstration, hands on training, audio-visuals, and practice, BSL (Basic Life Support) Systems [SCA - Sudden Cardiac Arrest, FBAO - Foreign Body Airway Obstruction, CPR, Defibrillation (using AED) (Includes CPR techniques, First Responder).
10.	Emergency treatment for all medical emergency cases viz. snake bite, dog bite, insecticide poisoning, fractures, burns, epilepsy etc.
11.	Role of Pharmacist in Disaster Management.
12.	Marketed preparations of disinfectants, antiseptics, fumigating agents, antilarval agents, mosquito repellents, etc.
13.	Health Communication: Audio / Video podcasts, Images, Power Point Slides, Short Films, etc. in regional language(s) for mass communication / education / Awareness on 5 different communicable diseases, their signs and symptoms, and prevention.
14.	Water purification techniques, use of water testing kit, calculation of Content/percentage of KMnO ₄ , bleaching powder to be used for wells/tanks
15.	Counselling children on junk foods, balanced diets - using Information, Education and Communication (IEC), counselling, etc. (Simulation Experiments).
16.	Preparation of various charts on nutrition, sources of various nutrients from Locally available foods, calculation of caloric needs of different groups (e.g. child, mother, sedentary lifestyle, etc.). Chart of glycemic index of foods.
17.	Tobacco cessation, counselling, identifying various tobacco containing products through charts/pictures

Assignments

The students shall be asked to submit the written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. An overview of Women's Health Issues
2. Study the labels of various packed foods to understand their nutritional contents
3. Breastfeeding counselling, guidance – using Information, Education and Communication (IEC)
4. Information about the organizations working on de-addiction services in the region (city / district, etc.)
5. Role of a pharmacist in disaster management – A case study
6. Overview on the National Tuberculosis Elimination Programme (NTEP)
7. Drug disposal systems in the country, at industry level and citizen level
8. Various Prebiotics or Probiotics (dietary and market products)
9. Emergency preparedness: Study of local Government structure with respect to Fire, Police departments, health department
10. Prepare poster/presentation for general public on any one of the Health Days. e.g. Day, AIDS Day, Handwashing Day, ORS day, World Diabetes Day, World Heart Day, etc.
11. List of home medicines, their storage, safe handling, and disposal of unused medicines
12. Responsible Use of Medicines: From Purchase to Disposal
13. Collection of newspaper clips (minimum 5) relevant to any one topic and its submission in an organized form with collective summary based on the news items
14. Read a minimum of one article relevant to any theory topic, from Pharma /Science/ or other Periodicals and prepare summary of it for submission
15. Potential roles of pharmacists in rural India

Field Visit

The students shall be taken in groups to visit any THREE of the following facilities to witness and understand the activities of such centers/facilities from the perspectives of the topics discussed in theory and/or practical courses. Individual reports from each student on their learning experience from the field visits shall be submitted.

1. Garbage Treatment Plant
2. Sewage Treatment Plant
3. Bio-medical Waste Treatment Plant

4. Effluent Treatment Plant
5. Water purification plant
6. Orphanage / Elderly-Care-Home / School and or Hostel/Home for persons with disabilities
7. Primary health care center

Annexure II. Detailed Syllabus of D.Pharm Year II

Subject DP201T	Code:	Subject Title: Pharmacology (Theory)
Pre-requisite: --		

Scope:

This course provides basic knowledge about different classes of drugs available for the pharmacotherapy of common diseases. The indications for use, dosage regimen, routes of administration, pharmacokinetics, pharmacodynamics, and contraindications of the drugs discussed in this course are vital for successful professional practice.

Course Objectives:

This course will discuss the following:

1. General concepts of pharmacology including pharmacokinetics, pharmacodynamics, routes of administration, etc.
2. Pharmacological classification and indications of drugs
3. Dosage regimen, mechanisms of action, contraindications of drugs
4. Common adverse effects of drugs

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the basic concepts of pharmacokinetics and pharmacodynamics
2. Enlist the various classes and drugs of choices for any given disease condition
3. Advise the dosage regimen, route of administration and contraindications for a given drug
4. Describe the common adverse drug reactions

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	General Pharmacology · Introduction and scope of Pharmacology · Various routes of drug administration - advantages and disadvantages · Drug absorption - definition, types, factors affecting drug absorption · Bioavailability and the factors affecting bioavailability	10	13.33

