KL (DEEMED TO BE UNIVERSITY)

CATEGORY 1 UNIVERSITY BY MHRD, Govt. of India

45 YEARS OF EDUCATIONAL LEADERSHIP

nirf 2025 NATIONAL INSTITUTIONAL RANKING FRAMEWORK

RANKED 26 AMONG ALL UNIVERSITIES

MASTER OF PHARMACY

PROGRAM HANDBOOK 2025

For Students Admitted in Academic Year 2025-26

VISION

To be a globally renowned university.

MISSION

To impart quality higher education and to undertake research and extension with emphasis on application and innovation that cater to the emerging societal needs through all-round development of students of all sections enabling them to be globally competitive and socially responsible citizens with intrinsic values.


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NATIONAL INSTITUTIONAL RANKING FRAMEWORK
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45 YEARS OF
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LEADERSHIP
AWARDS

Koneru Satyanarayana,

Chancellor

Sri Koneru Satyanarayana, BE, FIE, FIETE, MIEEE graduated in Electronics and Communication Engineering in the year 1977. Along with Sri Koneru Lakshmaiah, he is the co-founder of the Institute which was established in the year 1980. He is an educationist of eminence and also an industrialist of great repute. He runs a number of industries in and around Vijayawada.

Dr. K S Jagannatha Rao

Pro Chancellor

Prof. K. S. Jagannatha Rao was one of the leading scientists in neuroscience research in globe. He was the Director on Institute for Scientific Research and Technological Advances (INDICASAT AIP), Republic Panama and contributed lot in building innovation in higher education and research in Panama since 2010. He played a key role in building PRISM (Panamanian Research Institutes of Science and Medicine) in Latin America. Dr. Rao has his research area on Brain Research and established Alzheimer's Centre and published 165 papers in leading Biochemistry and Neuroscience Journals, supervised 19 Ph.D students. He is also adjunct faculty of Biomedical Informatics of UTHS, Houston, and Advisory Board Member of UT- El Paso Minority Health NIH program, USA and Adjunct Faculty, Methodist Research Institute, Houston, USA. He was elected Member of Panamanian Association for the Advancement of Science (APANAC) - Considered as National Science Academy of Panama. He received his undergraduate and Ph.D degrees from Sri Venkateswara University, Tirupati. Later, joined in Central Food Technological Research Institute, Mysore. He received Sir C. V. Raman Award by Karnataka State Council of Science and Technology, 2003.

Prof. G P S Varma

Vice Chancellor

Prof. G P S Varma, Vice-Chancellor, KLEF, is one of the most widely experienced leaders in Indian higher education, known for his commitment to expanding student opportunity, catalyzing academic innovation, and encouraging university's civic engagement and service to society. He adorned the position of Chairman, ISTE (Indian Society for Technical Education)- AP State, TSEMCET Test Committee Member-2021 nominated By Telangana State Govt, APEAMCET Admission Committee Member in 2016 by Andhra Pradesh State Council of Higher Education, Govt. of Andhra Pradesh. He has been a very farsighted Peer Team Visit Member for National Assessment and Accreditation Council (NAAC), Expert Committee Member for University Grants Commission (UGC) Autonomous Visits. He has been an Advisory Council Member for (CEGR) Centre for Education Growth, and Research India International Centre, New Delhi, and Board Member for Big-Data Analytics Forum.

Dr. K Rajasekhara Rao

Pro-Vice Chancellor

Dr. Kurra Rajasekhara Rao, Pro-Vice Chancellor is a professor of Computer Science and Engineering (C.S.E.) having more than 35 years of teaching and research as well as administrative experience. His current research interests include topics related to Embedded Systems, Software Engineering, Software Testing, Data Sciences, Image Processing and Knowledge Management. He has authored a book and has more than 240 research publications in various International/National Journals and Conferences. Dr. KRR is a recognized as 'Research Guide' in many reputed universities and 32 doctorates were awarded under his guidance till now.

Prior to this, he discharged duties in various organizations, as a Director, Usha Rama College of Engineering & Technology (Autonomous), Telaprolu, A.P, Director, Sri Prakash College of Engineering (SPCE), Tuni and as a faculty member in various positions in KLCE/K.L.University, Andhra Pradesh for over 20 years. He contributed as a Member in Board of Studies for CSE & IT, at various prestigious institutions like Acharya Nagarjuna University, Krishna University, Sree Vidyaniketan Engineering College, Tirupathi and Bapatla Engineering College, Bapatla. He extended his services to K.L. University as Member in Board of Management, Dean's Council, Academic Council, Standing Committee, Research Board & Board of Studies [CSE].

Dr. KRR' s outstanding contributions have been honoured by various organizations. He received the "Patron Award" from Computer Society of India (CSI), India's prestigious professional society in the years 2011 (Ahemadabad) and 2020 (Bhuvaneswar). Recognising his administrative capabilities, Association of Scientists, Developers and Faculties (ASDF) through Puducherry CM honoured him with the "Best Dean" award in the year 2012. He was felicitated with the "Aacharya Ratna" from Indian Servers, IMPACT and Lions Club in the year 2019. Received "Bhishmacharya" Award in 2022 by Bharath Educational Excellence Awards. He got honoured as "Global Faculty" by AKS Education awards in 2023 and "Lifetime Achievement Award" by AIMER Society for the year 2024.

Dr. N Venkatram

Pro-Vice Chancellor

Dr. Venkatram Nidumolu, Pro-Vice Chancellor is High performing, strategic thinking professional with more than 15years of administration experience and 20 years of teaching experience in KLEFand 30 years overall experience in the higher education sector. He graduated in B.Tech (ECE) from Acharya Nagarjuna University, pursued M.S degree from BITS, PILANI in software Systems. He received Ph.D award from Acharya Nagarjuna University. He held the positions like HOD, Joint Register, Principal, and Dean-Academics before becoming Pro-Vice Chancellor. He was core member of all NBA, NAAC, & other accreditations since 2004 and he has good experience in handling of quality issues and assessment related practices.

Dr. A V S Prasad

Pro-Vice Chancellor

Dr. A. V. S. Prasad, M.E and Ph.D from JNTU, Hyderabad is a professor in Civil Engineering. He has a rich experience of 33 years in academics which includes 26 years in administration at various cadres ranging from Head of Department, Dean, Principal, Director and Pro-Vice Chancellor. He has served as Director of Audisankara group of institutions and Narayana Group of Institutions for 18 years and was instrumental in getting these institutions accredited by NAAC, NBA, Autonomous and gained many laurels from the State Government, JNTU etc. He has served as Pro-Vice Chancellor of KL University for 3 years.

He has extensive knowledge of administrative system, maintaining statutory norms of bodies like AICTE, UGC etc and has a good understanding of NBA, NAAC procedures and norms. He served as Member, Chairman of Board of Studies at JNTU(A), KLCE(Autonomous) and KL University.

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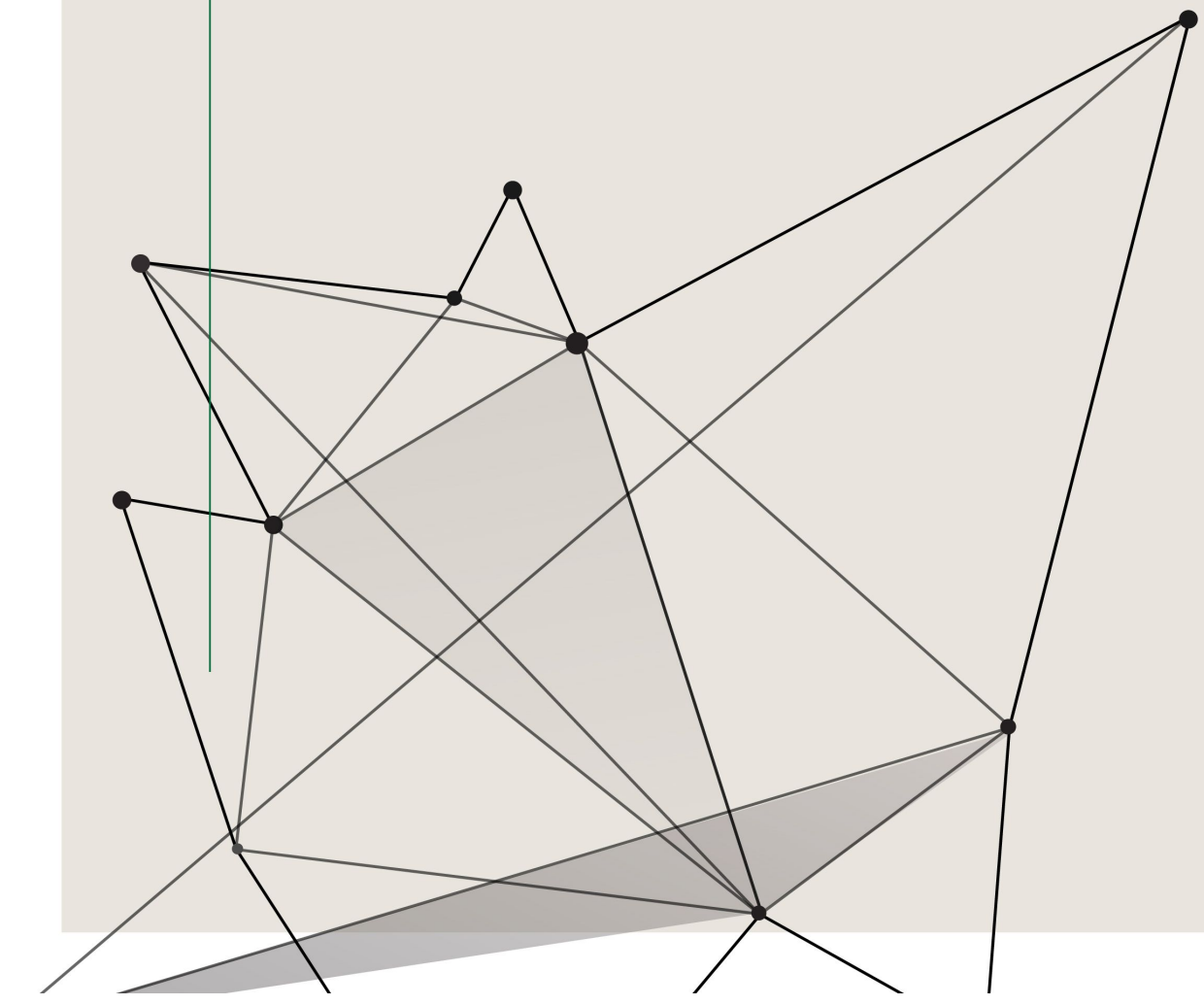
ABOUT THE DEPARTMENT

KL College of Pharmacy (KLCP), part of Koneru Lakshmaiah Education Foundation, is a premier institution dedicated to pharmaceutical education and research. Established in 2016 with the goal of preparing skilled professionals for the pharmaceutical and healthcare sectors, KLCP offers undergraduate (B. Pharmacy), postgraduate (M. Pharm in Pharmaceutics and Pharm. D), and doctoral programs (Full time and part time PhD) in pharmacy. The college emphasizes a blend of theoretical knowledge and practical skills, facilitated by state-of-the-art laboratories, advanced research facilities, and experienced faculty.

KLCP focuses on research-driven education and innovation in areas such as drug formulation, pharmaceutical technology, pharmacology, pharmaceutical chemistry and pharmacotherapeutics. With strong industry partnerships and a curriculum aligned with global standards, the college prepares students for successful careers in research, healthcare, and pharmaceutical industries. Its commitment to excellence is reflected in its collaborations with government agencies, industry bodies, and reputed international universities, positioning KLCP as a hub for advancing pharmaceutical sciences.



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VISION

Lead the future of global healthcare and well-being of the communities we serve.

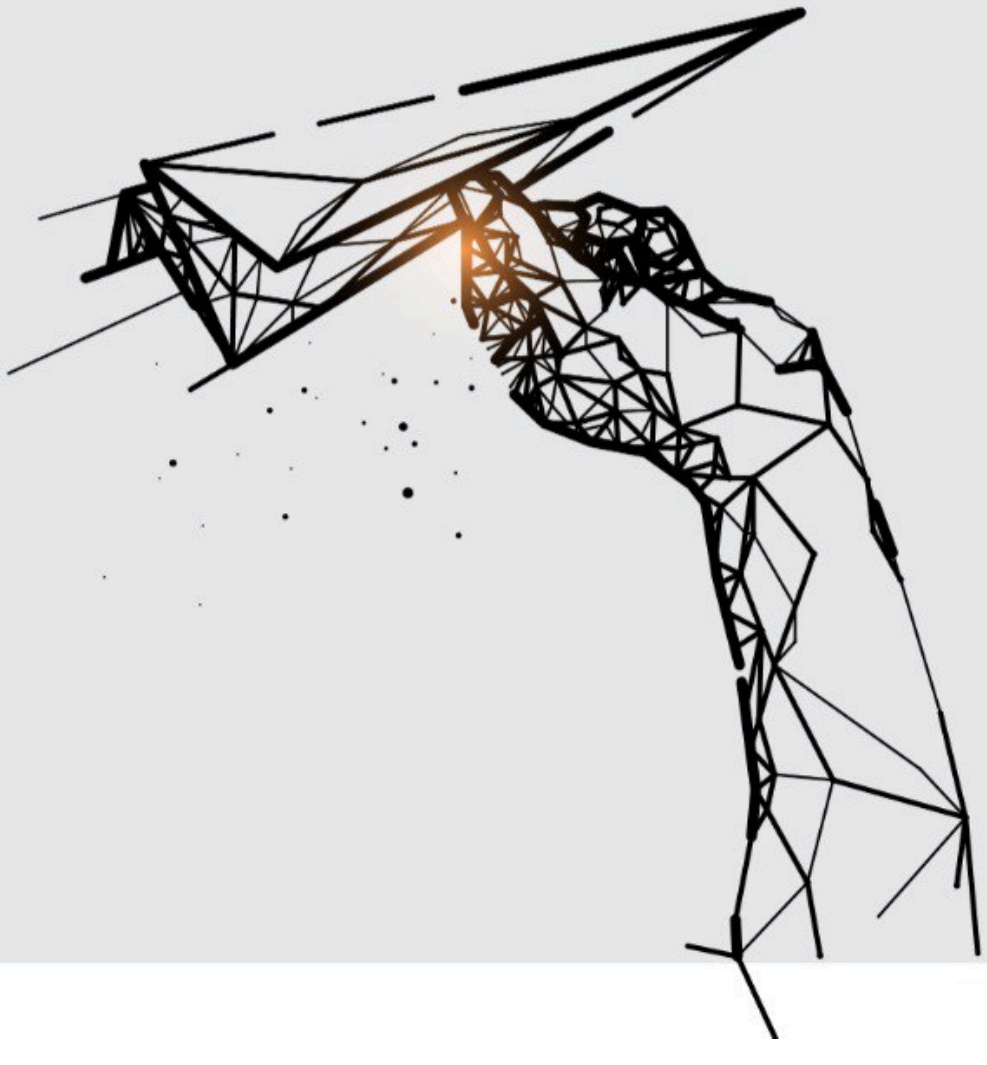
MISSION

Education: Provide the most comprehensive and highest quality education for pharmaceutical sciences in a learning environment that embraces diversity, equity, integrity, ethics, moral courage and accountability.

Community service: Conduct health education programs to the community to prevent disease and improve public health and wellness by fostering an environment that promotes the safe, efficacious, and cost-effective use of medications.

Research: Develop a passion for discovery and innovations with multidisciplinary collaborative research and engage in creative partnerships locally and globally to advance health education, research, and practice.

Entrepreneurship: Encourage and support resourcefulness, originality, imagination, ingenuity, and vision in our students, faculty, and staff. Foster the development of entrepreneurs who have the ability to dream, inspire and innovate and courage to envisage the commercial success and socio economic productivity of innovations.



(DEEMED TO BE UNIVERSITY)

Y25: M.Pharm (Pharmaceutics)

Program Handbook

Program Educational Objectives (PEOs)

PEOs

PEO	PEO Description
1	Knowledge & Understanding: To showcase the knowledge of pharmaceuticals, medication use and their safety and effectiveness.
2	Skill: To demonstrate their skills in providing quality pharmaceuticals, drug information and therapy including legal and ethical aspects.
3	Attitude: To evaluate technological advancements, continuously update professional knowledge, and actively participate in the implementation of national health programmes.

Program Outcomes & Program Specific Outcomes (PO & PSO)

PO & PSO

PO/PSO	PO/PSO Description
PO1	Advanced Pharmaceutical Knowledge: Apply core and emerging concepts of pharmaceutical sciences to develop, evaluate, and optimize innovative drug formulations, delivery systems, and therapeutic strategies.
PO2	Research Competence and Innovation: Design and execute independent and collaborative research projects using advanced experimental techniques, analytical tools, and data interpretation methods to address contemporary pharmaceutical challenges.
PO3	Regulatory and Ethical Proficiency: Demonstrate in-depth understanding of regulatory frameworks, quality systems (GMP, GLP, ICH guidelines), and uphold ethical standards in academic, industrial, and clinical research environments.
PO4	Technology Integration and Problem Solving: Utilize modern instruments, software, and digital technologies including QbD, computational modeling, and automation to analyze complex pharmaceutical problems and propose evidence-based solutions.
PSO1	To equip students with knowledge and skills in formulation design, product development, in vitro and biopharmaceutical evaluation, and optimization techniques to achieve improved therapeutic efficacy.
PSO2	To engage in research and promote entrepreneurial initiatives that address the needs of the healthcare sector and benefit society.

