



CAYM Education Trusts

Siddhant College of Pharmacy

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1.2.1 - Excel link

**Number of programmes in which
choice Based Credit System (CBCS)/
elective course system has been
implemented.**



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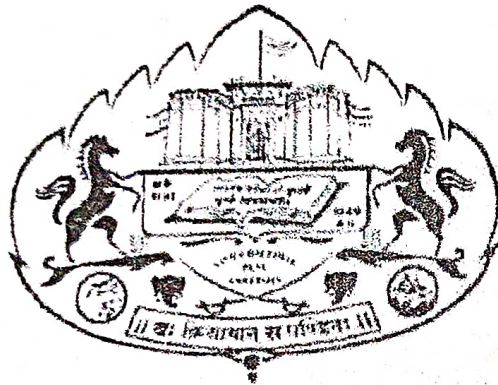
1.2.1 : Number of programmes in which choice Based Credit System (CBCS)/ elective course system has been implemented.

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SAVITRIBAI PHULE PUNE UNIVERSITY

FACULTY OF SCIENCE AND TECHNOLOGY



RULES & SYLLABUS

**FIRST YEAR BACHELOR OF PHARMACY (B. Pharm.) COURSE
(EFFECTIVE FROM ACADEMIC YEAR 2018-2019)**



Pharmacy Council of India
New Delhi

**Rules & Syllabus for the Bachelor
of Pharmacy (B. Pharm) Course**

[Framed under Regulation 6, 7 & 8 of the Bachelor of
Pharmacy (B. Pharm) course regulations 2014]

CHAPTER- I: REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Revised Regulations for the B. Pharm. Degree Program (CBCS) of the Pharmacy Council of India, New Delhi". They shall come into effect from the Academic Year 2016-17. The regulations framed are subject to modifications from time to time by Pharmacy Council of India.

2. Minimum qualification for admission

2.1 First year B. Pharm:

Candidate shall have passed 10+2 examination conducted by the respective state/central government authorities recognized as equivalent to 10+2 examination by the Association of Indian Universities (AIU) with English as one of the subjects and Physics, Chemistry, Mathematics (P.C.M) and or Biology (P.C.B / P.C.M.B.) as optional subjects individually. Any other qualification approved by the Pharmacy Council of India as equivalent to any of the above examinations.

2.2. B. Pharm lateral entry (to third semester):

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

3. Duration of the program

The course of study for B.Pharm shall extend over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The curricula and syllabi for the program shall be prescribed from time to time by Pharmacy Council of India, New Delhi.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semestershall consist of not less than 100 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from December/January to May/June in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

7.2. Minimum credit requirements

The minimum credit points required for award of a B. Pharm. degree is 208. These credits are divided into Theory courses, Tutorials, Practical, Practice School and Project over the duration of eight semesters. The credits are distributed semester-wise as shown in Table IX. Courses generally progress in sequences, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

The lateral entry students shall get 52 credit points transferred from their D. Pharm program. Such students shall take up additional remedial courses of 'Communication Skills' (Theory and Practical) and 'Computer Applications in Pharmacy' (Theory and Practical) equivalent to 3 and 4 credit points respectively, a total of 7 credit points to attain 59 credit points, the maximum of I and II semesters.

8. Academic work

A regular record of attendance both in Theory and Practical shall be maintained by the teaching staff of respective courses.

9. Course of study

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

Table-I: Course of study for semester I

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

[‡]Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB) course.

[§]Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM) course.

* Non University Examination (NUB)

Table-II: Course of study for semester II

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

*Non University Examination (NUE)

Table-III: Course of study for semester III

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------|---|--------------|----------|---------------|
| BP301T | Pharmaceutical Organic Chemistry II – Theory | 3 | 1 | 4 |
| BP302T | Physical Pharmaceutics I – Theory | 3 | 1 | 4 |
| BP303T | Pharmaceutical Microbiology – Theory | 3 | 1 | 4 |
| BP304T | Pharmaceutical Engineering – Theory | 3 | 1 | 4 |
| BP305P | Pharmaceutical Organic Chemistry II – Practical | 4 | - | 2 |
| BP306P | Physical Pharmaceutics I – Practical | 4 | - | 2 |
| BP307P | Pharmaceutical Microbiology – Practical | 4 | - | 2 |
| BP 308P | Pharmaceutical Engineering --Practical | 4 | - | 2 |
| Total | | 28 | 4 | 24 |

Table-IV: Course of study for semester IV

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------|--|--------------|----------|---------------|
| BP401T | Pharmaceutical Organic Chemistry III - Theory | 3 | 1 | 4 |
| BP402T | Medicinal Chemistry I - Theory | 3 | 1 | 4 |
| BP403T | Physical Pharmaceutics II - Theory | 3 | 1 | 4 |
| BP404T | Pharmacology I - Theory | 3 | 1 | 4 |
| BP405T | Pharmacognosy and Phytochemistry I - Theory | 3 | 1 | 4 |
| BP406P | Medicinal Chemistry I - Practical | 4 | - | 2 |
| BP407P | Physical Pharmaceutics II - Practical | 4 | - | 2 |
| BP408P | Pharmacology I - Practical | 4 | - | 2 |
| BP409P | Pharmacognosy and Phytochemistry I - Practical | 4 | - | 2 |
| Total | | 31 | 5 | 28 |

Table-V: Course of study for semester V

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------|---|--------------|----------|---------------|
| BP501T | Medicinal Chemistry II - Theory | 3 | 1 | 4 |
| BP502T | Industrial Pharmacy I - Theory | 3 | 1 | 4 |
| BP503T | Pharmacology II - Theory | 3 | 1 | 4 |
| BP504T | Pharmacognosy and Phytochemistry II - Theory | 3 | 1 | 4 |
| BP505T | Pharmaceutical Jurisprudence - Theory | 3 | 1 | 4 |
| BP506P | Industrial Pharmacy I - Practical | 4 | - | 2 |
| BP507P | Pharmacology II - Practical | 4 | - | 2 |
| BP508P | Pharmacognosy and Phytochemistry II - Practical | 4 | - | 2 |
| Total | | 27 | 5 | 26 |

Table-VI: Course of study for semester VI

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------------|--|---------------------|-----------------|----------------------|
| BP601T | Medicinal Chemistry III - Theory | 3 | 1 | 4 |
| BP602T | Pharmacology III - Theory | 3 | 1 | 4 |
| BP603T | Herbal Drug Technology - Theory | 3 | 1 | 4 |
| BP604T | Biopharmaceutics and Pharmacokinetics - Theory | 3 | 1 | 4 |
| BP605T | Pharmaceutical Biotechnology - Theory | 3 | 1 | 4 |
| BP606T | Quality Assurance - Theory | 3 | 1 | 4 |
| BP607P | Medicinal chemistry III - Practical | 4 | - | 2 |
| BP608P | Pharmacology III - Practical | 4 | - | 2 |
| BP609P | Herbal Drug Technology - Practical | 4 | - | 2 |
| Total | | 30 | 6 | 30 |

Table-VII: Course of study for semester VII

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------------|--|---------------------|-----------------|----------------------|
| BP701T | Instrumental Methods of Analysis - Theory | 3 | 1 | 4 |
| BP702T | Industrial PharmacyII - Theory | 3 | 1 | 4 |
| BP703T | Pharmacy Practice - Theory | 3 | 1 | 4 |
| BP704T | Novel Drug Delivery System - Theory | 3 | 1 | 4 |
| BP705P | Instrumental Methods of Analysis - Practical | 4 | - | 2 |
| BP706PS | Practice School* | 12 | - | 6 |
| Total | | 28 | 5 | 24 |

* Non University Examination (NUE)

Table-VIII: Course of study for semester VIII

| Course code | Name of the course | No. of hours | Tutorial | Credit points |
|--------------|--|--------------|-----------|---------------|
| BP801T | Biostatistics and Research Methodology | 3 | 1 | 4 |
| BP802T | Social and Preventive Pharmacy | 3 | 1 | 4 |
| BP803ET | Pharma Marketing Management | 3 + 3 = 6 | 1 + 1 = 2 | 4 + 4 = 8 |
| BP804ET | Pharmaceutical Regulatory Science | | | |
| BP805ET | Pharmacovigilance | | | |
| BP806ET | Quality Control and Standardization of Herbals | | | |
| BP807ET | Computer Aided Drug Design | | | |
| BP808ET | Cell and Molecular Biology | | | |
| BP809ET | Cosmetic Science | | | |
| BP810ET | Experimental Pharmacology | | | |
| BP811ET | Advanced Instrumentation Techniques | | | |
| BP812ET | Dietary Supplements and Nutraceuticals | | | |
| BP813PW | Project Work | 12 | - | 6 |
| Total | | 24 | 4 | 22 |

Table-IX: Semester wise credits distribution

| Semester | Credit Points |
|--|--|
| I | 27/29 [§] /30 [#] |
| II | 29 |
| III | 26 |
| IV | 28 |
| V | 26 |
| VI | 26 |
| VII | 24 |
| VIII | 22 |
| Extracurricular/ Co curricular activities | 01* |
| Total credit points for the program | 209/211[§]/212[#] |

* The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

§Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics course.