Sr. No.	Topic	Hours	Weightage (%)
	· Drug distribution - definition, factors affecting drug distribution · Biotransformation of drugs - Definition, types of biotransformation reactions, factors influencing drug metabolisms · Excretion of drugs - Definition, routes of drug excretion · General mechanisms of drug action and factors modifying drug action		
2	Drugs Acting on the Peripheral Nervous System · Steps involved in neurohumoral transmission · Definition, classification, pharmacological actions, dose, indications, and contraindications of a) Cholinergic drugs b) Anti-Cholinergic drugs c) Adrenergic drugs d) Anti-adrenergic drugs e) Neuromuscular blocking agents f) Drugs used in Myasthenia gravis g) Local anaesthetic agents h) Non-Steroidal Anti-Inflammatory drugs (NSAIDs)	11	14.66
3	Drugs Acting on the Eye Definition, classification, pharmacological actions, dose, indications and contraindications of · Miotics · Mydriatics · Drugs used in Glaucoma	2	2.66
4	Drugs Acting on the Central Nervous System Definition, classification, pharmacological actions, dose, indications and contraindications of · General anaesthetics · Hypnotics and sedatives · Anti-Convulsant drugs · Anti-anxiety drugs · Anti-depressant drugs · Anti-psychotics · Nootropic agents · Centrally acting muscle relaxants · Opioid analgesics	8	10.66
5	Drugs Acting on the Cardiovascular System Definition, classification, pharmacological actions, dose, indications, and contraindications of ● Anti-hypertensive drugs ● Anti-anginal drugs ● Anti-arrhythmic drugs ● Drugs used in atherosclerosis and ● Congestive heart failure ● Drug therapy for shock	6	8

Sr. No.	Topic	Hours	Weightage (%)
6	Drugs Acting on Blood and Blood Forming Organs Definition, classification, pharmacological actions, dose, indications, and contraindications of ● Hematinic agents ● Anti-coagulants ● Anti-platelet agents Thrombolytic drugs	4	5.33
7	Definition, classification, pharmacological actions, dose, indications, and contraindications of ● Bronchodilators ● Expectorants ● Anti-tussive agents ● Mucolytic agents	2	2.66
8	Drugs Acting on the Gastro Intestinal Tract Definition, classification, pharmacological actions, dose, indications, and contraindications of ● Anti-ulcer drugs ● Anti-emetics ● Laxatives and purgatives ● Anti-diarrheal drugs	5	6.66
9	Drugs Acting on the Kidney Definition, classification, pharmacological actions, dose, indications, and contraindications of ● Diuretics ● Anti-Diuretics	2	2.66
10	Hormones and Hormone Antagonists Physiological and pathological role and clinical uses of ● Thyroid hormones ● Anti-thyroid drugs ● Parathormone ● Calcitonin ● Vitamin D ● Insulin ● Oral hypoglycemic agents ● Estrogen ● Progesterone ● Oxytocin Corticosteroids	8	10.66
11	Autocoids ● Physiological role of Histamine, 5 HT and Prostaglandins ● Classification, clinical uses, and adverse effects of	3	4

Sr. No.	Topic	Hours	Weightage (%)
	antihistamines and 5 HT antagonists		
12	Chemotherapeutic Agents: Introduction, basic principles of chemotherapy of infections, infestations and neoplastic diseases, Classification, dose, indication and contraindications of drugs belonging to following classes: ● Penicillins ● Cephalosporins ● Aminoglycosides ● Fluoroquinolones ● Macrolides ● Tetracyclines ● Sulphonamides ● Anti-tubercular drugs ● Anti-fungal drugs ● Anti-viral drugs ● Anti-amoebic agents ● Anthelmintics ● Anti-malarial agents ● Anti-neoplastic agents	12	16
13	Biologicals Definition, types, and indications of biological agents with examples	2	2.66

Subject Code: DP201P	Subject Title: Pharmacology (Practical)
Pre-requisite: --	

Scope:

This course provides the basic understanding about the uses, mechanisms of actions, dose dependent responses of drugs in simulated virtual animal models and experimental conditions.

Course Objectives:

This course will demonstrate / provide hands-on experience in the virtual platform using appropriate software on the following

1. Study of pharmacological effects of drugs like local anaesthetics, mydriatic and mitotic on rabbit eye
2. Screening the effects of various drugs acting in the central nervous system
3. Study of drug effects on isolated organs / tissues
4. Study of pyrogen testing on rabbit

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Study and report the local anaesthetic, mydriatic and mitotic effects of the given drug on the rabbit eye
2. Choose appropriate animal experiment model to study the effects of the given drugs acting on the central nervous system and submit the report
3. Perform the effects of given tissues (simulated) on isolated organs / tissues and interpret the results
4. Interpret the dose dependent responses of drugs in various animal experiment models

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
2	1	80	20	100

List of Practical:

Sr. No.	Title of Experiment
1.	Study of local anaesthetics on rabbit eye
2.	Study of Mydriatic effect on rabbit eye

Sr. No.	Title of Experiment
3.	Study of Miotic effect on rabbit eye
4.	Effect of analgesics using Analgesiometer
5.	Study of analgesic activity by writhing test
6.	Screening of anti-convulsant using Electro Convulsimeter
7.	Screening of Muscle relaxants using Rota-Rod apparatus
8.	Screening of CNS stimulants and depressants using Actophotometer
9.	Study of anxiolytic activity using elevated plus maze method
10.	Study of effect of drugs (any 2) on isolated heart
11.	Effect of drugs on ciliary motility on frog's buccal cavity
12.	Pyrogen testing by rabbit method
	Assignments
1.	Introduction to Allergy Testing
2.	Introduction to Toxicity Studies
3.	Drug Facts Labels of US FDA
4.	Pre-clinical studies in new drug development
5.	Medicines and meals: Before or After food
6.	Pre-clinical studies in new drug development
7.	Drugs available as paediatric formulations
8.	Drug information apps