Program Rules & Regulations

Admission Eligibility Criteria

A Pass in the following examinations a) 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.) b) 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.)

Program Structure and Curriculum

For each academic program, the curriculum serves as a framework that specifies the credits, course category, codes, titles, and delivery methods (Lectures, Tutorials, Practice, Skills, Projects, Self-Study, Capstone Design, etc.) under the **Choice-Based Credit System (CBCS)**. The curriculum is designed, implemented, and assessed following the **Outcome-Based Education (OBE)** framework.In designing the curriculum, we ensure the integration of key contemporary and traditional values by embedding Indian Knowledge Systems (IKS), Sustainable Development Goals (SDGs), and Design Thinking principles into courses at their inception.

- Each **Academic Year** consists of two regular semesters, each approximately 20 weeks including classwork and exams:
    - **Odd Semester:** July to December
    - **Even Semester:** December to May
- A **Summer Term** may be offered from May to June but is not considered a regular semester for calculating program duration.
- Students have the flexibility to choose courses as prescribed by KLEF.
- Each course has a **Lecture-Tutorial-Practice-Skill (L-T-P-S)**component.

Course Credit Structure:

Credits are allocated to courses based on the **L-T-P-S** structure:

- Every **Lecture** or **Tutorial** hour equals **1 credit**.
- Every **Practical** hour equals **0.5 credits**.
- Every **Skill-based practice** hour equals **0.25 credits**.

Course Precedence:

The following are the guidelines for registering into courses with pre-requisites.

- A course may have one or more of its preceding course(s) as pre- requisite(s).
- To register for a course, the student must successfully be promoted in these course(s) earmarked as pre-requisite(s) for that course.

Registration Process

Key Guidelines:

- **Course Availability:** Students are permitted to register only for courses offered in the specific semester of enrollment.
- **Prerequisites:** Any prerequisite courses must be successfully completed before registering for subsequent courses.
- **Timely Registration:** Students must register on the designated registration day. KLEF reserves the right to deny late registrations.

- **Add/Drop/Change Period:** Students have a one-week window from the start of classes to add a course and two-weeks to drop or change courses.

- **Credit Limits:**
  - The recommended credit load is 22-24.
  - The maximum credit load per semester is 30.
  - If a student finds the standard load overwhelming, they can opt for deceleration, taking fewer courses now and making up the credits in a future summer semester.
  - Students in honors programs or pursuing a minor may be allowed to take on a heavier load through overloading, subject to eligibility criteria.

- **Elective Course Availability:** KLEF may cancel elective courses with low enrollment within the first week. Students will be able to switch to another elective if they meet its prerequisites.

- **Re-registration:** If a student wants to improve their grade in a course, they can re-register for it with approval from the Dean of Academics.

- **Registration Cancellation:** KLEF can cancel a student's registration for disciplinary reasons or plagiarism.

- **Timetable Clashes:** Students are responsible for resolving any timetable conflicts. They should contact their Department Year Coordinator immediately if any clashes arise.

- **Irregularities:** If any irregularities are found in a student's registration later on, KLEF may cancel their registration for a course or even the entire semester.

Registration Flexibilities:

- **Choice of electives:** Students have the flexibility to choose from a diverse set of elective courses that align with their personal interests or career objectives.

- **Choice of faculty:** Students have the flexibility to choose their preferred faculty members for certain courses, depending on departmental policies and course availability.

- **Acceleration & Overloading:** Students can accelerate their progress by taking courses from the next semester in advance, or overload by taking more credits than the standard limit. Prior permission from the Dean of Academics is required for either of these.

- **Deceleration & Underloading:** If students need to lighten their course load, they can decelerate by postponing some courses to the next semester, or underload by taking fewer credits than usual. Students who do not register on time, may also be forced to decelerate to compensate the classwork that they missed due to late registration. In both the cases of deceleration, permission must be sought from Office of Dean Academics through proper channel.

Summer Term Registration:

The Summer Term is designed to help students catch up or get ahead. Here are the guidelines:

- **Eligibility:** Students can register for summer courses if they have backlogs to clear, need to fulfill pre-requisites, or have been approved for acceleration.

- **Credit Limit:** The maximum credit load for the summer term is 12.

- **Timetable Clashes:** Students should ensure there are no conflicts in their summer course schedule.

- **Attendance & Promotion:** The same policies apply as in regular semesters, except that attendance condonation is not available in the summer.

Course Categories

- **Professional Core Courses (PCC):** Professional Core Courses (PCC) are essential courses within each engineering discipline that provide foundational knowledge and skills critical to the field. These courses are integral to the curriculum and ensure that students acquire the core competencies necessary for their professional practice.

- **Skill Development Courses (SDC):** Skill Development Courses are designed to equip students with practical, hands-on skills that enhance their employability and professional capabilities. These courses often focus on soft skills, technical proficiency, and industry-relevant competencies, such as communication, teamwork, leadership, digital literacy, and industry-specific software tools. By offering both theoretical knowledge and practical training, these courses help bridge the gap between academia and the professional world.

- **Project Research and Internship (PRI):** Project Research and Internship courses provide students with real-world experience by engaging them in research projects and internships in industry or academia. These courses are essential for developing practical problem-solving skills, fostering innovation, and giving students the opportunity to apply the theoretical knowledge gained in the classroom to real-life scenarios. Through internships and research projects, students can gain industry exposure, improve their technical skills, and prepare themselves for professional careers or advanced studies.

- **Value-Added Courses (VAC):** Value-Added Courses are designed to enhance employability by providing students with training that leads to globally recognized certifications or specialized skills. These courses focus on industry-relevant knowledge and practical applications, ensuring students are well-prepared for current job market demands. By offering advanced skills and certifications, Value-Added Courses give students a competitive edge in their careers.

- **Audit Course (AUC):** Audit courses are courses that students can attend without receiving a formal grade or credit towards their degree. These courses are often chosen by students who want to learn a subject for personal enrichment or to gain knowledge in areas outside of their major.

Requirements for the award of Degree

To be eligible for the award of a M.Pharmacy. degree, a student must successfully fulfill the following criteria:

- **Credit Requirements:** Earn the minimum number of credits specified in the program structure.

- **Focused Training:** Successfully undertake specific training in focused areas that enable students to be successful in their chosen career tracks. The focused areas are: (a) Employment in MNCs, (b) Civil Services (c) Higher Studies (d) Research and (e) Entrepreneurship.

- **Certifications:** Successfully complete at least one global certification or value-added course in the chosen discipline.

- **Audit Courses:** Successfully complete all audit courses outlined in the program structure.

- **Minimum CGPA:** Achieve a minimum Cumulative Grade Point Average (CGPA) of 5.0 by the end of the program.

- **Extra Courses:** Students with extra courses having 'DT' or 'F' grades can still graduate if they meet all other requirements. However, these courses will be factored into the CGPA calculation.

- **Time Limit:** Complete all requirements within:
    - A minimum of 4 regular semesters (excluding summer terms)
    - A maximum of 4 years

Academic Bank of Credits

- ABC helps the students to digitally store their academic credits from any higher education institute registered under ABC in order to award Certificate/Diploma/Degree/Honors based on the credits earned by the student.
- All the credits acquired by the students are stored digitally by registering into Academic Bank of Credits (ABC) portal. It also supports retaining the credits for a shelf period and continue their program study with multiple breakovers.
- Students may exit from their current program of study due to any unforeseen reasons or to focus on their chosen career path. In such cases, the student may break for a period of time (preferably not in the middle of an academic year) and may continue with the program of study at a later stage.
- Students must be able to complete their program by not exceeding the maximum duration of the program. If not, they may be issued with a Certificate, diploma, degree or honors based on the credits acquired over the period of time for all the programs approved by UGC.

Award of Class

A student having cleared all the courses and met all the requirements for the award of degree with

- Minimum of 5 CGPA is considered as Pass criteria for a student.
- CGPA of 5.00 to 5.99 will be awarded Second class.
- CGPA of 6.00 to 7.49 will be awarded First class.
- CGPA of 7.5 and above will be awarded First class with Distinction provided the student has cleared all the courses in first attempt

Award of Medals

KLEF awards Gold and Silver medals to the top two candidates in each program after successful completion of their study. The medals are awarded based on their CGPA during the Annual Convocation with the following constraints:

- The grade obtained through betterment/ supplementary will not be considered for this award.
- He/She must have obtained first class with distinction for the award of Gold or Silver-medal.

Course Flexibilities

In line with the institution's commitment to personalized learning, courses are offered in multiple modes, allowing students to tailor their academic journey based on personal preferences, career goals, and learning styles. The available modes include:

- **Regular Mode:** It is the traditional method of learning, involving in-person classroom instruction, a structured curriculum, and traditional assessments. This mode provides students with a structured and predictable learning environment, facilitating direct interaction with professors and classmates. It is suitable for students who prefer a traditional learning approach and value face-to-face interaction.

- **MOOCs Mode:** Massive Open Online Courses (MOOCs) are utilized to support independent learners, such as students engaged in internships or practice school. Students can earn credits by completing accredited online courses at their own pace. Assessments in this mode may include online quizzes, certifications, and institutional evaluations.

- **Work-in-lieu Mode:** It allows students to substitute certain coursework with relevant work experience, internships, or on-the-job training. Credits are awarded based on the work performed, and evaluations are typically centered around performance reports, supervisor evaluations, and reflective essays. This mode is ideal for students who want to gain practical experience while fulfilling academic requirements.

Attendance calculation in a course

- **Attendance calculation for LTPS:** Attendance of a student on a course is calculated based on the credit-weighted average of the student's attendance in each of the LTPS components of the course.

- **Attendance start date:** Attendance is counted from the class commencement date. However, for transferred or newly admitted students, attendance in their admitted semester is counted from the date of admission.

Attendance requirements leading to promotion

- **Minimum Attendance:** 80% attendance is required for course promotion and appearing for the semester-end exam.
- **Condonation:** Up to 10% condonation by Principal, College of Engineering, is possible for medical emergencies with proper documentation submitted within a week. Students will be levied a condonation fee to appear for the semester-end exam.
- **Marginal Cases:** Attendance slightly below 70% due to severe medical or valid reasons may be considered for further relaxation by the condonation board appointed and headed by the Vice-Chancellor.

Attendance-based marks

- **Marks:** Course coordinators can allocate up to 8% of the total marks for attendance for theory based courses and 10% of total marks for attendance for practical/skill based courses, clearly stated in the course handout and approved by the Dean of Academics through proper channel..

- **Mark Distribution:** Marks are awarded based on attendance ranges: 95-100 is 8 marks, 90-94 is 6 marks, 85-89 is 4 marks, 80-84 is 2 marks and less than 80 is 0 mark. Further, for M. Pharm (Practical Courses) the distribution of marks, if the attendance percentage is 95-100 is 10 marks, 90-94 is 7.5 marks, 85-89 is 5 marks, 80-84 is 2.5 marks and less than 80 is 0 mark.

- **Applicability:** Attendance marks, apply to all L-T-P-S components.

Attendance waiver

- **Eligibility:** Students with a CGPA and SGPA of 9.00 or higher in the previous semester can get an attendance waiver for up to three courses in the next semester, with prior approval from the Dean of Academics through proper channel.

- **Conditions:** Students using the attendance waiver can participate in all assessments and evaluation components without being marked ineligible due to attendance-based regulations.

Compensatory (Extra) attendance policy

- **Eligibility:** Students representing KLEF in events or participating in co-curricular / extracurricular activities can get compensatory attendance with prior written approval.

- **Limit:** Compensation is limited to 10% of total classes per course per semester and doesn't apply to the summer term.

Course-based promotion and detention policy

- **Minimum Attendance:** Students must meet the minimum attendance requirement to be promoted in a course. If a student fails to meet this requirement, their grade in the course will be marked as "DT", indicating that the student is detained in the course.

- **Next Steps after detention:** Student must re-register in a detained course and study it completely by attending the classwork, submitting all assessments, taking all evaluation components

Eligibility for appearing Sem-End Examination

A Student registered for a course and got promoted is eligible to write the Semester End Examination for that course unless found ineligible due to one or more of the following reasons:

- Shortfall of attendance.
- Acts of indiscipline.
- Withdrawal from a course.
- Non-payment of examination fees.
- Without a hall ticket.

Assessment & Evaluation

The assessment in each theory subject consists of Sem In Exams, in class quizzes/tutorials/home-assignments/Active Learning Methods (continuous assessment) and the Semester End Exanimation (SEE). Students are advised to refer to the course handout to get more detailed information on assessment.

- Sem In Examinations and the Semester End Examinations will be conducted as per the Academic Calendar.
- As per the necessity, the Supplementary examinations will be conducted at the discretion of Dean Academics with the approval of the Vice Chancellor.
- Students may have to take more than one examination in a day during Sem In exams, Semester End Examinations /Supplementary examinations.

College / School Name	Semester-In Evaluation (Weightage in percent) (A)	Sem End Examination (Weightage in percent) (B)	Minimum requirement for pass percent	
			(A+B)	B
College of Pharmacy	25	75	50	25

Semester-In Evaluation

The following guidelines are followed for the Semester In evaluation.

- The process of evaluation is continuous throughout the semester
- The distribution of marks for Semester In evaluation is 25 percent of aggregate marks of the course.
- The distribution of weightage for various evaluation components are decided and notified by the course coordinator through the course handout after approval by the Dean Academics, prior to the beginning of the semester.
- In order to maintain transparency in evaluation, answer scripts are shown to the students for verification, within one week of conduct of exam. If there is any discrepancy in evaluation, the student can request the course coordinator to re-evaluate.
- The solution key and scheme of evaluation for all examinations are displayed by the Course Coordinator in the appropriate web portal of the course, on the day of the conduct of examination.
- In case the student is unable to appear for any evaluation component owing to hospitalization, participation in extra/ co-curricular activities representing KLEF/ state/ country; the Dean Academics can permit to conduct of re-examination for such students.
- In case a student has missed any of the two in semester evaluations, S/he is eligible for and will be provided with an opportunity of appearing for re-examination.
- The pattern and duration of such examination are decided and notified by the Course Coordinator through the Course handout, after approval from the Dean Academic.
- To maintain transparency in evaluation, answer scripts are shown to the students for verification. If there is any discrepancy in evaluation, the student can request the Controller of Examinations to re-evaluate.
- If a student earns F grade in any of the courses of a semester, an instant supplementary exam (for only Semester End Exam component) will be provided within a fortnight of the declaration of the results.

Semester-End Evaluation

The following guidelines are followed for the End Semester evaluation.

- The end-semester evaluation typically includes a variety of components such as Sem End Exams, projects, presentations, or practical assessments, skill assessments as detailed in the course handout.
- Each component is evaluated based on the criteria outlined in the course handout.
- The distribution of weightage for various evaluation components are decided and notified by the course coordinator through the course handout after approval by the Dean Academics, prior to the beginning of the semester.
- To pass in a course, student must meet or exceed the minimum passing marks specified for each end semester summative assessment component mentioned in the course handout.
- The key and scheme of evaluation for all examinations are displayed by the Course Coordinator in the appropriate web portal of the course, on the day of the conduct of examination.
- In case the student is unable to appear for any Sem end summative evaluation component owing to hospitalization, participation in extra/ co-curricular activities representing KLEF/ state/ country; student can request for re-examination by taking prior permission from Dean Academics.
- If a student earns F grade in any of the courses of a semester, an instant supplementary exam (for only Semester End Exam component) will be provided within a fortnight of the declaration of the results.

Absence in Assessment and Examination

If a student misses a formative assessment component (quizzes, assignments, etc.) due to illness or other valid reasons, no retakes will be permitted, and a score of zero will be recorded. However, in cases of an excused absence, the instructor may allow the student to retake the assessment, subject to written approval from both the Principal and the relevant Head of Department.

Make-up Exams:

A student's absence from Semester In or Semester End Exams will only be considered for a make-up exam under the following circumstances.

- Pre-approved participation in university/state/national/international co-curricular or extracurricular activities.
- Illness or medical emergencies resulting in hospitalization, with a doctor's certification explicitly stating the student's inability to attend the exam within the designated period.
- Death of an immediate family member.

Remedial Exams:

- Remedial exams are conducted for students who score less than 60% on Semester In Exam I and have attended at least 85% of the remedial classes.
- For courses without remedial classes, no remedial exam will be scheduled.
- If a student does not take or scores less than 60% on Semester In Exam I, they must attend remedial classes and maintain a minimum 85% attendance to be eligible for the remedial exam. The remedial exam score will then be considered.
- The number of remedial classes will be 33% of the regular classes held prior to Semester In Exam I. However, there are no remedial exams for Semester In Exam II or laboratory exams.