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology course.

10. Program Committee

1. The B. Pharm. program shall have a Program Committee constituted by the Head of the institution in consultation with all the Heads of the departments.

2. The composition of the Program Committee shall be as follows:

A senior teacher shall be the Chairperson; One Teacher from each department handling B.Pharm courses; and four student representatives of the program (one from each academic year), nominated by the Head of the institution.

3. Duties of the Program Committee:

- i. Periodically reviewing the progress of the classes.
- ii. Discussing the problems concerning curriculum, syllabus and the conduct of classes.
- iii. Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.
- iv. Communicating its recommendation to the Head of the institution on academic matters.
- v. The Program Committee shall meet at least thrice in a semester preferably at the end of each Sessionalexam (Internal Assessment) and before the end semester exam.

11. Examinations/Assessments

The scheme for internal assessment and end semester examinations is given in Table – X.

11.1. End semester examinations

The End Semester Examinations for each theory and practical coursethrough semesters I to VIII shall be conducted by the university except for the subjects with asterix symbol (*) in table I and II for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

Tables-X: Schemes for internal assessments and end semester examinations semester wise

Semester I

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|----------------------|--|---|--|---|--|---|--|---|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| | | | Marks | Duration | | | | |
| BP101T | Human Anatomy and Physiology I- Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP102T | Pharmaceutical Analysis I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP103T | Pharmaceutics I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP104T | Pharmaceutical Inorganic Chemistry – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP105T | Communication skills – Theory * | 5 | 10 | 1 Hr | 15 | 35 | 1.5 Hrs | 50 |
| BP106RBT BP106RMT | Remedial Biology/ Mathematics – Theory* | 5 | 10 | 1 Hr | 15 | 35 | 1.5 Hrs | 50 |
| BP107P | Human Anatomy and Physiology – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP108P | Pharmaceutical Analysis I – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP109P | Pharmaceutics I – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP110P | Pharmaceutical Inorganic Chemistry – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP111P | Communication skills – Practical* | 5 | 5 | 2 Hrs | 10 | 15 | 2 Hrs | 25 |
| BP112RBP | Remedial Biology – Practical* | 5 | 5 | 2 Hrs | 10 | 15 | 2 Hrs | 25 |
| Total | | 70/75[§]/80[#] | 115/125[§]/130[#] | 23/24[§]/26[#] Hrs | 185/200[§]/210[#] | 490/525[§]/ 540[#] | 31.5/33[§]/ 35[#] Hrs | 675/725[§]/ 750[#] |

[#]Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

[§]Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

* Non University Examination (NUE)

Semester II

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|--------------|--|---------------------|-----------------|---------------|------------|--------------------|---------------|-------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| | | | Marks | Duration | | | | |
| BP201T | Human Anatomy and Physiology II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP202T | Pharmaceutical Organic Chemistry I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP203T | Biochemistry – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP204T | Pathophysiology – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP205T | Computer Applications in Pharmacy – Theory* | 10 | 15 | 1 Hr | 25 | 50 | 2 Hrs | 75 |
| BP206T | Environmental sciences – Theory* | 10 | 15 | 1 Hr | 25 | 50 | 2 Hrs | 75 |
| BP207P | Human Anatomy and Physiology II – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP208P | Pharmaceutical Organic Chemistry I – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP209P | Biochemistry – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP210P | Computer Applications in Pharmacy – Practical* | 5 | 5 | 2 Hrs | 10 | 15 | 2 Hrs | 25 |
| Total | | 80 | 125 | 20 Hrs | 205 | 520 | 30 Hrs | 725 |

* The subject experts at college level shall conduct examinations

Semester III

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|--------------|---|---------------------|-----------------|-----------|------------|--------------------|--------------|-------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| | | | Marks | Duration | | | | |
| BP301T | Pharmaceutical Organic Chemistry II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP302T | PhysicalPharmaceuticsI –Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP303T | Pharmaceutical Microbiology – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP304T | Pharmaceutical Engineering – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP305P | Pharmaceutical Organic Chemistry II – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP306P | Physical Pharmaceutics I – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP307P | Pharmaceutical Microbiology – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP308P | Pharmaceutical Engineering – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| Total | | 60 | 100 | 20 | 160 | 440 | 28Hrs | 600 |

Semester IV

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|--------------|--|---------------------|-----------------|---------------|------------|--------------------|---------------|-------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| | | | Marks | Duration | | | | |
| BP401T | Pharmaceutical Organic Chemistry III- Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP402T | Medicinal Chemistry I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP403T | Physical Pharmaceutics II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP404T | Pharmacology I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP405T | Pharmacognosy I – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP406P | Medicinal Chemistry I – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP407P | Physical Pharmaceutics II – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP408P | Pharmacology I – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP409P | Pharmacognosy I – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| Total | | 70 | 115 | 21 Hrs | 185 | 515 | 31 Hrs | 700 |

Semester V

| Course code | Name of the course | Internal Assessment | | | End Semester Exams | | Total Marks | |
|--------------|---------------------------------------|---------------------|-----------------|--------------|--------------------|------------|---------------|------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | | Duration |
| | | | Marks | Duration | | | | |
| BP501T | Medicinal Chemistry II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP502T | Industrial PharmacyI – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP503T | Pharmacology II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP504T | Pharmacognosy II – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP505T | Pharmaceutical Jurisprudence – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP506P | Industrial PharmacyI – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP507P | Pharmacology II – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| BP508P | Pharmacognosy II – Practical | 5 | 10 | 4 Hr | 15 | 35 | 4 Hrs | 50 |
| Total | | 65 | 105 | 17 Hr | 170 | 480 | 27 Hrs | 650 |

(11)

Semester VII

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|--------------|--|---------------------|-----------------|-------------|------------|--------------------|---------------|-------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| | | | Marks | Duration | | | | |
| BP701T | Instrumental Methods of Analysis – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP702T | Industrial Pharmacy – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP703T | Pharmacy Practice – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP704T | Novel Drug Delivery System – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP705 P | Instrumental Methods of Analysis – Practical | 5 | 10 | 4 Hrs | 15 | 35 | 4 Hrs | 50 |
| BP706 PS | Practice School* | 25 | - | - | 25 | 125 | 5 Hrs | 150 |
| Total | | 70 | 70 | 8Hrs | 140 | 460 | 21 Hrs | 600 |

* The subject experts at college level shall conduct examinations

Semester VIII

| Course code | Name of the course | Internal Assessment | | | | End Semester Exams | | Total Marks |
|--------------|---|---------------------|-----------------|---------------|--------------|--------------------|---------------|-----------------|
| | | Continuous Mode | Sessional Exams | | Total | Marks | Duration | |
| Marks | Duration | | Marks | Duration | | | | |
| BP801T | Biostatistics and Research Methodology – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP802T | Social and Preventive Pharmacy – Theory | 10 | 15 | 1 Hr | 25 | 75 | 3 Hrs | 100 |
| BP803ET | Pharmaceutical Marketing – Theory | 10 + 10 = 20 | 15 + 15 = 30 | 1 + 1 = 2 Hrs | 25 + 25 = 50 | 75 + 75 = 150 | 3 + 3 = 6 Hrs | 100 + 100 = 200 |
| BP804ET | Pharmaceutical Regulatory Science – Theory | | | | | | | |
| BP805ET | Pharmacovigilance – Theory | | | | | | | |
| BP806ET | Quality Control and Standardization of Herbals – Theory | | | | | | | |
| BP807ET | Computer Aided Drug Design – Theory | | | | | | | |
| BP808ET | Cell and Molecular Biology – Theory | | | | | | | |
| BP809ET | Cosmetic Science – Theory | | | | | | | |
| BP810ET | Experimental Pharmacology – Theory | | | | | | | |
| BP811ET | Advanced Instrumentation Techniques – Theory | | | | | | | |
| BP812PW | Project Work | - | - | - | - | 150 | 4 Hrs | 150 |
| Total | | 40 | 60 | 4 Hrs | 100 | 450 | 16 Hrs | 550 |

11.2. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below.

Table-XI: Scheme for awarding internal assessment: Continuous mode

| Theory | | |
|---|---------------|----------|
| Criteria | Maximum Marks | |
| Attendance (Refer Table – XII) | 4 | 2 |
| Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar) | 3 | 1.5 |
| Student – Teacher interaction | 3 | 1.5 |
| Total | 10 | 5 |
| Practical | | |
| Attendance (Refer Table – XII) | 2 | |
| Based on Practical Records, Regular viva voce, etc. | 3 | |
| Total | 5 | |

Table- XII: Guidelines for the allotment of marks for attendance

| Percentage of Attendance | Theory | Practical |
|--------------------------|--------|-----------|
| 95 – 100 | 4 | 2 |
| 90 – 94 | 3 | 1.5 |
| 85 – 89 | 2 | 1 |
| 80 – 84 | 1 | 0.5 |
| Less than 80 | 0 | 0 |

11.2.1. Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical Sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment as per the requirements given in tables – X.