Subject DP202T	Code:	Subject Title: Community Pharmacy and Management (Theory)
Pre-requisite: --		

Scope:

The course is designed to impart basic knowledge and skills to provide various pharmaceutical care services to patients and general practitioners in the community setup

Course Objectives:

This course will discuss the following:

1. Establishing and running a community pharmacy and its legal requirements
2. Professional aspects of handling and filling prescriptions
3. Patient counselling on diseases, prescription and or non-prescription medicines
4. Scope for performing basic health screening in community pharmacy settings

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the establishment, legal requirements, and effective administration of a community pharmacy
2. Professionally handle prescriptions and dispense medications
3. Counsel patients about the disease, prescription and or non-prescription medicines
4. Perform basic health screening on patients and interpret the reports in the community pharmacy settings

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Community Pharmacy Practice- Definition, history and development of community pharmacy - International and Indian scenarios	2	2.66
2	Professional responsibilities of community pharmacists Introduction to the concept of Good Pharmacy Practice and SOPs.	3	4
3	Prescription and prescription handling • Definition, parts of prescriptions, legality of prescriptions, prescription handling, labelling of dispensed medications (Main label, ancillary label, pictograms), brief instructions on medication usage • Dispensing process, Good Dispensing Practices, dispensing	7	9.33

Sr. No.	Topic	Hours	Weightage (%)
	errors and strategies to minimize them		
4	Communication skills • Definition, types of communication skills • Interactions with professionals and patients • Verbal communication skills (one-to-one, over the telephone) • Written communication skills • Body language • Patient interview techniques	6	8
5	Patient counselling • Definition and benefits of patient counselling • Stages of patient counselling - Introduction, counselling content, counselling process, and closing the counselling session • Barriers to effective counseling - Types and strategies to overcome the barriers • Patient counselling points for chronic diseases/disorders - Hypertension, Diabetes, Asthma, Tuberculosis, Chronic obstructive pulmonary disease, and AIDS • Patient Package Inserts - Definition, importance and benefits, Scenarios of PPI use in India and other countries Patient Information leaflets - Definition and uses	10	13.33
6	Medication Adherence Definition, factors influencing non-adherence, strategies to overcome non-adherence	2	2.66
7	Health Screening Services in Community Pharmacy Introduction, scope, and importance of various health screening services - for routine monitoring of patients, early detection, and referral of undiagnosed cases	5	6.66
9	Over The Counter (OTC) Medications • Definition, need and role of Pharmacists in OTC medication dispensing • OTC medications in India, counseling for OTC products • Self-medication and role of pharmacists in promoting the safe practices during self-medication Responding to symptoms, minor ailments, and advice for self-care in conditions such as - Pain management, Cough, Cold, Diarrhea, Constipation, Vomiting, Fever, Sore throat, Skin disorders, Oral health (mouth ulcers, dental pain, gum swelling)	15	20

Sr. No.	Topic	Hours	Weightage (%)
10	Community Pharmacy Management • Legal requirements to set up a community pharmacy • Site selection requirements • Pharmacy designs and interiors • Vendor selection and ordering • Procurement, inventory control methods, and inventory management • Financial planning and management • Accountancy in community pharmacy – Day book, Cash book • Introduction to pharmacy operation softwares – usefulness and availability • Customer Relation Management (CRM) • Audits in Pharmacies • SOP of Pharmacy Management • Introduction to Digital Health, mHealth and Online pharmacies	25	33.33

Subject Code: DP202P	Subject Title: COMMUNITY PHARMACY AND MANAGEMENT (Practical)
Pre-requisite: --	

Scope:

The course is designed to train the students and improve professional skills to provide various pharmaceutical care services in community pharmacy.

Course Objectives:

This course will train the students in the following

1. Professional handling and filling prescriptions
2. Patient counselling on diseases and minor ailments
3. Patient counselling on prescription and / or non-prescription medicines
4. Preparation of counselling materials such as patient information leaflets
5. Performing basic health screening tests

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Handle and fill prescriptions in a professional manner
2. Counsel patients on various diseases and minor ailments
3. Counsel patients on prescription and or non-prescription medicines
4. Design and prepare patient information leaflets
5. Perform basic health screening tests

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
9.	Handling of prescriptions with professional standards, reviewing prescriptions, checking for legal compliance and completeness (minimum 5)
10.	Identification of drug-drug interactions in the prescription and follow-up actions (minimum 2)