Remedial Classes Policy

The following categories of students are recommended to attend Remedial classes:

- Students who did not attend or obtain a minimum of 60 percent marks in the Sem In exam1.
- Students for whom CO1/CO2 is (are) not attained in Sem In Exam 1
- Any other student may also be permitted to attend remedial classes as per the discretion of the principal.

The following are the guidelines to conduct remedial classes:

- Remedial classes which are scheduled to be conducted usually one or two weeks post conclusion of Sem In exam1.
- The number of remedial classes to be conducted shall be 33 percent of regular classes held till the Sem In exam I.
- Remedial classes MUST NOT be scheduled during regular class work hours.

Assessment of Project/Research based Courses

- All project or research-based subjects must have a defined time limit for completion.
- The specific time limits for completion and schedule for monitoring and evaluation of performance of students will be announced each term.
- The final project report, after getting the plagiarism certificate, only will be considered and evaluated by the panel of examiners.
- Student project reports must follow the guidelines prescribed by the office of Dean Academics.

Grading Process

At the end of all evaluation components based on the performance of the student, each student is awarded based on absolute grading system.

Absolute Grading:

The list of absolute grades and its connotation are given below:

Performance	Letter Grade	Grade Point	Percentage of marks
Outstanding	O	10	90 - 100
Excellent	A	9	80 - 89
Good	B	8	70 - 79
Fair	C	7	60 - 69
Average	D	6	50 - 59
Fail	F	0	0 - 49
Absent	AB	0	Absent

Course handout

A course handout is a document that provides essential information about a specific course. It's like a roadmap that guides you through the course, helping you understand the expectations, assignments, and grading criteria.

Significance of Course Handout:

- **Clarity and Organization:** Course handouts help you stay organized and focused by outlining the course structure, topics, and deadlines.
- **Expectations:** They communicate the instructor's expectations for your participation, assignments, and overall performance.
- **Grading:** Course handouts outline the grading criteria, so you know exactly how your work will be evaluated.
- **Resources:** They often list valuable resources, such as textbooks, articles, or online tools, that can aid your learning.

Expectations from the course handout:

- **Course Description:** A brief overview of the course, its goals, and its relevance to your studies.
- **Learning Outcomes:** Clear goals for what you should be able to do by the end of the course. These outcomes will help you understand the skills and knowledge that are expected to gain.
- **Instructor Information:** Contact details, office hours, and specific communication preferences.
- **Course Schedule:** A tentative timeline of topics, assignments, and exams.
- **Required Materials:** A list of textbooks, articles, or other materials essential for the course.
- **Assessment Methods:** A breakdown of how your final grade will be determined, including the weight of assignments, exams, and participation.
- **Assignment Guidelines:** Detailed instructions for each assignment, including due dates, submission requirements, and expectations.

Effective use of the course handout:

- **Refer to it regularly:** Check back to keep track of important dates and assignments.
- **Highlight key points:** Make notes or highlight sections that are particularly important to you.
- **Ask questions:** If something isn't clear, bring it up in class or during office hours.

Betterment

- A student may reappear for the semester-end examination for betterment, only in the theory part of a course to improve their grade, provided that the student has passed the course, his/her CGPA is less than or equal to 6.75 and the grade in the respective course is equal to or lower than a 'D'. In case of reappearing for a course, the best of the two grades will be considered.

- A student may re-register for any course in any semester during the program to improve their grade if the current grade in the course is lower than 'C', with the approval of the Dean Academics and in accordance with academic regulations.

- A student cannot reappear for the semester-end examination in courses with an L-T-P-S structure such as 0-0-X-X, 0-0-X-0, 0-0-0-X, Social Internship, Technical Internship, Seminar, Term Paper, Project, Capstone Project, Practice School, Industrial Internship.

Supplementary

- A student is eligible for a supplementary exam if they don't meet the minimum passing marks for a course or if they fail any component of the end-of-semester assessments listed in the course handout.

- If a student has failed courses from a previous odd semester that are not offered in the current semester, the supplementary exams for those courses will be scheduled for the summer supply.

- As per the end semester assessment components listed in the course handout (i.e. end semester summative) if student fail any component, they are eligible for a supplementary exam. Only the component(s) student failed will be considered for this supplementary attempt, though in some cases, you might be allowed to retake all components to improve your marks.

- In cases where there is a clash between supplementary exams and other scheduled exams, students may take the supplementary exams during the summer supply.

- If a student fails any of the end-of-semester examinations in an even semester, supplementary exams will be scheduled either within one month after the release of the results (i.e. summer supply) or during the summer term.

- Student must register for supplementary exams within a specified period after the results are declared.

- Student may be required to pay a supplementary exam fee. Details on the fee structure and payment process will be provided along with the supplementary exam notification.

- A student is not eligible for the award of a degree with first class with Distinction, if they opt for the Supplementary option.

Revaluation

Students desirous of seeing their Semester End Examination answer scripts have to apply online to the COE for the same within the timeframe as declared by the COE by paying the prescribed fee through ERP.

- There is no provision for re evaluation in case of Lab/Practical/skilling exams, project, viva voce exam or seminar / design / mini project courses.
- The final grades awarded to each course shall be announced by the COE and the same will be made available to students through the website/notice boards.

Credit Transfer

Credit transfer between KLEF and other Institution:

Credit transfer from KLEF to other institutions: Student studying in KLEF can take transfer to another institution under the following conditions:

- KLEF has signed MOU with the institution

- However, a student, after seeking transfer from KLEF can return to KLEF after a semester or year. Based on courses done in the other institution, equivalent credits shall be awarded to such students.

Credit transfer from another institution to KLEF:

A student studying in another institution can take transfer to KLEF under the following conditions:

- When a student seeks transfer, equivalent credits will be assigned to the student based on the courses studied by the student.

- To determine the equivalent credits for a course from a previous institution on a 10-point scale at KLEF, the number of credits of the course is multiplied by the equivalent grade point of the previous institution and then divided by the number of credits of the corresponding course at KLEF.

- If a course from the previous institution has zero credits and no grade assigned, the student must sit for the final examination for the equivalent course at KLEF.

- A transfer student seeking improvement in any course can take the final examination at KLEF, where the grade received at KLEF becomes the final grade recorded on their grade sheets.

- The student, when transferred from other institutions, must stick to the rules and regulations of KLEF.

- To graduate from KLEF, a student must study at least half of the minimum duration prescribed for a program at KLEF.

Credit Transfer Through MOOCs:

- Undergraduate students can get credits for MOOCs courses recommended by KLEF up to a maximum of 20% of their minimum credits required for graduation. The discretion of allocation of MOOCs courses equivalent to the courses in the curriculum lies with the office of the Dean Academics.

- A student may also be permitted to obtain 20 credits through MOOCs in addition to the minimum credits required for graduation. These 20 credits can also be utilized to acquire a Minor degree or an Honors degree if the courses are pronounced equivalent to those specified for the respective degrees by the office of the Dean Academics. These additional credits through MOOCs if to be considered for CGPA/Minor/Honors degree must be approved by Dean Academics prior to enrollment in the respective MOOCs.

- Students acquiring additional credits for Honors/Minor degree must adhere to the rules governing the award of the respective degree, otherwise, a student applying for registering into additional credits through MOOCs must possess a minimum CGPA of 7.5 till that semester.

Semester Promotion policy

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

Counselling procedure

KLEF is committed to fostering a supportive and nurturing environment for our students, addressing not only their academic needs but also their psychological well-being. To achieve this, KLEF is implementing a comprehensive Mentor-Mentee Scheme aimed at providing holistic support through academic, career, and psychological counselling. To achieve this, KLEF implement a comprehensive Mentor-Mentee Scheme and establish the Central Academic Counselling Board (CACB) in addressing academic, career and student-psychological issues.

The Mentor-Mentee Scheme aims to provide personalized guidance and support to students throughout their academic journey. Each student shall be assigned a mentor from the faculty, who will act as a guide, counselor, and advocate for the student's academic and personal growth. The mentor-mentee relationship is intended to facilitate communication, goal-setting, and problem-solving.

The primary objectives of the Mentor-Mentee Scheme are:

- To facilitate a strong and positive mentor-mentee relationship that supports students' academic growth, personal development, and psychological well-being.

- To offer career counselling, guiding mentees in exploring career options, developing professional skills, and making informed career-related decisions.

- To provide psychological counselling, offering a safe space for mentees to discuss psychological concerns and providing appropriate support or referrals when needed.

- To provide tailored academic counselling, helping mentees set academic goals, plan their course of study, and navigate academic challenges effectively.

Academic Counselling:
The mentors oversee the following academic counselling activities which are not limited to:

- Providing guidance during academic registration sessions
- Monitoring attendance and addressing attendance-related concerns
- Communicating attendance and marks information to parents/guardians
- Addressing concerns related to backlogs and providing advice
- Advising on domain specializations and academic flexibilities
- Assisting students in exploring study abroad opportunities
- Conducting student and parent meetings to address academic concerns

Career Counselling:
The mentors oversee the following career counselling activities which are not limited to:

- Recommending technical skilling courses and certificate programs
- Facilitating internship opportunities and competitive exam preparations
- Guiding students through term papers, projects, hackathons, and coding challenges
- Providing information on higher education options and entrance exams
- Encouraging entrepreneurship awareness and guiding start-ups initiatives
- Assisting students in preparing for placements and future career goals
- Conducting student and parent meetings to discuss career aspirations

Psychological Counselling:
The Mentors oversee the following psychological counselling activities which are not limited to:

- Providing guidance on time management and classroom activities
- Addressing anti-ragging issues and promoting a positive attitude
- Providing support for managing mental stress and promoting well-being
- Addressing hostel, room, home, and food-related concerns
- Conducting student and parent meetings to address personal well-being

Mentor-Mentee allocation

- The Department Academic Counselling Board (DACB) is responsible for assigning approximately 20 students to each faculty member, who will act as their mentor. The mentors will guide and support their assigned students throughout their academic journey.
- Counsellors/mentors will be appointed from the students' respective parent departments, and these faculty members will continue as mentors until the students complete their course.
- The counselling program aims to help students develop their character, academic abilities, professional skills, and social responsibilities. Mentors play a vital role in this process by:
    - Maintaining detailed records of mentor-mentee interactions in the ERP system. Mentors are required to update the ERP with counselling remarks for both students and their parents every fortnight.
    - Providing regular updates to parents about students' academic progress, career developments, and physiological status through various communication channels, including phone calls, SMS, WhatsApp, and Telegram.
    - Ensuring that counselling remarks are accurately recorded in the ERP system, and reflecting these updates in DACB monthly reports and CACB semester reports.

Academic Counselling Board

- Academic Counselling Board is constituted by the Dean Academics. This board shall comprise of the Chairman, Convener, Principal/Director, HOD and Professor/Associate Professor. A student will be put under Academic Counselling Board in the following circumstances:
    - Has CGPA of less than 6.00.
    - Has F grade or Detained in multiple courses.
- The first level of Counselling such students will be done by the Mentor of the student and the HoD followed by the ACB and the list of students who have to undergo the ACB counselling be forwarded by the HoD to the Office of Dean Academics.
- The students undergoing the Academic Counselling Board process may be allowed to register only for a few courses based on the recommendation of Academic Counselling Board.

Rustication policy

A student may be rusticated from the KLEF on disciplinary grounds, based on the recommendations of any empowered committee, by the Vice Chancellor.

Malpractice penalty policy

The following actions constitute malpractice during examinations and are subject to disciplinary actions as outlined below:

Clause 1: Possession of unauthorized material in the examination hall (e.g., paper, notebooks, programmable calculators, cell phones, or any material related to the exam subject). This includes any marks on the candidate's body that could be used as an aid.

Penalty: Immediate expulsion from the examination hall, without cancelling the paper.

Clause 2: a) Providing or receiving assistance, or communicating with others via oral means, body language, or electronic devices (such as cell phones), either inside or outside the examination hall. b) Smuggling in or out answer sheets, additional sheets, or arranging to send out the question paper or answer sheets during or after the exam. c) Using objectionable or offensive language in the answer paper or in communication with examiners, or attempting to influence examiners to award passing marks. d) Exchanging answer scripts or additional sheets in the examination hall

Penalty: Expulsion from the examination hall and cancellation of the comprehensive examination performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him

Clause 3: Copying from any unauthorized material (e.g., paper, books, programmable calculators, palm computers) during the exam.

Penalty: Expulsion from the examination hall, cancellation of the exam performance in that subject, and a fine of Rs. 1000.

Clause 4: a) Taking the answer script outside the exam hall, tearing the script or any part of it inside or outside the hall. b) Appearing for the exam in a drunken condition.

Penalty: Expulsion from the examination hall and cancellation of comprehensive examination performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining comprehensive examinations of the subjects of that semester/year.

Clause 5: a) Disobeying examination authorities, creating disturbances, organizing or instigating a walk-out, threatening or assaulting officials, or damaging property inside or outside the exam hall. b) Possession of any lethal weapon or firearm in the examination hall.

Penalty: Expulsion from the exam hall and cancellation of exam performance in all subjects. The student will be debarred from future exams and may forfeit their seat. Outsiders will be handed over to the police.

Clause 6: Impersonation during the examination.

Penalty: Both the impersonator and the original candidate will be expelled from the exam hall. The original candidate's performance will be cancelled in all subjects, including practical and project work, and they will be barred from exams for two consecutive semesters. Continuation in the course is subject to academic regulations. The impersonator (if an outsider) will be handed over to the police.

Clause 7: Repeated offenses.

Penalty: For a second offense, the candidate will face expulsion from the exam hall and cancellation of all exam performances for that term, with a fine of Rs. 1000. Repeated academic dishonesty may result in the issuance of a transfer certificate (TC).

Clause 8: Any other form of malpractice not specified.

Penalty: Punishment will be determined by the Examination Malpractice Committee and approved by the Vice-Chancellor.

Plagiarism Penalty Policy

Plagiarism is considered a serious breach of academic integrity, compromising both the ethical standards of the university and the intellectual development of students. The university enforces a strict zero-tolerance policy regarding plagiarism, and all students are expected to uphold the highest standards of academic honesty.

Penalties for plagiarism will be applied as follows:

First Offense:

- Minor Plagiarism (e.g., improper citation, small portions of copied work): The student will receive a warning and be required to resubmit the work with proper citations. Marks may be reduced up to 50%.
- Major Plagiarism (e.g., copying significant portions, submitting another person's work): The assignment will receive a grade of zero. The student may be required to attend a mandatory workshop on academic integrity.

Second Offense:

- Any second offense, regardless of severity, will result in a zero for the assignment and an official letter of reprimand placed in the student's record. The student will be placed on academic probation.

Third Offense:

- The student will face suspension from the university for one academic term. A record of academic misconduct will be permanently placed in the student's academic file.

Repeated Violations:

- Further violations after the third offense may lead to expulsion from the university.

In cases of group work, if plagiarism is identified, all group members will be held equally accountable unless it can be demonstrated that the act of plagiarism was isolated to specific individuals.

Terminology

Absolute Grading: Absolute grading is a method of assigning grades based on predetermined criteria or standards rather than comparing student performance to other students in the class (See: Relative Grading where the performances are compared).

Academic Bank of Credits (ABC): Academic Bank of Credits, an initiative of Government of India, is a digital platform that stores the academic credits earned by a student throughout their educational journey. It's essentially a virtual repository of a student's academic achievements.

Academic Council: The Academic Council is the highest academic body of the University and is responsible for the maintenance of standards of instruction, education and examination within the University. The Academic Council is an authority as per UGC regulations and has the right to decide all academic matters including academic research.

Academic Year: It is the period necessary to complete an actual course of study within a year. It comprises of two consecutive regular semesters i.e., Odd and Even semesters.

Acceleration: Acceleration of courses refers to a student's ability to progress through their academic program at a faster pace than traditional timelines.

Attendance: Attendance refers to the record of a student's presence or absence in educational institutions. It is a critical factor influencing academic performance, overall development, and future success.

Audited Course: It is a course of study which has zero credits and has a "Satisfactory" or an "Unsatisfactory" grade.

Backlog Course: A course is considered to be a backlog if the student has obtained 'F' grade or detained in the course.

Basic Sciences: The courses of foundational nature in the areas of Mathematics, Physics, Chemistry, Biology etc., are offered in this category.

Betterment: Betterment is a way that contributes towards improving the students' grade in any course(s). It can be done by either (a) re-appearing or (b) re-registering for the course.

Board of Studies: Board of Studies (BOS) is an authority as defined in UGC regulations, constituted by Vice Chancellor for each of the department separately. They are responsible for curriculum design and update in respect of all the programs offered by a department.

Branch of Study: It is a branch of knowledge, an area of study or a specific program (like Civil Engineering, Mechanical Engineering, Electrical and Electronics Engineering etc.)