Sessional exam shall be conducted for 30 marks for theory and shall be computed for 15 marks. Similarly Sessional exam for practical shall be conducted for 40 marks and shall be computed for 10 marks.

Question paper pattern for theory Sessional examinations

For subjects having University examination

| | | |
|---------------------------------------|---|-------------|
| I. Multiple Choice Questions (MCQs) | = | 10 x 1 = 10 |
| OR | | OR |
| Objective Type Questions (5 x 2) | = | 05 x 2 = 10 |
| (Answer all the questions) | | |
| I. Long Answers (Answer 1 out of 2) | = | 1 x 10 = 10 |
| II. Short Answers (Answer 2 out of 3) | = | 2 x 5 = 10 |

Total = 30 marks

For subjects having Non University Examination

I. Long Answers (Answer 1 out of 2)

II. Short Answers (Answer 4 out of 6)

| | | |
|-------|---|-------------|
| | = | 1 x 10 = 10 |
| | = | 4 x 5 = 20 |
| Total | = | 30 marks |

Question paper pattern for practical sessional examinations

I. Synopsis

II. Experiments

III. Viva voce

| | | |
|-------|---|----------|
| | = | 10 |
| | = | 25 |
| | = | 05 |
| Total | = | 40 marks |

12. Promotion and award of grades

A student shall be declared PASS and eligible for getting grade in a course of B.Pharm. program if he/she secures at least 50% marks in that particular course including internal assessment. For example, to be declared as PASS and to get grade, the student has to secure a minimum of 50 marks for the total of 100 including continuous mode of assessment and end semester theory examination and has to secure a minimum of 25 marks for the total 50 including internal assessment and end semester practical examination.

13. Carry forward of marks

In case a student fails to secure the minimum 50% in any Theory or Practical course as specified in 12, 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.

14. 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 before the commencement of next end semester theory examinations.

15. Re-examination of end semester examinations

Reexamination of end semester examinations shall be conducted as per the schedule given in table XIII. The exact dates of examinations shall be notified from time to time.

Table-XIII: Tentative schedule of end semester examinations

| Semester | For Regular Candidates | For Failed Candidates |
|---------------------|------------------------|-----------------------|
| I, III, V and VII | November / December | May / June |
| II, IV, VI and VIII | May / June | November / December |

Question paper pattern for end semester theory examinations

For 75 marks paper

- I. Multiple Choice Questions(MCQs) = 20 x 1 = 20
OR
Objective Type Questions (10 x 2) = 10 x 2 = 20
(Answer all the questions)
- II. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
III. Short Answers (Answer 7 out of 9) = 7 x 5 = 35

Total = 75 marks

For 50 marks paper

- I. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
II. Short Answers (Answer 6 out of 8) = 6 x 5 = 30

Total = 50 marks

For 35 marks paper

- I. Long Answers (Answer 1 out of 2) = 1 x 10 = 10
II. Short Answers (Answer 5 out of 7) = 5 x 5 = 25

Total = 35 marks

Question paper pattern for end semester practical examinations

- I. Synopsis = 5
II. Experiments = 25
III. Viva voce = 5

Total = 35 marks

16. Academic Progression:

No student shall be admitted to any examination unless he/she fulfills the norms given in 6. Academic progression rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I, II and III semesters till the IV semester examinations. However, he/she shall not be eligible to attend the courses of V semester until all the courses of I and II semesters are successfully completed.

A student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of I, II, III and IV semesters are successfully completed.

A student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of I, II, III, IV, V and VI semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to VIII semesters within the stipulated time period as per the norms specified in 26.

A lateral entry student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of III and IV semesters are successfully completed.

A lateral entry student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of III, IV, V and VI semesters are successfully completed.

A lateral entry student shall be eligible to get his/her CGPA upon successful completion of the courses of III to VIII semesters within the stipulated time period as per the norms specified in 26.

Any student who has given more than 4 chances for successful completion of I / III semester courses and more than 3 chances for successful completion of II / IV semester courses shall be permitted to attend V / VII semester classes ONLY during the subsequent academic year as the case may be. In simpler terms there shall NOT be any ODD BATCH for any semester.

Note: Grade AB should be considered as failed and treated as one head for deciding academic progression. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

17. Grading of performances

17.1. Letter grades and grade points allocations:

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

Table – XII: Letter grades and grade points equivalent to Percentage of marks and performances

| Percentage of Marks Obtained | Letter Grade | Grade Point | Performance |
|------------------------------|--------------|-------------|-------------|
| 90.00 – 100 | O | 10 | Outstanding |
| 80.00 – 89.99 | A | 9 | Excellent |
| 70.00 – 79.99 | B | 8 | Good |
| 60.00 – 69.99 | C | 7 | Fair |
| 50.00 – 59.99 | D | 6 | Average |
| Less than 50 | F | 0 | Fail |
| Absent | AB | 0 | Fail |

A learner 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.

18. The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester. For example, if a student takes five courses (Theory/Practical) in a semester with credits C₁, C₂, C₃, C₄ and C₅ and the student's grade points in these courses are G₁, G₂, G₃, G₄ and G₅, respectively, and then student's SGPA is equal to:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4 + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and AB grade awarded in that semester. For example if a learner has a F or AB grade in course 4, the SGPA shall then be computed as:

$$\text{SGPA} = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 \text{ ZERO} + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

19. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the VIII semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all VIII semesters and their courses. The CGPA shall reflect the failed status in case of F grade(s), till the course(s) is/are passed. When the course(s) is/are passed by obtaining a pass grade on subsequent examination(s) the CGPA shall only reflect the new grade and not the fail grades earned earlier. The CGPA is calculated as:

$$\text{CGPA} = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4 + C_5S_5 + C_6S_6 + C_7S_7 + C_8S_8}{C_1 + C_2 + C_3 + C_4 + C_5 + C_6 + C_7 + C_8}$$

where C_1, C_2, C_3, \dots is the total number of credits for semester I, II, III, ..., and S_1, S_2, S_3, \dots is the SGPA of semester I, II, III, ...

20. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

| | |
|------------------------------|--------------------------|
| First Class with Distinction | = CGPA of 7.50 and above |
| First Class | = CGPA of 6.00 to 7.49 |
| Second Class | = CGPA of 5.00 to 5.99 |

21. Project work

All the students shall undertake a project under the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed by the University shall evaluate the project at the time of the Practical examinations of other semester(s). Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book:

| | |
|-------------------------------|----------|
| Objective(s) of the work done | 15 Marks |
| Methodology adopted | 20 Marks |
| Results and Discussions | 20 Marks |
| Conclusions and Outcomes | 20 Marks |

Total 75 Marks

Evaluation of Presentation:

| | |
|----------------------------|----------|
| Presentation of work | 25 Marks |
| Communication skills | 20 Marks |
| Question and answer skills | 30 Marks |

Total 75 Marks

Explanation: The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.

22. Industrial training (Desirable)

Every candidate shall be required to work for at least 150 hours spread over four weeks in a Pharmaceutical Industry/Hospital. It includes Production unit, Quality Control department, Quality Assurance department, Analytical laboratory, Chemical manufacturing unit, Pharmaceutical R&D, Hospital (Clinical Pharmacy), Clinical Research Organization, Community Pharmacy, etc. After the Semester – VI and before the commencement of Semester – VII, and shall submit satisfactory report of such work and certificate duly signed by the authority of training organization to the head of the institute.

23. Practice School

In the VII semester, every candidate shall undergo practice school for a period of 150 hours evenly distributed throughout the semester. The student shall opt any one of the domains for practice school declared by the program committee from time to time.

At the end of the practice school, every student shall submit a printed report (in triplicate) on the practice school he/she attended (not more than 25 pages). Along with the exams of semester VII, the report submitted by the student, knowledge and skills acquired by the student through practice school shall be evaluated by the subject experts at college level and grade point shall be awarded.

24. Award of Ranks

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more courses during the B.Pharm program shall not be eligible for award of ranks. Moreover, the candidates should have completed the B. Pharm program in minimum prescribed number of years, (four years) for the award of Ranks.

25. Award of degree

Candidates who fulfill the requirements mentioned above shall be eligible for award of degree during the ensuing convocation.

26. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

27. Re-admission after break of study

Candidate who seeks re-admission to the program after break of study has to get the approval from the university by paying a condonation fee.
No condonation is allowed for the candidate who has more than 2 years of break up period and he/she has to rejoin the program by paying the required fees.

UNIT III

07 Hours

Excretory products and their elimination

- Modes of excretion
- Human excretory system- structure and function
- Urine formation
- Rennin angiotensin system

Neural control and coordination

- Definition and classification of nervous system
- Structure of a neuron
- Generation and conduction of nerve impulses
- Structure of brain and spinal cord
- Functions of cerebrum, cerebellum, hypothalamus and medulla oblongata

Chemical coordination and regulation

- Endocrine glands and their secretions
- Functions of hormones secreted by endocrine glands

Human reproduction

- Parts of female reproductive system
- Parts of male reproductive system
- Spermatogenesis and Oogenesis
- Menstrual cycle

UNIT IV

05 Hours

Plants and mineral nutrition:

- Essential mineral, macro and microconstituents
- Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation

Photosynthesis

- Autotrophic nutrition, photosynthesis, Photorespiration, Factors affecting photosynthesis.

