CHARUSAT
CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

STUDENT INFORMATION BOOKLET FOR THE ACADEMIC YEAR 2025-26

(VOLUME – 2 : M.Pharm- Pharmacology)

Ramanbhai Patel College of Pharmacy

CHARUSAT UNIVERSITY
Off. Nadiad-Petlad Highway, Changa - 388 421
Anand, Gujarat, India

CONTENT

PREAMBLE

The Handbook (Student's Information Booklet) for Students, printed in two volumes contain General Information Respectively about the CHARUSAT University and detailed information about Indukaka Ipcowala Institute of Management.

Handbook Volume-I contains information about general rules to be followed by the students on campus. It gives information about the general facilities and support available for the students on campus. It gives insight about the discipline and conduct rules of the University.

This Handbook (Student's Information Booklet) is for the purpose of providing information to the students about the University and its programmes and is not a Regulation book of the University. Hence, no claim can be made based on the information given in the book.

The University / Institute reserves the right to amend the rules and regulations mentioned in the Handbook without any prior notice. The decision of the University shall be final on all matters. For any clarification, the Student Section may be contacted.

Handbook Volume-II (Student's Information Booklet) contains academic information about the Institute, which includes the Academic Rules and Regulations regarding academic requirements and academic conduct of the students at the University including different policies and forms. Besides, it includes important information on registration, grading system, academic standards, attendance norms, discipline and the like. The students shall abide by these rules and shall, at all times, conduct in a manner so as to bring credit to the University and enhance its prestige in the society.

It is prime responsibility of the students to get familiar (themselves) with the rules and regulations

About the Institute

Ramanbhai Patel College of Pharmacy (RPCP) is a constituent Institute of Charotar University of Science and Technology (CHARUSAT). RPCP was established in the year 2004 with a view to promote excellence in Pharmacy Education and to prepare young talent to meet the challenges of Industrial Pharmacy and Pharmacy Practice. The Institute has the patronage of Zydus Cadila Health Care Ltd; patronized by Shri Pankaj Patel, CMD, Zydus Cadila Healthcare Ltd to commemorate his father, Late Shri Ramanbhai Patel. A Visionary Entrepreneur and a Philanthropist. M.Pharm Programs at RPCP are executed under the auspices of T. P. Patel Centre for PG studies in Pharmacy. The centre in patronized by Shri Jagdishbhai Patel and Shri H. T. Patel and their families to monumentalize their father, Late Shri T. P. Patel.

Vision

To Become a Premier Pharma Institute by Creating World Class Pharmacists and Researchers

Mission

To Strive for the Excellence in Pharmaceutical Sciences through Quality Education and Research

SECTION - 1

PROGRAMME SPECIFIC: M.Pharm

1.1 Academic Regulation

&

1.2 M.Pharm (Pharmacology) Programme Structure (Teaching & Examination Scheme)

ACADEMIC REGULATIONS & SYLLABUS

Faculty of Pharmacy
Master of Pharmacy Programme
(Pharmacology)

(AS PER PCI SYLLABUS)

A. Y. 2023 – 2024

Ramanbhai Patel College of Pharmacy

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

Vision of RPCP

To Become a Premier Pharma Institute by Creating World Class Pharmacists and Researchers.

Mission of RPCP

To Strive for the Excellence in Pharmaceutical Sciences through Quality Education and Research.

PROGRAM OUTCOMES

1. Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.

2. Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

3. Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.

4. Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

5. Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.

6. Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

7. Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

8. Communication: Communicate effectively with u the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

9. The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

10. Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

11. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

FACULTY OF PHARMACY

ACADEMIC REGULATIONS
MASTER OF PHARMACY (M. Pharm.) PROGRAMME
Choice Based Credit System (CBCS)

1. Short Title and Commencement

These regulations shall be called as "The Revised Academic Regulations for the postgraduate programmes under the Faculty of Pharmacy". They shall come into effect from the Academic Year 2018-19. The regulations framed are subject to modifications from time to time by the respective regulatory bodies.

2. Minimum Qualification for Admission

2.1 Candidate shall have passed B. Pharm Degree examination of an Indian university established by law in India from an institution approved by Pharmacy Council of India and has scored not less than 55 % of the maximum marks (aggregate of 4 years of B.Pharm.)

2.2 Every student, selected for admission to post graduate pharmacy program in any PCI approved institution should have obtained registration with the State Pharmacy Council or should obtain the same within one month from the date of his/her admission, failing which the admission of the candidate shall be cancelled.

Note: It is mandatory to submit a migration certificate obtained from the respective university where the candidate had passed his/her qualifying degree (B.Pharm.).

3. Duration of the Programme

The course of study for M.Pharm shall extend over a period of four semesters (two academic years). 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 a Semester

Each semester shall 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. Programme 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 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 a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having four lectures 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.

The contact hours of seminars, assignments and research work shall be treated as that of practical courses for the purpose of calculating credits. i.e., the contact hours shall be multiplied by 1/2. Similarly, the contact hours of journal club, research work presentations and discussions with the supervisor shall be considered as theory course and multiplied by 1.

7.2. Minimum credit requirements

The minimum credit points required for the award of M. Pharm. degree is 93. However based on the credit points earned by the students under the head of co-curricular activities, a student shall earn a maximum of 98 credit points. These credits are divided into Theory courses, Practical, Seminars, Assignments, Research work, Discussions with the supervisor, Journal club and Co-Curricular activities over the duration of four semesters. The credits are distributed semester-wise. Courses generally progress in sequence, 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.

8. Academic work

A regular record of attendance both in Theory, Practical, Seminar, Assignment, Journal club, Discussion with the supervisor, Research work presentation and Dissertation shall be maintained by the department / teaching staff of respective courses**.**

9. Examinations/Assessments

The scheme for internal assessment and end semester examinations is given in Annexure II (Table – 1 to 5).

9.1. End Semester Examinations

The End Semester Examinations for each theory and practical course through semesters I to IV shall be conducted by the University for which Examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

9.2. Internal Assessment: Continuous Mode

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

Table- 1: Scheme for awarding internal assessment: Continuous mode

Theory	
Criteria	**Maximum Marks**
Attendance (Refer Table – 2)	8
Student – Teacher interaction	2
Total	10
Practical	
Attendance (Refer Table – 2)	10
Based on Practical Records, Regular viva voce, etc.	10
Total	20

Table- 2: Guidelines for the allotment of marks for attendance

Percentage of Attendance	**Theory**	**Practical**
95 – 100	8	10
90 – 94	6	7.5
85 – 89	4	5
80 – 84	2	2.5
Less than 80	0	0

9.2.1. Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college. The scheme of question paper for theory and practical Sessional examinations will be as prescribed by the regulatory body. The average marks of two Sessional exams shall be

computed for internal assessment as per the requirements given in Annexure II. 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.

10. Promotion and Award of Grades

A student shall be declared PASS and eligible for getting grade in a course of M.Pharm. Programme, if he/she secures at least 50% marks in that particular course including internal assessment.

11. Carry Forward of Marks

In case a student fails to secure the minimum 50% in any Theory or Practical course as specified in 9 above, 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.

12. 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.

13. Re-examination of End Semester Examinations

Re-examination of end semester examination shall be conducted as per the schedule given in table 3. The exact dates of examinations shall be notified from time to time.

Table-3: Tentative schedule of end semester examinations

Semester	**For Regular Candidates**	**For Failed Candidates**	
		Remedial Examination-1	**Remedial Examination-2***
I and III	November / December	After 15 days of the declaration of the result of the end semester Examination	last week of June/ end of the Academic Year, which is earlier
II and IV	May / June	After 15 days of the declaration of the result of the end semester Examination	

* If student who are remain left from end semester examination and remedial examination-1.

14. Academic Progression

No student shall be admitted to any examination unless he/she fulfils the norms given in item no. 6 under the heading of attendance and progress. Academic progression rules are applicable as follows:

- **"Student will not be allowed to move to next year if she/he has not cleared all the courses of the previous year"**
- A student shall be eligible to carry forward all the courses of Ist semesters till the IInd semester examinations. However, he/she shall not be eligible to attend the courses of the IIIrd semester until all the courses of the Ist and IInd semesters are successfully completed.
- A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to IV semesters within the stipulated time period as per the norms.
- Note: Grade "NA" should be considered as failed and treated as one head for deciding ATKT. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

15. Grading of Performances (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 – 4.

Table-4: Letter grades and grade points equivalent to Percentage of marks and performances

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	AA	10	Outstanding
80.00 – 89.99	AB	9	Excellent
70.00 – 79.99	BB	8	Good
60.00 – 69.99	BC	7	Fair
50.00 – 59.99	CC	6	Average
Less than 50	FF	0	Fail
Absent	NA	0	Fail

A learner who remains absent for any end semester examination shall be assigned a letter grade of "NA" and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

16. 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 students' SGPA is equal to:

$$\text{SGPA} = \frac{C1G1+C2G2+C3G3+C4G4}{C1+C2+C3+C4}$$

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

$$\text{SGPA} = \frac{C1G1+C2G2+C3G3+C4Zero}{C1+C2+C3+C4}$$

17. 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 FF 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:

$$\text{CGPA} = \frac{C1S1+C2S2+C3S3+C4S4}{C1+C2+C3+C4}$$

where C1, C2, C3,…. is the total number of credits for semester I,II,III,…. and S1,S2, S3,….is the SGPA of semester I,II,III,…. .

No student will be allowed to move further if CGPA is less than 3 at the end of every academic year.

18. Declaration of Class (Table-5)

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

First Class with Distinction	= CGPA of. 7.50 to 10.0
First Class	= CGPA of 6.0 to 7.49
Second Class	= CGPA of 5.0 to 5.99
Pass Class	< CGPA of 5.00

19. Project Work

All the students shall undertake a project under the supervision of a teacher in Semester III to IV and submit a report. 4 copies of the project report shall be submitted (typed & bound copy not less than 75 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). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book				
Criteria	**Semester-III**		**Semester-IV**	
			Internal Evaluation (Marks)	**External Evaluation (Marks)**
Objective(s) of the work done	--		05	05
Methodology Adopted	--		25	25
Results and Discussions	--		15	15
Conclusions and Outcome	--		05	05
Total	--		50	50
Final Total			**100**	
Evaluation of Presentation				
	Semester-III		**Semester-IV**	
Criteria	**Internal Evaluation (Marks)**	**External Evaluation (Marks)**	**Internal Evaluation (Marks)**	**External Evaluation (Marks)**
Presentation of work	75	100	75	75
Communication skills	25	50	25	25
Question and answer skills	50	50	50	50
Total	150	200	150	150
Final Total	**350**		**300**	

20. 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 M.Pharm program shall not be eligible for award of ranks.

Moreover, the candidates should have completed the M. Pharm program in minimum prescribed number of years, (two years) for the award of Ranks.

22. Award of degree

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

23. 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.