Sr. No.	Title of Experiment
11.	Preparation of dispensing labels and auxiliary labels for the prescribed medications (minimum 5)
12.	Providing the following health screening services for monitoring patients / detecting new patients (one experiment for each activity)
13.	Blood Pressure Recording, Capillary Blood Glucose Monitoring, Lung function assessment using Peak Flow Meter and incentive spirometer, recording capillary oxygen level using Pulse Oximeter, BMI measurement
14.	Providing counselling to simulated patients for the following chronic diseases / disorders including education on the use of devices such as insulin pen, inhalers, spacers, nebulizers, etc. where appropriate (one experiment for each disease)
15.	Type 2 Diabetes Mellitus, Primary Hypertension, Asthma, Hyperlipidaemia, Rheumatoid Arthritis
16.	Providing counselling to simulated patients for the following minor ailments (any three)
	Assignments
1.	SOPs for various activities in Community Pharmacy (as discussed in Theory and Practical)
2.	List out the various abbreviations, short forms used in prescriptions and their interpretation
3.	Patient Information Leaflet for a given chronic disease / disorder
4.	Patient Information Leaflet for prescription / non-prescription medicines
5.	Preparation of window / shelf display materials for the model community pharmacy
6.	Overview of Software available for retail pharmacy management including billing, inventory, etc.
7.	Dosage / Medication Reminder Aids
8.	Overview on the operations and marketing strategies of various online pharmacies
9.	Overview on the common fixed dose combinations
10.	Overview on the medications requiring special storage conditions
11.	Role of Community Pharmacists in preventing Antimicrobial Resistance
12.	Jan Aushadhi and other Generic Medicine initiatives in India
13.	Global Overview of Online Pharmacies
14.	Community Pharmacy Practice Standards: Global Vs. Indian Scenario
15.	Overview of pharmacy associations in India

Field Visit

The students shall be taken in groups to visit community pharmacies and medicine distributors to understand and witness the professional activities of the community pharmacists, and supply chain logistics. Individual reports from each student on their learning experience from the field visit shall be submitted.

Subject DP203T	Code:	Subject Title: Biochemistry & Clinical pathology (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on the study of structure and functions of biomolecules and the chemical processes associated with living cells in normal and abnormal states. The course also emphasizes on the clinical pathology of blood and urine.

Course Objectives:

This course will discuss the following at the fundamental level

1. Structure and functions of biomolecules
2. Catalytic activity, diagnostic and therapeutic importance of enzymes
3. Metabolic pathways of biomolecules in health and illness (metabolic disorders)
4. Biochemical principles of organ function tests and their clinical significance
5. Qualitative and quantitative determination of biomolecules / metabolites in the biological sample
6. Clinical pathology of blood and urine

Course Outcomes:

Upon successful completion of this course, the students will be able to

5. Describe the functions of biomolecules
6. Discuss the various functions of enzymes in the human system
7. Explain the metabolic pathways of biomolecules in both physiological and pathological conditions
8. Describe the principles of organ function tests and their clinical significances
9. Determine the biomolecules / metabolites in the given biological samples, both

- qualitatively and quantitatively
10. Describe the clinical pathology of blood and urine

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Introduction to biochemistry: Scope of biochemistry in pharmacy; Cell and its biochemical organization.	2	2.66
2	Carbohydrates - Definition, classification with examples, chemical properties - Monosaccharides - Structure of glucose, fructose, and galactose - Disaccharides - structure of maltose, lactose, and sucrose - Polysaccharides - chemical nature of starch and glycogen - Qualitative tests and biological role of carbohydrates - Morphological - Pharmacological - Chemical - Chemo-taxonomical	5	6.66
3	Proteins - Definition, classification of proteins based on composition and solubility with examples - Definition, classification of amino acids based on chemical nature and nutritional requirements with examples - Structure of proteins (four levels of organization of protein structure) - Qualitative tests and biological role of proteins and amino acids - Diseases related to malnutrition of proteins	5	6.66
4	Lipids - Definition, classification with examples - Structure and properties of triglycerides (oils and fats) - Fatty acid classification – Based on chemical and nutritional requirements with examples - Structure and functions of cholesterol in the body - Lipoproteins - types, composition and functions in the body - Qualitative tests and functions of lipids.	5	6.66

Sr. No.	Topic	Hours	Weightage (%)
5	Nucleic acids • Definition, purine and pyrimidine bases • Components of nucleosides and nucleotide with examples • Structure of DNA (Watson and Crick model), RNA and their functions	4	5.33
6	Enzymes • Definition, properties and IUB and MB classification • Factors affecting enzyme activity • Mechanism of action of enzymes, Enzyme inhibitors • Therapeutic and pharmaceutical importance of enzymes	5	6.66
7	Vitamins • Definition and classification with examples Sources, chemical nature, functions, coenzyme form, recommended dietary requirements, deficiency diseases of fat-and water-soluble vitamins	6	8
8	Metabolism (Study of cycle/pathways without chemical structures) • Metabolism of Carbohydrates: Glycolysis, TCA cycle and glycogen metabolism, regulation of blood glucose level. Diseases related to abnormal metabolism of Carbohydrates • Metabolism of lipids: Lipolysis, β-oxidation of Fatty acid (Palmitic acid) ketogenesis and ketolysis. Diseases related to abnormal metabolism of lipids such as Ketoacidosis, Fatty liver, Hypercholesterolemia • Metabolism of Amino acids (Proteins): General reactions of amino acids and its significance– Transamination, deamination, Urea cycle and decarboxylation. Diseases related to abnormal metabolism of amino acids, Disorders of ammonia metabolism, phenylketonuria, alkaptonuria and Jaundice. • Biological oxidation: Electron transport chain and Oxidative phosphorylation	20	26.66
9	Minerals: Types, Functions, Deficiency diseases, recommended dietary requirements	5	6.66
10	Water and Electrolytes • Distribution, functions of water in the body • Water turnover and balance • Electrolyte composition of the body fluids, Dietary intake of electrolyte and Electrolyte balance • Dehydration, causes of dehydration and oral rehydration therapy	5	6.66