UNIT V

04 Hours

Plant respiration: Respiration, Glycolysis, fermentation (anaerobic)

Plant growth and development

- Phases and rate of plant growth, Condition of growth, Auxin function as plant growth regulators

Cell- The unit of life

- Structure and functions of cell and cell organelles Cell division

Tissues

- Definition, types of tissues, location and functions.

Text Books

- a. Text book of Biology by S. B. Gokhale
- b. A Text book of Biology by Dr. Thulajappa and Dr. Sectaram.

Reference Books

- a. A Text book of Biology by B.V. Sreenivasa Naidu
- b. A Text book of Biology by Naidu and Murthy
- c. Botany for Degree students By A.C.Dutta.
- d. Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan.
- e. A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate

BP112RBP.REMEDIAL BIOLOGY (Practical)

30 Hours

1. Introduction to experiments in biology
 - a) Study of Microscope
 - b) Section cutting techniques
 - c) Mounting and staining
 - d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root
Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

Reference Books

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C K Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi

BP 106RMT.REMEDIAL MATHEMATICS (Theory)

30 Hours

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.

Objectives: Upon completion of the course the student shall be able to:-

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

Course Content:

UNIT – I

06 Hours

- **Partial fraction**

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction, Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics

- **Logarithms**

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

- **Function:**

Real Valued function, Classification of real valued functions,

- **Limits and continuity :**

Introduction, Limit of a function, Definition of limit of a function ($\epsilon - \delta$

definition), $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = na^{n-1}$, $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$,

UNIT –II

06 Hours

- **Matrices and Determinant:**

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants, Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix, Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley-Hamilton theorem, Application of Matrices in solving Pharmacokinetic equations

BP803ET. PHARMA MARKETING MANAGEMENT (Theory)

45 Hours

Scope:

The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Product management.

Course Objective: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

Unit I

10 Hours

Marketing:

Definition, general concepts and scope of marketing; Distinction between marketing & selling; Marketing environment; Industry and competitive analysis; Analyzing consumer buying behavior; industrial buying behavior.

Pharmaceutical market:

Quantitative and qualitative aspects; size and composition of the market; demographic descriptions and socio-psychological characteristics of the consumer; market segmentation & targeting. Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist. Analyzing the Market; Role of market research.

Unit II

10 Hours

Product decision:

Classification, product line and product mix decisions, product life cycle, product portfolio analysis; product positioning; New product decisions; Product branding, packaging and labeling decisions, Product management in pharmaceutical industry.

Unit III

10 Hours

Promotion:

Methods, determinants of promotional mix, promotional budget; An overview of personal selling, advertising, direct mail, journals, sampling, retailing, medical exhibition, public relations, online promotional techniques for OTC Products.

Unit IV

10 Hours

Pharmaceutical marketing channels:

Designing channel, channel members, selecting the appropriate channel, conflict in channels, physical distribution management: Strategic importance, tasks in physical distribution management.

Professional sales representative (PSR):

Duties of PSR, purpose of detailing, selection and training, supervising, norms for customer calls, motivating, evaluating, compensation and future prospects of the PSR.

Unit V

10 Hours

Pricing:

Meaning, importance, objectives, determinants of price; pricing methods and strategies, issues in price management in pharmaceutical industry. An overview of DPCO (Drug Price Control Order) and NPPA (National Pharmaceutical Pricing Authority).

Emerging concepts in marketing:

Vertical & Horizontal Marketing; Rural Marketing; Consumerism; Industrial Marketing; Global Marketing.

Recommended Books: (Latest Editions)

1. Philip Kotler and Kevin Lane Keller: Marketing Management, Prentice Hall of India, New Delhi
2. Walker, Boyd and Larreche : Marketing Strategy- Planning and Implementation, Tata MC GrawHill, New Delhi.
3. Dhruv Grewal and Michael Levy: Marketing, Tata MC Graw Hill
4. Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing, India
5. Rajan Saxena: Marketing Management; Tata MC Graw-Hill (India Edition)
6. Ramaswamy, U.S & Nanakamari, S: Marketing Managemnt:Global Perspective, IndianContext,Macmilan India, New Delhi.
7. Shanker, Ravi: Service Marketing, Excell Books, New Delhi
8. Subba Rao Changanti, Pharmaceutical Marketing in India (GIFT – Excel series) Excel Publications.

BP 805T: PHARMACOVIGILANCE (Theory)

45 hours

Scope: This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions.

Objectives:

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

1. Why drug safety monitoring is important?
2. History and development of pharmacovigilance
3. National and international scenario of pharmacovigilance
4. Dictionaries, coding and terminologies used in pharmacovigilance
5. Detection of new adverse drug reactions and their assessment
6. International standards for classification of diseases and drugs
7. Adverse drug reaction reporting systems and communication in pharmacovigilance
8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
9. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation
10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
12. CIOMS requirements for ADR reporting
13. Writing case narratives of adverse events and their quality.

Course Content

Unit I

10 Hours

Introduction to Pharmacovigilance

- History and development of Pharmacovigilance
- Importance of safety monitoring of Medicine
- WHO international drug monitoring programme
- Pharmacovigilance Program of India(PvPI)

Introduction to adverse drug reactions

- Definitions and classification of ADRs
- Detection and reporting
- Methods in Causality assessment
- Severity and seriousness assessment
- Predictability and preventability assessment
- Management of adverse drug reactions

Basic terminologies used in pharmacovigilance

- Terminologies of adverse medication related events
- Regulatory terminologies

Unit II

10 hours

Drug and disease classification

- Anatomical, therapeutic and chemical classification of drugs
- International classification of diseases
- Daily defined doses
- International Non proprietary Names for drugs

Drug dictionaries and coding in pharmacovigilance

- WHO adverse reaction terminologies
- MedDRA and Standardised MedDRA queries
- WHO drug dictionary
- Eudravigilance medicinal product dictionary

Information resources in pharmacovigilance

- Basic drug information resources
- Specialised resources for ADRs

Establishing pharmacovigilance programme

- Establishing in a hospital
- Establishment & operation of drug safety department in industry
- Contract Research Organisations (CROs)
- Establishing a national programme

Unit III

10 Hours

Vaccine safety surveillance

- Vaccine Pharmacovigilance
- Vaccination failure
- Adverse events following immunization

Pharmacovigilance methods

- Passive surveillance – Spontaneous reports and case series
- Stimulated reporting
- Active surveillance – Sentinel sites, drug event monitoring and registries
- Comparative observational studies – Cross sectional study, case control study and cohort study
- Targeted clinical investigations

Communication in pharmacovigilance

- Effective communication in Pharmacovigilance
- Communication in Drug Safety Crisis management
- Communicating with Regulatory Agencies, Business Partners, Healthcare facilities & Media

Unit IV

8 Hours

Safety data generation

- Pre clinical phase
- Clinical phase
- Post approval phase (PMS)

ICH Guidelines for Pharmacovigilance

- Organization and objectives of ICH
- Expedited reporting
- Individual case safety reports
- Periodic safety update reports
- Post approval expedited reporting
- Pharmacovigilance planning
- Good clinical practice in pharmacovigilance studies

Unit V

7 hours

Pharmacogenomics of adverse drug reactions

- Genetics related ADR with example focusing PK parameters.

Drug safety evaluation in special population

- Paediatrics
- Pregnancy and lactation
- Geriatrics

CIOMS

- CIOMS Working Groups
- CIOMS Form

CDSCO (India) and Pharmacovigilance

- D&C Act and Schedule Y
- Differences in Indian and global pharmacovigilance requirements

Recommended Books (Latest edition):

1. Textbook of Pharmacovigilance: S K Gupta, Jaypee Brothers, Medical Publishers.
2. Practical Drug Safety from A to Z By Barton Cobert, Pierre Biron, Jones and Bartlett Publishers.
3. Mann's Pharmacovigilance: Elizabeth B. Andrews, Nicholas, Wiley Publishers.
4. Stephens' Detection of New Adverse Drug Reactions: John Talbot, Patrick Walle, Wiley Publishers.
5. An Introduction to Pharmacovigilance: Patrick Waller, Wiley Publishers.
6. Cobert's Manual of Drug Safety and Pharmacovigilance: Barton Cobert, Jones & Bartlett Publishers.
7. Textbook of Pharmacoepidemiology edited by Brian L. Strom, Stephen E Kimmel, Sean Hennessy, Wiley Publishers.
8. A Textbook of Clinical Pharmacy Practice -Essential Concepts and Skills: G. Parthasarathi, Karin Nyfort Hansen, Milap C. Nahata
9. National Formulary of India
10. Text Book of Medicine by Yashpal Munjal

BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS
(Theory)

Scope: In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLP in traditional system of medicines.

