Name of Faculty	:	Faculty of Pharmacy
Name of Program	:	Bachelor of Pharmacy
Course Code	:	2BPH05
Course Title	:	Computer Applications In Pharmacy
Type of Course	:	Basic Pharmaceutical Sciences
Year of Introduction	:	2023-24

Prerequisite	:	Zeal to learn the subject	
Course Objective	:	1.Understand the various types of data base management system . 2.To known different application of computers in pharmaceutical field. 3.Understand the different analysis system for preclinical study.	
Course Outcomes	:	At the end of this course, students will be able to:	
	CO1	To **know** the number system as well as information system.	
	CO2	To **understand** about web Technology & data base and its application of pharmacy field.	
	CO3	To **understand** the technologies being applied within the platform of pharmacy in addition to some label of software.	
	CO4	To **apply the** computer in the field of bioinformatics in addition to database, scope, application, vacancies development and its limitations to **identify** in the broad spectrum of pharmaceutical research and formulation development on basis of existing information related to bioinformatics.	
	CO5	To analyse the Pre clinical data using computer	

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			Credits	Examination Marks				
				Theory Marks		Practical Marks		Total
L	**T**	**P**	**C**	**SEE**	**CIA**	**SEE**	**CIA**	**Marks**
03	00	02	04	50	25	15	10	100

*Legends: **L**-Lecture; **T**–Tutorial/Teacher Guided Theory Practice; **P** – Practical, **C** – Credit, **SEE** – Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping with COs
1	**Number system**: Binary number system, Decimal number system, Octalnumber system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division. Concept of Information Systems and Software : Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project	6	20 %	CO1
2	**Web technologies**:Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and ServerProducts Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database	6	20 %	CO2
3	**Application of computers in Pharmacy –** Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospital and Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems, barcode medicine identification and automated dispensing of drugs, mobile technology and adherence monitoring. Diagnostic System, Lab-diagnostic System, Patient Monitoring System,Pharma Information System.	6	20 %	CO3
4	**Bioinformatics:** Introduction, Objective of Bioinformatics, Bioinformatics Databases, Concept of Bioinformatics, Impact of Bioinformatics in Vaccine Discovery	6	20 %	CO4
5	**Computers as data analysis in Preclinical development**: Chromatographic dada analysis(CDS), Laboratory Information managementSystem (LIMS) and Text Information Management System(TIMS)	6	20 %	CO5

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	0	60	20	20	0	0

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Suggested List of Experiments/Tutorials

Sr. No.	Name of Experiment/Tutorial	Teaching Hours
1	Design a questionnaire using a word processing package to gather informationabout a particular disease.	2
2	Create a HTML web page to show personal information.	2
3	Retrieve the information of a drug and its adverse effects using online tools	2
4	Creating mailing labels Using Label Wizard , generating label in MS WORD	2
5	Create a database in MS Access to store the patient information with the requiredfields Using access	2
6	Design a form in MS Access to view, add, delete and modify the patient record inthe database	4
7	Generating report and printing the report from patient database	2
8	Creating invoice table using – MS Access	2
9	Drug information storage and retrieval using MS Access	2
10	Creating and working with queries in MS Access	4
11	Exporting Tables, Queries, Forms and Reports to web pages	4
12	Exporting Tables, Queries, Forms and Reports to XML pages	2

Major Equipment/ Instruments and Software Required

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Microsoft office

Suggested Learning Websites

Sr. No.	Name of Website
1	https://pci.nic.in/pdf/Syllabus_B_Pharm.pdf
2	https://www.aicte-india.org/downloads/bpharma.pdf.
3	https://www.ipc.gov.in/
4	https://www.ayush.gov.in/
5	https://ayudmla.gujarat.gov.in/home.php

6	https://www.fda.gov/
7	https://www.pharmacopoeia.com/
8	https://ipapharma.org/
9	https://gpat.nta.nic.in/
10	https://drnaitiktrivedi.com/
11	https://gdc4gpat.com/course/gpat/
12	https://niscpr.res.in/
13	https://delnet.in/
14	https://ihubgujarat.in/
15	https://www.ssipgujarat.in/

Reference Books

Sr. No.	Name of Reference Books
1	Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600South Washington Square, USA, (215) 922-1330.
2	Computer Application in Pharmaceutical Research and Development –Sean Ekins –
3	Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
4	Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
5	Microsoft office Access - 2003, Application Development Using VBA, SQL Server,DAP and Infopath –