Sr. No.	Topic	Hours	Weightage (%)
11	Introduction to Biotechnology	1	1.33
12	Organ function tests • Functions of kidney and routinely performed tests to assess the functions of kidney and their clinical significances • Functions of liver and routinely performed tests to assess the functions of liver and their clinical significances • Lipid profile tests and its clinical significances	6	8
13	Introduction to Pathology of Blood and Urine • Lymphocytes and Platelets, their role in health and disease • Erythrocytes - Abnormal cells and their significance Normal and Abnormal constituents of Urine and their significance	6	8

Subject Code: DP203P	Subject Title: Biochemistry & Clinical Pathology (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students in the qualitative testing of various biomolecules and testing of biological samples for determination of normal and abnormal constituents.

Course Objectives:

This course will train and provide hands-on experiences on the following

1. Qualitative determination of biomolecules / metabolites in simulated biological samples
2. Determination of normal and abnormal constituents of simulated blood and urine samples

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Qualitatively determine the biomolecules / metabolites in the given biological samples
2. Determine the normal and abnormal constituents in blood and urine samples and interpret the results of such testing

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
3	1.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
4.	Qualitative analysis of carbohydrates
5.	Qualitative analysis of Proteins and amino acids
6.	Qualitative analysis of lipids
7.	Qualitative analysis of urine for normal and abnormal constituents
8.	Determination of constituents of urine (glucose, creatinine, chlorides)
9.	Determination of constituents of blood/serum (simulated) (Creatine, glucose, cholesterol, Calcium, Urea, SGOT/SGPT)
10.	Study the hydrolysis of starch from acid and salivary amylase enzyme)

Sr. No.	Title of Experiment
	Assignments
1.	The students shall be asked to submit written assignments on Various Pathology Lab Reports (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

Subject DP204T	Code:	Subject Title: Pharmacotherapeutics (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on etiopathogenesis of common diseases and their management along with quality use of medicines.

Course Objectives:

This course will discuss about

1. Etiopathogenesis of selected common diseases and evidence-based medicine therapy
2. Importance of individualized therapeutic plans based on diagnosis
3. Basic methods for assessing the clinical outcomes of drug therapy

Course Outcomes:

Upon successful completion of this course, the students will be able to

5. Help assessing the subjective and objective parameters of patients in common disease conditions
6. Assist other healthcare providers to analyse drug related problems and provide therapeutic interventions
7. Participate in planning the rational medicine therapy for common diseases
8. Design and deliver discharge counselling for patients.

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Pharmacotherapeutics – Introduction, scope, and objectives. Rational use of Medicines, Evidence Based Medicine, Essential Medicines List, Standard Treatment Guidelines (STGs)	8	10.66
2	Definition , etiopathogenesis, clinical manifestations , non-pharmacological and pharmacological management the diseases associated with		
	a) Cardiovascular System • Hypertension • Angina and Myocardial infarction • Hyperlipidaemia • Congestive Heart Failure	8	10.66
	b) Respiratory System • Asthma • COPD	4	5.33
	c) Endocrine System • Diabetes • Thyroid disorders - Hypo and Hyperthyroidism	5	6
	d) Central Nervous System • Epilepsy • Parkinson's disease • Alzheimer's disease • Stroke • Migraine	8	10.66
	e) Gastro Intestinal Disorders • Gastro oesophageal reflux disease • Peptic Ulcer Disease • Alcoholic liver disease • Inflammatory Bowel Diseases (Crohn's Disease and Ulcerative Colitis)	8	10.66
	f) Haematological disorders • Iron deficiency anaemia • Megaloblastic anaemia	4	5.33
	g) Infectious diseases • Tuberculosis • Pneumonia • Urinary tract infections • Hepatitis • Gonorrhoea and Syphilis • Malaria • HIV and Opportunistic infections • Viral Infections (SARS, CoV2)	12	16
	h) Musculoskeletal disorders	3	4

Sr. No.	Topic	Hours	Weightage (%)
	• Rheumatoid arthritis • Osteoarthritis		
	i) Dermatology • Psoriasis • Scabies • Eczema	3	4
	j) Psychiatric Disorders • Depression • Anxiety • Psychosis	4	5.33
	k) Ophthalmology • Conjunctivitis (bacterial and viral) • Glaucoma	2	2.66
	l) Anti-microbial Resistance	2	2.66
	m) Women's Health • Polycystic Ovary Syndrome • Dysmenorrhea • Premenstrual Syndrome	4	5.33

Subject Code: DP204P	Subject Title: Pharmacotherapeutics (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students in the basic skills required to support the pharmaceutical care services for selected common disease conditions.