Objectives: Upon completion of the subject student shall be able to;

1. know WHO guidelines for quality control of herbal drugs
2. know Quality assurance in herbal drug industry
3. know the regulatory approval process and their registration in Indian and international markets
4. appreciate EU and ICH guidelines for quality control of herbal drugs

10 hours

Unit I

Basic tests for drugs – Pharmaceutical substances, Medicinal plants materials and dosage forms

WHO guidelines for quality control of herbal drugs.

Evaluation of commercial crude drugs intended for use

10 hours

Unit II

Quality assurance in herbal drug industry of cGMP, GAP, GMP and GLP in traditional system of medicine.

WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines
WHO Guidelines on GACP for Medicinal Plants.

10 hours

Unit III

EU and ICH guidelines for quality control of herbal drugs.

Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines

Unit IV

08 hours

Stability testing of herbal medicines. Application of various chromatographic techniques in standardization of herbal products.

Preparation of documents for new drug application and export registration

GMP requirements and Drugs & Cosmetics Act provisions.

Unit V

07 hours

Regulatory requirements for herbal medicines.

WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems

Comparison of various Herbal Pharmacopocias.

Role of chemical and biological markers in standardization of herbal products

Recommended Books: (Latest Editions)

1. Pharmacognosy by Trease and Evans
2. Pharmacognosy by Kokate, Purohit and Gokhale
3. Rangari, V.D., Text book of Pharmacognosy and Phytochemistry Vol. I , Carrier Pub., 2006.
4. Aggrawal, S.S., Herbal Drug Technology. Universities Press, 2002.
5. EMEA. Guidelines on Quality of Herbal Medicinal Products/Traditional Medicinal Products,
6. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.
7. Shinde M.V., Dhalwal K., Potdar K., Mahadik K. Application of quality control principles to herbal drugs. International Journal of Phytomedicine 1(2009); p. 4-8.
8. WHO. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998. WHO. Guidelines for the Appropriate Use of Herbal Medicines. WHO Regional Publications, Western Pacific Series No 3, WHO Regional office for the Western Pacific, Manila, 1998.
9. WHO. The International Pharmacopeia, Vol. 2: Quality Specifications, 3rd edn. World Health Organization, Geneva, 1981.
10. WHO. Quality Control Methods for Medicinal Plant Materials. World Health Organization, Geneva, 1999.
11. WHO. WHO Global Atlas of Traditional, Complementary and Alternative Medicine. 2 vol. set. Vol. 1 contains text and Vol. 2, maps. World Health Organization, Geneva, 2005.
12. WHO. Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants. World Health Organization, Geneva, 2004.

RESET: CELL AND MOLECULAR BIOLOGY (Elective subject)

45 Hours

Scope:

- Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function.
- This is done both on a microscopic and molecular level.
- Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organisms such as humans, plants, and sponges.

Objectives: Upon completion of the subject student shall be able to;

- Summarize cell and molecular biology history.
- Summarize cellular functioning and composition.
- Describe the chemical foundations of cell biology.
- Summarize the DNA properties of cell biology.
- Describe protein structure and function.
- Describe cellular membrane structure and function.
- Describe basic molecular genetic mechanisms.
- Summarize the Cell Cycle

Course content:

Unit I

10Hours

- a) Cell and Molecular Biology: Definitions theory and basics and Applications.
- b) Cell and Molecular Biology: History and Summation.
- c) Properties of cells and cell membrane.
- d) Prokaryotic versus Eukaryotic
- e) Cellular Reproduction
- f) Chemical Foundations -- an Introduction and Reactions (Types)

Unit II

10 Hours

- a) DNA and the Flow of Molecular Information
- b) DNA Functioning
- c) DNA and RNA
- d) Types of RNA
- e) Transcription and Translation

Unit III

10 Hours

- a) Proteins: Defined and Amino Acids
- b) Protein Structure

- c) Regularities in Protein Pathways
- d) Cellular Processes
- e) Positive Control and significance of Protein Synthesis

Unit IV

08 Hours

- a) Science of Genetics
- b) Transgenics and Genomic Analysis
- c) Cell Cycle analysis
- d) Mitosis and Meiosis
- e) Cellular Activities and Checkpoints

Unit V

07 Hours

- a) Cell Signals: Introduction
- b) Receptors for Cell Signals
- c) Signaling Pathways: Overview
- d) Misregulation of Signaling Pathways
- e) Protein-Kinases: Functioning

Recommended Books (latest edition):

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Pepler: Microbial Technology.
9. Edward: Fundamentals of Microbiology.
10. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
11. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
12. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of Recombinant DNA: ASM Press Washington D.C.
13. RA Goldshy et. al., : Kuby Immunology.

BP809ET. COSMETIC SCIENCE(Theory)

45Hours

UNIT I

10Hours

Classification of cosmetic and cosmeceutical products

Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

Skin: Basic structure and function of skin.

Hair: Basic structure of hair. Hair growth cycle.

Oral Cavity: Common problem associated with teeth and gums.

UNIT II

10 Hours

Principles of formulation and building blocks of skin care products:

Face wash,

Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages. Application of these products in formulation of cosmeceuticals.

Antiperspirants & deodorants- Actives & mechanism of action.

Principles of formulation and building blocks of Hair care products:

Conditioning shampoo, Hair conditioner, anti-dandruff shampoo.

Hair oils.

Chemistry and formulation of Para-phenylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.

UNIT III

10 Hours

Sun protection, Classification of Sunscreens and SPF.

Role of herbs in cosmetics:

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

Analytical cosmetics: BIS specification and analytical methods for shampoo, skin-cream and toothpaste.

UNIT IV

08 Hours.

Principles of Cosmetic Evaluation: Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties

Soaps, and syndet bars. Evolution and skin benefits.

UNIT V

07 Hours

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis.

Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes

Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

References

- 1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
- 2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
- 3) Text book of cosmeticology by Sanju Nanda & Roop K. Khar, Tata Publishers.



CAYMET's

Siddhant College of pharmacy

Sudumbre, Pune

Dr. Swati Vinod Jogdand

(Elective Subject Selection Report 2022-23)

Date: 15/01/2023

Members of Committee:

Dr. Swati Vinod Jogdand

Signatures:

Prepared by

(Dr. Swati Jogdand)

Checked by

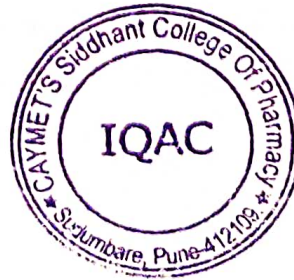
(Dr. Swati Deshmukh)

IQAC coordinator

(Dr. Swati Deshmukh)

Principal

(Dr. Rahul Dumbre)



Excel sheet was generated after filling of Google form by all final students and subjects were offered to them. Four teachers were assigned for all subjects and timetable was prepared for the same.

Link for Elective Subject Selection Form 2022-23

<https://forms.gle/Bh8zShvodftmsdEQ6>

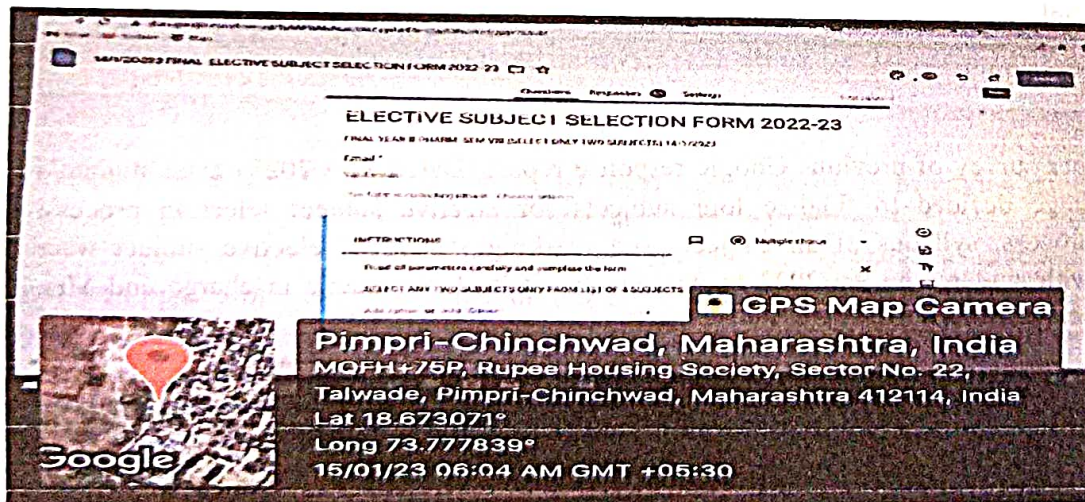
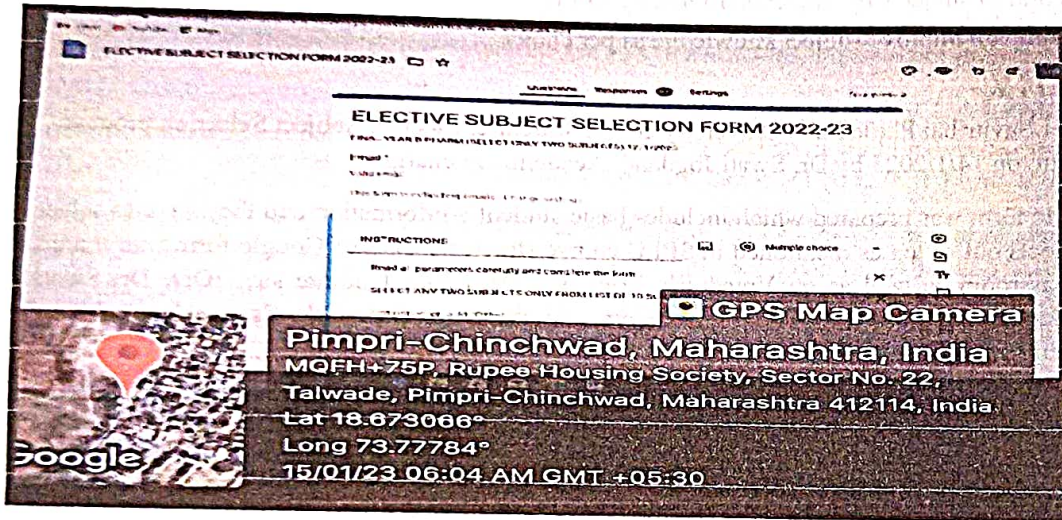
Response link