Bridge Courses: Courses which are required to bridge the continuity among the Basic sciences/Engineering Sciences/professional courses (both core and electives) and are identified through gap analysis carried out using feedback obtained from various academic stakeholders are termed as Bridge Courses. These courses also do not yield any credits but require a "Satisfactory" result to register into the attached professional courses.

Capstone Project: A capstone project is the culminating academic experience for many students, typically undertaken in the final year of a degree program. It's designed to integrate and apply the knowledge and skills acquired throughout the course of study.

Certificate course: It is a course that makes a student gain hands-on expertise and skills required for holistic development. It is a mandatory, non-credited course for the award of degree.

Change of Branch: Change of branch means transfer from one's branch of study to another.

Compulsory course: Course required to be undertaken for the award of the degree as per the program.

Course: A course is a subject offered by the University for learning in a particular semester.

Course Handout: Course Handout is a document which gives a complete plan of the course. It contains the details of the course viz. Course title, Course code, Pre-requisite, Credit structure, team of instructors, Course objectives, Course rationale, Course Outcomes and the relevant syllabus, textbook(s) and reference books, Course delivery plan and session plan, evaluation method, chamber consultation hour, course notices and other course related aspects. In essence, course handout is an agreement between students (learners) and the instructor.

Course Outcomes: The essential skills that need to be acquired by every student through a course.

Course Withdrawal: Withdrawing from a Course means that a student can drop from a course within the first two weeks of the odd or even Semester (deadlines are different for summer sessions). However, s/he can choose a substitute course in place of it by exercising the option within 5 working days from the date of withdrawal.

Credit: A credit is a unit that gives weight to the value, level or time requirements of an academic course. The number of 'Contact Hours' in a week of a particular course determines its credit value.

Credit point: It is the product of grade point and number of credits for a course.

Credit Transfer: The procedure of granting credit (s) to a student for course(s) undertaken at another institution.

Cumulative Grade Point Average (CGPA): It is a measure of cumulative performance of a student over all the completed semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

Curriculum: Curriculum is a standards-based sequence of planned experiences where students practice and achieve proficiency in content and applied learning skills. Curriculum is the central guide for all educators as to what is essential for teaching and learning, so that every student has access to rigorous academic experiences.

Deceleration: Deceleration of courses typically refers to a student's decision to reduce their course load or extend the time taken to complete a degree program.

Degree: A student who fulfils all the Program requirements is eligible to receive a degree.

Degree Requirements: Degree requirements are the specific courses, credits, and academic standards that a student must fulfill to earn a particular degree.

Degree with Specialization: A student who fulfills all the Program requirements of her/his discipline and successfully completes a specified set of Professional elective courses in a specialized area is eligible to receive a degree with specialization.

Department: An academic entity that conducts relevant curricular and co-curricular activities, involving both teaching and non-teaching staff and other resources.

Designing Your Own Degree: Designing your own degree is a revolutionary concept that empowers students to create a customized educational path aligned with their passions, career goals, and unique learning styles.

Dissertation: Dissertation is a substantial piece of original research written and defended by a candidate for a degree.

Detention in a course: Student who does not obtain minimum prescribed marks in continuous in-semester evaluation and /or minimum prescribed attendance in a course shall be detained in that course.

Double Major Degree: A double major degree allows students to specialize in two academic fields while earning a single bachelor's degree.

Dropping from the Semester: A student who doesn't want to register for the semester should do so in writing in a prescribed format before commencement of the semester.

End-semester Evaluation: End-semester evaluation is a summative assessment conducted at the conclusion of an academic term to measure students' overall performance.

Elective Course: A course that can be chosen from a set of courses. An elective can be Professional Elective, Open Elective, Management Elective and Humanities Elective.

Engineering Sciences: The courses belonging to basic evolutionary aspects of engineering from Mechanical Sciences, Electrical Sciences and Computing like Engineering Mechanics, Data structures, Network Theory, Signal Analysis.

EPICS: EPICS stands for Engineering Projects in Community Service. It's a unique program that combines engineering education with community service.

Evaluation: Evaluation is the process of judging the academic work done by the student in her/his courses. It is done through a combination of continuous in-semester assessment and semester end examinations.

Experiential Learning: Experiential learning is a process through which students develop knowledge, skills, and values from direct experiences outside a traditional academic setting. It involves learning by doing, where students engage in hands-on activities, real-world problem-solving, and reflective practices to gain deeper understanding and practical application of the concepts they are studying.

Flexi-Core course: A Flexi-Core course typically refers to an elective or optional course within a degree program that offers students flexibility in choosing subjects based on their interests and career goals.

Formative Assessment: Formative assessment is ongoing evaluation of student understanding to inform instruction and facilitate learning.

Flipped Learning: Flipped learning is an instructional strategy that reverses the traditional teaching model. In flipped learning, students are introduced to new content outside of class, usually through video lectures, readings, or other materials. The in-class time is then used for more interactive activities, such as discussions, problem-solving, group work, and applying the concepts learned at home.

Grade: It is an index of the performance of the students in a said course. Grades are denoted by alphabets.

Grade Point: It is a numerical weight allotted to each letter grade on a 10 - point scale.

Grade Point Average (GPA): Grade Point Average is a numerical representation of a student's academic performance. It is calculated by averaging the numerical equivalents of letter grades earned in courses, considering the number of credit hours for each course.

Honors Degree: A student who fulfills all the Program requirements of her/his discipline and successfully completes a specified set of additional courses within the same program is eligible to receive an Honors degree.

Humanities, Arts and Social Sciences (HAS): It is a broad term that groups together the academic disciplines of humanities, arts and social sciences.

Industrial Training: Training program undergone by the student as per the academic requirement in any company/firm.

Industrial Visit: Visit to a company/firm as per the academic requirement.

Internship: Internship is a temporary work experience offered by an organization for a limited period. It provides students, graduates, or career changers with an opportunity to gain practical skills and experience in a specific field.

In-Semester Evaluation: Summative assessments used to evaluate student learning, acquired skills, and academic attainment during a course.

Induction Courses: Student who gets admitted into B.Tech. program must complete a set of Induction courses for a minimum period of 3 weeks and obtain a "Satisfactory" result prior to registering into 1st Semester of the Program.

Innovation Semester: An Innovation Semester is a dedicated academic term focused on cultivating a culture of creativity, problem-solving, and entrepreneurial thinking.

Lecture: A lecture is a formal instructional session where an instructor presents information to a large group of students.

Make-up Test: An additional test scheduled on a date other than the originally scheduled date.

Malpractice: Malpractice typically refers to academic dishonesty or misconduct during examinations or coursework. This can include a wide range of behaviors that compromise the integrity of the evaluation process.

Management elective: A course that develops managerial skills and inculcates entrepreneurial skills.

Minor Degree: A student who fulfills all the Program requirements of her/his discipline and successfully completes a specified set of courses from another discipline is eligible to receive a minor degree in that discipline.

Multiple Entry and Multiple Exit (MEME): It is an educational framework designed to provide flexibility in learning pathways, allowing students to enter and exit educational programs at various stages based on their individual needs, prior knowledge, and career goals.

National Education Policy (NEP): NEP 2020 is a comprehensive framework for transforming India's Education System. It aims to create an equitable and vibrant knowledge society by providing high-quality education to all.

NHEQF: NHEQF stands for National Higher Education Qualifications Framework. It's a comprehensive framework designed to standardize and classify higher education qualifications in India. The primary goal of NHEQF is to ensure that qualifications from different institutions are comparable and recognized nationally and internationally.

Open Elective: This is a course of interdisciplinary nature. It is offered across the University for all Programs.

Overloading: Registering for more number of credits than normally prescribed by the Program in a semester.

Peer Learning: Peer learning is a collaborative learning process where students learn from each other. It involves sharing knowledge, skills, and experiences among peers.

Practical: A practical is a hands-on session where students apply theoretical knowledge in a real-world or laboratory setting. Practical sessions are designed to develop students' technical skills, problem-solving abilities, and understanding of experimental procedures.

Practice School: It is a part of the total program and takes one full semester in a professional location, where the students and the faculty get involved in finding solutions to real-world problems. A student can choose Project/Practice School during his/her final year to meet the final requirements for the award of degree.

Pre-requisite: A course, the knowledge required for registration into higher level course.

Product Development Semester: A Product Development Semester is an academic term dedicated to the process of creating new products or improving existing ones.

Professional Core: The courses that are essential constituents of each engineering discipline are categorized as Professional Core courses for that discipline.

Professional Elective: A course that is discipline centric. An appropriate choice of minimum number of such electives as specified in the program will lead to a degree with specialization.

Program: A set of courses offered by the Department. A student can opt and complete the stipulated minimum credits to qualify for the award of a degree in that Program.

Program Educational Objectives: The broad career, professional, personal goals that every student will achieve through a strategic and sequential action plan.

Program Outcome (PO): Program outcomes are statements that describe what students are expected to know, understand, and be able to do upon completing a specific academic program.

Project: Course that a student must undergo during his/her final year which involves the student to undertake a research or design, which is carefully planned to achieve a particular aim. It is a credit-based course.

Project-Based Learning (PBL): Project-Based Learning is an instructional approach where students actively engage in real-world and personally meaningful projects.

Rapid Prototyping Semester: A Rapid Prototyping Semester is an academic term dedicated to the practical application of rapid prototyping techniques to create physical models or prototypes of products or designs.

Registration: Process of enrolling into a set of courses in a semester/ term of the Program.

Re-Registration: Student who are detained in courses due to attendance or marks criteria as per their regulation are given a chance to re-register for the same and complete it during the summer term.

Relative Grading: Relative grading is a method of assigning grades based on a student's performance compared to the rest of the class.

Remedial Exam: A remedial Exam is an assessment designed to identify specific areas of weakness or gaps in a student's knowledge or skills. It is typically administered after a student has performed poorly on a regular assessment.

Research Project: A research project is a systematic investigation undertaken to answer a specific question or address a particular problem.

Research Semester: A research semester is a dedicated period within an academic program focused on independent research or scholarly inquiry.

Research Seminar: A research seminar is a formal academic gathering where researchers present their ongoing work to a group of peers, faculty, and other interested individuals.

Self-learning: Self-learning is the process of acquiring knowledge and skills independently without formal instruction.

Semester: It is a period of study consisting of 15+1 weeks of academic work equivalent to normally 90 working days including examination and preparation holidays. The odd Semester starts normally in July and even semester in December.

Semester End Examinations: It is an examination conducted at the end of a course of study.

Skilling: It is a process of developing and enhancing specific skills that are essential for performing particular tasks or activities effectively. It involves structured training and practice aimed at equipping individuals with the practical abilities, knowledge, and competencies required for professional success and personal development.

Social Immersive Learning (SIL): Social Immersive Learning is a pedagogical approach that combines the power of social interaction with immersive technologies to create engaging and impactful learning experiences.

Social Service: An activity designed to promote social awareness and generate well-being; to improve the life and living conditions of society.

Student Outcomes: The essential skill sets that need to be acquired by every student during her/his program of study. These skill sets are in the areas of employability, entrepreneurial, social and behavioral.

Substitution of Elective course: Replacing an elective course with another elective course as opted by the student.

Summative Assessment: Summative Assessment is a type of evaluation that occurs at the end of a learning period.

Summer term: The term during which courses are offered from May to July. Summer term is not a student's right and will be offered at the discretion of the University.

Supplementary: A student can reappear only in the semester end examination for the Theory component of a course, subject to the regulations contained herein.

Term paper: A 'term paper' is a research report written by students that evolves their course-based knowledge, accounting for a grade. Term paper is a written original research work discussing a topic in detail. It is a credit-based course.

Tutorial: A tutorial is a small group session designed to provide personalized guidance and support to students. Tutorials often involve discussions, problem-solving activities, and hands-on practice to reinforce concepts learned in lectures.

Under-loading: Registering for lesser number of credits than normally prescribed for a semester in that Program.

Value-Added Courses: Courses leading to global certification and those which are conducted exclusively for employability are referred to as value added courses.

FAQs

Q:What is the Choice-Based Credit System (CBCS) and how does it work?
A: CBCS allows student to choose courses from various categories based on your interests and career goals. Each course has a credit value assigned to it, and you need to earn a minimum number of credits in each category and in total to complete your program.

Q: Can I choose electives based on my interests?
A: Yes, student has the flexibility to choose electives that align with your personal interests and career objectives.

Q: Can I choose my preferred faculty members for certain courses?
A: During registrations prior to commencement of each semester, if a course is offered for multiple sections and if multiple faculty are teaching the same course, you will then have a choice of selecting the section being taught by that faculty under whom you wish to study.

Q: When and how do I register for courses?
A: Student must register for courses on the designated registration day. There is a one-week window for adding courses and a two-week window for dropping or changing them.

Q: Can I get an attendance waiver?
A: Students with a CGPA and SGPA of 9.00 or higher in the previous semester can get an attendance waiver for up to three courses with prior approval.

Q: What is the minimum attendance requirement for promotion?
A: 80% attendance is required for course promotion and appearing for the semester-end exam.

Q: Are there any extracurricular activities or clubs available?

A: Yes, KLEF offers various extracurricular activities and clubs, such as sports, cultural events, and student organizations.

Q: What happens if I have less than 80% attendance?
A: Upto 70% attendance, student may be eligible for condonation or marginal case consideration, but need to provide proper documentation and may be subject to fees. But falling below 70% will make you detain in the course.

Q: What happens if I detain a course?
A: Student who detained in a course must re-register for the course and study it again in summer term. If the detained course is not offered by the department, then the student can study other equivalent course from the same category upon taking approval from office of Dean Academics.

Q: What is ABC?
A: ABC enables you to digitally store your earned credits and potentially use them towards future studies at other institutions.

Q: Will I get my degree upon acquiring all the required credits?

A: Apart from fulfilling the total credit requirement, it is required to fulfill category and sub-category wise credit requirements and outcome requirements (which are clearly mentioned in the degree-wise credit requirements section) to be eligible for award of specific degree.

Q: Can I accelerate or decelerate my studies?

A: Students are generally recommended to register for 20 to 24 credits in each semester. Students who cannot cope up with such load, may consult their counsellor and Head of the Department to register in lower number of credits. This process is called "Deceleration". Students who do not register on time, may also be forced to decelerate to compensate the classwork that they missed due to late registration. In both the cases of deceleration, permission must be sought from Office of Dean Academics through proper channel. On the contrary, Students who wish to accelerate can register for upto 30 credits by selecting courses that are usually offered in later semesters and complete them in advance. Students may also use the optional Summer Term for accelerating courses upto 12 credits. In Similarly, a student may also register for credits lower than. However, you'll need approval from the Dean of Academics.

Q: Can I register for a course without promoting in its pre-requisite course?

A: No, student must promote in the pre-requisite course in order to register for a course having pre-requisite.

Program - Degrees(Design your own Degree)

S#	Major Flexibility	Program Addon
1	No Flexibility	No Add-on

Degree-wise Credit Requirements

1. No Flexibility with No Add-on

a) Credit Requirement **Total Credit Required: 97**

S#	Category	Sub-Category	Min-Credit	Max-Credit	Min-Courses	Max-Courses	Grouping
1	PCC	PCC-CORE	48.0	48.0	11	11	
2	SDC	SDC-CORE	19.0	19.0	7	7	
3	PRI	PRI-CORE	30.0	30.0	2	2	
4	VAC	VAC-CERT	0.0	0.0	1	1	
5	AUC	AUC-CAREER	0.0	0.0	1	1	

b) Outcome Requirement

- Have obtained a minimum CGPA of 5.0 at the end of the program.
- Must have finished all the above-mentioned requirements in less than twice the period of the program, which includes deceleration period chosen by the student, deceleration imposed by KLEF or debarred from the KLEF.