24. Extra Credit:

An extra credit is to be offered to a student for achievements in co-curricular and extra–curricular activities. This credit shall not be counted while considering the minimum credits for completing the program. The activities and appropriate weight (points) to be allocated to award an extra credit are broadly classified as per the table below:

Sr. no.	Name of the Activity	Maximum Credit Points Eligible / Activity
1	Participation in National Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	01
2	Participation in international Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	02
3	Academic Award/Research Award from State Level/National Agencies	01
4	Academic Award/Research Award from International Agencies	02
5	Research / Review Publication in National Journals (Indexed in Scopus / Web of Science)	01
6	Research / Review Publication in International Journals (Indexed in Scopus / Web of Science)	02

Note: International Conference: Held Outside India

International Journal: The Editorial Board Outside India

***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.**

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
MASTER OF PHARMACY (PHARMACOLOGY) PROGRAMME
Schemes for internal assessments and end semester examinations
SEMESTER-I

SCHEME OF TEACHING

Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
PHCCC009	Modern Pharmaceutical Analytical Techniques	4	4	4
PHPCL001	Advanced Pharmacology-I	4	4	4
PHPCL013	Pharmacological & Toxicological Screening Methods-I	4	4	4
PHPCL003	Cellular and Molecular Pharmacology	4	4	4
PHPCL004	Pharmacology and Toxicology Practical-I	12	6	12
PHPCL005	Seminar/Assignment-I	2	1	2
---	DHSS Elective-I*	2	2	2
	Total	**32**	**25**	**32**

SCHEME OF EVALUATION

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
PHCCC009	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hrs	100
PHPCL001	Advanced Pharmacology – I	10	15	1Hr	25	75	3Hrs	100
PHPCL013	Pharmacological & Toxicological Screening Methods-I	10	15	1Hr	25	75	3Hrs	100
PHPCL003	Cellular and Molecular Pharmacology	10	15	1Hr	25	75	3Hrs	100
PHPCL004	Pharmacology and Toxicology Practical-I	20	30	6Hrs	50	100	6Hrs	150
PHPCL005	Seminar/Assignment-I	-	-	-	100	-	-	100
---	DHSS Elective-I*	-	-	-	30	70	-	100
Total								750

*DHSS elective courses: SCHEME OF TEACHING

Semester	Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
I	HS105.02 B	Academic Speaking and Presentation Skills	02	02	02

*DHSS elective courses: SCHEME OF EVALUATION

Course Code	Course Name	Evaluation Scheme				
		Theory		Practical		Total
		Internal	External	Internal	External	
HS105.02 B	Academic Speaking and Presentation Skills	-	-	30	70	100

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
MASTER OF PHARMACY (PHARMACOLOGY) PROGRAMME
Schemes for internal assessments and end semester examinations
SEMESTER II

SCHEME OF TEACHING

Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
PHPCL006	Advanced Pharmacology-II	4	4	4
PHPCL014	Pharmacological & Toxicological Screening Methods-II	4	4	4
PHCCC003	Clinical Research and Pharmacovigilance	4	4	4
PHPCL008	Principles of Drug Discovery	4	4	4
PHPCL009	Pharmacology and Toxicology Practical-II	12	6	12
PHPCL010	Seminar / Assignment-II	2	1	2
---	DHSS Elective-II*	2	2	2
---	University Elective-II**	2	2	2
	Total	**34**	**27**	**34**

SCHEME OF EVALUATION

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
PHPCL006	Advanced Pharmacology-II	10	15	1Hr	25	75	3Hrs	100
PHPCL014	Pharmacological & Toxicological Screening Methods-II	10	15	1Hr	25	75	3Hrs	100
PHCCC003	Clinical Research and Pharmacovigilance	10	15	1Hr	25	75	3Hrs	100
PHPCL008	Principles of Drug Discovery	10	15	1Hr	25	75	3Hrs	100
PHPCL009	Pharmacology and Toxicology Practical-II	20	30	6Hrs	50	100	6Hrs	150
PHPCL010	Seminar/Assignment-II	-	-	-	100	-	-	100
---	DHSS elective-II*	-	-	-	30	70	-	100
---	University Elective-II**	-	-	-	25	25	-	50
Total								800

*DHSS elective courses: SCHEME OF TEACHING

Semester	Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
II	HS106.02 B	Academic Writing	02	02	02

*DHSS elective courses: SCHEME OF EVALUATION

Course Code	Course Name	Evaluation Scheme				
		Theory		Practical		Total
		Internal	External	Internal	External	
HS106.02 B	Academic Writing	-	-	30	70	100

****University elective courses: SCHEME OF TEACHING - Semester-II**

Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
NRMD551	Mindfulness and Well-Being: Living With Balance and Ease	4	2	4
PTUD796	Yoga and Positive Psychology for Managing Career and Life	4	2	4
FSUD554	Plastic Waste Management	4	2	4
FSUD553	Computational Science in Engineering	4	2	4
FSUD552	Nuclear Astrophysics	4	2	4
FSUD551	Energy Resources, Economics and Sustainability	4	2	4
CAUD518	Software Project Management	4	2	4
MBUD558	Introduction to Operations Research	4	2	4
FTUD501	Blockchain and Its Applications	4	2	4
FTUD502	Sustainable Engineering Concepts and Life Cycle Analysis	4	2	4
FTUD552	Health and Safety Management	4	2	4
OCMPH1003	Introduction on Intellectual Property to Engineers and Technologists	4	2	4

****University elective courses: SCHEME OF EVALUATION- Semester-II**

Course Code	Course Name	Evaluation Scheme				
		Theory		Practical		Total
		Internal	External	Internal	External	
NRMD551	Mindfulness and Well-Being: Living With Balance and Ease	-	-	25	25	50
PTUD796	Yoga and Positive Psychology for Managing Career and Life	-	-	25	25	50
FSUD554	Plastic Waste Management	-	-	25	25	50
FSUD553	Computational Science in Engineering	-	-	25	25	50
FSUD552	Nuclear Astrophysics	-	-	25	25	50
FSUD551	Energy Resources, Economics and Sustainability	-	-	25	25	50
CAUD518	Software Project Management	-	-	25	25	50
MBUD558	Introduction to Operations Research	-	-	25	25	50
FTUD501	Blockchain and Its Applications	-	-	25	25	50
FTUD502	Sustainable Engineering Concepts and Life Cycle Analysis	-	-	25	25	50
FTUD552	Health and Safety Management	-	-	25	25	50
OCMPH1003	Introduction on Intellectual Property to Engineers and Technologists	-	-	25	25	50

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
MASTER OF PHARMACY (PHARMACEUTICAL QUALITY ASSURANCE) PROGRAMME
Schemes for internal assessments and end semester examinations

SEMESTER-III

Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
PHCCC010	Research Methodology and Biostatistics*	4	4	4
PHCCC011	Journal Club-I	1	1	1
PHPCL015	Discussion / Presentation (Proposal Presentation)	2	2	2
PHPCL016	Research Work-I	28	14	28
	Total	**35**	**21**	**35**

* Non University Exam

SCHEME OF EVALUATION

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
PHCCC010	Research Methodology and Biostatistics*	10	15	1 Hr	25	75	3 Hr	100
PHCCC011	Journal Club-I	-	-	-	25	-	-	25
PHPCL015	Discussion / Presentation (Proposal Presentation)	-	-	-	50	-	-	50
PHPCL016	Research Work-I	-	-	-	-	350	1 Hr	350
Total								525

* Non University Exam

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
MASTER OF PHARMACY (PHARMACEUTICAL QUALITY ASSURANCE) PROGRAMME
Schemes for internal assessments and end semester examinations

SEMESTER-IV

Course Code	Course Name	Credit Hours	Credit Points	Hrs/Week
PHCCC012	Journal Club-II	1	1	1
PHPCL017	Discussion/Presentation	3	3	3
PHPCL018	Research Work-II	31	16	31
	Total	**35**	**20**	**35**

SCHEME OF EVALUATION

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
PHCCC012	Journal Club-II	-	-	-	25	-	-	25
PHPCL017	Discussion/Presentation	-	-	-	75	-	-	75
PHPCL018	Research Work-II	-	-	-	-	400	1Hr	400
Total								500

Semester wise distribution

Semester	Credit Point
I	25
II	27
III	21
IV	20
Co-curricular Activity (Attending conference, scientific presentations, publication, industry training and other scholarly activities)	Maximum-5
Total Credit Point	Minimum-93 Maximum -98*

*** Credit point for co-curricular activity**

FACULTY OF PHARMACY
Master of Pharmacy Programme

Syllabi
Semester I

Charotar University of Science and Technology

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHCCC009: MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (Theory)

Total hours: 60 Hr

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	UV-Visible spectroscopy	10
	IR spectroscopy	
	Spectroflourimetry	
	Flame emission spectroscopy and Atomic absorption spectroscopy	
2	NMR Spectroscopy	10
3	Mass Spectroscopy	10
	X-Ray Crystallography	
4	Chromatography	10
5	Electrophoresis	10
	Immunological Assays	
6	Potentiometry	10
	Thermal analysis	

Detailed Syllabus:

1.	**UV-Visible spectroscopy**	**10 Hours**	**16.67%**
	• UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV Visible spectroscopy.		
	IR spectroscopy		
	• Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR		

	Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy		
	Spectroflourimetry		
	Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.		
	Flame emission spectroscopy and Atomic absorption spectroscopy		
	• Principle, Instrumentation, Interferences and Applications.		
2.	**NMR Spectroscopy**	**10 Hours**	**16.67%**
	• Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, SpinSpin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy.		
3.	**Mass Spectroscopy**	**10 Hours**	**16.67%**
	• Mass Spectrometry: Principle, Theory, Instrumentation of Mass Spectrometry, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analysers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectrometry.		
	X ray Crystallography		
	• Production of X rays, Different X ray diffraction methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X ray diffraction.		
4.	**Chromatography**	**10 Hours**	**16.67%**
	• Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and applications of		

	the following: a) Paper chromatography b) Thin Layer chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Affinity chromatography		
5.	**Electrophoresis**	**10 Hours**	**16.67%**
	• Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing		
	Immunological Assays		
	• RIA (Radio Immuno assay), ELISA, Bioluminescence assays.		
6.	**Potentiometry**	**10 Hours**	**16.67%**
	• Principle, working, Ion selective Electrodes and Application of potentiometry		
	Thermal Techniques		
	• Differential Scanning Calorimetry (DSC): Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. • Differential Thermal Analysis (DTA): Principle, instrumentation and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.		

Course Outcome (COs):

At the end of the course, the students would be able to;

CO1	describe theory and principle of various spectroscopic and chromatographic separation techniques.
CO2	describe instrumentation and application of various spectroscopic and chromatographic separation techniques with justification.
CO3	summarize approaches to be adopted for quantitative & qualitative analysis of drugs in single and combine dosage forms.
CO4	Describe use of thermal methods and potentiometry in analysis of drugs/formulations
CO5	interpret the spectra and propose the structure of organic compounds.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	-	-	-	3
CO2	3	3	3	-	3	-	-	3	-	3	3
CO3	3	3	3	3	-	3	-	3	-	3	3
CO4	3	3	3	3	-	-	-	3	-	-	3
CO5	3	-	3	3	-	-	-	3	-	-	3

❖ **References:**

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series. 8. The Analysis of Drugs in Biological Fluids, Joseph Chamberlain, CRC Press

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL001: ADVANCED PHARMACOLOGY-I (Theory)

Total hours: 60 Hr

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**General Pharmacology** a. Pharmacokinetics: b. Pharmacodynamics:	12
2	**Neurotransmission**	12
3	**Central nervous system Pharmacology**	12
4	**Cardiovascular Pharmacology**	12
5	**Autocoid Pharmacology**	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**General Pharmacology** a. Pharmacokinetics: The dynamics of drug absorption, distribution, biotransformation and elimination. Concepts of linear and non-linear compartment models. Significance of Protein binding. b. b. Pharmacodynamics: Mechanism of drug action and the relationship between drug concentration and effect. Receptors, structural and functional families of receptors, quantitation of drug receptors interaction and elicited effects.	12	20.00%
2	**Neurotransmission** a. General aspects and steps involved in neurotransmission. b. Neurohumoral transmission in autonomic nervous system (Detailed study about neurotransmitters- Adrenaline and Acetyl choline). c. Neurohumoral transmission in central nervous system (Detailed study about neurotransmitters- histamine, serotonin, dopamine, GABA, glutamate and glycine]. d. Non adrenergic non cholinergic transmission (NANC). Co-transmission **Systemic Pharmacology**	12	20.00%