<https://docs.google.com/forms/d/1pFWPAAfyA6xCbXULppTikT8e-Oauf0hwPosJQvqY78/edit#responses>

OUTCOMES:

1. Elective subject selection process conducted smoothly.
2. Students selected subjects as per their choice to improve knowledge.

PHOTOS



Jogdand
Academic in charge
Dr. Swati Jogdand



CAYM Education Trusts

Siddhant College of Pharmacy

A/P Sudumbare, Talegaon - Chaka Road, Tal: Maval, Dist: Pune -412109
Phone: 02114-661947, Email: siddhantcollegeofpharmacy@yahoo.in, Website: www.siddhantcop.in

ELECTIVE SUBJECT SELECTION REPORT:-2022-23

DATE: 15/01/2023

OBJECTIVES:

1. Introduction of elective subjects to Final year B Pharmacy Students
2. Selection of subjects by Students offered by SPPU.
3. Students can improve subject knowledge as per choice.

MAIN REPORT:

As per Savitribai Phule Pune University course structure, Elective Subject Selection process was carried out on 12/1/2023 by Dr. Swati Jogdand, Academic in charge.

Google form was prepared which includes basic student's information and they have to select only two subjects out of ten as mentioned in SPPU course structure. Following are subjects given By SPPU:

1. Pharma marketing management
2. Pharmaceutical Regulatory Sciences
3. Pharmacovigilance
4. Quality control and standardization of Herbals
5. Computer Aided Drug Design
6. Cell and Molecular Biology
7. Cosmetic Sciences
8. Experimental Pharmacology
9. Advanced in Instrumental Techniques
10. Dietary Supplements and Nutraceuticals

Link of Google form was shared on Google classroom as well as on Vmedulife, wts app group. Principal, Dr. Rahul Dumbre sir, HOD, Dr. Swati Deshmukh Madam and Mrs. Swati Jogdand,



Academic in charge guided student's to select subjects and its requirements after completion of Pharmacy course.

Excel sheet was generated after filling of Google form by all final students and subjects were offered to them.

Link for Elective Subject Selection Form 2022-23

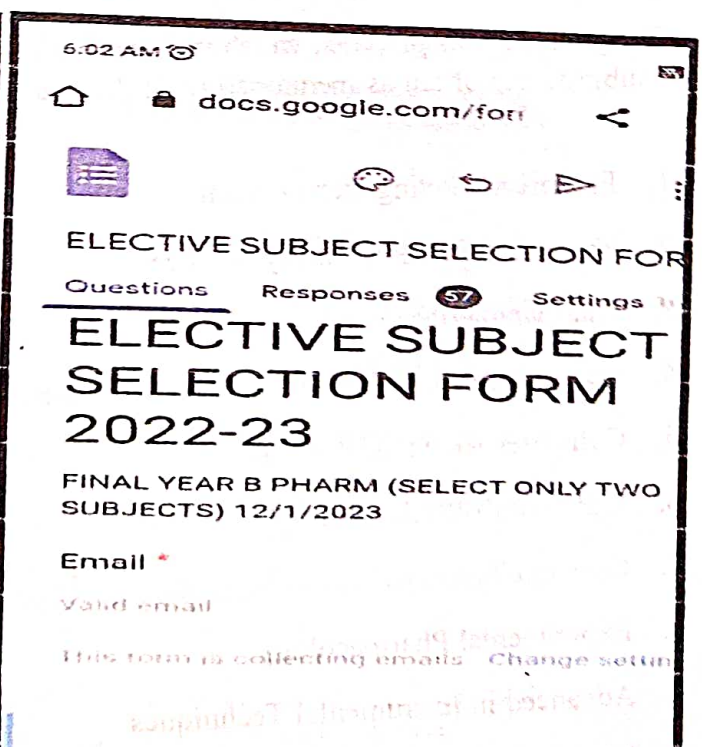
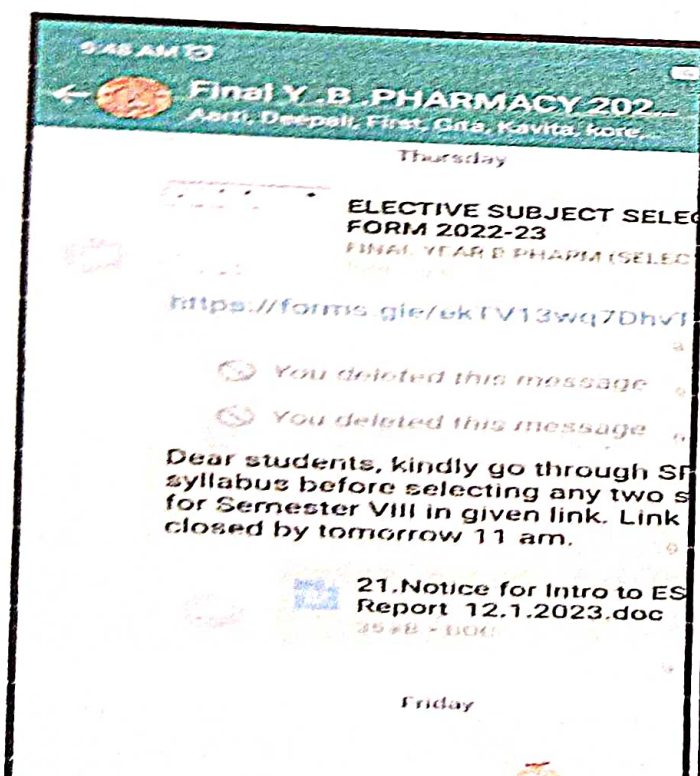
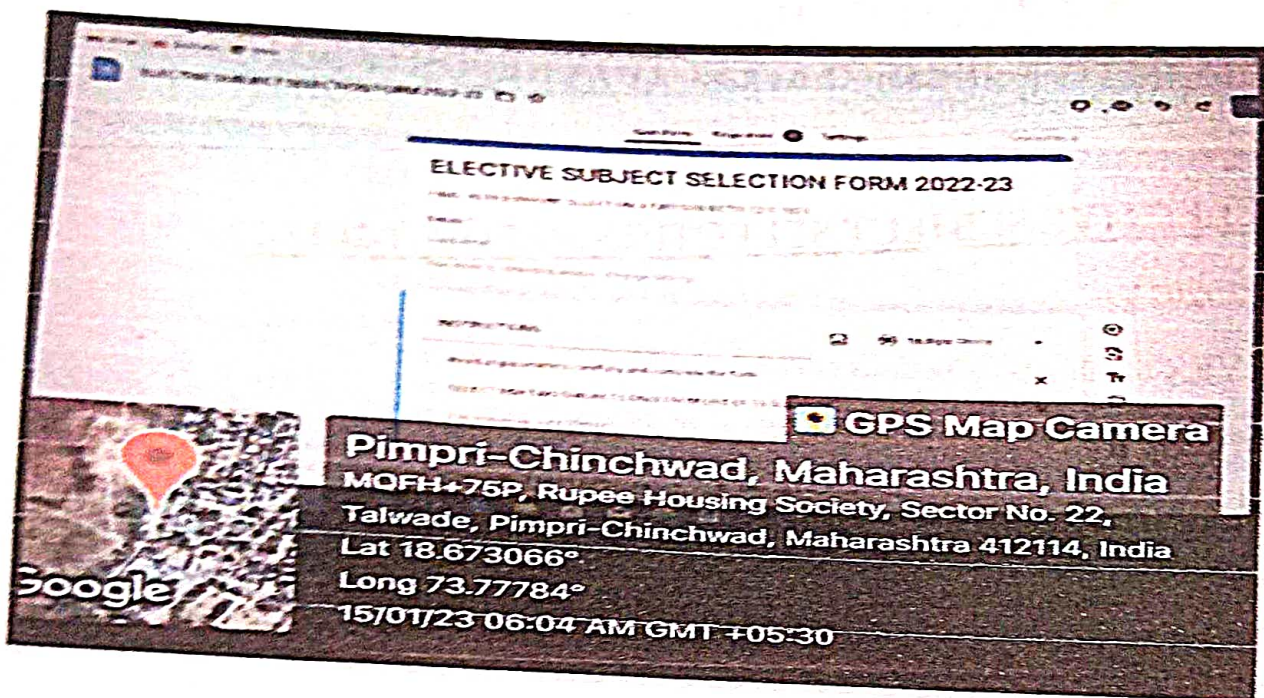
<https://forms.gle/ekTV13wq7DhvT3z56>

Response link

<https://docs.google.com/forms/d/1VUC-eJ2201RvhUHbd4sLcWWFG-r0QGsQjwXchVleN66u4/edit>

No of participants: 57

PHOTOS



14/1/2023

As per survey of previous Google response report (Dated 12/1/2023) from student's choice, college decided to finalize four subjects for elective subject selection process. Selection process, syllabus of all subjects and marking system of elective subject were discussed with students on 14/1/2023 by Dr. Swati Jogdand, Academic in charge and Mrs. Vanita Gade, Exam Department.

