



# **Ordinance Governing Diploma in Pharmacy (D. Pharm.) Course, Pharmacy Council of India.**

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## **Rules & Syllabus for the Diploma in Pharmacy (F. Y. D. Pharm) Course**

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## **SANJAY GHODAWAT UNIVERSITY KOLHAPUR**

Sanjay Ghodawat University (SGU) is established in the Academic Year 2017-18, as a State Private University under Govt. of Maharashtra Act No. XL of 2017 dated 3rd May 2017, with the approval of the UGC and the state Government. "For the true measure of giving is giving without measure." Spread across 150 Acres, Sou. Sushila Danchand Ghodawat Charitable Trust's Sanjay Ghodawat University (SGU) is situated in serene atmosphere amidst idyllic hills and lush green meadows to study in harmony with Nature. The Institution aspires to run along the lines of best-in- the-world education and become a world-class institution where teaching-learning process gets a far deeper meaning. SGU always stands as the guiding star of brilliance, quality and deliverance beyond expectations. Innovativeness and Creativity are the hallmarks of a genius enterprise and SGU stands to be a stage where these qualities would be nurtured, encouraged and blossomed. The genius is incomplete without the sense of social responsibility and SGU's ultimate goal remains the development of an attitude of gratitude that freely gives back without expectations. The Sanjay Ghodawat University stands as a beacon of light to guide the younger generation of the day on the right path to fulfillment in career and life. The USP of the University is its research based curriculum and academically oriented teaching staff. The world class ambience and infrastructure helps the students to easily accommodate themselves in an environment that is conducive to the teaching- learning process. Hands on experience, challenge based case studies, maximum participation of students in the classroom, use of modern digital technology, smart classrooms, solution oriented thinking promotion, stress on research and innovation, international tie ups, choice based credit system for flexibility in choosing areas of interest etc. are some of the features of the University. The university will help students develop as a unique individual-to be educated as a whole person, intellectually, emotionally, socially, ethically, and spiritually. The educational program designs are worked out meticulously in line with best in class universities with special focus on:

- Flexible Choice Based Credit System
- OBE - Outcome Based Education System
- Experiential Learning
- Project Based Learning
- Case Based Learning
- Training need analysis based on Performance Appraisal System
- Active Learning tools for effective delivery
- Mentoring / Proctorship
- On line learning /Self learning platforms
- Flipped Classroom concept
- Effective Student Feedback Mechanism



### **VISION**

Internationally recognized university of excellence in creating and disseminating knowledge through value-based quality education leading to betterment of mankind

### **MISSION**

- To prepare students for life-long learning and leadership in a global academic culture
- To create intellectual manpower relevant to the industry and society at large
- To collaborate with institutions of international repute for academic excellence
- To promote research and development through conducive environment
- To encourage entrepreneurship and skill development programs

### **CORE VALUES**

- Integrity
- Transparency
- Accountability
- Equality
- Empathy
- Stewardship

### **QUALITY POLICY**

Sanjay Ghodawat University is committed to establish high standards in value-based quality education to enhance and nurture young minds to excel in their chosen profession and develop into socially responsible citizens through resourceful collaboration, innovation and research

## OUTCOME BASED EDUCATION (OBE) MODEL

Sanjay Ghodawat University (SGU) has implemented OBE model of education, which is a learner centered approach. SGU has witnessed a sea change in the entire academic systems with implementation of all three components of OBE – Design, Delivery and Assessment. The SGU model of autonomy focuses on experiential learning which believes in learning by doing. This is achieved through hands on experience, industrial assignments, mini projects and live problem solving and collaboration with industries.

SGU is set in to dynamics of transformation and witnessing a shift in focus from teaching to learning and entire academic system of SGU is designed to provide multiple learning opportunities for students to acquire and demonstrate the Knowledge, Skills and Attitudes (KSA) for rewarding career. The Vision and Mission of the Management, contribution from eminent BOG members and knowledgeable members of Academic Council and Board of Studies, the motivation and drive of the Director, the relentless efforts of the fellow Deans and Head of Departments and all teaching and non teaching staff along with commitment to learning of students made it possible to successfully transform the institute and stand out to carve a niche for itself as an Institute of repute.

OBE is an approach of curriculum design and teaching that focuses on what students should be able to do (attained) at the end of course/ program. Outcome based education (OBE) is student-centered instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes (KSA). Its focus remains on evaluation of outcomes of the program by stating the knowledge, skill and behavior a graduate is expected to attain upon completion of a program and after 4 – 5 years of graduation. In the OBE model, the required knowledge and skill sets for a particular degree is predetermined and the students are evaluated for all the required parameters (Outcomes) during the course of the program.

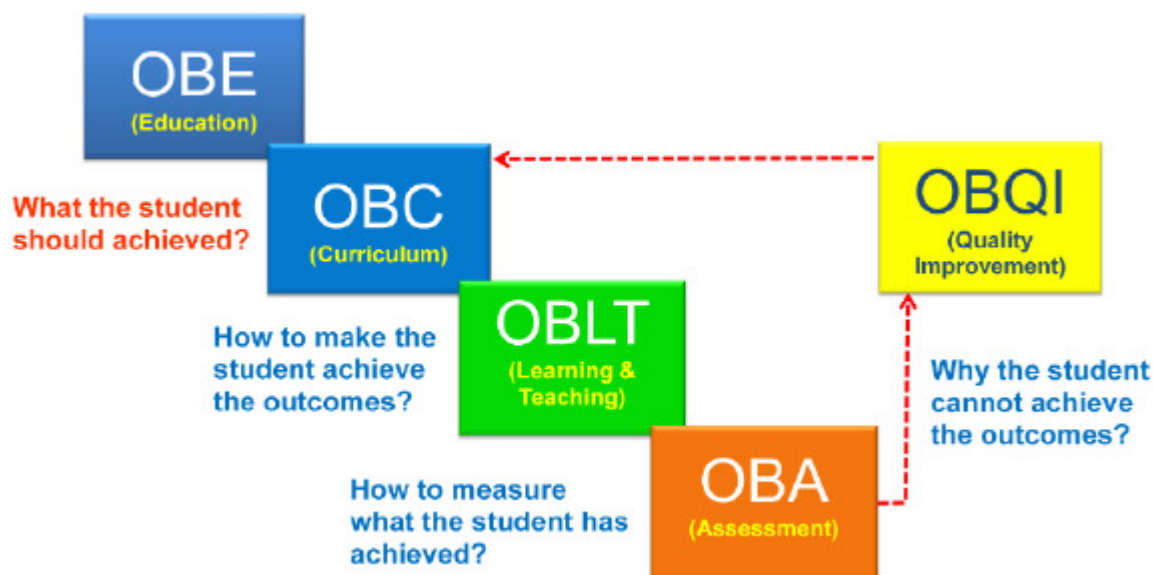
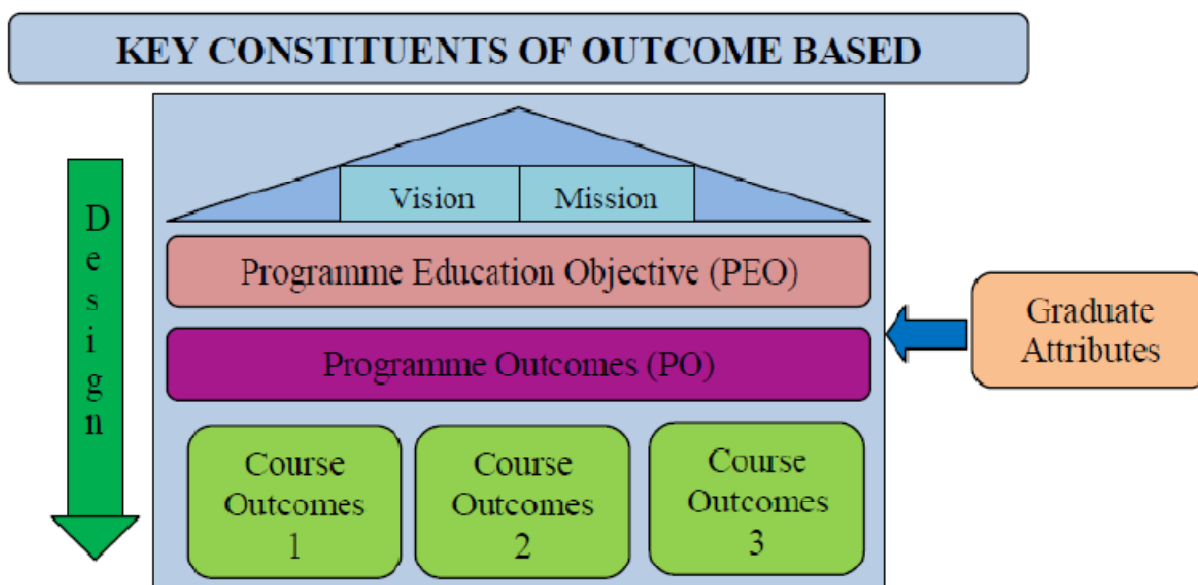