Course Objectives:

This course will train the students on

1. How to prepare a SOAP (Subjective, Objective, Assessment and Plan) note for clinical cases of selected common diseases
2. Patient counselling techniques/methods for common disease conditions

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Write SOAP (Subjective, Objective, Assessment and Plan) notes for the given clinical cases of selected common diseases
2. Counsel the patients about the disease conditions, uses of drugs, methods of handling and administration of drugs, life-style modifications, and monitoring parameters

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
1	0.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
15.	Preparation and discussion of SOAP (Subjective, Objective, Assessment and Plan) notes for at least SIX clinical cases (real / hypothetical) of the following disease conditions : 1. Hypertension 2. Angina Pectoris 3. Myocardial Infarction 4. Hyperlipidaemia

Sr. No.	Title of Experiment
	5. Rheumatoid arthritis 6. Asthma 7. COPD 8. Diabetes 9. Epilepsy 10. Stroke 11. Depression 12. Tuberculosis 13. Anaemia (any one type as covered in theory) 14. Viral infection (any one type as covered in theory) 15. Dermatological conditions (any one condition as covered in theory)
16.	Patient counselling exercises using role plays based on the real / hypothetical clinical case scenarios. The students are expected to provide counselling on disease condition, medications, life-style modifications, monitoring parameters, etc. and the same shall be documented. (Minimum 5 cases)
17.	Simulated cases to enable dose calculation of selected drugs in paediatrics, and geriatrics under various pathological conditions. (Minimum 4 cases)

Subject DP205T	Code:	Subject Title: Hospital And Clinical Pharmacy (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart fundamental knowledge and professional skills required for facilitating various hospital and clinical pharmacy services.

Course Objectives:

This course will discuss and train the students in the following

1. Hospital and Hospital Pharmacy organization and set-ups
2. Basics of hospital pharmacy services including the procurement, supply chain, storage of medicines and medical supplies
3. Basics of clinical pharmacy including introduction to comprehensive pharmaceutical care services
4. Basic interpretations of common laboratory results used in clinical diagnosis towards optimizing the drug therapy

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Explain about the basic concepts of hospital pharmacy administration
2. Manage the supply chain and distribution of medicines within the hospital settings
3. Assist the other healthcare providers in monitoring drug therapy and address drug related problems
4. Interpret common lab investigation reports for optimizing drug therapy

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)		
Lecture	Tutorial	Credit	Theory		Total
			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	Hospital Pharmacy • Definition, scope, national and international scenario • Organisational structure • Professional responsibilities, Qualification and experience requirements, job specifications, work load requirements and inter professional relationships • Good Pharmacy Practice (GPP) in hospital	6	8

Sr. No.	Topic	Hours	Weightage (%)
	- Hospital Pharmacy Standards (FIP Basel Statements, AHSP) - Introduction to NAQS guidelines and NABH Accreditation and Role of Pharmacists		
2	Different Committees in the Hospital - Pharmacy and Therapeutics Committee - Objectives, Composition, and functions - Hospital Formulary-Definition, procedure for development and use of hospital formulary Infection Control Committee - Role of Pharmacist in preventing Antimicrobial Resistance	4	5.33
4	Supply Chain and Inventory Control - Preparation of Drug lists - High Risk drugs, Emergency drugs, Schedule H1 drugs, NDPS drugs, reserved antibiotics - Procedures of Drug Purchases – Drug selection, short term, long term, and tender/e-tender process, quotations, etc. - Inventory control techniques: Economic Order Quantity, Reorder Quantity Level, Inventory Turnover etc. - Inventory Management of Central Drug Store – Storage conditions, Methods of storage, Distribution, Maintaining Cold Chain, Devices used for cold storage (Refrigerator, ILR, Walk-in-Cold rooms) - FEFO, FIFO methods - Expiry drug removal and handling, and disposal. Disposal of Narcotics, cytotoxic drugs - Documentation - purchase and inventory	14	18.66
5	Drug distribution - Drug distribution (in- patients and out - patients) – Definition, advantages and disadvantages of individual prescription order method, Floor Stock Method, Unit Dose Drug Distribution Method, Drug Basket Method. - Distribution of drugs to ICCU/ICU/NICU/Emergency wards. - Automated drug dispensing systems and devices - Distribution of Narcotic and Psychotropic substances and their storage.	7	9.33
6	Compounding in Hospitals. Bulk compounding, IV admixture services and incompatibilities, Total parenteral nutrition	4	5.33
7	Radio Pharmaceuticals - Storage, dispensing and disposal of radiopharmaceuticals	2	2.66
8	Application of computers in Hospital Pharmacy Practice, Electronic health records, Softwares used in hospital pharmacy	2	2.66