	A detailed study on pathophysiology of diseases, mechanism of action, pharmacology and toxicology of existing as well as novel drugs used in the following systems Autonomic Pharmacology: Parasympathomimetics and Parasympatholytics, sympathomimetics and sympatholytic agents affecting neuromuscular junction.		
3	**Central nervous system Pharmacology** General and local anesthetics. Sedatives and hypnotics, drugs used to treat anxiety. Depression, psychosis, mania, epilepsy, neurodegenerative diseases. Narcotic and non-narcotic analgesics.	12	20.00%
4	**Cardiovascular Pharmacology** Diuretics, antihypertensives, antiischemics, anti-arrhythmics, drugs for heart failure and hyperlipidemia. Hematinics, coagulants, anticoagulants, fibrinolytics and anti-platelet drugs.	12	20.00%
5	**Autocoid Pharmacology** The physiological and pathological role of Histamine, Serotonin, Kinins, Prostaglandins, Opioid autocoids. Pharmacology of antihistamines, 5HT antagonists.	12	20.00%

Course Outcome (COs):

At the end of the course, the students would be able to

CO-1	summarize the topics on pathophysiology, advanced pharmacology and rationalize the pharmacotherapy of the selected disease conditions
CO-2	narrate and correlate the concepts of drug action and pharmacokinetics
CO-3	describe the mechanism of drugs at cellular and molecular level and link those mechanisms with drug utilization in particular conditions.
CO-4	describe the adverse effects, contraindications and clinical uses of drugs used in the treatment of diseases.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	-	3	-	-	3	3	-	-	-	3
CO2	3	-	3	-	-	3	3	-	-	-	3
CO3	3	-	3	-	-	3	3	-	-	-	3
CO4	3	-	3	-	-	3	3	-	-	-	3

REFERENCES:

1. The Pharmacological basis of therapeutics- Goodman and Gilman
2. Principles of Pharmacology. The Pathophysiologic basis of drug Therapy by David E Golan et al.
3. Basic and Clinical Pharmacology by B.G -Katzung
4. Pharmacology by H.P. Rang and M.M. Dale.
6. Hand book of Clinical Pharmacokinetics by Gibaldi and Prescott.
6. Text book of Therapeutics, drug and disease management by E T. Herfindal and Gourley.
7. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B. C. Yu.
8. Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists
9. Scientific publication from reputed journals regarding advanced pharmacology

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL013: PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-I (Theory)

Total hours: 60 Hrs

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**Laboratory Animals**	12
2	**Preclinical screening**	12
	General principles of preclinical screening. CNS Pharmacology	
3	**Preclinical screening**	12
	Respiratory Pharmacology	
	Reproductive Pharmacology	
	Analgesics, Anti-inflammatory	
	Gastrointestinal drugs	
4	**A) Preclinical screening** **B) Cardiovascular Pharmacology** **C) Drugs for metabolic disorders** **D) Anticancer agents**	12
5	**A) Preclinical screening**	12
	B) Immunomodulators, Immunosuppressants and Immunostimulants	
	C) General principles of immunoassay	

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**Laboratory Animals** Common lab animals: Description, handling and applications of different species and strains of animals. Transgenic animals: Production, maintenance and applications. Anesthesia and euthanasia of experimental animals. Maintenance and breeding of laboratory animals. CPCSEA guidelines to conduct experiments on animals. Good laboratory practice: Bioassay-Principle, scope and limitations and methods	12	20.00%

2	**Preclinical screening** of new substances for the pharmacological activity using in Vivo, in vitro, and other possible animal alternative models. **General principles of preclinical screening CNS Pharmacology**: behavioral and muscle coordination, CNS stimulants and depressants, anxiolytics, antipsychotics, anti-epileptics and nootropics. Drugs for neurodegenerative diseases like Parkinsonism, Alzheimer's and multiple sclerosis. Drugs acting on Autonomic Nervous System.	12	20.00%
3	**Preclinical screening** of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. **Respiratory Pharmacology**: anti-asthmatics, drugs for COPD and anti-allergic. **Reproductive Pharmacology**: Aphrodisiacs and antifertility agents **Analgesics, Anti-inflammatory** and antipyretic agents. **Gastrointestinal drugs**: anti-ulcer, anti -emetic, anti-diarrheal and laxatives.	12	20.00%
4	**Preclinical screening** of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. **Cardiovascular Pharmacology**: antihypertensives, antiarrythmics, antianginal, **Drugs for metabolic disorders** like anti-diabetic, antihyperlipidemic, and agents. Anticancer agents. Hepatoprotective screening meth	12	20.00%
5	**Preclinical screening** of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models **Immunomodulators, Immunosuppressants and Immunostimulants** General principles of immunoassay: theoretical basis and optimization ofimmunoassay, heterogeneous and homogenous immunoassay systems. Immunoassay methods evaluation; protocol outline, objectives and preparation. Immunoassay for digoxin and insulin Limitations of animal experimentation and alternate animal experiments.	12	20.00%

	Extrapolation of in vitro data to preclinical and preclinical to humans.		

Course Outcome (COs):

At the end of the course, the students would be able to;

CO1	appraise the regulations and ethical requirement for the usage of experimental animals
CO2	describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals
CO3	describe the various newer screening methods involved in the drug discovery process
CO4	appreciate and correlate the preclinical data to humans
CO5	suggest and rationalize *in-vitro* and *in-vivo* preclinical evaluation processes

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	-	-	-	-	-	3	-	-	-	3
CO2	3	-	-	3	-	-	3	-	-	-	3
CO3	3	-	-	3	-	-	3	-	-	-	3
CO4	3	-	-	-	-	-	3	-	-	-	3
CO5	3	-	-	-	-	-	-	-	-	-	3

REFERENCES:

1. Biological standardization by J.H. Burn D.J. Finney and I.G. Goodwin
2. Indian Pharmacopeia and other Pharmacopeias
3. Screening methods in Pharmacology by Robert Turner. A
4. Evaluation of drugs activities by Laurence and Bachrach
5. Methods in Pharmacology by Arnold Schwartz.
6. Fundamentals of experimental Pharmacology by M. N. Ghosh
7. Pharmacological experiment on intact preparations by Churchill Livingstone
8. Drug discovery and Evaluation by Vogel H.G.
9. Experimental Pharmacology by R. K. Goyal.
10. Preclinical evaluation of new drugs by S.K. Gupta
11. Scientific publication from reputed journals regarding screening methods of various drugs

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL003: CELLULAR AND MOLECULAR PHARMACOLOGY
(Theory)

Total hours: 60 Hrs

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**Cell biology**	12
2	**Cell signaling**	12
3	**Principles and applications of genomic and proteomic tools**	12
4	**Pharmacogenomics**	12
5	**A) Cell culture techniques** **B) Biosimilars**	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**Cell biology** Structure and functions of cell and its organelles Genome organization. Gene expression and its regulation, importance of siRNA and micro RNA, gene mapping and gene sequencing Cell cycles and its regulation. Cell death– events, regulators, intrinsic and extrinsic pathways of apoptosis. Necrosis and autophagy.	12	20.00%
2	**Cell signaling** Intercellular and intracellular signaling pathways. Classification of receptor family and molecular structure ligand gated ion channels; Gprotein coupled receptors, tyrosine kinase receptors and nuclear receptors. Secondary messengers: cyclic AMP, cyclic GMP, calcium ion, inositol 1,4,5-trisphosphate, (IP3), NO, and diacylglycerol. Detailed study of following intracellular signaling pathways: cyclic AMP signaling pathway, mitogenactivated protein kinase (MAPK) signaling, Janus kinase	12	20.00%

	(JAK)/signal transducer and activator of transcription (STAT) signaling pathway.		
3	**Principles and applications of genomic and proteomic tools** DNA electrophoresis, PCR (reverse transcription and real time), Gene sequencing, micro array technique, SDS page, ELISA and western blotting, Recombinant DNA technology and gene therapy Basic principles of recombinant DNA Technology-Restriction enzymes, various types of vectors. Applications of recombinant DNA technology. Gene therapy- Various types of gene transfer techniques, clinical applications and recent advances in gene therapy	12	20.00%
4	**Pharmacogenomics** Gene mapping and cloning of disease gene. Genetic variation and its role in health/ pharmacology Polymorphisms affecting drug metabolism Genetic variation in drug transporters Genetic variation in G protein coupled receptors Applications of proteomics science: Genomics, proteomics, metabolomics, functionomics, nutrigenomics Types of immunotherapeutics, humanisation antibody therapy, Immunotherapeutics in clinical practice	12	20.00%
5	**Cell culture techniques** Basic equipments used in cell culture lab. Cell culture media, various types of cell culture, general procedure for cell cultures; isolation of cells, subculture, cryopreservation, characterization of cells and their application. Principles and applications of cell viability assays, glucose uptake assay, Calcium influx assays Principles and applications of flow cytometry **Biosimilars**	12	20.00%

Course Outcome (COs):

At the end of the course, the students would be able to;

CO-1	describe the concepts of cell signaling and justify its role in pharmacotherapeutics.
CO-2	summarize the interventions of drugs in the molecular pathways and describe the end results of interventions.
CO-3	appreciate the applicability and justify the use of of molecular pharmacology and various biomarkers in drug discovery process.
CO-4	suggest the application of genomics and proteomics in diagnosis, treatment and prognosis of various diseases.
CO-5	describe the application of cell culture techniques in evaluation of drug molecules for various assays.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	-	-	-	-	-	-	-	-	-	3
CO2	3	-	-	-	-	-	-	-	-	-	3
CO3	3	3	3	-	-	3	-	3	-	-	3
CO4	3	3	3	3	-	3	-	3	-	-	3
CO5	3	3	3	3	-	3	-	3	-	-	3

REFERENCES:

1. The Cell, A Molecular Approach. Geoffrey M Cooper.
2. Pharmacogenomics: The Search for Individualized Therapies. Edited by J. Licinio and M -L. Wong
3. Handbook of Cell Signaling (Second Edition) Edited by Ralph A. *et.al*
4. Molecular Pharmacology: From DNA to Drug Discovery. John Dickenson *et.al*
5. Basic Cell Culture protocols by Cheril D.Helgason and Cindy L.Miller
6. Basic Cell Culture (Practical Approach) by J. M. Davis (Editor)
7. Animal Cell Culture: A Practical Approach by John R. Masters (Editor)
8. Current porotocols in molecular biology vol I to VI edited by Frederick M.Ausuvel *et al.*
9. Scientific publication from reputed journals regarding cellular and molecular pharmacology

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL004: PHARMACOLOGY PRACTICAL-I (Practical)

Total hours: 180 Hrs

Outline of the course:

Practical
1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry

Handling of laboratory animals

1. Various routes of drug administration.
2. Techniques of blood sampling, anesthesia and euthanasia of experimental animals.
3. Functional observation battery tests (modified Irwin test)
4. Evaluation of CNS stimulant, depressant, anxiogenics and anxiolytic, anticonvulsant activity.
5. Evaluation of analgesic, anti-inflammatory, local anesthetic, mydriatic and miotic activity.
6. Evaluation of diuretic activity.
7. Evaluation of antiulcer activity by pylorus ligation method.
8. Oral glucose tolerance test.
9. Isolation and identification of DNA from various sources (Bacteria, Cauliflower, onion, Goat liver).
10. Isolation of RNA from yeast
11. Estimation of proteins by Braford/Lowry's in biological samples.
12. Estimation of RNA/DNA by UV Spectroscopy.
13. Gene amplification by PCR.
14. Protein quantification Western Blotting.
15. Enzyme based in-vitro assays (MPO, AChEs, α amylase, α glucosidase).
16. Cell viability assays (MTT/Trypan blue/SRB).
17. DNA fragmentation assay by agarose gel electrophoresis.
18. DNA damage study by Comet assay.
19. Apoptosis determination by fluorescent imaging studies.
20. Pharmacokinetic studies and data analysis of drugs given by different routes of administration using softwares
21. Enzyme inhibition and induction activity
22. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (UV)
23. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (HPLC)