Figure 1: OBE flows and description



The OBE model measures the progress of the graduate in three parameters, which are

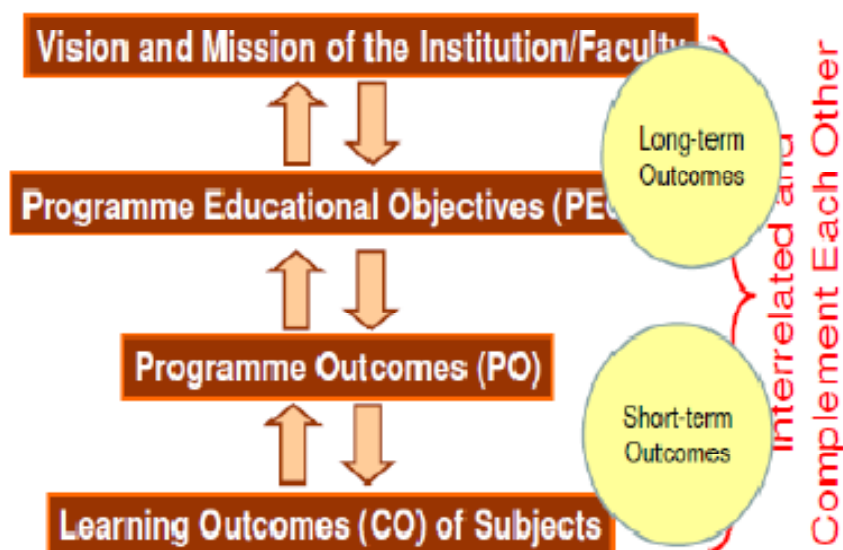
- Program Educational Objectives (PEO)
- Program Outcomes (PO)
- Course Outcomes (CO)

Program Educational Objectives (PEO) are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve. PEO's are measured 4-5 years after graduation. Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. They must reflect the Graduate attributes. Course outcomes are the measurable parameters which evaluates each students performance for each course that the student undertakes in every semester.

The various assessment tools for measuring Course Outcomes include Tests and End Semester Examinations, Tutorials, Assignments, Project work, Labs, Presentations, Employer/Alumni Feedback etc,. These course outcomes are mapped to Graduate attributes and Program outcomes based on relevance. This evaluation pattern helps Institutions to measure the Program Outcome. The Program Educational Objective is measure through Employer satisfaction survey (Yearly), Alumni survey (Yearly), Placement records and higher education records.

## Outcomes in OBE

### A Model Hierarchy of Outcomes



### Special Features of OBE

- OBE is an educational process that focuses on what students can do or the qualities they should develop after they are taught.
- OBE involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than accumulation of course credits.
- Both structures and curricula are designed to achieve those capabilities or qualities.
- Discourages traditional education approaches based on direct instruction of facts and standard methods.
- It requires that the students demonstrate that they have learnt the required skills and content.



# **CHAPTER- I:**

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# **REGULATIONS**



## **SCHEME & SYLLABUS FOR DIPLOMA IN PHARMACY**

### **1. DURATION OF THE COURSE:**

The duration of the course shall be for two academic years, with each academic year spread over a period of not less than one hundred and eighty working days in addition to 500 hours practical training spread over a period of not less than 3 months.

### **2. ELIGIBILITY FOR ADMISSION:**

No. Candidate shall be admitted to Diploma in Pharmacy Pt. I unless he/she had passed any of the following examinations in all the optional subjects and compulsory subjects (Physics, Chemistry, Biology and /or Mathematics including English as one of the Compulsory subjects):

- a) Intermediate examination in Science; The First Year of the three year degree course in Science; 10+2 Examination (Academic stream) in Science;
- b) Pre-degree examination; any other qualification approved by the Pharmacy Council of India as equivalent to any of the above exam.

Admission of candidates to the Diploma in Pharmacy Part - I shall be made in order of merit on the basis of 'Pre-Pharmacy Test' conducted in accordance with the scheme of Examinations and syllabus laid-down by the University.

### **3. ELIGIBILITY FOR APPEARING IN EXAMINATION**

- (a) Eligibility for appearing at the Diploma in Pharmacy Part-I Examination: Only such candidates who produce-certificate from the Head of the Academic Institution in which he/she has undergone the Diploma in Pharmacy Part-I course, in proof of his/her having regularly and satisfactorily undergone the course of study by **attending not less than 75% of the classes held both in theory and in practical separately in each subject**, shall be eligible for appearing at the Diploma in Pharmacy (Part-I) examination.
- (b) Eligibility for appearing at the Diploma in Pharmacy Part-II Examination: Only such candidates who produce certificate from the Head of the academic institution in which he/she has undergone the Diploma in Pharmacy Part-II course, in proof of his/her having regularly and satisfactorily attending **not less than 75% of the classes held both in theory and practicals separately in each subject**, shall be eligible for appearing at the Diploma in Pharmacy (Part-II) examination.
- (c) A candidate can have a relaxation of 10% attendance on medical ground by producing a certificate from medical officer of government hospital and a 5% relaxation by the vice chancellor on the recommendation of Dean, faculty.

### **4. GENERAL**

- (A) **Course of Study:** The course of study for Diploma in Pharmacy part-I and Diploma in pharmacy part-II shall include the subjects as given in the Tables I & II below. The number of hours devoted to each subject for its teaching is given against columns 2 and 3 of the Tables below.