Program Structure

S#	Cat	Sub-Cat	CourseCode	Course Title	Mode	Acrym	L	T	P	S	CR	CH	Pre-req
1	PCC	PCC-CORE	25PY5101	MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	R	MPAT	4	0	0	0	4	4	
2	PCC	PCC-CORE	25PY5102	DRUG DELIVERY SYSTEMS	R	DDS	4	0	0	0	4	4	
3	PCC	PCC-CORE	25PY5103	MODERN PHARMACEUTICS	R	MP	4	0	0	0	4	4	
4	PCC	PCC-CORE	25PY5104	REGULATORY AFFAIR	R	RA	4	0	0	0	4	4	
5	PCC	PCC-CORE	25PY5105	PHARMACEUTICS PRACTICAL I	R	PP-I	0	0	12	0	6	12	
6	PCC	PCC-CORE	25PY5107	MOLECULAR PHARMACEUTICS	R	MP	4	0	0	0	4	4	
7	PCC	PCC-CORE	25PY5108	ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS	R	ABPK	4	0	0	0	4	4	
8	PCC	PCC-CORE	25PY5109	COMPUTER AIDED DRUG DELIVERY SYSTEM	R	CADDS	4	0	0	0	4	4	
9	PCC	PCC-CORE	25PY5110	COSMETIC AND COSMECEUTICALS	R	CC	4	0	0	0	4	4	
10	PCC	PCC-CORE	25PY5111	PHARMACEUTICS PRACTICAL II	R	PP-II	0	0	12	0	6	12	
11	PCC	PCC-CORE	25PY5113	RESEARCH METHODOLOGY AND BIOSTATISTICS	R	RMB	4	0	0	0	4	4	
12	SDC	SDC-CORE	25PY5114	JOURNAL CLUB	R	JC-I	0	0	2	0	1	2	
13	SDC	SDC-CORE	25PY5115	DISCUSSION / PRESENTATION (PROPOSAL PRESENTATION)	R	D/P-I	0	0	4	0	2	4	
14	SDC	SDC-CORE	25PY5117	JOURNAL CLUB	R	JC-II	0	0	2	0	1	2	
15	SDC	SDC-CORE	25PY5112	SEMINAR/ASSIGNMENT	R	S/A-II	0	0	8	0	4	8	
16	SDC	SDC-CORE	25PY5106	SEMINAR/ASSIGNMENT	R	S/A-I	0	0	8	0	4	8	
17	SDC	SDC-CORE	25PY5119	DISCUSSION/FINAL PRESENTATION	R	D/P-II	0	0	6	0	3	6	
18	SDC	SDC-CORE	25PY5120	CO-CURRICULAR ACTIVITIES (ATTENDING CONFERENCE, SCIENTIFIC PRESENTATIONS AND OTHER SCHOLARLY ACTIVITIES)	R	CCA	0	0	8	0	4	8	
19	PRI	PRI-CORE	25PY5118	RESERCH WORK	R	RW	0	0	32	0	16	32	
20	PRI	PRI-CORE	25PY5116	RESERCH WORK	R	RW	0	0	28	0	14	28	
21	VAC	VAC-CERT	25CC3016	BASE SAS	R	BSAS	0	0	0	8	0	8	
22	VAC	VAC-CERT	25CC3069	PHARMACOVIGILANCE	R	PCV	0	0	0	8	0	8	
23	VAC	VAC-CERT	25CC3077	REGULATORY AFFAIRS	R	RGA	0	0	0	8	0	8	
24	AUC	AUC-CAREER	CRTVQRL1V1	CAMPUS RECRUITMENT: VERBAL APTITUDE TRAINING	R	CRT: VAT	0	0	0	8	0	8	
25	AUC	AUC-CAREER	CRTVQRL2V2	CAMPUS RECRUITMENT: QUANTITATIVE APTITUDE TRAINING	R	CRT: QAT	0	0	0	8	0	8	

S#	Cat	Sub-Cat	CourseCode	Course Title	Mode	Acrym	L	T	P	S	CR	CH	Pre-req
26	AUC	AUC-CAREER	CRTVQRL3V3	CAMPUS RECRUITMENT: REASONING APTITUDE TRAINING	R	CRT: RAT	0	0	0	8	0	8	
27	AUC	AUC-CAREER	CRTCSSL1V1	CAMPUS RECRUITMENT: COMMUNICATION SKILLS TRAINING	R	CRT: CST	0	0	0	8	0	8	
28	AUC	AUC-CAREER	CRTCSSL2V2	CAMPUS RECRUITMENT: SOFT SKILLS TRAINING	R	CRT: SST	0	0	0	8	0	8	
29	AUC	AUC-CAREER	CADCORL1V1	CAREER ADVANCEMENT: TRAINING IN CORE DOMAIN	R	CAD: TICD	0	0	0	8	0	8	
30	AUC	AUC-CAREER	CADUPSL1V1	CAREER ADVANCEMENT: UPSC-CIVIL SERVICES EXAM TRAINING	R	CAD: UPSC	0	0	0	8	0	8	
31	AUC	AUC-CAREER	CADENTL1V1	CAREER ADVANCEMENT:ENTREPRENEURIAL CAREER PATHWAY TRAINING	R	CAD: ECPT	0	0	0	8	0	8	
32	AUC	AUC-CAREER	CRTCODL1V1	CAMPUS RECRUITMENT: LOGIC BUILDING SKILLS TRAINING	R	CRT: LBST	0	0	0	8	0	8	
33	AUC	AUC-CAREER	CADCOML1V1	CAREER ADVANCEMENT:COMPETITIVE EXAM TRAINING	R	CAD: COM	0	0	0	8	0	8	

Program Articulation Matrix

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
1	PCC	25PY5101 - MPAT	CO1	Investigation, Characterization and quantification of organic compounds using analytical instruments	3	2			2	
2	PCC	25PY5101 - MPAT	CO2	Investigate and determine the structure of typical organic chemical compounds using NMR spectroscopy	3	2			2	
3	PCC	25PY5101 - MPAT	CO3	Investigate and determine the structure of typical organic chemical compounds using MS spectrometry	3	2			2	
4	PCC	25PY5101 - MPAT	CO4	Understand the isolation, purification and quantification of typical organic chemical compounds using chromatography techniques	3	2			2	
5	PCC	25PY5101 - MPAT	CO5	Understand the concepts of electrophoresis and radio-immuno assays	2	2			2	
6	PCC	25PY5101 - MPAT	CO6	Investigate and determine the structure of typical chemical compounds using X-Ray Diffraction methods	2	2			2	
7	PCC	25PY5102 - DDS	CO1	Understand the process of pilot plant and scale up of pharmaceutical dosage forms	2	2			2	
8	PCC	25PY5102 - DDS	CO2	Understand about suitable drugs and polymers for specific controlled drug delivery systems and discuss modern strategies	2	2			2	
9	PCC	25PY5102 - DDS	CO3	Understand various approaches for rate controlled and ocular drug delivery systems	2	2				2
10	PCC	25PY5102 - DDS	CO4	Understand the formulation concepts involved in development of GRDDS, buccal and transdermal DDS	2	2			2	

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
11	PCC	25PY5102 - DDS	CO5	Apply the evaluation of buccal and transdermal DDs	2	3			3	
12	PCC	25PY5102 - DDS	CO6	Apply novel strategies in delivery of biosimilars like proteins, peptides and vaccines	2	3			3	
13	PCC	25PY5103 - MP	CO1	understand various preformulation concepts in dosage form Development	2				3	
14	PCC	25PY5103 - MP	CO2	Understand new dosage forms by applying the principles of optimization.		2			3	
15	PCC	25PY5103 - MP	CO3	understand validation protocol for solid and liquid dosage forms.		2			3	
16	PCC	25PY5103 - MP	CO4	Apply the cGMP and Industrial management principles in dosage form development		2			3	
17	PCC	25PY5103 - MP	CO5	Understand the process of compaction and compression in solid dosage form development	2				3	
18	PCC	25PY5103 - MP	CO6	Understand the study of consildation parameter	2				3	
19	PCC	25PY5104 - RA	CO1	Understand the concepts of innovator and generic drugs in drug development process	2		2		2	
20	PCC	25PY5104 - RA	CO2	Understand Regulatory requirements for new drug application approval in pharmaceuticals	2		2		2	
21	PCC	25PY5104 - RA	CO3	Understand ICH guidelines for filing and approval process of drug products in different countries	2		2		2	
22	PCC	25PY5104 - RA	CO4	Illustrate the post approval regulatory requirements for products and submission of global documents in Common Technical Document/ eCTD formats	3		3		3	
23	PCC	25PY5104 - RA	CO5	Illustrate the regulatory procedures involved in non-clinical and clinical drug development	3		3		3	

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
24	PCC	25PY5104 - RA	CO6	Apply the principles of regulatory affairs in drug development process, filing and approval, non-clinical and clinical drug development in global scenario	3		3		3	
25	PCC	25PY5105 - PP-I	CO1	Analyse the Pharmacopoeial compounds and their formulations by various analytical techniques	3			3		3
26	PCC	25PY5105 - PP-I	CO2	Preparation and evaluation of the different oral drug delivery systems	3			3		3
27	PCC	25PY5107 - MP	CO1	Understand the concepts involved in Drug targeting systems		2				2
28	PCC	25PY5107 - MP	CO2	Understand the preparation and evaluation of targeting methods		2				2
29	PCC	25PY5107 - MP	CO3	Design and develop various delivery systems for a specific drug target		2				2
30	PCC	25PY5107 - MP	CO4	Understand the preparation and evaluation of Intra nasal formulations		3				2
31	PCC	25PY5107 - MP	CO5	Understand the nucleic acid- based therapeutic drug delivery system		3				2
32	PCC	25PY5107 - MP	CO6	Applications of the potential target diseases for gene therapy		3				2
33	PCC	25PY5108 - ABPK	CO1	Understand the mechanisms and factors affecting ADME processes through GIT	2				2	
34	PCC	25PY5108 - ABPK	CO2	Discuss several biopharmaceutic considerations, BCS, IVIVC and permeability in drug product design and in vitro drug product performance	2				2	
35	PCC	25PY5108 - ABPK	CO3	Understand the impact of drug interactions on drug action	2				2	

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
36	PCC	25PY5108 - ABPK	CO4	Explain the protocol for bioavailability/bioequivalence studies and their role in generic product development	2				2	
37	PCC	25PY5108 - ABPK	CO5	Illustrate the assessment of pharmacokinetic parameters assuming different models	2				2	
38	PCC	25PY5108 - ABPK	CO6	Illustrate the application of pharmacokinetic principles in development of drug products and biosimilars	2				2	
39	PCC	25PY5109 - CADDS	CO1	Understand the history of computers in pharmaceutical research and development	3			3		
40	PCC	25PY5109 - CADDS	CO2	Understand computational modeling of drug disposition	3			3		
41	PCC	25PY5109 - CADDS	CO3	Apply the approaches of optimization techniques in pharmaceutical formulation	3			3		
42	PCC	25PY5109 - CADDS	CO4	Understand the importance of computers in biopharmaceutical characterization	3			3		
43	PCC	25PY5109 - CADDS	CO5	Understand the role of computer simulations in PK-PD and clinical data management	3			3		
44	PCC	25PY5109 - CADDS	CO6	Illustrate the application of AI, robotics and CFD in pharmacy field	3			3		
45	PCC	25PY5110 - CC	CO1	Understand the Regulatory provisions related to the import, manufacture and sale of cosmetics.		2			1	
46	PCC	25PY5110 - CC	CO2	Understand the diverse skin problems and how to overcome through skin preparations		2			1	
47	PCC	25PY5110 - CC	CO3	Understand the Formulation and evaluation of a variety of cosmetic products.		2			1	
48	PCC	25PY5110 - CC	CO4	Understanding the key ingredients and basic science to develop cosmetics and Cosmeceuticals.		2			1	

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
49	PCC	25PY5110 - CC	CO5	Understand the knowledge of the various technologies involved in cosmetics manufacture.		2			1	
50	PCC	25PY5110 - CC	CO6	Understand the Design of cosmeceuticals and herbal formulations .		2			1	
51	PCC	25PY5111 - PP-II	CO1	Development and evaluation of different novel drug delivery systems by applying various computational tools		3		3	2	
52	PCC	25PY5111 - PP-II	CO2	Apply PK-PD simulation models in drug design and development, cosmeceuticals preparation		3		3	2	
53	PCC	25PY5113 - RMB	CO1	Understand the basic principles of research methodology and its role in pharmaceutical aspect		3			2	
54	PCC	25PY5113 - RMB	CO2	Understand the basic concepts of biostatistics		3			2	
55	PCC	25PY5113 - RMB	CO3	Illustrate the importance of biostatistics in research		3			2	
56	PCC	25PY5113 - RMB	CO4	Develop research proposal following the principles of medical research		3			2	
57	PCC	25PY5113 - RMB	CO5	Apply the guidelines of CPCSEA in preclinical experimentation		3			2	
58	PCC	25PY5113 - RMB	CO6	Understand the principles of Declaration of Helsinki		3			2	
59	PRI	25PY5116 - RW	CO1	Review the latest literature in selected area of work		2		2		2
60	PRI	25PY5116 - RW	CO2	Conduct research experiments to meet the aim and objectives of proposed research work		2		2		3
61	PRI	25PY5116 - RW	CO3	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement		2		2		3

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PSO1	PSO2
62	PRI	25PY5116 - RW	CO4	Document the findings of conducted experiments		2		2		3
63	PRI	25PY5116 - RW	CO5	Interpret the results obtained and summarize the work with a conclusion		2		2		2
64	PRI	25PY5116 - RW	CO6	I Interpret the results obtained and summarize the work with a conclusion		2		2		2
65	PRI	25PY5118 - RW	CO1	Review the latest literature in selected area of work		2		2		2
66	PRI	25PY5118 - RW	CO2	Conduct research experiments to meet the aim and objectives of proposed research work		2		2		3
67	PRI	25PY5118 - RW	CO3	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement		2		2		3
68	PRI	25PY5118 - RW	CO4	Document the findings of conducted experiments		2		2		2
69	PRI	25PY5118 - RW	CO5	Interpret the results obtained and summarize the work with a conclusion		2		2		2
70	PRI	25PY5118 - RW	CO6	Interpret the results obtained and summarize the work with a conclusion		2		2		2
					2.4	2.3	2.5	2.5	2.1	2.3

Y25: M.Pharm (Pharmaceutics)

Category: Professional Core Courses (PCC)

25PY5101 - MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5101	MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	MPAT	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Investigation, Characterization and quantification of organic compounds using analytical instruments	2	PO1, PO2, PSO1
CO2	Investigate and determine the structure of typical organic chemical compounds using NMR spectroscopy	3	PO1, PO2, PSO1
CO3	Investigate and determine the structure of typical organic chemical compounds using MS spectrometry	3	PO1, PO2, PSO1
CO4	Understand the isolation, purification and quantification of typical organic chemical compounds using chromatography techniques	2	PO1, PO2, PSO1
CO5	Understand the concepts of electrophoresis and radio-immuno assays	2	PO1, PO2, PSO1
CO6	Investigate and determine the structure of typical chemical compounds using X-Ray Diffraction methods	3	PO1, PO2, PSO1

Syllabus

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 Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

NMR spectroscopy: 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, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy

Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.

Chromatography: 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

Electrophoresis: 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

X ray Crystallography: Production of X rays, Different X ray diffraction methods, Braggs law, Rotating crystal technique, X-ray powder technique, Types of crystals and applications of X-ray diffraction.

Reference Books

1 Principles of Instrumental Analysis, Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition (2019), Eastern press, Bangalore.

2 Quantitative Analysis of Drugs in Pharmaceutical formulation , P D Sethi , 3rd edition (2015), CBS Publishers, New Delhi.

3 Spectroscopy by Silverstein, John & Wiley & Sons. Inc.,, 6th edition (2021), Wiley publications.

4 Instrumental Analysis, Willard and Merritt, 7th edition (2004), EWP, East West Press Ltd., Delhi/Madras.

5 Organic spectroscopy., Y.R. Sharma , 5th edition (2013), Chand Publishers, Delhi .

25PY5102 - DRUG DELIVERY SYSTEMS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5102	DRUG DELIVERY SYSTEMS	DDS	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the process of pilot plant and scale up of pharmaceutical dosage forms	2	PO1, PO2, PSO1
CO2	Understand about suitable drugs and polymers for specific controlled drug delivery systems and discuss modern strategies	2	PO1, PO2, PSO1
CO3	Understand various approaches for rate controlled and ocular drug delivery systems	2	PO1, PO2, PSO2
CO4	Understand the formulation concepts involved in development of GRDDS, buccal and transdermal DDS	2	PO1, PO2, PSO1
CO5	Apply the evaluation of buccal and transdermal DDs	3	PO1, PO2, PSO1
CO6	Apply novel strategies in delivery of biosimilars like proteins, peptides and vaccines	3	PO1, PO2, PSO1

Syllabus

Sustained Release SR and Controlled Release CR formulations, Introduction & basic concepts, advantages, disadvantages, factors influencing, Physicochemical and biological approaches for SR and CR formulation, Mechanism of drug delivery from SR, CR formulation. Polymers, introduction, definition, classification, properties and application. Dosage Forms for Personalized Medicine, Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines, Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.

Rate Controlled Drug Delivery Systems- Principles and Fundamentals, Types, Activation. Modulated Drug Delivery Systems; Mechanically activated, pH activated, Enzyme activated, and Osmotic activated Drug Delivery Systems, Feedback regulated Drug Delivery Systems, Principles and Fundamentals. Ocular Drug Delivery Systems, Barriers of drug permeation, Methods to overcome barriers.

Gastro-Retentive Drug Delivery Systems: Principle, concepts, advantages and disadvantages, Modulation of GI transit time approaches to extend GI transit. Buccal Drug Delivery Systems: Principle of mucoadhesion, advantages and disadvantages, Mechanism of drug permeation, Methods of formulation and its evaluations. Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation.

Protein and Peptide Delivery: Barriers for protein delivery. Formulation and evaluation of delivery systems of proteins and other macromolecules. Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccine

Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation.