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	apply the spectroscopic and chromatographic methods in estimation of drugs.
CO2	perform basic laboratory techniques like administration of drugs, collection of biological samples, anaesthesia and euthanasia of experimental animals.
CO3	estimate drug samples and markers in biological sample.
CO4	evaluate safety and efficacy of the drugs using screening model based experiments.
CO5	demonstrate various molecular biology techniques.
CO6	perform pharmacokinetic studies and data analysis.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	3	3	3	-	-	-	-	-	-	3
CO2	3	3	3	3	-	-	3	-	-	-	3
CO3	3	3	3	3	-	-	3	-	-	-	3
CO4	3	3	3	3	-	-	-	-	-	-	3
CO5	3	3	3	3	-	-	-	-	-	-	3
CO6	3	3	3	3	-	-	3	-	-	-	3

REFERENCES:

1. CPCSEA, OECD, ICH, USFDA, Schedule Y, EPA guidelines,
2. Fundamentals of experimental Pharmacology by M.N.Ghosh
3. Handbook of Experimental Pharmacology by S.K. Kulkarni.
4. Drug discovery and Evaluation by Vogel H.G.
5. Spectrometric Identification of Organic compounds - Robert M Silverstein,
6. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman,
7. Vogel‘s Text book of quantitative chemical analysis - Jeffery, Basset, Mendham, Denney
8. Basic Cell Culture protocols by Cheril D. Helgason and Cindy L.Mille
9. Basic Cell Culture (Practical Approach) by J. M. Davis (Editor)
10. Animal Cell Culture: A Practical Approach by John R. Masters (Editor)

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
HS105.02 B: ACADEMIC SPEAKING AND PRESENTATION SKILLS
(Sem-I)

I. Credits and Schemes:

Sem	Course Code	Course Name	Credits	Teaching Scheme	Evaluation Scheme				
				Contact Hours/Week	Theory		Practical		Total
					Internal	External	Internal	External	
1	HS105.02 B	Academic Speaking and Presentation Skills	02	02	--	--	30	70	100

II. Course Outline

Module No.	Title/Topic	Classroom Contact Hours
1	**Foundations of Advance Communication** • *Meaning and Definition of Advance Communication* • *Advance Communication in Digital, Social, Mobile World* • *Strategies for Advance Communication* • Meaning and Concept of Academic Language • High Frequency Academic Vocabulary	**04**
2	**Art of Conversation** • *Describing people, places and things* • *Expressing opinions* • *Making suggesting* • *Persuading someone* • *Interpreting and Summarizing*	**06**

3	***Science of Power Speaking*** • *Phonemes* • *Word Stress* • *Pronunciation* • *Intonation* • *Pause* • *Register* • *Fluency* • *Prosody* • *Lexical Range*	**06**
4	***Academic Speaking Application – Part I*** • *Art of Oratory* • *Formal Presentation* • *Speech Analysis – Decoding Best Speeches*	**08**
5	**Academic Speaking Application – Part II** • *Job Interview* • *Group Discussion* • *Meeting*	**06**
	Total	**30**

III. Instruction Methods and Pedagogy

The course is based on practical learning. Teaching will be facilitated by reading material, discussion, task-based learning, projects, assignments and various interpersonal activities like case studies, group work, independent and collaborative research, presentations etc.

IV. Evaluation

The students will be evaluated continuously in the form of their consistent performance throughout the semester. There is no theoretical evaluation. There is just practical evaluation. The evaluation (practical) is schemed as 30 marks for internal evaluation and 70 marks for external evaluation.

Internal Evaluation

The students' performance in the course will be evaluated on a continuous basis through the following components:

Sl. No.	Component	Number	Marks per incidence	Total Marks
1	I-Talk	1	10	25
2	Situational Speaking	1	05	
3	Case Study - Speech Analysis	2	10	
4	Attendance and Class Participation	-		05
			Total	**30**

External Evaluation

The University Practical Examination will be for 70 marks and will test the advance communication skills and academic speaking.

Sl. No.	Component	Number	Marks per incidence	Total Marks
1	Viva / Practical	-	70	70
Total				**70**

Course Outcome (COs):

After completion of the course the student would be able to:

CO1	understand and demonstrate advance communication skills and academic speaking.
CO2	demonstrate linguistic competence
CO3	demonstrate performing ability at group discussion and personal interview.
CO4	demonstrate the formal presentation skills.
CO5	demonstrate ability to communicate in diverse situations

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	3	-	-	-
CO2	-	-	-	-	-	-	-	3	-	-	-
CO3	-	-	-	-	3	-	-	3	-	-	-
CO4	-	-	-	-	-	-	-	3	-	-	-
CO5	-	2	-	-	3	-	-	3	-	-	-

Correlation levels 1, 2 or 3 are as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

V. Reference Books

- Headway Academic Skills - Level 1: Listening, Speaking and Study Skills Student's Book Paperback

VI. Reading

- **Unit 1:** Business communication Today (Thirteenth Edition) by Courtland L. Bovee, John V. Thill and Roshan Lal Raina
- **Unit 2:** Effective Speaking Skills by Terry O' Brien
- **Unit 2:** Speak Better Write Better by Norman Lewis
- **Unit 2:** Well Spoken: Teaching Speaking to All Students by Erik Palmer
- **Unit 3:** Let Us Hear Them Speak : Developing Speaking – Listening Skills in English by Jayshree Mohanraj (Publisher – Sage Publication)
- **Unit 4:** The craft of scientific presentations: Critical steps to succeed and critical errors to avoid. New York: Springer by Michael Alley
- **Unit 4:** Presentation Skills in English by Bob Dignen (Publisher: Orient Black Swan)

FACULTY OF PHARMACY
Master of Pharmacy Programme

Syllabi
Semester II

Charotar University of Science and Technology

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL006: ADVANCED PHARMACOLOGY-II (Theory)

Total hours: 60 Hrs

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**Endocrine Pharmacology**	12
2	**Chemotherapy**	12
3	**Chemotherapy**	12
4	**GIT Pharmacology**	12
5	**Free radicals Pharmacology**	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**Endocrine Pharmacology** Molecular and cellular mechanism of action of hormones such as growth hormone, prolactin, thyroid, insulin and sex hormones, Anti-thyroid drugs, Oral hypoglycemic agents, Oral Contraceptives, Corticosteroids, Drugs affecting calcium regulation	12	20.00%
2	**Chemotherapy** Cellular and molecular mechanism of actions and resistance of antimicrobial agents such as β-lactams, aminoglycosides, quinolones, Macrolide Anti-biotics. Antifungal, antiviral, and anti-TB drugs	12	20.00%
3	**Chemotherapy** Drugs used in Protozoal Infections; Drugs used in the treatment of Helminthiasis Chemotherapy of cancer Immunopharmacology Cellular and biochemical mediators of inflammation and immune response. Allergic or hypersensitivity reactions. Pharmacotherapy of asthma and COPD. Immunosuppressant and Immuno-stimulants	12	20.00%

4	**GIT Pharmacology** Antiulcer drugs, Prokinetics, antiemetics, anti-diarrheals and drugs for constipation and irritable bowel syndrome. Chronopharmacology Biological and circadian rhythms, applications of chronotherapy in various diseases like cardiovascular disease, diabetes, asthma and peptic ulcer	12	20.00%
5	**Free radicals Pharmacology** Generation of free radicals, role of free radicals in etiopathology of various Diseases Such as diabetes, neurodegenerative diseases and cancer. Protective activity of certain important antioxidant Recent Advances in Treatment: Alzheimer's disease, Parkinson's disease, Cancer, Diabetes mellitus	12	20.00%

Course Outcome (COs):

At the end of the course, the students would be able to;

CO1	describe the mechanism of drug actions at cellular and molecular level.
CO2	summarize the pathophysiology and rationalize the pharmacotherapy of various diseases.
CO3	narrate the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
CO4	describe the recent advancements in the treatment of various diseases and justify the advancement in the approaches with reference to conventional treatment.
CO5	describe and suggest the use of chemotherapeutics agents considering safety profile.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	-	3	3	-	3	-	-	-	-	3
CO2	3	3	3	-	-	3	-	-	3	-	3
CO3	3	3	3	-	-	3	-	3	3	-	3
CO4	3	-	-	-	-	3	-	-	-	-	3
CO5	3	-	3	-	-	3	3	-	-	-	3

REFERENCES:

1. The Pharmacological basis of therapeutics- Goodman and Gill man's
2. Principles of Pharmacology. The Pathophysiologic basis of drug therapy by David E Golan et al.
3. Basic and Clinical Pharmacology by B.G –Katzung
4. Pharmacology by H.P. Rang and M.M. Dale.

5. Handbook of Clinical Pharmacokinetics by Gibaldi and Prescott.
6. Textbook of Therapeutics, drug and disease management by E T. Herfindal and Gourley.
7. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B.C.Yu.
8. Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists
9. Robbins & Cortan Pathologic Basis of Disease, 9th Ed. (Robbins Pathology)
10. A Complete Textbook of Medical Pharmacology by Dr. S.K Srivastava published by APC Avichal Publishing Company.
11. KD.Tripathi. Essentials of Medical Pharmacology
12. Principles of Pharmacology. The Pathophysiologic basis of drug Therapy by David E Golan, Armen H, Tashjian Jr, Ehrin J,Armstrong, April W, Armstrong, Wolters, Kluwer-Lippincott Williams & Wilkins Publishers6. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A.
Nieman,
7. Vogel‘s Text book of quantitative chemical analysis - Jeffery, Basset, Mendham, Denney
8. Basic Cell Culture protocols by Cheril D. Helgason and Cindy L.Mille
9. Basic Cell Culture (Practical Approach) by J. M. Davis (Editor)
10. Animal Cell Culture: A Practical Approach by John R. Masters (Editor)

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL014: PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II (Theory)

Total hours: 60 Hrs

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**Basic definition and types of toxicology**	12
2	**Acute, sub-acute and chronic- oral, dermal and inhalational studies as per OECD guidelines**	12
3	**Reproductive toxicology studies**	12
4	**IND enabling studies**	12
5	**Toxicokinetics**	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**Basic definition and types of toxicology** (general, mechanistic, regulatory and descriptive) Regulatory guidelines for conducting toxicity studies OECD, ICH, EPA and Schedule Y OECD principles of Good laboratory practice (GLP) History, concept and its importance in drug development	12	20.00%
2	**Acute, sub-acute and chronic- oral, dermal and inhalational studies as per OECD guidelines** Acute eye irritation, skin sensitization, dermal irritation & dermal toxicity studies. Test item characterization- importance and methods in regulatory toxicology studies	12	20.00%
3	**Reproductive toxicology studies**, Male reproductive toxicity studies, female reproductive studies (segment I and segment III), teratogenecity studies (segment II) Genotoxicity studies (Ames Test, in vitro and in vivo Micronucleus and Chromosomal aberrations studies) In vivo carcinogenicity studies	12	20.00%

4	**IND enabling studies (**IND studies) - Definition of IND, importance of IND, industry perspective, list of studies needed for IND submission. Safety pharmacology studies- origin, concepts and importance of safety pharmacology. Tier1- CVS, CNS and respiratory safety pharmacology, HERG assay. Tier2- GI, renal and other studies	12	20.00%
5	**Toxicokinetics-** Toxicokinetic evaluation in preclinical studies, saturation kinetics, Importance and applications of toxicokinetic studies. Alternative methods to animal toxicity testing.	12	20.00%