## Diploma in Pharmacy (Part-I)

Course Code	Course Title	L	P	Component (hr/year)	Exam	WT		Min Passing (%)
DP101T	Pharmaceutics-I	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP102T	Pharmaceutical Chemistry-I	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP103T	Pharmacognosy	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP104T	Biochemistry & Clinical Pathology	2	-	Theory (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP105T	Human Anatomy & Physiology	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP106T	Health Education & community pharmacy	2	-	Theory (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP101P	Pharmaceutics-I	-	4	Practical (100)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP102P	Pharmaceutical Chemistry-I	-	3	Practical (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP103P	Pharmacognosy	-	3	Practical (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP104P	Biochemistry & Clinical Pathology	-	3	Practical (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP105P	Human Anatomy & Physiology	-	2	Practical (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
	Total	16	15	775			1100	440

**Note:** 75% attendance in theory and practical separately is compulsory to attend the examinations



## Diploma in Pharmacy (Part-II)

Course Code	Course Title	L	P	Component (Hr/Year)	Exam	WT		Min Passing (%)
DP201T	Pharmaceutics-II	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP202T	Pharmaceutical Chemistry-II	4	-	Theory (100)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP203T	Pharmacology & Toxicology	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP204T	Pharmaceutical Jurisprudence	2	-	Theory (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP205T	Drug store and Business Management	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP206T	Hospital & Clinical Pharmacy	3	-	Theory (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP201P	Pharmaceutics-II	-	4	Practical (100)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP202P	Pharmaceutical Chemistry-II	-	3	Practical (75)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP203P	Pharmacology & Toxicology	-	2	Practical (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
DP206P	Hospital & Clinical Pharmacy	-	2	Practical (50)	Sessional- 1	20	20	40
					Sessional- 2	20		
					Sessional- 3	20		
					Annual Exam	80	80	
	Total	18	11	725			1000	400

**Note:** 75% attendance in theory and practical separately is compulsory to attend the examinations

- (B) **Examinations:** There shall be an examination for Diploma in Pharmacy (part-I) to examine students of the first year course and an examination for Diploma in Pharmacy (part-II) to examine students of the second year course. Each examination may be held twice every year. The first examination in every year shall be the annual examination and the second examination shall be supplementary examination of the Diploma in Pharmacy (part-I) or Diploma in pharmacy (Part-II) as the case may be. The examinations shall be of written and practical (including oral) nature. Carrying maximum marks for each part of subject, as indicated in Table III and IV:R-29 (A) (Plan and scheme of examination for Diploma in Pharmacy).

### **5. Examination rules:**

- a) **Mode of examinations:** Each theory and practical examination in the subject shall be of three hours duration. A candidate who fails in theory or practical examination shall reappear in such theory or practical paper(s) as the case may be. Practical examination shall also consist of *viva voce* (oral) examination.
- b) **Award of sessional marks and maintenance of records:** A regular record of both theory and practical class work and examinations conducted in an institution imparting training for Diploma in Pharmacy Part-I and Diploma in pharmacy Part-II courses, shall be maintained for each student in the institution and **20 marks for each theory and 20 marks** for each practical subject shall be allotted as sessional.

There shall be at **least three periodic sessional examinations** during each academic year. The highest **aggregate of any two performances** shall form the basis of calculating sessional marks.

The sessional marks in practicals shall be allotted on the following basis:

- i. Actual performance in the sessional examination. 10
  - ii. Day to day assessment in the practical class work. 10
- c) **Minimum marks for passing the examination:** A student shall not be declared to have passed Diploma in Pharmacy examination unless he/she secures atleast 40% marks in each of the subject separately in theory examination, including sessional marks and atleast 40% marks in each of the practical examination including sessional marks. The candidates securing 60% marks or above in aggregate in all subjects in a single attempt at the Diploma in Pharmacy (Part-I) or Diploma in Pharmacy (Part-II) examinations shall be declared to have passed in first class the Diploma in Pharmacy (Part-I) or Diploma in Pharmacy (Part-II) examinations, as the case may be. Candidates securing 75% marks or above in any subject or subjects provided he/she passes in all the subjects in single attempt, will be given distinction in that subjects(s).
- d) **Eligibility for Promotion to Diploma in Pharmacy (Part- II):** All candidates who have appeared for all the subjects and passed the Diploma in pharmacy part-I class. However **failure in more than two subjects** (each Theory paper or practical examination shall be considered as a subject) shall debar him/her from promotion to the Diploma in Pharmacy Part-II class. Such candidates shall be examined in the failing subjects only at subsequent. A candidate who fails to pass D Pharm Part - I exam. in **four attempts** shall not allowed to continue the course.
- e) **Improvement of sessional marks:** Candidates who wish to improve sessional marks can



do so by appearing in two additional sessional examinations during the next academic year. The average score of the two examinations shall be the basis for improved sessional marks in theory. The sessional of practicals shall be improved by appearing in additional practical examinations. Marks awarded to a candidate for day to day assessment in the practical class, can not be improved unless he/she attends regular course of study again.

- f) **Certificate of passing examination for Diploma in Pharmacy (Part-II):** Certificate of having passes the examination for the Diploma in Pharmacy Part-II shall be granted by the Examining Authority to a successful student.
- g) **Certificate of Diploma in Pharmacy:** A certificate of Diploma in Pharmacy shall be granted by the Examining Authority to successful candidate on producing certificate of having passed the Diploma in Pharmacy Part-I and Part-II and satisfactory completion of practical training for Diploma in pharmacy (Part-III).
- h) The chairman and at least one expert member of examining committee of the Examining Authority concerned with appointment of examiners and conduct of pharmacy examination should be person possessing pharmacy Qualifications.
- i) **Question paper pattern:** Each paper shall consist of **six questions out of which five shall be attempted**. Half of the total number of papers in each year will be set and assessed by **external examiners** and the remaining half will be set and assessed by the internal examiners. There shall be one external and one internal examiner for each practical Examination.

## **6. PRACTICAL TRAINING**

### **Diploma in Pharmacy (Part-III)**

- (a) **Period and other conditions of practical training:** After having appeared in Part-II examination of Diploma in Pharmacy conducted by Board/University or other approved examination Body or any other course accepted as being equivalent by the Pharmacy Council of India, a candidate shall be eligible to undergo practical training in one or more of the following institutions namely: Hospitals/Dispensaries run by Central/State Government/Municipal corporations/Central Government Health Scheme and Employees State Insurance Scheme. A Pharmacy, Chemist and Druggist licensed under the Drugs and Cosmetics Rules, 1945 made under the Drugs and Cosmetics Act, 1940 (23 of 1940). The institutions referred in sub-regulation (1) shall be eligible to impart training subject to the condition that the number of student pharmacists that may be taken in any Hospital, Pharmacy, Chemist and Druggist licensed under the Drugs and Cosmetics Rules, 1945 made under the Drugs and cosmetics Act, 1940 shall not exceed two where there is one registered pharmacist engaged in the work in which the student pharmacist is under going practical training, where there is more than one registered pharmacist similarly engaged, the number shall not exceed one for each additional such registered pharmacist. Hospital and Dispensary other than those specified in sub-regulation (1) for the purpose of giving practical training shall have to be recognized by pharmacy council of India on fulfilling the conditions specified in Appendix-D to these regulations.

In the course of practical training, the trainees shall have exposure to: Working knowledge of keeping of records required by various acts concerning the profession of pharmacy and Practical experience in the manipulation of pharmaceutical apparatus in common use, the reading, translation and copying of prescription including checking of

dose, the dispensing of prescriptions illustrating the commoner methods of administering medicaments; the storage of drugs and medical preparations. **The practical training shall be not less than five hundred hours spread over a period of not less than three months** provided that not less than two hundred and fifty hours and devoted to actual dispensing of prescriptions.