Protein and Peptide Delivery: Barriers for protein delivery. Formulation and evaluation of delivery systems of proteins and other macromolecules. Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccine

Reference Books

1 Novel Drug Delivery Systems,, Y W. Chien, 1991, Marcel Dekker, Inc..

2 Encyclopedia of Controlled Delivery, Edith Mathiowitz,, 1999, Wiley Interscience Publication, John Wiley and Sons, Inc, New York. Chichester/Weinheim.

3 Controlled Drug Delivery -concepts and advances, S.P. Vyas and R.K. Khar, 2004, Vallabh Prakashan, New Delhi.

4 Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS) , Adeboye Adejare , 2020, Elsevier Academic Press .

25PY5103 - MODERN PHARMACEUTICS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5103	MODERN PHARMACEUTICS	MP	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	understand various preformulation concepts in dosage form Development	2	PO1, PSO1
CO2	Understand new dosage forms by applying the principles of optimization.	2	PO2, PSO1
CO3	understand validation protocol for solid and liquid dosage forms.	2	PO2, PSO1
CO4	Apply the cGMP and Industrial management principles in dosage form development	3	PO2, PSO1
CO5	Understand the process of compaction and compression in solid dosage form development	2	PO1, PSO1
CO6	Understand the study of consildation parameter	2	PO1, PSO1

Syllabus

Preformulation Concepts Drug Excipient interactions different methodskinetics of stabilityStability testing Theories of dispersion and pharmaceutical Dispersion preparation and stability large and small volume parental physiological and formulation considerationManufacturing and evaluation

Optimization techniquesin Pharmaceutical Formulation Concept and parameters of optimization Optimization techniques in pharmaceutical formulation and processing Statistical design Response surface methodFactorial designs and application in formulation

ValidationIntroduction to Pharmaceutical Validation Scope merits of Validation Validation and calibration of Master plan ICH WHO guidelines for calibration and validation of of specific dosage formTypes of validation

cGMP Industrial Management Objectives and policies of current good manufacturing practiceslayout of buildings services equipments and their maintenance Production management Production organization materials managementhandling and transportation inventory management and control production and planning control Sales forecasting budget

Compression and compaction: Physics of tablet compression compressionconsolidation effect of friction distribution of forcescompaction profiles.

Study of consolidation parameters Diffusion parameters Dissolution parameters and Pharmacokinetic parametersHeckel plots Similarity factors

Reference Books

1 Modern Pharmaceutics, Gillbert , 2, mercel.

2 Modern Pharmaceutics, Gilbert S. Banker, Christopher T. Rhodes, 3, CRC Press.

3 Remington: The Science and Practice of Pharmacy, Loyd V. Allen Jr., 3, Pharmaceutical Press.

4 Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Michael E. Aulton, Kevin M.G. Taylor, 3, Elsevier.

25PY5104 - REGULATORY AFFAIR (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5104	REGULATORY AFFAIR	RA	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the concepts of innovator and generic drugs in drug development process	2	PO1, PO3, PSO1
CO2	Understand Regulatory requirements for new drug application approval in pharmaceuticals	2	PO1, PO3, PSO1
CO3	Understand ICH guidelines for filing and approval process of drug products in different countries	2	PO1, PO3, PSO1
CO4	Illustrate the post approval regulatory requirements for products and submission of global documents in Common Technical Document/ eCTD formats	3	PO1, PO3, PSO1
CO5	Illustrate the regulatory procedures involved in non-clinical and clinical drug development	3	PO1, PO3, PSO1
CO6	Apply the principles of regulatory affairs in drug development process, filing and approval, non-clinical and clinical drug development in global scenario	3	PO1, PO3, PSO1

Syllabus

Drug development concepts- Documentation in Pharmaceutical industry Master formula record, DMF Drug Master File, distribution records, Generic drugs product development Introduction, Hatch Waxman act and amendments, CFR CODE OF FEDERAL REGULATION , drug product performance, in-vitro, ANDA regulatory approval process, NDA approval process, BE and drug product assessment, in vivo, scale up process approval changes, post marketing surveillance, outsourcing BA and BE to CRO.

Product approval requirements-API, biologics, novel, therapies obtaining NDA, ANDA for generic drugs ways and means of US registration for foreign drugs ICH guidelines- ICH Guidelines of ICH Q, S E, M. Regulatory requirements of EU, MHRA, TGA and ROW countries.

Post product approval documents- CMC, post approval regulatory affairs. Regulation for combination products and medical devices. CTD and ECTD format, industry and FDA liaison. Clinical and non clinical drug development- Global submission of IND, NDA, ANDA. Investigation of medicinal products dossier, dossier IMPD and investigator brochure IB.

Clinical trials- Developing clinical trial protocols. Institutional review board independent ethics committee Formulation and working procedures informed Consent process and procedures. HIPAA new, requirement to clinical study process, pharmacovigilance safety monitoring in clinical trials.

Reference Books

1 Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and IsaderKaufer, 2 (2013), CRC Press.

2 The Pharmaceutical Regulatory Process, Ira R. Berry and Robert P. Martin, 2 (2019), CRC Press.

3 FDA Regulatory Affairs- A Guide for Prescription Drugs, Medical Devices, and Biologics, Douglas J. Pisano, 2 (2008), CRC Press.

4 New Drug Approval Process: Accelerating Global Registrations, Richard A Guarino, 4 (2004), CRC Press.

25PY5105 - PHARMACEUTICS PRACTICAL I (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5105	PHARMACEUTICS PRACTICAL I	PP-I	R	0	0	12	0	6

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Analyse the Pharmacopoeial compounds and their formulations by various analytical techniques	4	PO1, PO4, PSO2
CO2	Preparation and evaluation of the different oral drug delivery systems	3	PO1, PO4, PSO2

Syllabus

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 7.To perform In-vitro dissolution profile of CR/ SR marketed formulation

1. Formulation and evaluation of sustained release matrix tablets 2. Formulation and evaluation osmotically controlled DDS 3. Preparation and evaluation of Floating DDS- hydro dynamically balanced DDS 4. Formulation and evaluation of Muco adhesive tablets. 5. Formulation and evaluation of trans dermal patches. 6. To carry out preformulation studies of tablets. 7. To study the effect of compressional force on tablets disintegration time. 8. To study Micromeritic properties of powders and granulation. 9. To study the effect of particle size on dissolution of a tablet. 10. To study the effect of binders on dissolution of a tablet

Reference Books

1 Modern Pharmaceutics, Gillbert and S. Banker., 2013, CRC Press Inc..

2 Advances in Pharmaceutical Sciences Vol. 2-5, H.S. Bean & A.H. Beckett., 2012, Acdemic Press Inc..

3 Pharmaceutical dosage forms - Tablets, volume 1 -3 , Larry L Augsburger, Stephen W Hoag , 2006, Informa Healthcare .

4 Pharmaceutical dosage forms - Parenterals volume1-2 , Liberman & Lachman, Kenneth E. Avis , 2003, Informa Healthcare .

25PY5107 - MOLECULAR PHARMACEUTICS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5107	MOLECULAR PHARMACEUTICS	MP	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the concepts involved in Drug targeting systems	2	PO2, PSO2
CO2	Understand the preparation and evaluation of targeting methods	2	PO2, PSO2
CO3	Design and develop various delivery systems for a specific drug target	3	PO2, PSO2
CO4	Understand the preparation and evaluation of Intra nasal formulations	2	PO2, PSO2
CO5	Understand the nucleic acid- based therapeutic drug delivery system	2	PO2, PSO2
CO6	Applications of the potential target diseases for gene therapy	3	PO2, PSO2

Syllabus

Targeted Drug Delivery Systems - Concepts, Events and biological process involved in drug targeting. Tumour targeting and Brain specific delivery. Targeting Methods - introduction preparation and evaluation. Nano Particles & Liposomes - Types, preparation and evaluation

Micro Capsules or Micro Spheres - Types, preparation and evaluation. Monoclonal Antibodies - preparation and application. Preparation and application of Noisome, Aquasomes, Phytosomes, Electrosomes

Pulmonary Drug Delivery Systems - Aerosols, propellents, Containers Types, preparation and evaluation. Intra Nasal Route Delivery systems - Types, preparation and evaluation.

Nucleic acid based therapeutic delivery system - Gene therapy, introduction (exvivo and in-vivo gene therapy). Potential target diseases for gene therapy (inherited disorder and cancer). Gene expression systems (viral and nonviral gene transfer). Liposomal gene delivery systems. Biodistribution and Pharmacokinetics.

Reference Books

1 Novel Drug Delivery Systems, Y W. Chien, 2, 1992, Marcel Dekker, Inc..

2 Encyclopedia of Controlled Delivery, Edith Mathiowitz, 1, 2009, John Wiley and Sons.

3 Targeted and COntrolled Drug delivery, Vyas and Khar, 1, 2019, Vallabh Prakashan, New Delhi.

4 Controlled and Novel Drug Delivery, N.K. Jain, 1, 2019, CBS Publishers.

5 Controlled Drug Delivery Systems, Robinson, J. R., Lee V. H. L, 2, 1987, Marcel Dekker, Inc..

25PY5108 - ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5108	ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS	ABPK	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the mechanisms and factors affecting ADME processes through GIT	2	PO1, PSO1
CO2	Discuss several biopharmaceutic considerations, BCS, IVIVC and permeability in drug product design and in vitro drug product performance	2	PO1, PSO1
CO3	Understand the impact of drug interactions on drug action	2	PO1, PSO1
CO4	Explain the protocol for bioavailability/bioequivalence studies and their role in generic product development	2	PO1, PSO1
CO5	Illustrate the assessment of pharmacokinetic parameters assuming different models	3	PO1, PSO1
CO6	Illustrate the application of pharmacokinetic principles in development of drug products and biosimilars	3	PO1, PSO1

Syllabus

Drug Absorption from the Gastrointestinal Tract Gastrointestinal tract Mechanism of drug absorption Factors affecting drug absorption pHpartition theory of drug absorption Formulation and physicochemical factors Dissolution rate Dissolution process NoyesWhitney equation and drug dissolution Factors affecting the dissolution rate

Biopharmaceutic considerations in drug product design and In Vitro Drug Product PerformanceIntroduction, biopharmaceutic factors affecting drug bioavailability rate-limiting steps in drug absorption physicochemical nature of the drug formulation factors affecting drug product performance in vitro

dissolution profile comparisons drug product stabilityconsiderations in the design of a drug productBiopharmaceutics classification systemmethodsPermeability Invitroin-situ and In-vivo methods

Drug product performance purpose of bioavailability studies relative and absolute availability methods for assessing bioavailability

Generic biologics clinical significance of bioequivalence studies, special Generic biologics in bioavailability and bioequivalence studies,generic substitution

Modified-Release Drug Products Targeted Drug Delivery Systems and Biotechnological Products Introduction to Pharmacokinetics and pharmacodynamic drug interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs. IntroductionProteins and peptides Monoclonal antibodies OligonucleotidesVaccines Gene therapies

Reference Books

1 1. Biopharmaceutics and Clinical Pharmacokinetics , Milo Gibaldi, 1990, , Lea and Febiger.

2 Applied Biopharmaceutics & Pharmacokinetics, Leon Shargel, Andrew B.C. Yu, and Susanna Wu-Pong, 1980, Shargel publisher.

3 Biopharmaceutics and Clinical Pharmacokinetics, Milo Gibaldi and Donald Perrier, 1995, CRS publisher.

4 Pharmacokinetics: Principles and Applications, David D'Argenio and Anil S. J. Menon, 1992, Shargel publisher.

25PY5109 - COMPUTER AIDED DRUG DELIVERY SYSTEM (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5109	COMPUTER AIDED DRUG DELIVERY SYSTEM	CADDS	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the history of computers in pharmaceutical research and development	2	PO1, PO4
CO2	Understand computational modeling of drug disposition	2	PO1, PO4
CO3	Apply the approaches of optimization techniques in pharmaceutical formulation	3	PO1, PO4
CO4	Understand the importance of computers in biopharmaceutical characterization	2	PO1, PO4
CO5	Understand the role of computer simulations in PK-PD and clinical data management	2	PO1, PO4
CO6	Illustrate the application of AI, robotics and CFD in pharmacy field	3	PO1, PO4

Syllabus

Computers in Pharmaceutical Research and Development: A General Overview: History of Computers in Pharmaceutical Research and Development. Statistical modeling in Pharmaceutical research and development: Descriptive versus Mechanistic Modeling, Statistical Parameters, Estimation, Confidence Regions, Nonlinearity at the Optimum, Sensitivity Analysis, Optimal Design, Population Modeling.

Quality-by-Design in Pharmaceutical Development: Introduction, ICH Q8 guideline, Regulatory and industry views on QbD, Scientifically based QbD - examples of application. Computational Modeling of Drug Disposition: Introduction, Modeling Techniques: Drug Absorption, Solubility, Intestinal Permeation, Drug Distribution, Drug Excretion, Active Transport; P-gp, BCRP, Nucleoside Transporters, hPEPT1, ASBT, OCT, OATP, BBB-Choline Transporter.

Computer-aided formulation development: Concept of optimization, Optimization parameters, Factorial design, Optimization technology & Screening design. Computers in Pharmaceutical Formulation: Development of pharmaceutical emulsions, microemulsion drug carriers Legal Protection of Innovative Uses of Computers in R&D, The Ethics of Computing in Pharmaceutical Research, Computers in Market analysis.

Computer-aided biopharmaceutical characterization: Gastrointestinal absorption simulation. Introduction, Theoretical background, Model construction, Parameter sensitivity analysis, Virtual trial, Fed vs. fasted state, In vitro dissolution and in vitro in vivo correlation, Biowaiver considerations.

Computer Simulations in Pharmacokinetics and Pharmacodynamics: Introduction, Computer Simulation: Whole Organism, Isolated Tissues, Organs, Cell, Proteins and Genes. Computers in Clinical Development: Clinical Data Collection and Management, Regulation of Computer Systems.

Artificial Intelligence (AI), Robotics and Computational fluid dynamics: General overview, Pharmaceutical Automation, Pharmaceutical applications, Advantages and Disadvantages. Current Challenges and Future Directions.

Reference Books

1. Encyclopedia of Pharmaceutical Technology, Vol 13, , James Swarbrick, James. G.Boylan,, 13, Marcel Dekker Inc, New York, 1996. .
2. Computer Applications in Pharmaceutical Research and Development, 2006, , Sean Ekins, , 4, John Wiley & Sons..
3. Computer-Aided Applications in Pharmaceutical Technology, Jelena Djuris,, 1st Edition, Woodhead Publishing..
4. Biopharmaceutics and Clinical Pharmacokinetics, An Introduction, Robert. E. Notari, 4, Marcel Dekker Inc, NewYork and Basel,.

25PY5110 - COSMETIC AND COSMECEUTICALS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5110	COSMETIC AND COSMECEUTICALS	CC	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the Regulatory provisions related to the import, manufacture and sale of cosmetics.	2	PO2, PSO1
CO2	Understand the diverse skin problems and how to overcome through skin preparations	2	PO2, PSO1
CO3	Understand the Formulation and evaluation of a variety of cosmetic products.	2	PO2, PSO1
CO4	Understanding the key ingredients and basic science to develop cosmetics and Cosmeceuticals.	2	PO2, PSO1
CO5	Understand the knowledge of the various technologies involved in cosmetics manufacture.	2	PO2, PSO1
CO6	Understand the Design of cosmeceuticals and herbal formulations .	2	PO2, PSO1

Syllabus

Cosmetics Regulatory Definition of cosmetic products as per Indian regulation. Indian regulatory requirements for labeling of cosmetics. Regulatory provisions relating to import of cosmetics. Misbranded and spurious cosmetics. Regulatory provisions relating to manufacture of cosmetics. Conditions for obtaining license, prohibition of manufacture and sale of certain cosmetics, loan license, offences and penalties. Cosmetics Biological aspects Structure of skin relating to problems like dry skin, acne, pigmentation, prickly heat, wrinkles and body odor. Structure of hair and hair growth cycle. Common problems associated with oral cavity. Cleansing and care needs for face, eye lids, lips, hands, feet, nail, scalp, neck, body and under arm.

Design of cosmeceutical products- Sun protection, sunscreens classification and regulatory aspects. Addressing dry skin, acne, sun protection, pigmentation, prickly heat, wrinkles, body odor, dandruff, dental cavities, bleeding gums, mouth odor and sensitive teeth through cosmeceutical formulations.

Formulation Building blocks- Building blocks for different product formulations of cosmetics or cosmeceuticals. Surfactants Classification and application. Emollients, rheological additives classification and application. Antimicrobial used as preservatives, their merits and demerits. Factors affecting microbial preservative efficacy. Formulation Building blocks- Building blocks for formulation of a moisturizing cream, vanishing cream, cold cream, shampoo and toothpaste. Soaps and syndetbars.

Perfumes- Classification of perfumes. Perfume ingredients listed as allergens in EU regulation. Controversial ingredients- Parabens, formaldehyde liberators, dioxane. Herbal Cosmetics- Herbal ingredients used in Hair care, skin care and oral care. Review of guidelines for herbal cosmetics by private bodies like cosmos with respect to preservatives, emollients, foaming agents, emulsifiers and rheology modifiers. Challenges in formulating herbal cosmetics.