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	suggest the methods for evaluation of preclinical safety and toxicity of the drug & new chemical entity and justify the selection with comparative studies
CO2	describe various types of toxicity studies and interpret the results
CO3	appreciate and narrate the importance of ethical and regulatory requirements for toxicity studies
CO4	describe the toxicokinetic studies and be able to suggest the alternatives of conventional toxicological approaches.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	3	-	-	-	-	3	-	-	-	3
CO2	3	3	-	-	-	-	3	-	-	-	3
CO3	3	3	-	-	-	-	3	-	-	-	3
CO4	3	3	-	3	-	-	3	-	-	-	3

REFERENCES:

1. Handbook on GLP, Quality practices for regulated non-clinical research and development (http://www.who.int/tdr/publications/documents/glp- handbook.pdf).
2. Schedule Y Guideline: drugs and cosmetics (second amendment) rules, 2005, ministry of health and family welfare (department of health) New Delhi
3. Drugs from discovery to approval by Rick NG.
4. Animal Models in Toxicology, 3rd Edition, Lower and Bryan
5. OECD test guidelines.
6. Principles of toxicology by Karen E. Stine, Thomas M. Brown.
7. Guidance for Industry M3 (R2) Nonclinical Safety Studies for the Conduct of Human Clinical Trials and Marketing Authorization for Pharmaceuticals (http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm073246.pdf)

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHCCC003: CLINICAL RESEARCH AND PHARMACOVIGILANCE
(Theory)

Total hours: 60 Hr

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Regulatory Perspectives of Clinical Trials	10
2	Clinical Trial: Types and Design	10
3	Clinical Trial Documentation	10
4	Basic aspects, terminologies and establishment of Pharmacovigilance	10
5	Methods, ADR reporting and tools used in Pharmacovigilance	10
6	Pharmacoepidemiology, Pharmacoeconomics, safety Pharmacology	10

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1.	Regulatory Perspectives of Clinical Trials	10	16.66%
	Origin and Principles of International Conference on Harmonization - Good Clinical Practice (ICH-GCP) guidelines Ethical Committee: Institutional Review Board, Ethical Guidelines for Biomedical Research and Human Participant, Schedule Y, ICMR Informed Consent Process: Structure and content of an Informed Consent Process Ethical principles governing informed consent process		
2.	**Clinical Trials: Types and Design**	10	16.66%
	Experimental Study- RCT and Non RCT, Observation Study: Cohort, Case Control, Cross sectional Clinical Trial Study Team Roles and responsibilities of Clinical Trial Personnel: Investigator, Study Coordinator, Sponsor, Contract Research Organization and its management		

3.	**Clinical Trial Documentation**		
	Guidelines to the preparation of documents, Preparation of protocol, Investigator Brochure, Case Report Forms, Clinical Study Report Clinical Trial Monitoring, Safety Monitoring in CT Adverse Drug Reactions: Definition and types. Detection and reporting methods. Severity and seriousness assessment. Predictability and preventability assessment, Management of adverse drug reactions; Terminologies of ADR	10	16.66%
4.	**Basic aspects, terminologies and establishment of pharmacovigilance**		
	History and progress of pharmacovigilance, Significance of safety monitoring, Pharmacovigilance in India and international aspects, WHO international drug monitoring programme, WHO and Regulatory terminologies of ADR, evaluation of medication safety, establishing pharmacovigilance centres in Hospitals, Industry and National programmes related to pharmacovigilance. Roles and responsibilities in Pharmacovigilance	10	16.66%
5.	**Methods, ADR reporting and tools used in Pharmacovigilance**		
	International classification of diseases, International Non-proprietary names for drugs, Passive and Active surveillance, Comparative observational studies, Targeted clinical investigations and Vaccine safety surveillance. Spontaneous reporting system and Reporting to regulatory authorities, Guidelines for ADRs reporting. Argus, Aris G Pharmacovigilance, VigiFlow, Statistical methods for evaluating medication safety data.	10	16.66%
6	**Pharmacoepidemiology, Pharmacoeconomics, safety Pharmacology**	10	16.66%

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	describe the types, regulatory requirements and responsibilities of key players involved in clinical trials
CO2	identify Clinical Trial Documentation and narrate the role of Quality Assurance in clinical trials
CO2	narrate the role of the principles of Pharmacovigilance and its application in therapeutics
CO3	describe various approaches and mechanism established to excise pharmacovigilance

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11
CO1	3	3	-	-	-	-	-	-	-	-	-
CO2	3	3	3	-	-	-	-	-	-	-	-
CO3	3	3	-	-	-	-	-	-	-	-	-
CO4	3	3	-	-	-	-	-	-	-	-	-

❖ **References:**

1. Central Drugs Standard Control Organization- Good Clinical Practices, Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health; 2001.
2. International Conference on Harmonization of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonized Tripartite Guideline. Guideline for Good Clinical Practice.E6; May 1996.
3. Ethical Guidelines for Biomedical Research on Human Subjects 2000. Indian Council of Medical Research, New Delhi.
4. Textbook of Clinical Trials edited by David Machin, Simon Day and Sylvan Green, March 2005, John Wiley and Sons.
5. Clinical Data Management edited by R K Rondels, S A Varley, C F Webbs. Second Edition, Jan 2000, Wiley Publications.
6. Handbook of clinical Research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone.
7. Principles of Clinical Research edited by Giovanna di Ignazio, Di Giovanna and Haynes.
8. Principles and practice of pharmaceutical medicine, Second edition. Authors: Lionel. D. Edward, Andrew.J. Fletcher Anthony W Fos , Peter D Sloaier Publisher:Wiley;
9. Relevant review articles from recent medical and pharmaceutical literature.

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL008: PRINCIPLES OF DRUG DISCOVERY (Theory)

Total hours: 60 Hr

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	**An overview of modern drug discovery process**	12
2	**Lead Identification- combinatorial chemistry & high throughput screening**	12
3	**Rational Drug Design**	12
4	**Molecular docking**	12
5	**QSAR Statistical methods**	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1	**An overview of modern drug discovery process**	12	20.00%
	Target identification, target validation, lead identification and lead Optimization. Economics of drug discovery. Target Discovery and validation-Role of Genomics, Proteomics and Bioinformatics. Role of Nucleic acid microarrays, Protein microarrays, Antisense technologies, siRNAs, antisense oligonucleotides, Zinc finger proteins. Role of transgenic animals in target validation.		
2	**Lead Identification- combinatorial chemistry & high throughput screening**	12	20.00%
	in silico lead discovery techniques, Assay development for hit identification. Protein structure Levels of protein structure, Domains, motifs, and folds in protein structure. Computational prediction of protein structure: Threading and homology modeling methods. Application of NMR and X-ray crystallography in protein structure prediction		
3	**Rational Drug Design**	12	20.00%

	Traditional vs rational drug design, Methods followed in traditional drug design, High throughput screening, Concepts of Rational Drug Design, Rational Drug Design Methods: Structure and Pharmacophore based approaches, Virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening,		
4	**Molecular docking**	12	20.00%
	Rigid docking, flexible docking, manual docking; Docking based screening. De novo drug design. Quantitative analysis of Structure Activity Relationship History and development of QSAR, SAR versus QSAR, Physicochemical parameters, Hansch analysis, Fee Wilson analysis and relationship between them.		
5	**QSAR Statistical methods**	12	20.00%
	Regression analysis, partial least square analysis (PLS) and other multivariate statistical methods. 3D-QSAR approaches like COMFA and COMSIA Prodrug design-Basic concept, Prodrugs to improve patient acceptability, Drug solubility, Drug absorption and distribution, site specific drug delivery and sustained drug action. Rationale of prodrug design and practical consideration of prodrug design		

Course Outcome (COs):

At the end of the course, the students would be able to;

CO1	describe the stages of drug discovery with significance of each stage
CO2	appreciate the importance of genomics, proteomics and bioinformatics in drug discovery
CO3	enumerate various targets for drug discovery with justification
CO4	narrate the lead seeking and lead optimization approaches with prototype applications
CO5	appreciate the role of computer aided drug design in drug discovery and be able to compare various approaches of drug discovery.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	3	3	3	-	-	3	-	-	-	3
CO2	3	3	3	3	-	-	3	-	-	-	3
CO3	3	3	3	3	-	-	3	-	-	-	3
CO4	3	3	3	3	-	-	3	-	-	-	3
CO5	3	3	3	3	-	-	3	-	-	-	3

REFERENCES:

1. Mouldy Sioud. Target Discovery and Validation Reviews and Protocols: Volume 2 Emerging Molecular Targets and Treatment Options. 2007 Humana Press Inc.
2. Darryl León. Scott Markel. In Silico Technologies in Drug Target Identification and Validation. 2006 by Taylor and Francis Group, LLC.
3. Johanna K. DiStefano. Disease Gene Identification. Methods and Protocols. Springer New York Dordrecht Heidelberg London.
4. Hugo Kubiny. QSAR: Hansch Analysis and Related Approaches. Methods and Principles in Medicinal Chemistry. Publisher Wiley-VCH
5. Klaus Gubernator, Hans-Joachim Böhm. Structure-Based Ligand Design. Methods and Principles in Medicinal Chemistry. Publisher Wiley-VCH
6. Abby L. Parrill. M. Rami Reddy. Rational Drug Design. Novel Methodology and Practical Applications. ACS Symposium Series; American Chemical Society: Washington, DC, 1999.
7. J. Rick Turner. New drug development design, methodology and, analysis. John Wiley & Sons, Inc., New Jersey.

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL009: PHARMACOLOGY PRACTICAL – II

Total hours: 180 Hr

Outline of the course:

1. To record the DRC of agonist using suitable isolated tissues preparation.
2. To study the effects of antagonist/potentiating agents on DRC of agonist using suitable isolated tissue preparation.
3. To determine to the strength of unknown sample by matching bioassay by using suitable tissue preparation.
4. To determine to the strength of unknown sample by interpolation bioassay by using suitable tissue preparation.
5. To determine to the strength of unknown sample by bracketing bioassay by using suitable tissue preparation.
6. To determine to the strength of unknown sample by multiple point bioassay by using suitable tissue preparation.
7. Estimation of pA2 values of various antagonists using suitable isolated tissue preparations.
8. To study the effects of various drugs on isolated heart preparations
9. Recording of rat BP, heart rate and ECG.
10. Recording of rat ECG
11. Drug absorption studies by averted rat ileum preparation.
12. Acute oral toxicity studies as per OECD guidelines.
13. Acute dermal toxicity studies as per OECD guidelines.
14. Repeated dose toxicity studies- Serum biochemical, hematological, urine analysis, functional observation tests and histological studies.
15. Drug mutagenicity study using mice bone-marrow chromosomal aberration test.
16. Protocol design for clinical trial. (3 Nos.)
17. Design of ADR monitoring protocol.
18. In-silico docking studies. (2 Nos.)
19. In-silico pharmacophore-based screening.
20. In-silico QSAR studies.
21. ADR reporting

Course Outcome (COs):

At the end of the course, the students would be able to;

CO1	evaluate the chemicals by adopting various experimental pharmacology techniques
CO2	apply biochemical methods in evaluation of drugs and experimental medicines
CO3	justify selection of various in-vitro approaches for evaluations of drugs
CO4	investigate toxicity using various guidelines

CO5	evolve the mechanism of various endogenous ligand and drugs based on receptor activation and signaling pathway cascade activation through prototype experiments.
CO6	prepare a clinical trial protocol and report ADR.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
CO1	3	3	3	3	-	-	-	-	-	-	3
CO2	3	3	3	3	-	-	-	-	-	-	3
CO3	3	3	3	-	-	-	-	-	-	-	3
CO4	3	3	-	3	-	3	-	3	3	3	3
CO5	3	-	-	3	-	-	-	-	-	-	3
CO6	3	3	3	3	-	-	3	3	3	-	3

REFERENCES:

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. Text book of in-vitro practical Pharmacology by Ian Kitchen
4. Bioassay Techniques for Drug Development by Atta-ur-Rahman, Iqbal choudhary and William Thomsen.
5. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B.C.Yu.
6. Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists.