Following four subjects are again given to students to elect final two:

| Sr. no. | Subject name | Total number of students |
|---------|-----------------------------|--------------------------|
| 1 | Pharma marketing management | 16 |
| 2 | Pharmacovigilance | 43 |
| 3 | Pharma Regulatory Science | 12 |
| 4 | Cosmetic Sciences | 57 |

Excel sheet was generated after filling of Google form by all final students and most selected two subjects were offered to them. Two teachers were assigned for Cosmetic science and Pharmacovigilance and mentioned in timetable.

No of participants: 64

Link for Elective Subject Selection Form 2022-23

<https://forms.gle/Bh8zSbvodftmsdEQ6>

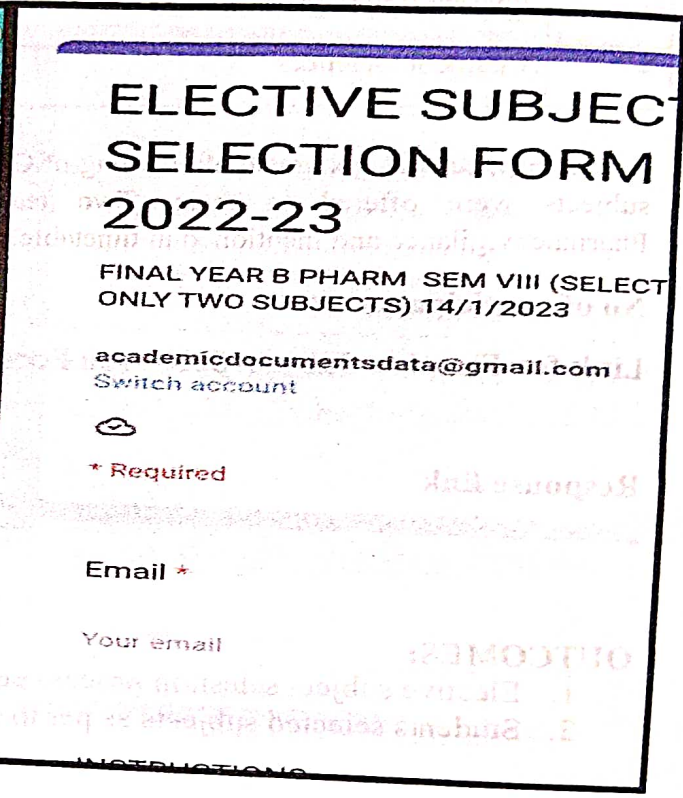
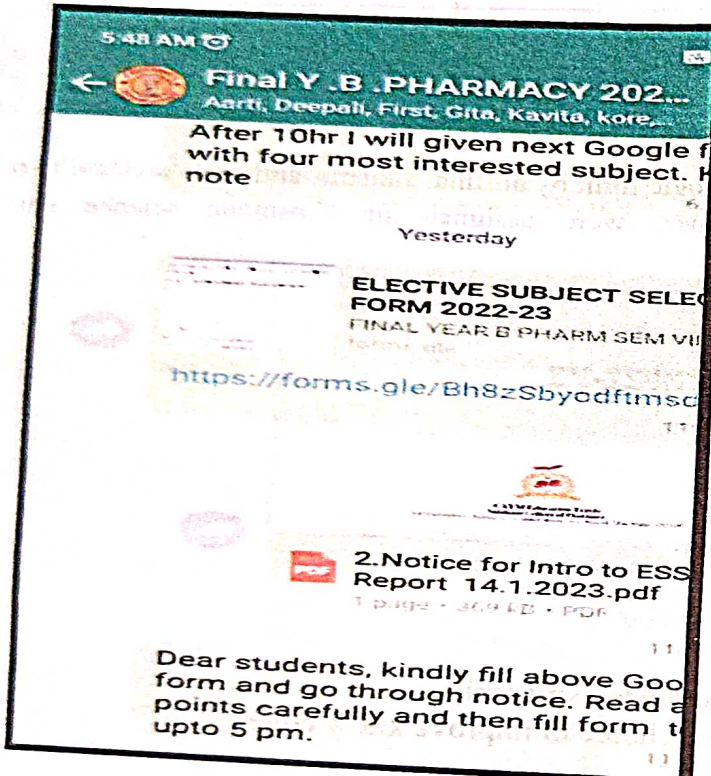
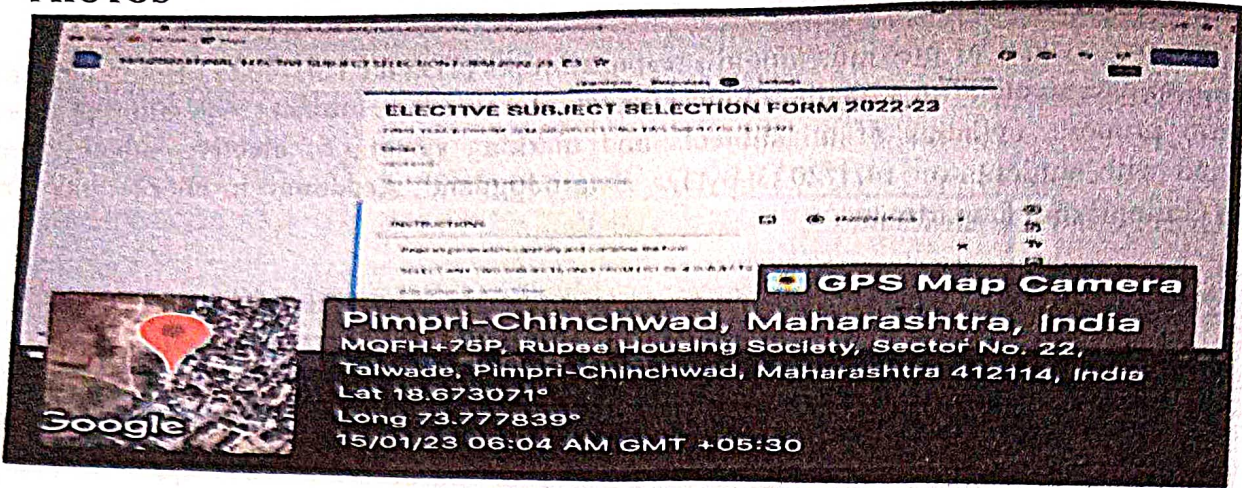
Response link

<https://docs.google.com/forms/d/1pfWPAAfYA6xCbXULppTikT8e-Oauf0fhwPosJQvgY78/edit#responses>