**(b) Procedure to be followed prior to commencing of the training:**

The head of the academic training institution, shall supply application in triplicate in Practical Training Contract Form for Qualification as Pharmacist' to candidate eligible to under-take the said practical training, the contract form shall be as specified in Appendix-E to these regulations. The head of an academic training institution shall fill section-I of the contract form. The trainee shall fill section-II of the said contract form and the head of the institution agreeing to impart the training (hereinafter referred to as the Apprentice Master) shall fill section-III of the said contract form. It shall be the responsibility of the trainee to ensure that one copy (hereinafter referred to as the first copy of the contract form) so filled is submitted to Head of the academic training institution and the other two copies (hereinafter referred to as the second copy and the third copy) shall be filled with Apprentice Master (if he so desires) or with the trainee pending completion of the training.

- (c) Certificate of Passing Diploma in Pharmacy (Part-III)** on satisfactory completion of the apprentice period, the Apprentice Master shall fill Section-IV of the second copy and third copy of contract form and cause it to be sent to the head to the academic training institution who shall suitably enter in the first copy of the entries from the second copy and third copy and shall fill section-V of the three copies of contract form and thereafter handover both the second copy and the third copy to the trainee. Thus, if completed in all respect, shall be regarded as a certificate of having successfully completed the course of Diploma in Pharmacy (Part-III).

## **7. Audit Course:**

A student may have to register for an audit course in a D. Pharm Part-I or Part-II which could be institute requirement or department requirement.

An audit course may include either a) a regular course required to be done as per structure or required as pre-requisite of any higher level course or b) the programs like practical training, industry visits, societal activities etc

Audit course shall not carry any credits but shall be reflected in Grade Card as "PP"/"NP" depending upon the satisfactory performance in the semester evaluation as per the course curriculum structure.

## **8. Facilitation to Students:**

### **8.1 Faculty Advisor:**

On joining the institute, a student or a group of students shall be assigned to a faculty advisor who shall be mentor for a student throughout his/her tenure in the institute. A student shall be expected to consult the faculty advisor on any matter relating to his/her academic performance and the courses he/she may take in various semesters/summer term. A faculty advisor shall be the person to whom the parents/guardians should contact for performance related issues of their ward.



**The role of the Faculty Adviser is outlined below:**

- a) Guide the students about the rules and regulations governing the courses of study for a particular degree.
- b) Advise the students for registering courses as per curriculum given. For this purpose, the Faculty Adviser has to discuss with the student his/her academic performance during the previous semester and then decide the number and nature of the courses for which He / She can register during the semester as per the curriculum.
- c) Approve the registration of the students.
- d) Advise students to overload/ drop one or more courses/activities based on her/his academic performance as per the prescribed rules.
- e) At the end of the first semester/year, the Faculty Adviser may even advise a reduced load program for a poorly performing student.
- f) Pay special attention to weak students and carefully monitor performance of students recommended for slow track option.
- g) Advise students for Course Adjustment/Dropping of courses during the Semester within the stipulated time frame given in the Academic calendar.
- h) Advise students seeking semester drop either during the ongoing semester or before the commencement of the semester. FA has to ensure strict compliance of rules and regulations laid down for this purpose. Recommend the cases to the appropriate authorities for consideration.
- i) Make revised plan of study for weak/bright students based on their semester wise performance.
- j) Suggest modalities for course/credit requirements for the students recommended for exchange program.
- k) Guidance and liaison with parents of students for their performance.
- l) To ensure that students are not permitted to reregister for courses, which they have already passed.
- m) Inform students that any academic activity (course/Lab./seminar/project/noncredit requirement etc.) undergone without proper registration will not be counted towards the requirements of his/her degree.
- n) Strictly warn students that if she/he fails to register during any semester without prior approval, his/her studentship is liable to be cancelled.
- o) Keep the students updated about the Academic Administration of the University.

**8.2. Helping Weaker Students:**

A student with backlog/s should continuously seek help from his/her faculty advisor, Head of the Department and the Dean of respective schools. Additionally, he/she must also be in constant touch with his/her parents/local guardians for keeping them informed about academic performance. The university also shall communicate to the parents/guardians of such student at-least once during each semester regarding his/her performance in various tests and examination and also about his/her attendance. It shall



be expected that the parents/guardians too keep constant touch with the concerned faculty advisor or Head of the Department, and if necessary - the Dean of the respective school.

### **9. Discipline and Conduct:**

- Every student shall be required to observe discipline and decorous behavior both inside and outside the campus and not to indulge in any activity, which shall tend to bring down the prestige of the university.
- Any act of indiscipline of a student reported to the Dean, Student Development, shall be discussed in a Disciplinary Action Committee of the institute. The Committee shall enquire into the charges and recommend suitable punishment if the charges are substantiated.
- If a student while studying in the university is found indulging in anti-national activities contrary to the provisions of acts and laws enforced by Government, he/she shall be liable to be expelled from the institute without any notice.
- If a student is involved in any kind of ragging, the student shall be liable for strict action as per provisions in the Maharashtra anti-ragging act.
- If any statement/information supplied by the student in connection with his/her admission is found to be false/ incorrect at any time, his/ her admission shall be cancelled and he/she shall be expelled from the university and fees paid shall be forfeited.
- If a student is found guilty of malpractice in examinations, then he/she shall be punished as per the recommendations of the Grievance Redressal Committee (CRC) constituted by Board of Examinations.
- Every admitted student shall be issued photo identification (ID) card which must be retained by the student while he/she is registered at Sanjay Ghodawat University Kolhapur. The student must have valid ID card with him/her while in the University Campus.
- Any student who alters or intentionally mutilates an ID card or who uses the ID card of another student or allows his/her ID card to be used by another, student shall be subjected to disciplinary action.
- The valid ID card must be presented for identification purpose as and when demanded by authorities. Any student refusing to provide an ID card shall be subjected to disciplinary action.
- Students should switch off the Mobiles during the Instructional hours and in the academic areas of university Building, Library, Reading room etc. Strict action will be taken if students do not adhere to this.
- During the conduct of any Tests and Examination students must not bring their mobiles. A student in possession of the mobile whether in use or switched off condition will face disciplinary action and will be debarred from appearing for the Test / Examination.

### **10. Academic Calendar**

The academic activities of the institute are regulated by Academic Calendar and is made



available to the student's/ faculty members and all other concerned in electronic form or hard copy. It shall be mandatory for students / faculty to strictly adhere to the academic calendar for completion of academic activities.