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
HS106.02 B : ACADEMIC WRITING (Sem-II)

I. Credits and Schemes:

Sem	Course Code	Course Name	Credits	Teaching Scheme	Evaluation Scheme				
				Contact Hours/Week	Theory		Practical		Total
					Internal	External	Internal	External	
II	HS106.02 B	Academic Writing	02	02	--	--	30	70	100

II. Course Outline

Module No.	Title / Topic	Classroom Contact Hours
1	**Academic Writing and Research Process** • Introduction to Academic Writing • Academic Writing as a Part of Research • Types of Academic Writing • Features of Academic Writing • Importance of Good Academic Writing in various Academic Works	**05**
2	**Anatomy of Academic Writing** • Academic Vocabulary • Simple and Complex Sentences • Organizing Paragraphs • The Writing Process • Adopting Academic Writing Style	**05**
3	**Key Academic Skills** • Note – taking • Note – making • Paraphrasing • Summarizing	**05**
4	**Accuracy in Academic Writing** • Lexical Range • Academic Language and Structures • Elements of Writing • Proof Reading, Editing, and Rewriting	**05**
5	**Using and Citing Sources of Ideas** • Academic Texts and their Types • Intellectual Honesty in Academic Writing • Avoiding Plagiarism – Idea Theft	**05**

	• Degrees of Plagiarism • Types of Borrowing • Anatomy of Citations • Common Citat*ion Styles*	
6	**Contemporary Practices in Academic Writing** • Analytical Essays • Graph / Table / Process Interpretation and Description • Writing Reports • Writing Research / Concept Papers	**05**
Total		**30**

III. Instruction Methods and Pedagogy

The course is based on practical learning. Teaching will be facilitated by reading material, discussion, task-based learning, projects, assignments and various interpersonal activities like writing, group work, independent and collaborative research, etc.

IV. Evaluation

The students will be evaluated continuously in the form of their consistent performance throughout the semester. There is no theoretical evaluation. There is just practical evaluation. The evaluation (practical) is schemed as 30 marks for internal evaluation and 70 marks for external evaluation.

Internal Evaluation

The students' performance in the course will be evaluated on a continuous basis through the following components:

Sl. No.	Component	Number	Marks per incidence	Total Marks
1	Paragraph Writing	1	3	03
2	Note-taking / Note-making	1	3	03
3	Paraphrasing / Summarizing	1	4	04
4	Essay Writing	1	5	05
5	Concept Paper Writing	1	10	10
5	Attendance and Class Participation			05
			Total	**30**

External Evaluation

The University Practical Examination will be for 70 marks and will test the professional communication skills and academic writing skills of the students.

Sl. No.	Component	Number	Marks per incidence	Total Marks
1	Viva / Practical /Quiz/ Project / Academic Writing	-	70	70
			Total	**70**

Course Outcome (COs):

After completion of the course, the student would:

CO1	have sound understanding of the concept and applications of academic writing
CO2	have acquired enough knowledge of academic writing style, strategy and approach
CO3	be able to demonstrate error free and effective academic writing
CO4	be able to demonstrate ability to work on project/report/paper writing
CO5	understand the concept of plagiarism and learn to use different citation styles as a part of referencing

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	3	-	-	-
CO2	-	-	-	-	-	-	-	3	-	-	-
CO3	-	-	-	-	-	-	-	3	-	-	-
CO4	-	-	-	-	-	-	-	3	-	-	-
CO5	-	-	-	-	-	-	2	-	-	-	-

Correlation levels 1, 2 or 3 are as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

V. Reference Books / Reading

Essential Reading for Concepts

- Academic Writing for International Students, Routledge
- Academic Writing: A Guide for Management Students and Researchers. Monipally, M. M. & Pawar, B. S. Sage. 2010. New Delhi

Essential Reading for Activity and Teacher Resource

- ***Effective Academic Writing Level - 1,2,3,4 (Second Edition) By:*** Alice Savage, Patricia Mayer, Masoud Shafiei, Rhonda Liss, & Jason Davis; *Publisher: Oxford*

Additional Reading

- Writing Your Thesis (2nd Edition) by Paul Oliver, Sage
- Development Communication In Practice by Vilanilam V J, Sage
- Intercultural Communication by Mingsheng Li, Patel Fay, Sage
- www.owl.perdue.edu

FACULTY OF PHARMACY
Master of Pharmacy Programme

Syllabi
Semester III

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHCCC010: RESEARCH METHODOLOGY & BIOSTATISTICS (Theory)

Total hours: 60 Hr

Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	General Research Methodology	12
2	Biostatistics	12
3	Medical Research	12
4	CPCSEA guidelines for laboratory animal facility	12
5	Declaration of Helsinki	12

Detailed Syllabus:

Sr. No.	UNIT	Hours	Weightage (%)
1.	**General Research Methodology**	**12**	**20%**
	Research, objective, requirements, practical difficulties, review of literature, study design, types of studies, strategies to eliminate errors/bias, controls, randomization, crossover design, placebo, blinding techniques		
2.	**Biostatistics**	**12**	**20%**
	Definition, application, sample size, importance of sample size, factors influencing sample size, dropouts, statistical tests of significance, type of significance tests, parametric tests(students "t" test, ANOVA, Correlation coefficient, regression), non-parametric tests (wilcoxan rank tests, analysis of variance, correlation, chi square test), null hypothesis, P values, degree of freedom, interpretation of P values.		
3.	**Medical Research**	**12**	**20%**
	History, values in medical ethics, autonomy, beneficence, non-maleficence, double effect, conflicts between autonomy and beneficence/non-maleficence, euthanasia, informed consent,		

	confidentiality, criticisms of orthodox medical ethics, importance of communication, control resolution, guidelines, ethics committees, cultural concerns, truth telling, online business practices, conflicts of interest, referral, vendor relationships, treatment of family members, sexual relationships, fatality.		
4.	**CPCSEA guidelines for laboratory animal facility**	**12**	**20%**
	Goals, veterinary care, quarantine, surveillance, diagnosis, treatment and control of disease, personal hygiene, location of animal facilities to laboratories, anesthesia, euthanasia, physical facilities, environment, animal husbandry, record keeping, SOPs, personnel and training, transport of lab animals.		
5.	**Declaration of Helsinki**	**12**	**20%**
	History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care.		

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	narrate hierarchy of continue research by proper fundamental methodology.
CO2	summarize the guidelines and ethical values in medical research.
CO3	prepare protocol for Animal study.
CO4	apply the concept of design of experiments in pharmaceutical research.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11
CO1	3	-	-	-	-	-	-	-	-	-	3
CO2	3	-	-	-	-	-	-	-	-	-	3
CO3	3	-	-	-	-	-	-	-	-	-	3
CO4	3	-	-	-	-	-	-	3	-	-	3

Recommended Study Material:

❖ **References:**

1. Research In Education- John V. Best, John V. Kahn 7th edition, Published by: Phi Learning Pvt. Ltd
2. Research Methodology: Methods and Techniques. C.R. Kothari and Gaurav Garg, New Age International Publications.
3. Essentials of Research Methodology and Dissertation Writing. Kanan Yelikar, Jaypee Publishers
4. ICMR Ethical Guidelines for Biomedical Research (http://icmr.nic.in/ethical_guidelines.pdf)
5. A review of ―Scientist in legal Systems‖, Journal of Forensic Sciences (JOFS),21(2),1976.
6. Donald Menzel, Jones, Howard Mumford; Boyd, Lyle G., Writing a technical paper, J. Chem. Edu., 1962, 39 (6), p A500.
7. Mitchell, K. and Glover, T. 2001. Introduction to Biostatistics. McGraw Hill, Publishing Co.

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHCCC011: JOURNAL CLUB -I

Total hours: 15

Course Outcome (COs):

At the end of the course, the students would be able to

	CO
CO1	present scientific literature and interpret the finding

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	3	3	-	-	-	3	-	-	3

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHPCL016: RESEARCH WORK-I

Total hours: 420

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	define and describe research problem.
CO2	illustrate project management skills such as project design, scientific information and literature access, project implementation, data analysis, and interpretation.
CO3	present a dissertation report integrating appropriate written and verbal communicative skills.
CO4	efficiently use communication and information technology tools.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	-	-	-	-	-	3
CO2	3	3	3	3	-	-	-	-	-	-	3
CO3	3	-	3	3	-	-	-	-	-	-	3
CO4	3	-	-	-	-	-	3	3	-	-	3

FACULTY OF PHARMACY
Master of Pharmacy Programme

Syllabi
Semester IV

Charotar University of Science and Technology

FACULTY OF PHARMACY
MASTER OF PHARMACY PROGRAMME
PHCCC012: JOURNAL CLUB –II

Total hours: 15

Course Outcome (COs):

At the end of the course, the students would be able to

	CO
CO1	present scientific literature and interpret the finding

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	3	3	-	-	-	3	-	-	3

FACULTY OF PHARMACY
Master of Pharmacy Programme
PHPCL018: Research Work

Total hours: 465

Course Outcome (COs):

At the end of the course, the students would be able to

CO1	define and describe research problem.
CO2	illustrate project management skills such as project design, scientific information and literature access, project implementation, data analysis, and interpretation.
CO3	present a dissertation report integrating appropriate written and verbal communicative skills.
CO4	efficiently use communication and information technology tools.

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	-	-	-	-	-	3
CO2	3	3	3	3	-	-	-	-	-	-	3
CO3	3	-	3	3	-	-	-	-	-	-	3
CO4	3	-	-	-	-	-	3	3	-	-	3

1.2 Learning Resources

Students can utilize library at RPCP or CHARUSAT Knowledge Resource Centre (situated in building A1)

1.4 Academic Calendar:

Ramanbhai Patel College of Pharmacy					
Charotar University of Science & Technology					
Tentative Planning for **Academic Year: 2025-2026 (Odd semester-1st Sem M.Pharm.)**					
Week	**Date**	**Day**	**No. of working days**	**WD/HD**	**Activity**
1	03.10.2025	Fri	2	WD	**COMMENCEMENT OF 1st SEMESTER OF M.Pharm.**
	04.10.2025	Sat		WD	Teaching-Learning for 1st sem M.Pharm.
	05.10.2025	Sun		HD	
2	06.10.2025	Mon	6	WD	-
	07.10.2025	Tue		WD	
	08.10.2025	Wed		WD	
	09.10.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	10.10.2025	Fri		WD	
	11.10.2025	Sat		WD	-
	12.10.2025	Sun		HD	
3	13.10.2025	Mon	5	WD	-
	14.10.2025	Tue		WD	-
	15.10.2025	Wed		WD	-
	16.10.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	17.10.2025	Fri		WD	-
	18.10.2025	Sat		HD	
	19.10.2025	Sun		HD	
4	20.10.2025	Mon	0	HD	**Diwali vacation**
	21.10.2025	Tue		HD	
	22.10.2025	Wed		HD	
	23.10.2025	Thu		HD	-
	24.10.2025	Fri		HD	
	25.10.2025	Sat		HD	-
	26.10.2025	Sun		HD	
5	27.10.2025	Mon	6	WD	
	28.10.2025	Tue		WD	-