Sr. No.	Topic	Hours	Weightage (%)
9	Clinical Pharmacy: Definition, scope, and development - in India and other countries Technical definitions, common terminologies used in clinical settings and their significance such as Paediatrics, Geriatric, Anti-natal Care, Post-natal Care, etc. Daily activities of clinical pharmacists: Definition, goal, and procedure of • Ward round participation • Treatment Chart Review • Adverse drug reaction monitoring • Drug information and poisons information • Medication history • Patient counselling • Interprofessional collaboration Pharmaceutical care: Definition, classification of drug related problems. Principles and procedure to provide pharmaceutical care Medication Therapy Management, Home Medication Review	12	16
10	Clinical laboratory tests used in the evaluation of disease states - significance and interpretation of test results • Haematological, Liver function, Renal function, thyroid function tests • Tests associated with cardiac disorders • Fluid and electrolyte balance • Pulmonary Function Tests	10	13.33
11	Poisoning: Types of poisoning: Clinical manifestations and Antidotes Drugs and Poison Information Centre and their services – Definition, Requirements, Information resources with examples, and their advantages and disadvantages	6	8
12	Pharmacovigilance • Definition, aim and scope • Overview of Pharmacovigilance	2	2.66
13	Medication errors: Definition, types, consequences, and strategies to minimize medication errors, LASA drugs and Tallman lettering as per ISMP Drug Interactions: Definition, types, clinical significance of drug interactions	6	8

Subject Code: DP205P	Subject Title: Hospital And Clinical Pharmacy (Practical)
Pre-requisite: --	

Scope:

This course is designed to train the students to assist other healthcare providers in the basic services of hospital and clinical pharmacy.

Course Objectives:

This course will train the students with hands-on experiences, simulated clinical case studies in the following:

1. Methods to systematically approach and respond to drug information queries
2. How to interpret common laboratory reports to understand the need for optimizing dosage regimens
3. How to report suspected adverse drug reactions to the concerned authorities
4. Uses and methods of handling various medical/surgical aids and devices
5. How to interpret drug-drug interactions in the treatment of common diseases

Course Outcomes:

Upon completion of the course, the students will be able to

1. Professionally handle and answer the drug information queries
2. Interpret the common laboratory reports

3. Report suspected adverse drug reactions using standard procedures
4. Understand the uses and methods of handling various medical/surgical aids and devices
5. Interpret and report the drug-drug interactions in common diseases for optimizing the drug therapy

Note: Demonstration / Hands-on experience / preparation of charts / models / promotional materials / role plays / enacting / e-brochures / e-flyers / podcasts / video podcasts / any other innovative activities to understand the concept of various elements of social pharmacy listed here. (At least one activity to be carried out for each one of the following):

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Practical	Credit	Theory		Total
		University Assessment	Internal Assessment	
1	0.5	80	20	100

List of Practical:

Sr. No.	Title of Experiment
18.	Systematic approach to drug information queries using primary / secondary / tertiary resources of information (2 cases)
19.	Interpretation of laboratory reports to optimize the drug therapy in a given clinical case (2 cases)
20.	Filling up IPC's ADR Reporting Form and perform causality assessments using various scales (2 cases)
21.	Demonstration / simulated / hands-on experience on the identification, types, use / application /administration of ● Orthopaedic and Surgical Aids such as knee cap, LS belts, abdominal belt, walker, walking sticks, etc. ● Different types of bandages such as sterile gauze, cotton, crepe bandages, etc. ● Needles, syringes, catheters, IV set, urine bag, RYLE's tube, urine pots, colostomy bags, oxygen masks, etc.
22.	Case studies on drug-drug interactions
23.	Wound dressing (simulated cases and role play –minimum 2 cases)
24.	Vaccination and injection techniques (IV, IM, SC) using mannequins (5 activities)
25.	Use of Hospital Pharmacy Software and various digital health tools

Sr. No.	Title of Experiment
	Assignments
1.	Typical profile of a drug to be included in the hospital formulary
2.	Brief layout and various services of the Central Sterile Supplies Department (CSSD)
3.	Various types of sterilizers and sterilization techniques used in hospitals
4.	Fumigation and pesticide control in hospitals
5.	Role of Pharmacists in Transition of Care: Discharge cards, post hospitalization care, medicine reconciliation activities in developed countries
6.	Total parenteral nutrition and IV admixtures and their compatibility issues
7.	Concept of electronic health records
8.	Invasive and Non-invasive diagnostic tests - HRCT, MRI, Sonography, 2D ECHO, X-rays, Mammography, ECG, EMG, EEG
9.	Home Diagnostic Kits - Pregnancy Test, COVID testing etc
10.	Measures to be taken in hospitals to minimize Antimicrobial Resistance
11.	Role and responsibilities of a pharmacist in public hospital in rural parts of the country
12.	Safe waste disposal of hospital waste

Field Visit

The students shall be taken in groups to visit a Government / private healthcare facility to understand and witness the various hospital and clinical pharmacy services provided. Individual reports from each student on their learning experience from the field visit shall be submitted.