**TABLE-I Diploma in Pharmacy (Part-I)**

Subject	Theory		Practical	
	hours/year	Hrs./week	Hours /year	Hrs./week
Pharmaceutics-I	75	3	100	4
Pharmaceutical Chemistry-I	75	3	75	3
Pharmacognosy	75	3	75	3
Biochemistry & Clinical Pathology	50	2	75	3
Human Anatomy & Physiology	75	3	50	2
Health Education & community pharmacy	50	2		
	<b>400</b>	<b>16</b>	<b>375</b>	<b>15</b>

**TABLE-II Diploma in Pharmacy (Part-II)**

Subject	Theory		Practical	
	Hours /year	Hrs./week	hours/year	Hrs./week
Pharmaceutics-II	75	3	100	4
Pharmaceutical Chemistry-II	100	4	75	3
Pharmacology & Toxicology	75	3	50	2
Pharmaceutical Jurisprudence	50	2	-	
Drug store and Business Management	75	3	-	
Hospital & Clinical Pharmacy	75	3	50	2
	<b>450</b>	<b>18</b>	<b>275</b>	<b>11</b>

**Table-III Diploma in pharmacy (Part-I) Examination**

Subject	Max. Marks in Theory			Max. Marks in Practical		
	Examination	Sessional	Total	Examination	Sessional	Total
Pharmaceutics-I	80	20	100	80	20	100
Pharmaceutical Chemistry-I	80	20	100	80	20	100
Pharmacognosy	80	20	100	80	20	100
Biochem. & Clinical Pathology	80	20	100	80	20	100
Human Anatomy & Physiology	80	20	100	80	20	100
Health Education & community pharmacy	80	20	100			
			<b>600</b>			<b>500</b>

**TABLE-IV Diploma in Pharmacy (Part-II)**

Subject	Max. Marks in Theory			Max. Marks in Practical		
	Examination	Sessional	Total	Examination	Sessional	Total
Pharmaceutics-II	80	20	100	80	20	100
Pharmaceutical Chemistry-II	80	20	100	80	20	100
Pharmacology & Toxicology	80	20	100	80	20	100
Pharmaceutical Jurisprudence	80	20	100	-	-	-
Drug store and Business Management	80	20	100	-	-	-
Hospital & Clinical Pharmacy	80	20	100	80	20	100
			<b>600</b>			<b>400</b>



## **CHAPTER - II:**

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## **SYLLABUS**



## **First Year D. Pharm**

Course code	Name of the course	No. of Hrs/ week	No. of Hr/year	Total Marks
DP101T	Pharmaceutics-I	3	75	100
DP102T	Pharmaceutical Chemistry-I	3	75	100
DP103T	Pharmacognosy	3	75	100
DP104T	Biochemistry & Clinical Pathology	2	50	100
DP105T	Human Anatomy & Physiology	3	75	100
DP106T	Health Education & community pharmacy	2	50	100
DP101P	Pharmaceutics-I	4	100	100
DP102P	Pharmaceutical Chemistry-I	3	75	100
DP103P	Pharmacognosy	3	75	100
DP104P	Biochemistry & Clinical Pathology	3	75	100
DP105P	Human Anatomy & Physiology	2	50	100
Total		31	775	1100

**DP101T. PHARMACEUTICS-I (Theory)****Theory (75 Hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP101T	Pharmaceutics –I (Theory)	3	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**Course Content:****Scope:**

This course is designed to impart a basic knowledge required for preparing and packaging conventional dosage forms and basic knowledge of immunological agent.

**Objectives:**

Upon completion of this course the student should be able to:

- CO1. Classify<sup>1</sup>** different dosage forms and filtration techniques in pharmaceuticals.
- CO2. Discribe<sup>2</sup>** processes involved in preparation of various dosage form.
- CO3. Explain<sup>2</sup>** phamaceutital packaging types, materials and techniques.
- CO4. Illustrate<sup>3</sup>** techniques of formulating various dosage forms.
- CO5. Prepare<sup>5</sup>** various pharmaceutical dosage forms.

UNIT	Description	Hours
<b>I</b>	<b>Introduction of different dosage forms.</b> Their classification with examples-their relative applications. Familiarization with new drug delivery systems. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia	08
<b>II</b>	<b>Metrology</b> -System of weights and measures. Calculations including conversion from another system. Percentage calculations and adjustment of products .Use of alligation in calculations. Isotonic solutions	05
<b>III</b>	<b>Packaging of pharmaceuticals</b> -Desirable features of a container and types of containers. Study of glass & plastics as materials for containers and rubber as a material for closure-their merits and demerits. Introduction to aerosol packaging.	03
	<b>Size reduction:</b> objectives, and factors affecting size reduction, methods of size reduction- study of hammer mill, ball mill, fluid energy mill and disintegrator	03
<b>IV</b>	<b>Size separation</b> -size separation by shifting. Official standards for powders. Sedimentation methods of size separation. Construction and working of Cyclone separator.	04
<b>V</b>	<b>Mixing and Homogenization</b> -Liquid mixing and powder mixing, Mixing of semisolids. Study of Silverson Mixer-Homogenizer, Planetary Mixer; Agitated powder mixer; Triple Roller Mill; Propeller Mixer, Colloid Mill and Hand Homogeniser. Double cone mixer.	04



<b>VI</b>	<b>Clarification and Filtration</b> -Theory of filtration, Filter media; Filter aids and selection of filters. Study of the following filtration equipments- Filter Press, Sintered filters, Filter candles, Metafilter.	04
<b>VII</b>	<b>Extraction and Galenicals</b> - (a) Study of percolation and maceration and their modification, continuous hot extraction-Application in the preparation of tinctures and extracts. (b) Introduction to Ayurvedic dosage forms.	04
	<b>Heat process</b> , Evaporation, Definition, Factors affecting evaporation, study of evaporating steel and Evaporating pan	03
<b>VIII</b>	<b>Distillation</b> -Simple distillation and Fractional distillation, steam distillation and vacuum distillation. Study of vacuum steel, preparation of purified water I.P. and water for Injection I.P. construction and working of the steel used for the same.	03
<b>IX</b>	<b>Introduction to drying process</b> -Study of Tray Dryers; Fluidized Bed Dryer, Vacuum Dryer and Freeze Dryer.	03
<b>X</b>	<b>Sterilization</b> -Concept of sterilization and its differences from disinfection-Thermal resistance of microorganisms. Detailed study of the following sterilization process. Sterilization with moist heat, Dry heat sterilization, Sterilization by radiation, Sterilization by filtration and Gaseous sterilization.	06
<b>XI</b>	<b>Aseptic techniques</b> -Applications of sterilization process in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipment.	02
<b>XII</b>	<b>Processing of Tablets</b> -Definition; different type of compressed tables and their properties. Processes involved in the production of tablets; tablets excipients; defects in tablets; evaluation of tablets; physical standards including disintegration and dissolution. tablet coating-sugar coating; films coating, enteric coating and micro-encapsulation (Tablet coating may be de.. in an elementary manner).	12
<b>XIII</b>	<b>Processing of Capsules</b> -Hard and soft gelatin capsules; different sizes of capsules; filling of capsules; handling and storage of capsules. Special applications of capsules	07
<b>XIV</b>	<b>Study of immunological products</b> like sera, vaccines, toxoids & their preparations.	04

**DP101P. PHARMACEUTICS- I (Practical)****Practical -(100 hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP101P	Pharmaceutics- I (Practical)	-	-	4	Practical (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**No. Description**

Preparation (minimum number stated against each of the following categories illustrating different techniques involved)

1. Aromatic waters 3
2. Solutions 4
3. Spirits 2
4. Tinctures 4
5. Extracts 2
6. Creams 2
7. Cosmetic preparations 3
8. Capsules 2
9. Tablets 2
10. Preparations involving Ophthalmic preparations 2
11. Preparations involving aseptic techniques 2

**Books recommended: (Latest editions)**

- 1.) Remington's Pharmaceutical Sciences.
- 2.) The Extra Pharmacopoeia-Martindale.