	29.10.2025	Wed		WD	-
	30.10.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	31.10.2025	Fri		WD	-
	01.11.2025	Sat		WD	-
	02.11.2025	Sun		HD	
6	03.11.2025	Mon	5	WD	-
	04.11.2025	Tue		WD	-
	05.11.2025	Wed		HD	**Guru Nanak Jayanti**
	06.11.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	07.11.2025	Fri		WD	-
	08.11.2025	Sat		WD	-
	09.11.2025	Sun		HD	
7	10.11.2025	Mon	6	WD	-
	11.11.2025	Tue		WD	-
	12.11.2025	Wed		WD	-
	13.11.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	14.11.2025	Fri		WD	
	15.11.2025	Sat		WD	-
	16.11.2025	Sun		HD	
8	17.11.2025	Mon	6	WD	-
	18.11.2025	Tue		WD	
	19.11.2025	Wed		WD	-
	20.11.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	21.11.2025	Fri		WD	
	22.11.2025	Sat		WD	
	23.11.2025	Sun		HD	
9	24.11.2025	Mon	6	WD	-
	25.11.2025	Tue		WD	-
	26.11.2025	Wed		WD	**1st Internal Examination (T/P)**
	27.11.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	28.11.2025	Fri		WD	
	29.11.2025	Sat		WD	-
	30.11.2025	Sun		HD	
10	01.12.2025	Mon	6	WD	-
	02.12.2025	Tue		WD	-
	03.12.2025	Wed		WD	**1st Internal Examination (T/P)**
	04.12.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	05.12.2025	Fri		WD	
	06.12.2025	Sat		WD	

	07.12.2025	Sun		HD	
11	08.12.2025	Mon	6	WD	-
	09.12.2025	Tue		WD	-
	10.12.2025	Wed		WD	-
	11.12.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	12.12.2025	Fri		WD	-
	13.12.2025	Sat		WD	-
	14.12.2025	Sun		HD	-
12	15.12.2025	Mon	6	WD	-
	16.12.2025	Tue		WD	-
	17.12.2025	Wed		WD	-
	18.12.2025	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	19.12.2025	Fri		WD	-
	20.12.2025	Sat		WD	
	21.12.2025	Sun		HD	
13	22.12.2025	Mon	5	WD	-
	23.12.2025	Tue		WD	-
	24.12.2025	Wed		WD	Teaching-Learning for 1st sem M.Pharm.
	25.12.2025	Thu		HD	**Christmas**
	26.12.2025	Fri		WD	
	27.12.2025	Sat		WD	
	28.12.2025	Sun		HD	
14	29.12.2025	Mon	6	WD	-
	30.12.2025	Tue		WD	-
	31.12.2025	Wed		WD	-
	01.01.2026	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	02.01.2026	Fri		WD	-
	03.01.2026	Sat		WD	-
	04.01.2026	Sun		HD	-
15	05.01.2026	Mon	6	WD	-
	06.01.2026	Tue		WD	-
	07.01.2026	Wed		WD	-
	08.01.2026	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	09.01.2026	Fri		WD	-
	10.01.2026	Sat		WD	-
	11.01.2026	Sun		HD	-
16	12.01.2026	Mon	4	WD	-
	13.01.2026	Tue		WD	**2nd Internal Examination (P)**
	14.01.2026	Wed		HD	**Makar Sankranti (Uttarayan)**
	15.01.2026	Thu		HD	

	16.01.2026	Fri		WD	Teaching-Learning for 1st sem M.Pharm.
	17.01.2026	Sat		WD	-
	18.01.2026	Sun		HD	-
17	19.01.2026	Mon	6	WD	-
	20.01.2026	Tue		WD	-
	21.01.2026	Wed		WD	**2nd Internal Examination (T)**
	22.01.2026	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	23.01.2026	Fri		WD	-
	24.01.2026	Sat		WD	-
	25.01.2026	Sun		HD	-
18	26.01.2026	Mon	5	HD	**Republic Day**
	27.01.2026	Tue		WD	-
	28.01.2026	Wed		WD	-
	29.01.2026	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	30.01.2026	Fri		WD	-
	31.01.2026	Sat		WD	-
	01.02.2026	Sun		HD	-
19	02.02.2026	Mon	6	WD	-
	03.02.2026	Tue		WD	-
	04.02.2026	Wed		WD	**Journal Certification**
	05.02.2026	Thu		WD	Teaching-Learning for 1st sem M.Pharm.
	06.02.2026	Fri		WD	-
	07.02.2026	Sat		WD	-
	08.02.2026	Sun		HD	-
20	09.02.2026	Mon	6	WD	**CHARUSAT EXAMINATION (T/P)**
	10.02.2026	Tue		WD	
	11.02.2026	Wed		WD	
	12.02.2026	Thu		WD	
	13.02.2026	Fri		WD	
	14.02.2026	Sat		WD	
	15.02.2026	Sun		HD	
21	16.02.2026	Mon	6	WD	
	17.02.2026	Tue		WD	
	18.02.2026	Wed		WD	
	19.02.2026	Thu		WD	
	20.02.2026	Fri		WD	
	21.02.2026	Sat		WD	
	22.02.2026	Sun		HD	
22	16.02.2026	Mon	6	WD	
	17.02.2026	Tue		WD	

	18.02.2026	Wed		WD	
	19.02.2026	Thu		WD	
	20.02.2026	Fri		WD	
	21.02.2026	Sat		WD	
	22.02.2026	Sun		HD	
			116		

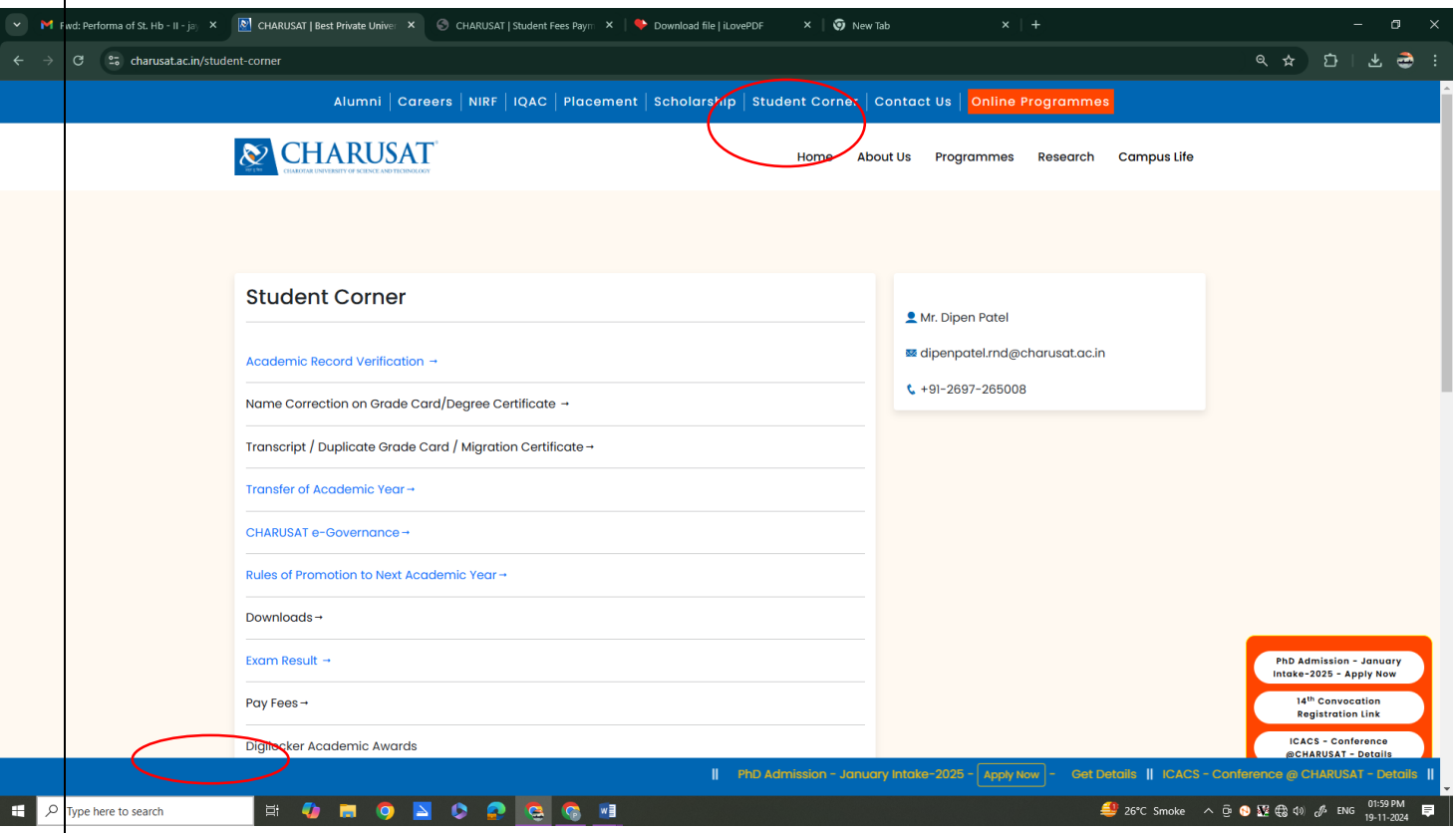
*** Schedule is tentative, subject to change**

SECTION - 2

VARIOUS ADMINISTRATIVE PROCESS

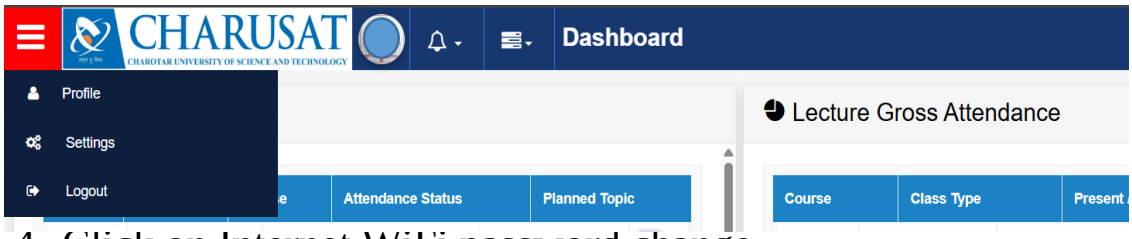
2.1 Payment of tuition fees or Other charges

Step:1	Visit University web-portal click on Pay Fees: https://charusat.edu.in:912/FeesPaymentApp/
Step:2	Enter your Student ID and Pay your Fees
Step:3	Download your fees receipt

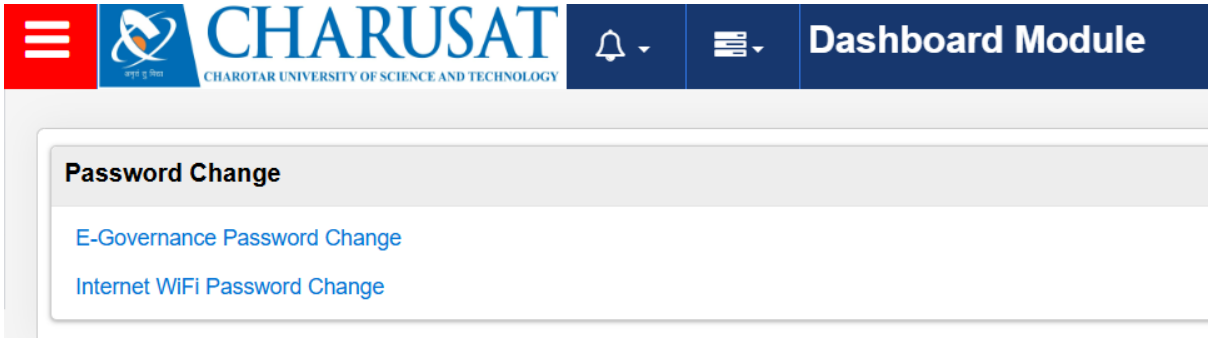


2.2 Process of Acquiring WIFI access

1. Go to e-governance website
    a. http://egov.charusat/
2. Login into your student account using e-governance login credentials
3. Go to settings tab as how in picture below