Subject DP206T	Code:	Subject Title: Pharmacy Law And Ethics (Theory)
Pre-requisite: --		

Scope:

This course is designed to impart basic knowledge on several important legislations related to the profession of pharmacy in India

Course Objectives:

This course will discuss the following

1. General perspectives, history, evolution of pharmacy law in India
2. Act and Rules regulating the profession and practice of pharmacy in India
3. Important code of ethical guidelines pertaining to various practice standards
4. Brief introduction to the patent laws and their applications in pharmacy

Course Outcomes:

Upon successful completion of this course, the students will be able to

1. Describe the history and evolution of pharmacy law in India
2. Interpret the act and rules regulating the profession and practice of pharmacy in India
3. Discuss the various codes of ethics related to practice standards in pharmacy
4. Interpret the fundamentals of patent laws from the perspectives of pharmacy

Teaching Scheme (Hours per week)			Evaluation Scheme (Marks)	
Lecture	Tutorial	Credit	Theory	Total

			University Assessment	Internal Assessment	
3	1	4	80	20	100

Detailed Syllabus:

Sr. No.	Topic	Hours	Weightage (%)
1	General Principles of Law, History and various Acts related to Drugs and Pharmacy profession	2	2.66
2	Pharmacy Act-1948 and Rules: Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils, Registration of Pharmacists, Offences and Penalties. Pharmacy Practice Regulations 2015	5	6.66
3	Drugs and Cosmetics Act 1940 and Rules 1945 and New Amendments Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Manufacture of drugs – Prohibition of manufacture and sale of certain drugs, Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license. Study of schedule C and C1, G, H, H1, K, P, M, N, and X. Sale of Drugs – Wholesale, Retail sale and Restricted license, Records to be kept in a pharmacy Drugs Prohibited for manufacture and sale in India Administration of the Act and Rules – Drugs Technical Advisory Board, Central Drugs Laboratory, Drugs Consultative Committee, Government analysts, licensing authorities, controlling authorities, Drug Inspectors.	23	30.66
4	Narcotic Drugs and Psychotropic Substances Act 1985 and Rules Objectives, Definitions, Authorities and Officers, Prohibition, Control and Regulation, Offences and	2	2.66

Sr. No.	Topic	Hours	Weightage (%)
	Penalties.		
5	Drugs and Magic Remedies (Objectionable Advertisements) Act 1954 Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties	2	2.66
6	Prevention of Cruelty to Animals Act-1960: Objectives, Definitions, CPCSEA - brief overview, Institutional Animal Ethics Committee, Breeding and Stocking of Animals, Performance of Experiments, Transfer and Acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties	2	2.66
7	Poisons Act-1919: Introduction, objective, definition, possession, possession for sales and sale of any poison, import of poisons	2	2.66
8	FSSAI (Food Safety and Standards Authority of India) Act and Rules: brief overview and aspects related to manufacture, storage, sale, and labelling of Food Supplements	2	2.66
9	National Pharmaceutical Pricing Authority: Drugs Price Control Order (DPCO) - 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, Pharmaceutical Policy 2002, National List of Essential Medicines (NLEM)	5	6.66
10	Code of Pharmaceutical Ethics: Definition, ethical principles, ethical problem solving, registration, code of ethics for Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath.	5	6.66
11	Medical Termination of Pregnancy Act and Rules – basic understanding, salient features, and Amendments	2	2.66
12	Role of all the government pharma regulator bodies – Central Drugs Standards Control Organization (CDSCO), Indian Pharmacopoeia Commission (IPC)	1	1.33
13	Good Regulatory practices (documentation, licenses, renewals, e-governance) in Community Pharmacy, Hospital pharmacy, Pharma Manufacturing, Wholesale business, inspections, import, export of drugs and medical devices	3	4
14	Introduction to BCS system of classification, Basic concepts of Clinical Trials, ANDA, NDA, New Drug development, New Drugs and Clinical Trials Rules, 2019. Brand v/s Generic, Trade name concept, Introduction to Patent Law and Intellectual Property Rights, Emergency Use	7	9.33

Sr. No.	Topic	Hours	Weightage (%)
	Authorization		
15	Blood bank – basic requirements and functions	2	2.66
16	Clinical Establishment Act and Rules – Aspects related to Pharmacy	2	2.66
17	Biomedical Waste Management Rules 2016 – Basic aspects, and aspects related to pharma manufacture to disposal of pharma / medical waste at homes, pharmacies, and hospitals	2	2.66
18	Bioethics - Basic concepts, history and principles. Brief overview of ICMR's National Ethical Guidelines for Biomedical and Health Research involving human participants	2	2.66
19	Introduction to the Consumer Protection Act	1	1.33
20	Introduction to the Disaster Management Act	1	1.33
21	Medical Devices – Categorization, basic aspects related to manufacture and sale	2	2.66

List of Assignments:

Sr. No.	Assignments
1.	Requirements for Ayurvedic, Homeopathic manufacturing , sale, and licensing requirements
2.	Layout and contents of official websites of various agencies regulating the profession of pharmacy in India: e.g., CDSCO, SUGAM portal, PCI, etc.
3.	Licenses required, application processes (online/offline), drug regulatory office website of the respective state
4.	Case studies – actions taken on violation of any act / rule related to pharmacy
5.	Schedule H1 drugs and its implementation in India
6.	Counterfeit / Spurious medicines
7.	Drug Testing Labs in India
8.	Overview of Pharma marketing practices
9.	Generic Medicines