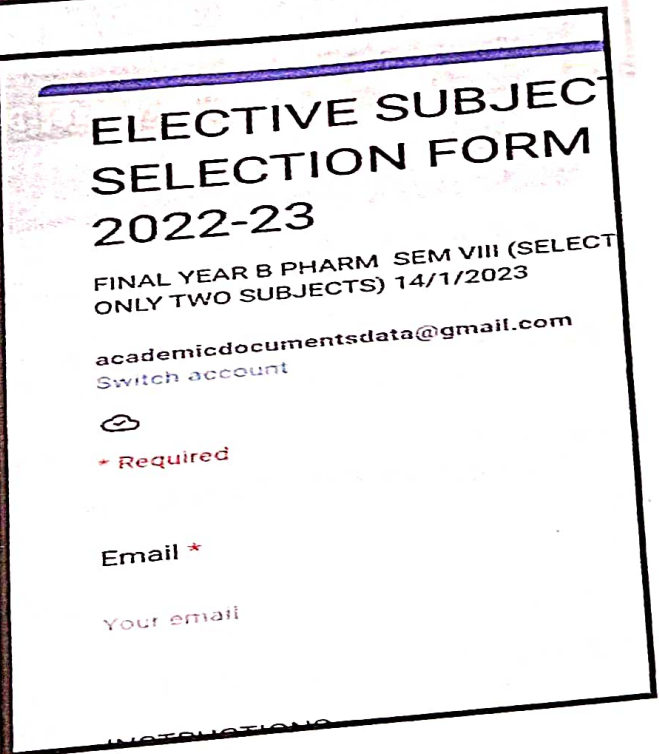
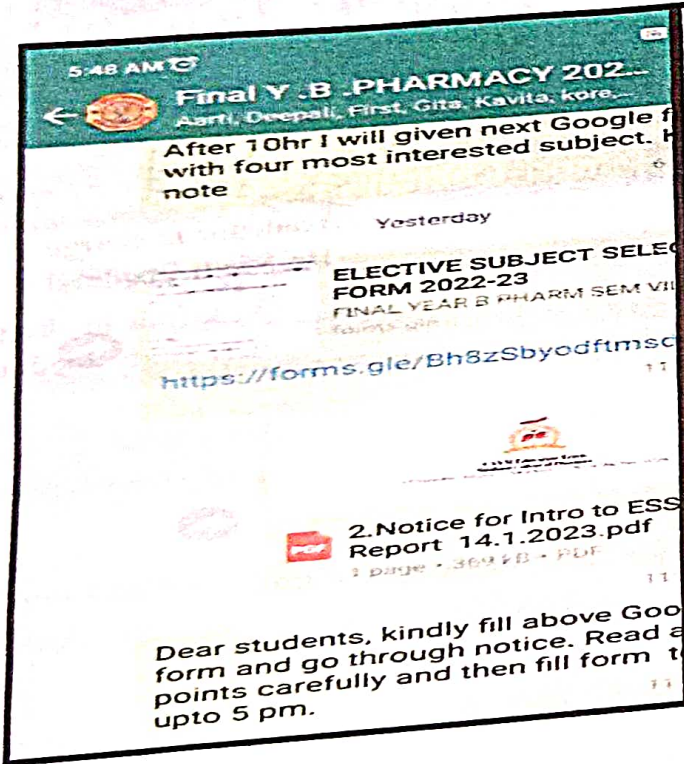
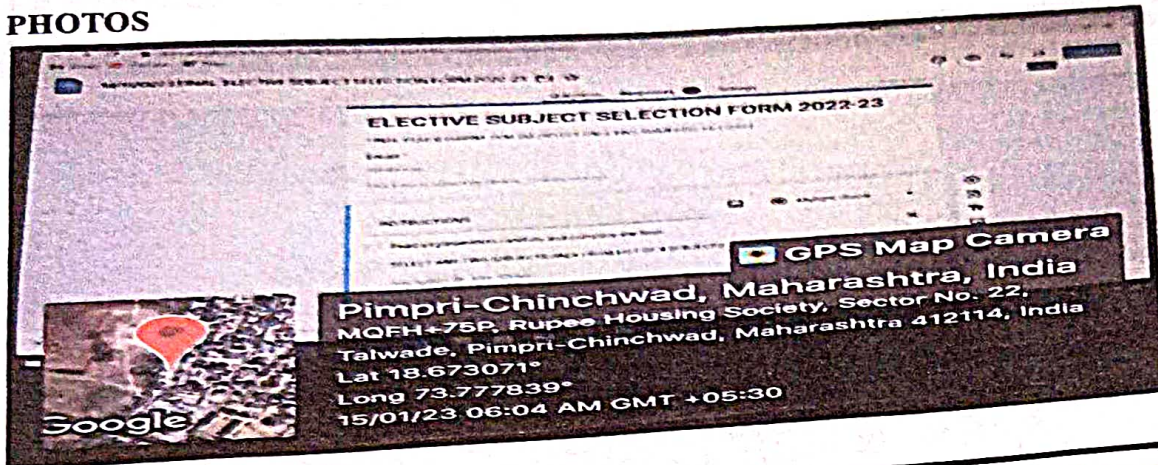
OUTCOMES:

1. Elective subject selection process conducted smoothly.
2. Students selected subjects as per their choice to improve knowledge.

PHOTOS



PHOTOS



Notices

| Sr No. | Notice Title | Category | Departments | Assigned |
|--------|--------------------------------|-----------|-------------|----------|
| 1 | For admission of students... | ACADEMICS | B Pharmacy | 24/7 |
| 2 | First Year B.Pharm starting... | ACADEMICS | B Pharmacy | 24/7 |
| 3 | B.Pharm and post graduate... | ACADEMICS | B Pharmacy | 24/7 |
| 4 | Technical subject selection... | ACADEMICS | B Pharmacy | 24/7 |
| 5 | Final year... | ACADEMICS | B Pharmacy | 24/7 |
| 6 | Pharmaceutical industry... | ACADEMICS | B Pharmacy | 24/7 |
| 7 | Pharmaceutical industry... | ACADEMICS | B Pharmacy | 24/7 |
| 8 | Pharmaceutical industry... | ACADEMICS | B Pharmacy | 24/7 |
| 9 | Pharmaceutical industry... | ACADEMICS | B Pharmacy | 24/7 |
| 10 | Pharmaceutical industry... | ACADEMICS | B Pharmacy | 24/7 |



GPS Ma
Pimpri-Chinchwad, Maharashtra
MQFH+75P, Rupee Housing Society, Sector
Talwade, Pimpri-Chinchwad, Maharashtra 4

Swati Jogdand
Academic in charge
Dr. Swati Jogdand





CAYM Education Trusts
Siddhant College of Pharmacy
A/T Sudumbare, Talegaon – Chakan Road, Tal: Maval, Dist: Pune -412109

Ref: SCOP/Academics/2022-23

Date:14/1/2023

Students Notice

All the Final Year B Pharm students are hereby informed that "Elective Subject Selection Form " has been shared on Google classroom **14th Jan , 2023**.

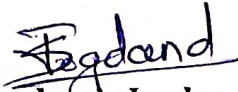
As per SPPU, It is compulsory to fill the given link for **Sem VIII subject selection process and select any two subjects only** out of **four** subjects allotted by SPPU.

Kindly go through SPPU syllabus before selecting subject. This is final elective subject selection process.

Link for Elective Subject Selection Form 2022-23

<https://forms.gle/Bh8zSbyodftmsdEQ6>




Academic In charge
Dr. Swati Jogdand



CAYM Education Trusts
Siddhant College of Pharmacy
A/P Sudumbare, Talegaon - Chakan Road, Tal: Maval, Dist: Pune -412109

Ref: SCOP/Academics/2022-23

Date:12/1/2023

Students Notice

All the Final Year B Pharm students are hereby informed that "Elective Subject Selection Form " has been shared on Google classroom **12th Jan , 2023**.

As per SPPU, It is compulsory to fill the given link for **Sem VIII** subject selection process and **select any two subjects only** out of ten subjects allotted by SPPU.

Kindly go through SPPU syllabus before selecting subject. We will list out best 4 out 10 subjects.

Link for Elective Subject Selection Form 2022-23

<https://forms.gle/ekTV13wq7DhvT3z56>



Swati Jogdand
Academic In charge
Dr. Swati Jogdand

ELECTIVE SUBJECT SELECTION FORM 2022-23

FINAL YEAR B PHARM (SELECT ONLY TWO SUBJECTS) 12/1/2023

* Required

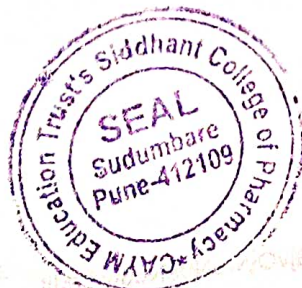
1. INSTRUCTIONS

Mark only one oval.

- Read all parameters carefully and complete the form
- SELECT ANY TWO SUBJECTS ONLY FROM LIST OF 10 SUBJECTS

2. Name of student *

3. Roll no *



4. Student have to elect any two subjects only from given list of subjects *

Check all that apply.

- Pharma marketing management
- Pharmaceutical regulatory science
- Pharmacovigilance
- Quality control and Standardization of Herbals
- Computer aided drug design
- Cell and Molecular biology
- Cosmetic sciences
- Experimental Pharmacology
- Advances instrumental techniques
- Dietary supplements and Nutraceuticals

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Google Forms

ELECTIVE SUBJECT SELECTION FORM 2022-23

FINAL YEAR B PHARM SEM VIII (SELECT ONLY TWO SUBJECTS) 14/1/2023

* Required

1. INSTRUCTIONS

Mark only one oval.

- Read all parameters carefully and complete the form
- SELECT ANY TWO SUBJECTS ONLY FROM LIST OF 4 SUBJECTS

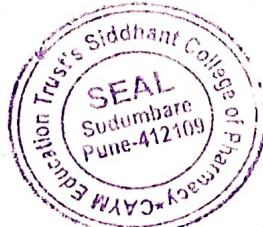
2. Name of student *

3. Roll no *

4. Student have to elect any two subjects only from given list of subjects *

Check all that apply.

- Pharma marketing management
- Pharmacovigilance
- Pharmaceutical Regulatory Science
- Cosmetic Science



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