Reference Books

1 Handbook of cosmetic science and Technology, A.O.Barel, M.Paye and H.I. Maibach, 3 (2009), CRC Press.

2 Cosmetics Formulation, Manufacturing and Quality control, P.P. Sharma, 5 (2008), Vandana Publishers.

3 The Complete Technology Book on Herbal Perfumes and Cosmetics, H Panda, 2 (2012), NIR Project and Consultancy services.

4 Cosmetic Technology, Sanju Nanda, Arun Nanda, Roop K.Khar , 1 (2022), Birla Publication.

25PY5111 - PHARMACEUTICS PRACTICAL II (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5111	PHARMACEUTICS PRACTICAL II	PP-II	R	0	0	12	0	6

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Development and evaluation of different novel drug delivery systems by applying various computational tools	4	PO2, PO4, PSO1
CO2	Apply PK-PD simulation models in drug design and development, cosmeceuticals preparation	3	PO2, PO4, PSO1

Syllabus

1.To study the effect of temperature change, non-solvent addition, incompatible polymer\ addition in microcapsules preparation 2.Preparation and evaluation of Alginate beads 3.Formulation and evaluation of gelatin /albumin microspheres 4.Formulation and evaluation of liposomes/niosomes 5.Formulation and evaluation of spherules 6.Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique. 7.Comparison of dissolution of two different marketed products /brands 8.Protein binding studies of a highly protein bound drug & poorly protein bound drug 9.Bioavailability studies of Paracetamol in animals. 10.Pharmacokinetic and IVIVC data analysis by Winnolin, R software 11.In vitro cell studies for permeability and metabolism

1. DoE Using Design Expert? Software 2. Formulation data analysis Using Design Expert? Software 3. Quality-by-Design in Pharmaceutical Development 4. Computer Simulations in Pharmacokinetics and Pharmacodynamics 5. Computational Modeling of Drug Disposition 6. To develop Clinical Data Collection manual 7. To carry out Sensitivity Analysis, and Population Modeling. 8. Development and evaluation of Creams 9. Development and evaluation of Shampoo and Toothpaste base

Reference Books

1 Drug formulation manual, D.P.S. Kohli and D.H.Shah. , 2011, Eastern publishers, New Delhi..

2 Pharmaceutical Process Validation; , Fra. R. Berry and Robert A. Nash., 2003, CRC Press Inc..

3 Pharmaceutical Preformulations, J.J. Wells., 1988, CRC Press Inc..

4 Biopharmaceutics and Clinical Pharmacokinetics, An Introduction, Robert. E. Notari, 2013, Marcel Dekker Inc, NewYork and Basel.

25PY5113 - RESEARCH METHODOLOGY AND BIOSTATISTICS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5113	RESEARCH METHODOLOGY AND BIOSTATISTICS	RMB	R	4	0	0	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understand the basic principles of research methodology and its role in pharmaceutical aspect	2	PO2, PSO1
CO2	Understand the basic concepts of biostatistics	2	PO2, PSO1
CO3	Illustrate the importance of biostatistics in research	3	PO2, PSO1
CO4	Develop research proposal following the principles of medical research	3	PO2, PSO1
CO5	Apply the guidelines of CPCSEA in preclinical experimentation	3	PO2, PSO1
CO6	Understand the principles of Declaration of Helsinki	2	PO2, PSO1

Syllabus

General Research Methodology- Research, objective, requirements, practical difficulties, review of literature, study design, types of studies, strategies to eliminate errors or bias, controls, randomization, crossover design, placebo, blinding techniques. Biostatistics- Definition, application, sample size, importance of sample size, factors influencing sample size, dropouts, statistical tests of significance, type of significance tests

Testing of Hypothesis- 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. Medical Research- History, values in medical ethics, autonomy, beneficence, non-maleficence, double effect, conflicts between autonomy and beneficence or 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.

CPCSEA guidelines for laboratory animal facility- 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.

Declaration of Helsinki- History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care.

Reference Books

1 Research Methodology , RK Khanna bis and Suvasis Saha, 2003, orien.

2 Biostatistics and Research methodology, N. K. Nag,, 3rd Edition, 2004, Kalyani.

3 Fundamental of Statistics, S.C.Guptha , 2013, Himalaya Publishing House.

4 Design and Analysis of Experiments, Pannerselvam, 2022, PHILearning Private Limited,R..

Y25: M.Pharm (Pharmaceutics)

Category: Skill Development Courses (SDC)

25PY5106 - SEMINAR/ASSIGNMENT (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5106	SEMINAR/ASSIGNMENT	S/A-I	R	0	0	8	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Select topic from the course content for deep learning towards seminar presentation	2	PO4, PSO1
CO2	Develop advanced content and present it as seminar	2	PO4, PSO1
CO3	Select topic from the course content for deep learning towards assignment preparation	2	PO4, PSO1
CO4	Develop advanced content and present it as assignment	2	PO4, PSO1

Syllabus

Select topic from the course content for deep learning towards seminar presentation

Develop advanced content and present it as seminar

Reference Books

1 "Pharmaceutical Sciences", Remington et al., 2020, Pharmaceutical Press.

2 "Medical Writing: A Prescription for Clarity", Neville W. Goodman and Martin B. Edwards, 2017, Cambridge University Press.

3 3 "Pharmaceutical Medicine and Translational Clinical Research", Divya Vohora and Gursharan Singh, 2017, Springer.

4 Surfactants in Personal Care Products and Decorative Cosmetics, Linda D. Rhein, Mitchell Schlossman, Anthony O'Lenick, 2006, CRC Press.

25PY5112 - SEMINAR/ASSIGNMENT (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5112	SEMINAR/ASSIGNMENT	S/A-II	R	0	0	8	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Select topic from the course content for deep learning towards seminar presentation	2	PO4, PSO1
CO2	Develop advanced content and present it as seminar	2	PO4, PSO1
CO3	Select topic from the course content for deep learning towards assignment preparation	2	PO4, PSO1
CO4	Develop advanced content and present it as assignment	2	PO4, PSO1

Syllabus

To Select topic from the course content for deep learning towards seminar presentation

To Develop advanced content and present it as seminar

To Select topic from the course content for deep learning towards assignment preparation

To Develop advanced content and present it as assignment

Reference Books

1 "Pharmaceutical Medicine and Translational Clinical Research", Divya Vohora and Gursharan Singh, 2020, Springer.

2 "Pharmaceutical Sciences", Remington et al., 2017, Pharmaceutical Press.

3 "Medical Writing: A Prescription for Clarity", Neville W. Goodman and Martin B. Edwards, 2017, Cambridge University Press.

4 Surfactants in Personal Care Products and Decorative Cosmetics, Linda D. Rhein, Mitchell Schlossman, Anthony O'Lenick, 2006, CRC Press.

25PY5114 - JOURNAL CLUB (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5114	JOURNAL CLUB	JC-I	R	0	0	2	0	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Select a research paper published in reputed journal by using search engines and databases	2	PO2, PSO1
CO2	Critically appraise the published research work	2	PO2, PSO1
CO3	Develop a report	2	PO2, PSO1
CO4	Present the critical observations and discuss	2	PO2, PSO1

Syllabus

To Select a research paper published in reputed journal by using search engines and databases

Critically appraise the published research work

Reference Books

1. "Medical Writing: A Prescription for Clarity", Neville W. Goodman and Martin B. Edwards, 2020, Cambridge University Press.
2. "Pharmaceutical Sciences", Remington et al., 2017, Pharmaceutical Press.
3. "Pharmaceutical Medicine and Translational Clinical Research", Divya Vohora and Gursharan Singh, 2017, Springer.
4. Surfactants in Personal Care Products and Decorative Cosmetics, Linda D. Rhein, Mitchell Schlossman, Anthony O'Lenick, 2006, CRC Press.

25PY5115 - DISCUSSION / PRESENTATION (PROPOSAL PRESENTATION) (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5115	DISCUSSION / PRESENTATION (PROPOSAL PRESENTATION)	D/P-I	R	0	0	4	0	2

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Identify the research problem	2	PO2, PSO2
CO2	Discuss research problem with team, peers and guide for solution	2	PO2, PSO2
CO3	Develop a protocol report on the critically appraised research problem with aim and objectives	3	PO2, PSO2
CO4	Analyse and present the critically appraised research problem in appropriate form and discuss the plan of work	4	PO2, PSO2

Syllabus

Research problem identification by refering various journals

Finding the solution for research problem with the team and research guides

Framing of aim, objectives and protocol for the identified research problem

Prepare a presentation about the identified research problem and discuss the plan of research work

Reference Books

1 Journal of Drug Delivery Science and Technology, Florence Siepmann, 97 (2024), Elsevier.

2 Drug delivery , Moein Moghimi , 31 (2024), Taylor and Francis .

3 Current drug delivery , Ricardo J. Dinis-Oliveira, 21 (2024), Bentham Science.

4 AAPS Pharma Sci tech, Robert O Williams III, 25 (2024), Springer Nature .

25PY5117 - JOURNAL CLUB (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5117	JOURNAL CLUB	JC-II	R	0	0	2	0	1

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Select a research paper published in reputed journal by using search engines and databases	2	PO2, PO4, PSO1
CO2	Critically appraise the published research work	2	PO2, PO4, PSO1
CO3	Develop a report	2	PO2, PO4, PSO1
CO4	Present the critical observations and discuss	2	PO2, PO4, PSO1

Syllabus

Identify the research problem

Discuss research problem with team, peers and guide for solution

Reference Books

1. Surfactants in Personal Care Products and Decorative Cosmetics, Linda D. Rhein, Mitchell Schlossman, Anthony O'Lenick, 2017, CRC Press.
2. Cosmetic Science and Technology: Theoretical Principles and Applications, Kazutami Sakamoto, Robert Y. Lochhead, Howard I. Maibach, Yuji Yamashita, 2017, Elsevier.
3. Cosmetic Formulation: Principles and Practice, Heather A.E. Benson, Adam C. Watkinson, 2011, CRC Press.
4. Practical Modern Cosmetic Dermatology, Peter Elsner, Howard I. Maibach, 2012, Springer.

25PY5119 - DISCUSSION/FINAL PRESENTATION (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5119	DISCUSSION/FINAL PRESENTATION	D/P-II	R	0	0	6	0	3

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Interpret the observations and results	2	PO2, PSO2
CO2	Develop the presentation in an organized manner	2	PO2, PSO2
CO3	Explain the followed methods and results	4	PO2, PSO2
CO4	Defend the questions from experts and peers	4	PO2, PSO2

Syllabus

To know the methods to interpret the observation and results obtained during the research work

Methods to develop an organized presentation for the performed research work

Methods to explain the methods followed and the obtained results in the performed research work

Methods to defend the questions raised from various experts and peers

Reference Books

1 Journal of Drug Delivery Science and Technology, Florence Siepmann, 97 (2024), Elsevier.

2 Drug delivery , Moein Moghimi, 31 (2024), Taylor and Francis .

3 Current drug delivery , Ricardo J. Dinis-Oliveira, 21 (2024), Bentham Science.

4 AAPS Pharma Sci tech, Robert O Williams III, 25 (2024), Springer Nature .

25PY5120 - CO-CURRICULAR ACTIVITIES (ATTENDING CONFERENCE, SCIENTIFIC PRESENTATIONS AND OTHER SCHOLARLY ACTIVITIES) (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5120	CO-CURRICULAR ACTIVITIES (ATTENDING CONFERENCE, SCIENTIFIC PRESENTATIONS AND OTHER SCHOLARLY ACTIVITIES)	CCA	R	0	0	8	0	4

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply for external scientific/technical programs like conferences/seminars/symposia, Present their technical or research work	3	PO2, PO4
CO2	Application of skills in presenting their technical or research work	3	PO2, PO4
CO3	Application of various tools and software in writing scientific papers, articles and presentations	3	PO2, PO4
CO4	Apply team management tasks and networking	3	PO2, PO4

Syllabus

procedure for preparing slides, posters for presention in conferences, seminars and scientific sessopns

introduction to scientific papers. articles, journals, indexing, impact factor, h-index, i-10 index, plagiarism, how to prepare a manuscript

Performing scientific paper writing and critical thinking, interpretation of research/review data

Management skills in Pharmacy, team coordination, networking with others

Reference Books

1 Novel Drug Delivery Systems, Y W. Chien, , 2, Marcel Dekker, Inc .

2 Encyclopedia of Controlled Delivery , Edith Mathiowitz , 2, Wiley Interscience Publication, John Wiley and Sons, Inc, New York. Chichester/Weinheim .

3 Controlled Drug Delivery -concepts and advances , S.P. Vyas and R.K. Khar , 4, Vallabh Prakashan, New Delhi .

4 Controlled and Novel Drug Delivery , N.K. Jain , 5, CBS Publishers& Distributors, New Delhi .

Y25: M.Pharm (Pharmaceutics)

Category: Project Research And Internship (PRI)

25PY5116 - RESERCH WORK (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5116	RESERCH WORK	RW	R	0	0	28	0	14

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Review the latest literature in selected area of work	2	PO2, PO4, PSO2
CO2	Conduct research experiments to meet the aim and objectives of proposed research work	4	PO2, PO4, PSO2
CO3	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement	5	PO2, PO4, PSO2
CO4	Document the findings of conducted experiments	2	PO2, PO4, PSO2
CO5	Interpret the results obtained and summarize the work with a conclusion	4	PO2, PO4, PSO2
CO6	I Interpret the results obtained and summarize the work with a conclusion	2	PO2, PO4, PSO2

Syllabus

Understanding Review the latest literature in selected area of work

Analyze the Conduct research experiments to meet the aim and objectives of proposed research work

Evaluate the findings and plan alterations or new methodologies or procedures for further improvement

Understanding the Document the findings of conducted experiments

Analyze the interpret the results obtained and summarize the work with a conclusion

Creating the interpret the results obtained and summarize the work with a conclusion

Reference Books

1 Journal of controlled release Journal of drug delivery science and technology DDIP IJP, y w chein, 2, elsevier.

2 Journal of advanced drug delivery system, robinson, 2, elseevier.

3 Journal of drug delivery technology, Prof. Dr. Florence Siepman, 2, sciiencedirect.

4 Advanced drug delivery system, Y W CHEIN, 2, elsevier.

5 journal of controlled drug delivery sytem, Robinson, 2, sciiencedirect.

25PY5118 - RESERCH WORK (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25PY5118	RESERCH WORK	RW	R	0	0	32	0	16

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Review the latest literature in selected area of work	2	PO2, PO4, PSO2
CO2	Conduct research experiments to meet the aim and objectives of proposed research work	4	PO2, PO4, PSO2
CO3	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement	5	PO2, PO4, PSO2
CO4	Document the findings of conducted experiments	2	PO2, PO4, PSO2
CO5	Interpret the results obtained and summarize the work with a conclusion	4	PO2, PO4, PSO2
CO6	Interpret the results obtained and summarize the work with a conclusion	2	PO2, PO4, PSO2

Syllabus

Understanding Review the latest literature in selected area of work

Analyze the Conduct research experiments to meet the aim and objectives of proposed research work

Evaluate the findings and plan alterations or new methodologies or procedures for further improvement

Understanding the Document the findings of conducted experiments

Analyze the nterpret the results obtained and summarize the work with a conclusion

Creating the interpret the results obtained and summarize the work with a conclusion

Reference Books

1 ournal of controlled release Journal of drug delivery science and technology DDIP IJP, y w chein, 2, elsevier.

2 Journal of advanced drug delivery system, robinson, 2, elseevier.

3 Journal of drug delivery technology, Prof. Dr. Florence Siepman, 2, sciiencedirect.

4 Journal of advanced systems, robinson, 4, science.

5 Journal of advanced controlled systems, robinson, 2, elsevier.

Y25: M.Pharm (Pharmaceutics)

Category: Value Added Courses (VAC)

25CC3016 - BASE SAS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25CC3016	BASE SAS	BSAS	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply the role of SAS Programming for Biotechnology	3	PO2, PO4
CO2	Apply the concepts of SAS Programming for Biotechnology Applications	3	PO2, PO4

Syllabus

Introduction to SAS, Data Import and Export, Data Step Processing, Data Manipulation and Cleaning, Introduction to PROC Steps, Basic Data Visualization

Advanced Data Step Techniques, Advanced PROC Procedures, Macro Programming, Data Analysis and Interpretation, Clinical Trials and Biostatistics, Case Studies and Project

Reference Books

1 The Little SAS Book: A Primer, Lora D. Delwiche, Susan J. Slaughter, 2019, SAS Institute.

2 Learning SAS by Example: A Programmer's Guide, Ron Cody, 2018, SAS Institute.

3 SAS Certification Prep Guide: Base Programming for SAS 9, SAS Institute, 2011, SAS Institute.

4 SAS Programming for Researchers and Social Scientists, Paul D. Allison, 2010, SAS Institute.

25CC3069 - PHARMACOVIGILANCE (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25CC3069	PHARMACOVIGILANCE	PCV	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply pharmacovigilance principles and methodologies to monitor and assess the safety of pharmaceutical products throughout their lifecycle, implementing the foundational principles of pharmacovigilance	3	PO3, PO4
CO2	Apply the concept of adverse drug reactions (ADRs) and assess their potential impact on public health, regulatory decisions, and patient care, nature, classification, and evaluation of adverse drug reactions (ADRs).	3	PO3, PO4

Syllabus

Introduction to Pharmacovigilance Overview of Pharmacovigilance Principles: Introduction to the field of pharmacovigilance, including the definition, objectives, and importance of monitoring drug safety throughout the lifecycle of medications. Regulations in Pharmacovigilance: Examination of global and regional regulations governing pharmacovigilance practices, including guidelines from agencies such as the FDA, EMA, and ICH.