**DP102T. PHARMACEUTICAL CHEMISTRY-I (Theory)****Theory (75 Hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP102T	Pharmaceutical Chemistry-I (Theory)	3	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**Scope:**

This subject designed to inculcate knowledge of inorganic compounds as medicinal and pharmaceutical agents and their quality control parameters and tests as per official monograph.

**Objectives:**

Upon completion of this course the student should be able to:

- CO1. Define<sup>1</sup>** and classify medicinal agent and enlist their uses.
- CO2. Explain<sup>2</sup>** important physical and chemical properties of inorganic compounds
- CO3. Describe<sup>2</sup>** the ideal properties and uses of inorganic compounds as medicinal and pharmaceutical agents
- CO4. Illustrate<sup>3</sup>** parameters and method to maintain quality of drugs and pharmaceuticals.
- CO5. Determine<sup>4</sup>** various inorganic compounds using different assay methods and immunities by identification and limit test.

**Course Content:**

UNIT	Description	Hours
	General discussion on the following inorganic compounds including important physical and chemical properties, medicinal and pharmaceutical uses, storage conditions and chemical incompatibility.	
<b>I</b>	<b>Acids, bases and buffers-</b> Boric acid, Hydrochloric acid, Strong Ammonium hydroxide, Sodium hydroxide and official buffers	05
<b>II</b>	<b>Antioxidants-</b> Hypophosphorous acid, Sulphur dioxide, Sodium bisulphite, Sodium meta-bisulphite, Sodium thiosulphate, Nitrogen and Sodium nitrite.	03
<b>III</b>	<b>Gastrointestinal agents-</b> <u>Acidifying agents-</u> Dilute Hydrochloric acid. <u>Antacids-</u> Sodium bicarbonate, Aluminum hydroxide gel, Aluminum phosphate, Calcium carbonate, Magnesium carbonate, Magnesium trisilicate, Magnesium	10



	oxide, Combinations of antacid preparations. Protective and Adsorbents- Bismuth sub carbonate and Kaolin. <u>Saline cathartics-</u> Sodium potassium tartrate and Magnesium sulphate.	
<b>IV</b>	<b>Topical Agents-</b> <u>Protective-</u> Talc, Zinc Oxide, Calamine, Zinc stearate, Titanium dioxide, Silicone polymers	04
<b>V</b>	<b>Antimicrobials and Astringents-</b> Hydrogen peroxide*, Potassium permanganate, Chlorinated lime, Iodine, Solutions of Iodine, Povidone-iodine, Boric acid, Borax, Silver nitrate, Mild silver protein, Mercury yellow, Mercuric oxide, Ammoniated mercury. <u>Sulphur and its compounds-</u> Sublimed sulphur, Percipitated sulphur, Selenium sulphide. <u>Astringents-</u> Alum and Zinc Sulphate.	10
<b>VI</b>	<b>Dental Products-</b> Sodium fluoride, Stannous fluoride, Calcium carbonate, Sodium meta phosphate, Di- calcium phosphate ,Strontium chloride, Zinc chloride. <u>Inhalants-</u> Oxygen, Carbon dioxide, Nitrous oxide.	06
<b>VII</b>	<b>Respiratory stimulants-</b> Ammonium carbonate	01
<b>VIII</b>	<b>Expectorants and Emetics-</b> Ammonium chloride*, Potassium iodide, Antimony potassium tartrate.	02
<b>IX</b>	<b>Antidotes-</b> Sodium nitrite.	01
<b>X</b>	<b>Major Intra and Extra cellular electrolytes-</b> <u>Electrolytes used for replacement therapy-</u> Sodium chloride and its preparations, Potassium chloride and its preparations. <u>Physiological acid-base balance and electrolytes used-</u> Sodium acetate, Potassium Acetate, Sodium bicarbonate Inj., Sodium citrate, Potassium citrate, Sodium lactate injection, Ammonium chloride and its injection. Combination of oral electrolyte powders and solutions.	10
<b>XI</b>	<b>Inorganic official compounds</b> of Iron, Iodine and Calcium, Ferrous Sulphate and Calcium Gluconate.	03
<b>XII</b>	<b>Radio pharmaceuticals and contrast media-</b> Radio activity-Alpha; Beta and Gamma Radiations, Biological effects of radiations, Measurement of radio activity, G.M. Counter, Radio isotopes-their uses, Storage and precautions with special reference to the official preparations. Radio opaque contrast media-Barium sulfate.	08
<b>XIII</b>	<b>Quality control of Drugs and pharmaceuticals-</b> Importance of quality control, significant errors, methods used for quality control, sources of impurities in pharmaceuticals. Limit tests for Arsenic, Chloride, Sulfate, Iron and Heavy metals.	10
<b>XIV</b>	<b>Identification tests</b> for cations and anions as per Indian Pharmacopoeia	02

**DP102P. PHARMACEUTICAL CHEMISTRY-I (Practical)****Practical- (75 hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP102P	Pharmaceutical Chemistry-I (Practical)	-	-	3	Practical (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**No. Description**

1. Identification tests for inorganic compounds particularly drugs and pharmaceuticals.
2. Limit test for chloride, Sulfate, Arsenic, Iron and Heavy metals
3. Assay of inorganic pharmaceuticals involving each of the following methods of compounds marked with (\*) under theory.
  - i. Acid-Base titrations (at least 3)
  - ii. Redox titrations (one each of permanganometry and iodimetry).
  - iii. Precipitation titrations (at least 2)
  - iv. Complexometric titration (Calcium and Magnesium).

**Books recommended (Latest editions)**

1. Indian Pharmacopoeia.

**DP103T. PHARMACOGNOSY (Theory)****Theory (75 Hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP103T	Pharmacognosy (Theory)	3	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**Scope:**

This subject is designed with the view of imparting knowledge to the learners about the source, preparation methods, standards and therapeutic uses of drugs originated from the natural sources viz plants, animals, and marine etc

**Objectives:**

On successful completion of following theory topics, a learner should be able to:

- CO1. Define<sup>1</sup>** and classify the indigenous systems of medicine and sources of natural medicines.
- CO2. Outline<sup>1</sup>** the isolation, identification test of phytochemicals and natural pharmaceutical aids.
- CO3. Describe<sup>2</sup>** therapeutic effects and pharmaceutical applications of natural origin drugs.
- CO4. Perform<sup>5</sup>** identification, morphological, physical and chemical evaluation of natural drugs.
- CO5. Illustrate<sup>4</sup>** the collection and preparation of crude drug for market..