4. Click on Internet WiFi password change



5. Change the password to get access to WiFi
6. Save and remember your password

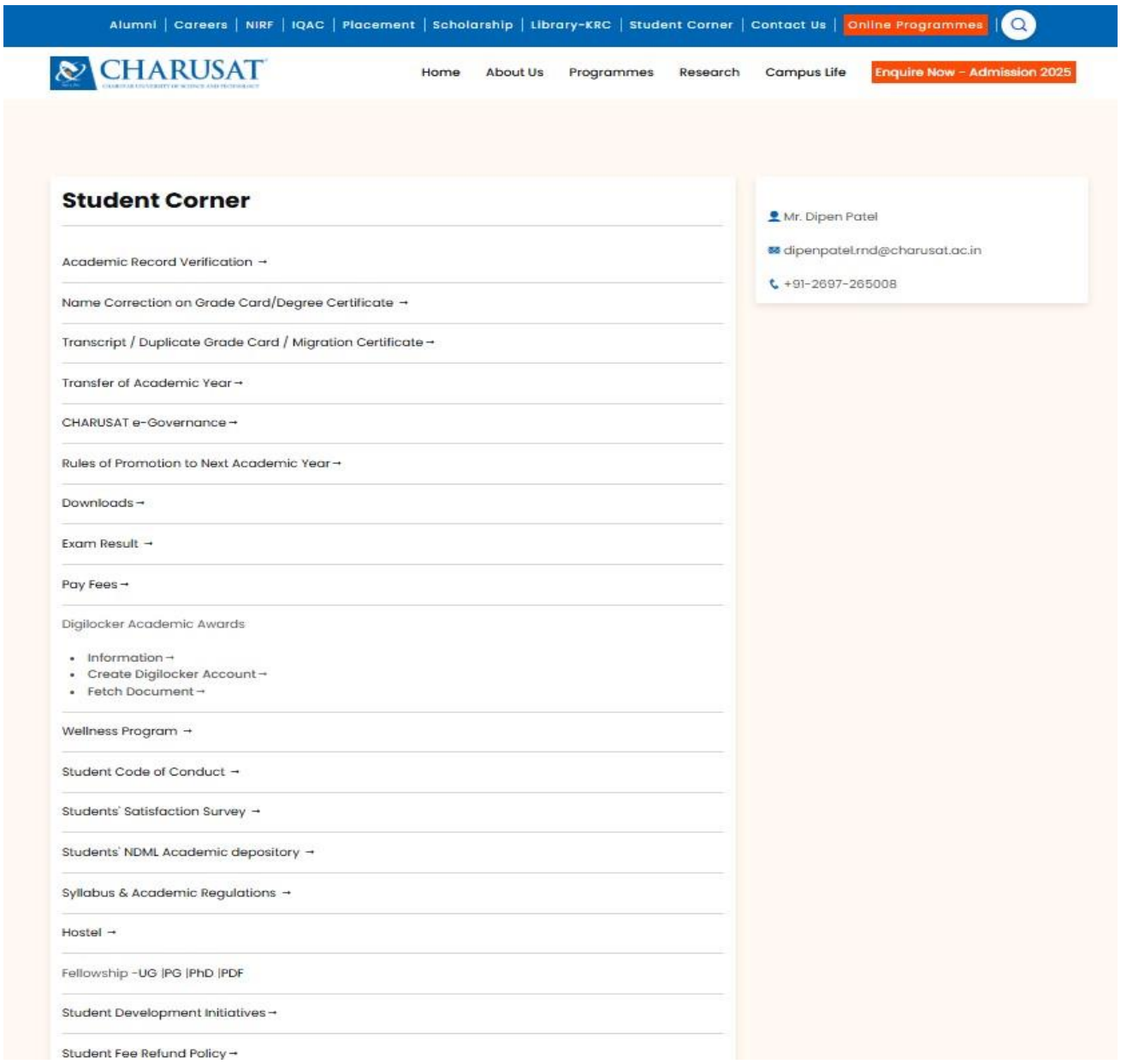
➢ Connect to wifi by authenticating your credentials on http://172.16.0.1:8090/httpclient.html

2.3 Process to obtain required Certificate from the institute

Step:1	Visit Administrative office of RPCP
Step:2	Submit an application as per your requirement along with your ID Number (via Email: principal.rpcp@charusat.ac.in)
Step:3	Collect certificate form Administrative office (Room no: 129A, RPCP)

2.4 Process to obtain required Certificate from the university office

➢ In order to obtain the required certificate at the University Level, students need to visit the Student Corner of the CHARUSAT University website. They can choose to apply online or offline and should ensure to include all necessary enclosures with their application. The application must be submitted to the Student Section of the University and should be duly attested by the relevant institute's HoD / Principal/ Dean. Once all the necessary procedures are completed, the certificate will be issued at the University office. (As per the below):



2.5 to 2.7 Process to obtain Duplicate Grade Card / Name Correction in Grade Card / Transcript OR E-transcript / Migration Certificate

Step:1	Online Application Request through CHARUSAT Web Portal https://www.charusat.ac.in/student-corner Select Transcript / Duplicate Grade Card / Migration Certificate Select Document Type **Migration Certificate** **Transcript/E-Transcript / WES** **Duplicate Grade Card** Enter CHARUSAT Student ID
Step:2	Pay fees at online Download Payment Receipt (for further Communication)
	University will get request after successful Payment (Time is depend on clearing of payment)
Collect the certificate within 15 days	

OR

Scan the below QR code

CHARUSAT®

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

अमृतं तु विद्या

SCAN TO APPLY FOR

e-transcript

Duplicate Grade Card

Migration Certificate

Student will get an e-copy of the transcript on his/her CHARUSAT e-mail id withing 48 hs working after the successful payment

2.8 Process for Academic Document Verification by External Agency

Step:1	Online Application Request through CHARUSAT Web Portal https://www.charusat.ac.in/student-corner
Step:2	Select Academic Record Verification menu
Step:3	Fill required Information
Step:4	Make Payment
Step:5	Please email Transaction receipt, Student Academic Verification Details (Transcript / Degree Certificate/ Marksheet(s)) after completing the payment process.
Email ID: ***studentservices@charusat.ac.in*** **Email Subject: Academic Document Verification : < Student ID > : < Student Name >**	

SECTION - 3

UNDERTAKINGS

AND

DECLARATIONS

UNDERTAKING
(Observing Rules and Regulations of the University)

Roll No. _____

I, Mr./Ms. _____ son/daughter of _____ have secured admission at the Indukaka Ipcowala Institute of Management of CHARUSAT University in the academic year _____ for the _____ Programme. We hereby confirm that we have gone through the academic rules and regulations of the Institute very carefully and we assure you that we will abide by the same.

Student Signature : _____

Name of the Parent/Guardian : 1. _____

2. _____

Signature of the Parent/Guardian : 1. _____ 2. _____

DECLARATION
(Code of Conducts and Disciplinary Rules)

I ..... bearing roll no. …… admitted in ..... (programme) of the Institute of....., CHARUSAT University, Changa do hereby declare and undertake that I will abide by the Code of Conduct, including rules for misconduct/indiscipline by the students, provisions like dress code on the campus, rules for maintaining vehicles on the campus, public display of affection (PDA), etiquette on the campus etc.

I will abide by all the rules and regulations as and when intimated by the university and if I am found violating any rules then, I shall be subjected to the major/minor penalties as may deemed fit by the university.

Signature : _____

Name of the Parent/Guardian : 1. _____

2. _____

Signature of the Parent/Guardian : 1. _____ 2. _____

UNDERTAKING
(Observing Rules & Regulations of the Examination)

I, ... Roll No..... studying in the First year of ..... programme at Institute of ....., CHARUSAT University, Changa do hereby undertake that I have read and understood all the Rules & Regulations related to Academic Dishonesty at examinations/tests/assignments and punishment in case of using unfair means, I have also gone through the Academic Regulations related to Granting of Term and Cancellation of admission, and I shall observe, follow and abide by all these rules and regulations.

I shall abide by all the rules and regulations and if I am found violating any rules then, I shall be subjected to the necessary action/penalties as per provision of rules/regulations of the university.

Signature : _____

Name : _____

Address : _____

_____

_____

Signature of the Parent/Guardian : 1. _____ 2. _____

UNDERTAKING
(To Refrain from Consumption of Drugs and Alcohol)

I, _____ bearing Roll No._____ admitted in _____ (programme) at Institute of _____ do hereby declare and undertake that I will refrain myself from possession / consumption of Drugs and Alcohol.

I know that the use/possession of narcotics drugs and alcohol is a punishable offence under the law of the Government of Gujarat and if I am found guilty of using such thing/s, then it will amount to a criminal offence and I am liable for the appropriate penalty as per laws and also liable to cancel my admission from the university.

I hereby give an undertaking to the Institute that I will refrain myself from possession or consumption of Drugs and Alcohol in and around the campus.

Date :

Place :

_____

Signature of Student

I undertake that I will take utmost care to see that my ward does not get involved in any such incident.

Name of the Parent/Guardian : 1. _____

2. _____

Signature of the Parent/Guardian : 1. _____ 2. _____

Address of Parent/ Guardian : _____

_____

Contact no of Parent/ Guardian : 1. _____ 2. _____

4. IMPORTANT CONTACTS

+91-02697-265011 (Last 4 digits: Extension number)

Name and Designation	Extension number & Email-id
Dr. Samir Patel Dean - Faculty of Pharmacy,	5161 dean.fph@charusat.ac.in
Dr. Manan Raval Principal, RPCP	5141 principal.rpcp@charusat.ac.in
Mr. Jaydeep Parmar P.A to Principal	5151 jaydeepparmar.ph@charusat.ac.in
Dr. Meghna Mehta Librarian	5145 meghanamehta.ph@charusat.ac.in
Mr. Jaydeep Parmar Student Section, RPCP	5151 jaydeepparmar.ph@charusat.ac.in
Shri Mukesh Yadav Dy. Registrar, Academic Section	5029 mukeshyadav.adm@charusat.ac.in
Ms. Manisha Patel Chief Finance Officer, Accounts Section	5007 cfo@charusat.ac.in
Shri Mitesh Patel Assistant Registrar, Students Section (University office)	5038 studentservices@charusat.ac.in
Dr. Abhilash Shukla Examination Section	----- abhilashshukla.mca@charusat.ac.in
Dr. Ritesh Patel Coordinator, E-governance	5251 coordinator.egov@charusat.ac.in
Shri Ritesh Bhatt WIN Cell Coordinator	5106 riteshbhatt.win@charusat.ac.in
Mr. Sujal Dadhaniya Corporate Development & Placement Cell	5213 tpo@charusat.ac.in,tnp@charusat.ac.in
Dr. Dilip Gosai Head, Charusat Rural Education Development Programme	5160 head.credp@charusat.ac.in
Dr. Gayatri Dave Chairperson, Women Development Cell	5197 gayatridave.bt@charusat.ac.in
Dr. Mrunali Patel Chairperson, Internal Complaint Committee	5163 chairperson.icc@charusat.ac.in
Dr. Vijay Panchal Head, Equal Opportunity Cell	5081 vijaypanchal.cv@charusat.ac.in
Shri Mukesh Patel Nodal Officer of Student Grievance Redressal Cell	5029 nodalofficergrc@charusat.ac.in
Dr. Vijaykumar Chaudhary Convenor, Anti-ragging Cell	5221 vijaychaudhary.me@charusat.ac.in