Adverse Drug Reaction Monitoring and Analysi: In-depth study of adverse drug reactions (ADRs), including their identification, assessment, and reporting procedures. Detailed examination of methods for identifying ADRs, including patient interviews, clinical observations, and the use of safety reporting systems.Techniques for assessing the causality, severity, and outcome of ADRs, including the use of assessment scales, causality algorithms, and severity grading systems.

Reference Books

1 "Pharmacovigilance: Principles and Practice", Patrick Waller , 2011, John Wiley & Sons.

2 "Practical Aspects of Signal Detection in Pharmacovigilance", Harald Herkner, Klemens Wallner, 2018, Springer.

3 "Introduction to Pharmacovigilance", Patrick Waller , 2012, Pharmaceutical Press.

4 Textbook of Pharmacovigilance: Ensuring the Safe Use of Medicines, SK Gupta, 2022, Jaypee Brothers Medical Publishers.

25CC3077 - REGULATORY AFFAIRS (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
25CC3077	REGULATORY AFFAIRS	RGA	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply the roles and functions of major regulatory agencies	3	PO3, PO4
CO2	Apply the regulatory environment and key legislation that governs pharmaceuticals, biologics, and medical devices	3	PO3, PO4
CO3	Apply the concepts of quality control and assurance processes to ensure trial integrity and compliance	3	PO3, PO4

Syllabus

Fundamentals of Regulatory Affairs: Introduction to Regulatory Affairs, Regulatory Bodies and Legislation, Drug Development and Approval Process, Clinical Trials and Good Clinical Practice (GCP), Regulatory Submissions and Documentation, Quality Assurance and Compliance, Post-Market Surveillance and Pharmacovigilance

Advanced Topics in Regulatory Affairs: International Regulatory Affairs, Medical Devices and Combination Products, Biologics and Biosimilars, Regulatory Affairs in Emerging Markets, Orphan Drugs and Rare Diseases, Over-the-Counter (OTC) Products and Dietary Supplements, Advanced Regulatory Strategies and Project Management

Reference Books

1 Fundamentals of US Regulatory Affairs, Regulatory Affairs Professionals Society (RAPS), 2019, Regulatory Affairs Professionals Society (RAPS).

2 FDA Regulatory Affairs: A Guide for Prescription Drugs, Medical Devices, and Biologics, Douglas J. Pisano, David S. Mantus, 2014, CRC Press.

3 European Regulatory Affairs: Guide for Successful Registration of Medicinal Products in Europe, Regulatory Affairs Professionals Society (RAPS), 2010, Regulatory Affairs Professionals Society (RAPS).

4 Essentials of Pharmaceutical Regulatory Affair, Douglas Pisano, David Mantus, 2003, CRC Press.

Y25: M.Pharm (Pharmaceutics)

Category: Audit Courses (AUC)

CADCOML1V1 - CAREER ADVANCEMENT:COMPETITIVE EXAM TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CADCOML1V1	CAREER ADVANCEMENT:COMPETITIVE EXAM TRAINING	CAD: COM	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Enhance critical thinking and problem-solving skills to analyze and solve complex problems effectively.	3	PO4
CO2	Apply strategic test-taking techniques to improve performance and manage exam-related stress.	3	PO4

Syllabus

Introduction to Critical Thinking: covering the definition, importance, and key components; Logical Reasoning: focusing on types of reasoning (deductive and inductive) and common logical fallacies; Data Interpretation: analyzing graphs, charts, and statistical information; and Problem-Solving Techniques: emphasizing creative problem-solving methods and structured frameworks.

Practice Sessions through case studies and group discussions. It also explores Understanding Exam Formats, providing an overview of common competitive exams such as GRE, GMAT, and UPSC, along with types of questions encountered. Students will learn Time Management Techniques for prioritizing questions and allocating time efficiently, alongside Effective Study Habits to create study schedules and utilize resources. The syllabus includes Stress Management Strategies, focusing on mindfulness and relaxation techniques, and concludes with Mock Exams and Feedback to assess performance and identify areas for improvement.

Reference Books

1 Critical Thinking: A Beginner's Guide, Gail McDonald, Springer, 2018.

2 The 7 Habits of Highly Effective People, Stephen R. Covey, Free Press, 2020.

CADCORL1V1 - CAREER ADVANCEMENT: TRAINING IN CORE DOMAIN (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CADCORL1V1	CAREER ADVANCEMENT: TRAINING IN CORE DOMAIN	CAD: TICD	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply advanced domain-specific concepts and emerging trends to address industry challenges and innovations.	3	PO1
CO2	Apply advanced problem-solving and strategic decision-making techniques to manage complex projects within the core domain.	3	PO1

Syllabus

Core Concepts, theories, and frameworks of the specific domain (e.g., finance, IT, healthcare, engineering), Advanced Domain-Specific Tools, innovations and their impact on the core domain, Real-world examples of how new trends are being applied within the domain

Domain specific challenges, Practical exercises to resolve complex issues in the domain, best practices for managing projects within the domain, Case Studies and Simulations.

CADENTL1V1 - CAREER ADVANCEMENT:ENTREPRENEURIAL CAREER PATHWAY TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CADENTL1V1	CAREER ADVANCEMENT:ENTREPRENEURIAL CAREER PATHWAY TRAINING	CAD: ECPT	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	apply essential entrepreneurial qualities such as resilience, innovation, and risk-taking, enabling them to pursue entrepreneurial career paths in various contexts, including startups, corporate roles, and freelancing.	3	PO2
CO2	Develop the skills to recognize potential business opportunities, conduct thorough market research, and validate ideas by addressing customer needs and evaluating feasibility, preparing them to create sustainable business solutions.	3	PO2

Syllabus

Defining entrepreneurship: What it means to be an entrepreneur; The distinction between entrepreneurial and traditional career paths; The entrepreneurial mindset: resilience, risk-taking, innovation, and adaptability; Exploring entrepreneurial career pathways in startups, corporate environments, freelancing, and social ventures.

Spotting opportunities: How to find unmet needs and gaps in the market; Market research: Tools and techniques for understanding trends and customer needs; Idea validation: Testing the feasibility of your business idea; Problem-solving for innovation: Leveraging customer pain points and inefficiencies.

Reference Books

1 The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, Eric Ries, 1st (2011), Crown Business.

2 The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company, Steve Blank, Bob Dorf, 2nd (2020), K&S Ranch Press.

3 Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, Alexander Osterwalder, Yves Pigneur, 1st (2010), Wiley.

4 The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail, Clayton M. Christensen, 1st (1997), Harvard Business Review.

CADUPSL1V1 - CAREER ADVANCEMENT: UPSC-CIVIL SERVICES EXAM TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CADUPSL1V1	CAREER ADVANCEMENT: UPSC-CIVIL SERVICES EXAM TRAINING	CAD: UPSC	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Understanding the basics of Indian History and it\'s evolution	2	PO3
CO2	Understanding the basics of Indian Geography	2	PO3
CO3	Understanding the Evolution of Indian Constitution.	2	PO3
CO4	Understanding the evolution of Indian Economy	2	PO3

Syllabus

Ancient Indian History- IVC,Rig Vedic, Later Vedic, Buddhism, Jainism, Mahajanapadas, Mouryan Empire, Guptan Empire, Harshavardhana empire, Sangam Age.

Exploring The Physical and Social Geography of India: The Universe, Big Bang Theory, Solar system, Geological Time Scale, Earth\'s Interior, Earth\'s Magnetic Feild.

Indian Polity and Constitution: Sailent featuresof Indian constitution, Preamble, Fundamental RIghts, Directrive Principles of State Policy, Fundamental Duties , Indian Parliament.

Understanding India\'s Economy - Indian Economic Development, National Income, Public Finance, Indian Budget.

Reference Books

1 Indian Polity, M. Laxmikanth, 7, Tata Mc Graw Hill.

2 Indian Economy, Nitin Singhania, 5, Mc Graw Hill.

3 Ancient and Medieval India, Poonam Dalal Dahiya, 3, Mc Graw Hill.

4 Fundamentals of Physical Geography, Husain Majid, 5, Mc Graw Hill.

CRTCODL1V1 - CAMPUS RECRUITMENT: LOGIC BUILDING SKILLS TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTCODL1V1	CAMPUS RECRUITMENT: LOGIC BUILDING SKILLS TRAINING	CRT: LBST	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply logical principles and critical thinking skills to analyze and evaluate arguments, solve problems, and make informed decisions.	3	PO4
CO2	Identify various logical reasoning techniques to solve complex problems, identify patterns, and draw valid conclusions	3	PO4

Syllabus

Introduction to Logic and Critical Thinking: fundamentals of logic, including the concepts of statements, propositions, truth values, logical connectives (AND, OR, NOT, IF-THEN, IF-AND-ONLY-IF), truth tables, and logical equivalence. Students will learn to identify and analyze different types of arguments, including deductive and inductive reasoning. They will also develop critical thinking skills, such as evaluating evidence, identifying assumptions, and recognizing fallacies

Logical Reasoning and Problem-Solving: applying logical reasoning techniques to solve various types of problems. Students will learn about different problem-solving strategies, including problem decomposition, pattern recognition, working backward, and using analogies. They will practice solving logic puzzles, brain teasers, and real-world problems that require logical thinking. Additionally, students will explore the concepts of syllogisms, Venn diagrams, and conditional reasoning to enhance their problem-solving abilities

Reference Books

1 Introduction to Logic, Irving M. Copi, Carl Cohen, Victor Rodych, 2014, Routledge.

2 Critical Thinking, Richard Paul, Linda Elder, 2019, Pearson.

3 The Art of Logical Thinking; Or, The Laws of Reasoning, William Walker Atkinson, 2013, Public domain in the

4 Symbolic logic and The game of logic, Carroll, Lewis, 1958, Dover Publications.

CRTCSSL1V1 - CAMPUS RECRUITMENT: COMMUNICATION SKILLS TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTCSSL1V1	CAMPUS RECRUITMENT: COMMUNICATION SKILLS TRAINING	CRT: CST	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	apply knowledge of communication of different types and techniques while analyzing body language and tone to enhance overall communication effectiveness.	3	PO2
CO2	apply active listening and feedback techniques, and analyzing effective participation in group discussions, while exploring roles in teamwork and strategies for managing conflicts, alongside professional communication practices such as writing emails and conducting meetings.	3	PO2

Syllabus

Communication: Basics, significance, types, verbal & non-verbal communication techniques, effective speaking and presentation skills tone and pacing in verbal interactions

Interpersonal skills, listening skills, feedback techniques, group communication and dynamics, group discussion, conflict management in professional communication, E-mail writing, report writing, presentations, interview skills.

Reference Books

1 Business Communication: A Problem-Solving Approach, Louis E. Boone & David L. Kurtz, 3rd Edition, McGraw Hill Education.

2 The Complete Guide to Business School Presentations", Jennifer D. D. McDonald, 2nd Edition, Pearson.

3 Listening: The Forgotten Skill", Geoffrey M. Cohen, 1st Edition, University Press of America.

4 Business Communication: Process and Product", Mary Ellen Guffey & Dana Loewy, 8th Edition, Cengage Learning.

5 Effective Communication Skills" Author, John Adair, 2nd Edition, Pan Macmillan.

CRTCSSL2V2 - CAMPUS RECRUITMENT: SOFT SKILLS TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTCSSL2V2	CAMPUS RECRUITMENT: SOFT SKILLS TRAINING	CRT: SST	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	applyi and practice empathy, critical thinking, problem-solving, decision-making, effective communication, and interpersonal skills through real-life scenarios and interactive activities.	3	PO4
CO2	apply group discussion techniques, interview skills, and mock interviews through practical exercises, encouraging learners to practice and refine these skills in realistic settings.	3	PO4

Syllabus

Critical thinking, problem soving, decision making, communication skills, interpersonal skills

Grooming, group discussions, story narrations, interview skills, mock interviews

Reference Books

1 Personality Development and Soft Skills", Barun K. Mitra, 2nd Edition, Oxford University Press.

2 Communication Skills for Engineers", C. Muralikrishna & Sunita Mishra, 1st Edition, Pearson Education.

3 Developing Soft Skills", Robert L. Katz, 1st Edition, McGraw Hill Education.

CRTVQRL1V1 - CAMPUS RECRUITMENT: VERBAL APTITUDE TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTVQRL1V1	CAMPUS RECRUITMENT: VERBAL APTITUDE TRAINING	CRT: VAT	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	apply and practice grammatical concepts like sentence formation, identifying odd words, using one-word substitutions, while enhancing understanding of idioms, phrases, spellings, and structures.	3	PO4
CO2	apply concepts like paragraph formation, sentence completion, reading comprehension, sentence correction, and correcting jumbled sentences, while enhancing word selection and sentence structure accuracy.	3	PO4

Syllabus

Synonyms, Antonyms, odd words, parts of speech, idioms and phrases, one word substitutions, odd words, formation of sentences

sentence completion, sentence correction, jumbled sentences, paragraph formation, reading comprehension, and sentence selection

Reference Books

1 The Pearson Guide to Verbal Ability and Logical Reasoning for the CAT", Nishit K. Sinha, 2nd Edition, Pearson.

2 Objective General English", S.P. Bakshi, 3rd Edition, Arihant Publications.

3 English Grammar in Use", Raymond Murphy, 5th Edition, Cambridge University Press.

CRTVQRL2V2 - CAMPUS RECRUITMENT: QUANTITATIVE APTITUDE TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTVQRL2V2	CAMPUS RECRUITMENT: QUANTITATIVE APTITUDE TRAINING	CRT: QAT	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply principles of quantitative techniques to solve problems on Simple Equations, Simple & Compound Interest etc	3	PO4
CO2	Apply principles of quantitative techniques to solve problems on Divisibility, Functions, Surds & Indices etc	3	PO4

Syllabus

Simple Equations, Problem on Ages, Ratio & Proportion, Variation& Partnership, Percentages, Profit, Loss& Discounts, Simple & Compound Interest, Averages & Allegations or Mixtures

Numbers, Divisibility, Decimal Fractions, LCM & HCF, Simplification, Sequence, Series & Progressions, Linear Algebra, Quadratic Equations & Inequalities, Theory of Equations. Sets, Relations & Functions, Surds & Indices, Logarithms

Reference Books

1 Quantitative Aptitude by R.S. Agarwal, SCHAND Publications, R.S. Agarwal, 2021, SCHAND Publications.

2 A Modern Approach to Verbal Reasoning by R.S. Agarwal, SCHAND Publications, R.S. Agarwal, 2021, SCHAND Publications.

CRTVQRL3V3 - CAMPUS RECRUITMENT: REASONING APTITUDE TRAINING (R)

CourseCode	Course Title	Acronym	Mode	L	T	P	S	CR
CRTVQRL3V3	CAMPUS RECRUITMENT: REASONING APTITUDE TRAINING	CRT: RAT	R	0	0	0	8	0

Course Outcomes

CO#	CO Description	BTL	PO/PSO
CO1	Apply principles of deductive logic to solve problems on syllogisms, Venn diagrams, etc	3	PO4
CO2	Apply principles of inductive logic to solve problems on assumptions and conclusions	3	PO4

Syllabus

Syllogism, Number& letter series, Number, letter & word Analogy, Odd man out, coding & decoding, Cubes & Dice, Logical Venn Diagrams

Statements & conclusions, statements & Arguments (Critical Reasoning), statements & Assumptions, logical connectives, Binary logic

Reference Books

1 A Modern Approach to Verbal Reasoning, R.S. Agarwal, 2022, SCHAND Publications.

2 Logical Reasoning for CAT, Arun Sharma, 2021, McGraw Hills.

Our Campuses

Green Fields, Vaddeswaram.
Guntur District, A.P., India, Pincode : 522 302.

Aziznagar, Moinabad Road,
Near TS Police Academy, Hyderabad, Telangana,
India, Pincode : 500 075

Bowrampet, ALEAP Industrial Area,
Gajularamaram, Hyderabad, Telangana,
India, Pincode : 500 043

Plot No: 52 & 53, Jubilee Gardens Road No. 2,
Kothaguda, Kondapur, Hyderabad Telangana,
India, Pincode : 500 084

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