**Course Content:**

UNIT	Description	Hours
<b>I</b>	Definition, history and scope of Pharmacognosy including indigenous system of medicine	02
<b>II</b>	Various systems of classification of drugs and natural origin	01
<b>III</b>	Adulteration and drug evaluation; significance of pharmacopoeial standards.	02
<b>IV</b>	Brief outline of occurrence, distribution, outline of isolation, identification tests, therapeutic effects and pharmaceutical application of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins	05
<b>V</b>	Occurrence, distribution, organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs. a) <b>Laxatives</b> - Aloes, Rhubarb, Castor oil, Ispaghula, Senna.	32

- b) **Cardiotonics**- Digitalis, Arjuna.
- c) **Carminatives & G.I. regulators**- Umbelliferous fruits, Coriander, Fennel, Ajowan, Cardamom, Ginger, Black pepper , Asafoetida, Nutmeg, Cinnamon, Clove.
- d) **Astringents**- Catecheu.
- e) **Drugs acting on nervous system**- Hyoscyamus, Belladonna, Aconite, Ashwagandha, Ephedra, Opium, Cannabis, Nux -vomina.
- f) **Antihypertensive**- Rauwolfia.
- g) **Antitussives**- Vasaka, Tolu balsam, Tulsi.
- h) **Antirheumatics**- Guggal, Colchicum.
- i) **Antitumour**- Vinca.
- j) **Antileprotics**- Chaulmoogra oil.
- k) **Antidiabetics**- Pterocarpus, *Gymnema sylvestre*.
- l) **Diuretics**- Gokhru, Punarnava.
- m) **Antidysenterics**- Ipecacuanha.
- n) **Antiseptics and disinfectants**- Benzoin, Myrrh, Neem, Curcuma.
- o) **Antimalarials**- Cinchona.
- p) **Oxytocics**- Ergot.
- q) **Vitamins**- Shark liver oil and Amla.
- r) **Enzymes**- Papaya, Diastase, Yeast.
- s) **Perfumes and flavoring agents**- peppermint oil, Lemon oil, Orange oil, lemon grass oil, sandal wood.

<b>VI</b>	<b>Pharmaceutical aids</b> - Honey, Arachis Oil, Starch, Kaolin, Pectin, Olive Oil. Lanolin, Beeswax, Acacia, Tragacanth, Sodium Alginate, Agar, Guar Gum, Gelatin.	05
<b>VII</b>	<b>Miscellaneous</b> - Liquorice, Garlic, Picrorhiza, Dirscorea, Linseed, Shatavari, Shankpushpi, Pyrethrum, Tobacco.	08
<b>VIII</b>	<b>Collection and preparation</b> of crude drugs for the market as exemplified by Ergot, Opium, Rauwalfia, Digitalis, Senna.	07
<b>IX</b>	Study of source, preparation and identification of fibers used in sutures and surgical dressings-cotton ,silk, wool and regenerated fibers	05
<b>X</b>	Gross anatomical studies of- Senna, Datura, Cinnamon, Cinchona, Fennal, Clove, Ginger, Nuxvomica & Ipecacuanha	08

**DP103P. PHARMACOGNOSY (Practical)****Practical -(75 hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP103P	Pharmacognosy (Practical)	3	-	-	Practical (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

No.	Description
1.	Identification of drugs by morphological characters. Physical and chemical tests for evaluation of drugs wherever applicable.
2.	<b>Gross anatomical studies(t.s.)of the following drugs :</b> <ol style="list-style-type: none"> <li>Senna,</li> <li>Datura,</li> <li>Cinnamon,</li> <li>Cinchona,</li> <li>Coriander,</li> <li>Fennel,</li> <li>Clove,</li> <li>Ginger,</li> <li>Nux-vomica,</li> <li>Ipecacuanha</li> </ol>
3.	Identification of fibers and surgical dressing

**Books recommended (Latest editions)**

- Kokate C K, Purohit AP, Gokhale SB. **Pharmacognosy**. Pune: Nirali Prakashan
- Evans W. **Trease and Evans' Pharmacognosy**. Elsevier/Saunders Ltd.

## **DP104T. BIOCHEMISTRY AND CLINICAL PATHOLOGY (Theory)**

**Theory -(50 Hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP104T	Biochemistry & Clinical Pathology (Theory)	2	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

### **Scope:**

The biochemistry and clinical pathology syllabus is designed to provide fundamental knowledge of biochemicals, the role and metabolism of nutrient molecules in physiological and pathological conditions and their levels in biological fluids.

### **Objectives:**

Upon completion of course learner shall be able to

- CO1. Define<sup>1</sup>** and classify the biological molecules and reiterate their levels in physiological and pathological conditions.
- CO2. Explain<sup>2</sup>** the chemistry and role of each biomolecule in the life process and disease associated with their metabolism.
- CO3. Describe<sup>2</sup>** the significance, role and levels of components of blood and urine in health and disease
- CO4. Determine<sup>5</sup>** the concentration of various normal and abnormal constituents in biological fluids.
- CO5. Demonstrate<sup>3</sup>** injection of drug in human body by various routes.

### **Course Content:**

UNIT	Description	Hours
<b>I</b>	<b>Introduction to biochemistry.</b> Brief chemistry and role of proteins, polypeptides and amino acids, classification, Qualitative tests, Biological value, Deficiency diseases	08
<b>II</b>	<b>Carbohydrates:</b> Brief chemistry and role of carbohydrates, classification, qualitative tests, Diseases related to carbohydrate metabolism.	10
<b>III</b>	<b>Lipids:</b> Brief chemistry and role of lipids, classification and qualitative tests. Diseases related to lipids metabolism.	08
<b>IV</b>	<b>Vitamins:</b> Brief chemistry and role of vitamins and coenzymes. Role of minerals and water in life processes.	08
<b>V</b>	<b>Enzymes:</b> Brief concept of enzymatic action. Factors affecting it.	08
<b>VI</b>	<b>Therapeutics:</b> Introduction to pathology of blood and urine. Lymphocytes and platelets, their role in health and disease. Erythrocytes-Abnormal cells and their significance. Abnormal constituents of urine and their significance in diseases	08

## **DP104P. BIOCHEMISTRY AND CLINICAL PATHOLOGY (Practical)**

**Practical- (75 hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP104P	Biochemistry & Clinical Pathology (Practical)	-	-	3	Practical (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

No.	Description
1.	Detection and identification of proteins. Amino acids, carbohydrates and lipids.
2.	<b>Analysis of normal and abnormal constituents of Blood and Urine:</b> <ol style="list-style-type: none"> <li>Glucose,</li> <li>Urea,</li> <li>Creatine,</li> <li>Cretinine,</li> <li>Cholesterol,</li> <li>Alkaline Phosphatase</li> <li>Acid Phosphatase,</li> <li>Bilirubin,</li> <li>SGPT,</li> <li>SGOT,</li> <li>Calcium,</li> <li>Diastase,</li> <li>Lipase</li> </ol>
3.	Examination of sputum and faeces (microscopic & staining).
4.	Practice in injecting drugs by intramuscular, subcutaneous and intravenous routes, withdrawal of blood samples.

### **Recommended Books (Latest edition)**

- Kumar V, Abas AK., Aster JC. **Robbins & Cotran Pathologic basis of disease.** South Asia edition; India; Elsevier.
- Harsh Mohan. **Text book of Pathology.** India: Jaypee Brothers Medical Publishers (P) Ltd.
- Satyanarayan U, Chakrapani U. **Biochemistry.** Kolkatta: Books and Allied (P) Ltd.



## DP105T. HUMAN ANATOMY AND PHYSIOLOGY (Theory)

Theory -(75 Hours)

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP105T	Human Anatomy & Physiology (Theory)	3	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

### Scope:

This subject is designed to impart basic knowledge of the structure and functions of the various systems of the human body.

### Objectives:

Upon completion of this course the learner should be able to:

- CO1. Define<sup>1</sup>** various terminologies used in anatomy and physiology.
- CO2. Explain<sup>2</sup>** the gross morphology, structure and functions of various organs of the human body.
- CO3. Identify<sup>1</sup>** various tissues and organs of different systems of human body.
- CO4. Perform<sup>3</sup>** tests for hematological parameters.
- CO5. Record<sup>1</sup>** basic physiological parameter of human body viz BP, HR, ECG etc

### Course Content:

UNIT	Description	Hours
<b>I</b>	Scope of Anatomy and physiology. Definition of various terms used in Anatomy. Structure of cell, function of its components with special reference to mitochondria and microsomes	07
<b>II</b>	<b>Elementary tissues:</b> Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue and nervous tissue	05
<b>III</b>	<b>Skeletal System:</b> Structure and function of Skeleton. Classification of joints and their function. Joint disorders	07
<b>IV</b>	<b>Cardiovascular System:</b> Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood. Name and functions of lymph glands. Structure and functions of various parts of the heart. Arterial and venous system with special reference to the names and positions of main arteries and veins. Blood pressure and its recording. Brief information about cardiovascular disorders.	07
<b>V</b>	<b>Respiratory system:</b> Various parts of respiratory system and their functions, physiology of respiration.	05



<b>VI</b>	<b>Urinary System:</b> Various parts of urinary system and their functions, structure and functions of kidney. Physiology of urine formation. Patho-physiology of renal diseases and edema	05
<b>VII</b>	<b>Muscular System:</b> Structure of skeletal muscle, physiology of muscle contraction. Names, positions, attachments and functions of various skeletal muscles. physiology of neuromuscular junction	07
<b>VIII</b>	<b>Central Nervous System:</b> Various parts of central nervous system, brain and its parts, functions and reflex action. Anatomy and physiology of <b>Autonomic Nervous System</b> .	07
<b>IX</b>	<b>Sensory Organs:</b> Elementary knowledge of structure and functions of the organs of taste, smell, ear, eye and skin. Physiology of pain	07
<b>X</b>	<b>Digestive System:</b> names of various parts of digestive system and their functions. structure and functions of liver, physiology of digestion and absorption	06
<b>XI</b>	<b>Endocrine System:</b> Endocrine glands and Hormones. Location of glands, their hormones and functions. Pituitary, thyroid, Adrenal and pancreas	07
<b>XII</b>	<b>Reproductive system:</b> Physiology and Anatomy of Reproductive system	05



## **DP105P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**Practical- (50 hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP105P	Human Anatomy & Physiology (Practical)	-	-	2	Practical (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

No.	Description
1.	<b>Study of the human Skelton</b>
2.	<b>Study with the help of charts and models of the following system and organs:</b> <ol style="list-style-type: none"> <li>Digestive system,</li> <li>Respiratory system,</li> <li>Ear</li> <li>Cardiovascular system</li> <li>Urinary system</li> <li>Reproductive system</li> <li>Eye</li> </ol>
3.	<b>Microscopic examination of</b> <ol style="list-style-type: none"> <li>Epithelial Tissue,</li> <li>Cardiac Muscle,</li> <li>Smooth Muscle,</li> <li>Skeletal Muscle.</li> <li>Connective Tissue</li> <li>Nervous Tissues</li> </ol>
4.	<b>Examination of blood films for</b> <ol style="list-style-type: none"> <li>Total leucocyte count (TLC)</li> <li>Differential leucocyte count (DLC)</li> <li>Malarial parasite</li> </ol>
5.	<b>Determination of</b> <ol style="list-style-type: none"> <li>RBCs,</li> <li>Clotting time of blood,</li> <li>Erythrocyte sedimentation rate</li> <li>Hemoglobin value</li> </ol>
6.	<b>Recording of</b> <ol style="list-style-type: none"> <li>Body Temperature,</li> <li>Pulse,</li> <li>Heart-Rate,</li> <li>Blood Pressure</li> <li>ECG.</li> </ol>

### **Books recommended (Latest editions)**

1. Tortora GJ, Derrickson BH. **Principles of Anatomy and Physiology**. Singapore: John Wiley & Sons (Asia) Pte Ltd
2. Waugh A. Grant A. **Ross and Wilson's Anatomy and physiology in health and illness**. New York: Churchill Livingstone (Elsevier).

**DP106T. HEALTH EDUCATION AND COMMUNITY PHARMACY (Theory)****Theory (50 Hours)**

Course Code	Course Title	L	T	P	Component	Exam	WT		Passing Min. (%)
DP106T	Health Education & Community Pharmacy (Theory)	2	-	-	Theory (100 marks)	Sessional- 1	20	20	40
						Sessional- 2	20		
						Sessional- 3	20		
						Annual Exam		80	

**Scope:**

This course is designed to transmit the knowledge of health, nutrition, environment and various diseases affecting society and role of pharmacist in prevention and control of these conditions.

**Objectives:**

Upon completion of the course the student should be able to:

- CO1. Define<sup>1</sup>** health, nutrition and various disease conditions.
- CO2. Classify<sup>1</sup>** foods, microbes, infective agents, disease and disinfectants.
- CO3. Explain<sup>2</sup>** the association of environment and health, causative agent of various type of diseases, spreading of disease and method of control.
- CO4. Describe<sup>2</sup>** methods of first aid and family planning.

**Course Content:**

UNIT	Description	Hours
<b>I</b>	<b>Concept of health:</b> Definition of physical health, mental health, social health, spiritual health determinants of health, indicator of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases	05
<b>II</b>	<b>Nutrition and health:</b> Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins and minerals-treatment and prevention.	05
<b>III</b>	<b>Demography and family planning:</b> Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.	07
<b>IV</b>	<b>First aid:</b> Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures and resuscitation methods, Elements of minor surgery and dressings	05
<b>V</b>	<b>Environment and health:</b> Source of water supply, water pollution, purification of water, health and air, noise, light-solid waste disposal and control-medical entomology, arthropod borne diseases and their control. Rodents, animals and diseases.	05
<b>VI</b>	<b>Fundamental principles of microbiology:</b> Classification of microbes, isolation,	03



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	staining techniques of organisms of common diseases.	
<b>VII</b>	<b>Communicable diseases:</b> Causative agents, mode of transmission and prevention. <b>Respiratory infections-</b> Chicken Pox, Measles, Influenza, Diphtheria, Whooping Cough And Tuberculosis. <b>Intestinal infection-</b> Poliomyelitis, Hepatitis, Cholera, Typhoid, food poisoning, Hookworm infection <b>Arthropod borne infections-</b> Plague, Malaria, Filariases. Surface infection- Rabies, Trachoma, Tetanus, Leprosy <b>Sexually transmitted diseases-</b> Syphilis, Gonorrhoea, AIDS	13
<b>VIII</b>	<b>Non-communicable diseases:</b> causative agents, prevention, care and control.	02
<b>IX</b>	<b>Epidemiology:</b> Its scope, methods, uses, dynamics of disease transmission. Immunity and immunization: Immunological products and their dose schedule. Principles of disease control and prevention, hospital acquired infection, prevention and control. Disinfection, types of disinfection procedures, for-faces, urine, sputum, room linen, dead-bodies, instruments	05

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**Books recommended (Latest editions)**

1. Paramar NS. **Health Education & community pharmacy.** New Delhi: CBS Publication
2. Kumar S. **Health Education & community pharmacy.** New Delhi: AITBS Publishers.
3. Yadav AV, Bhise S B. **Health Education and community pharmacy.** Pune: Nirli Prakashan