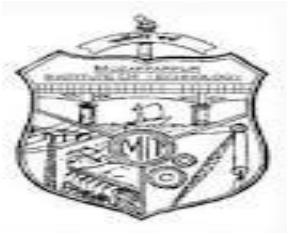
DEPARTMENT OF PHARMACY
MIT MUZAFFARPUR



AFFILIATED TO
ARYABHATTA KNOWLEDGE UNIVERSITY, MITHAPUR, PATNA

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NAME OF COURSE: PHARMACEUTICS-V
COURSE CODE (T) : 091501
COURSE CODE (P) : 091501P
SEMESTER : V
ACADEMIC YEAR : 2018-2019

PHARMACEUTICS -V
B. PHARM – FIFTH SEMESTER

1. Course Syllabus

Module-1

Liquid Dosages Forms: Introduction, types of additives used in formulations, Vehicles, stabilizers, preservatives, suspending agents, emulsifying agents, solubilizer, colors, flavours and others, manufacturing packaging and evaluation of clear liquids, suspensions and emulsions official in pharmacopoeia.

Semisolid Dosage Forms: Definitions, types, mechanisms of drug penetration, factors influencing penetration, semisolid bases and their selection. General formulation of semisolids, clear gels manufacturing procedure, evaluation and packaging.

3.Suppositories: Ideal requirements, bases, manufacturing procedure, packaging and evaluation.4.Extraction and Galenical

Module-2

Products:Principle and method of extraction, preparation of infusion, tinctures, dry and soft liquid extracts.

Blood Products and Plasma Substitutes: Collection, processing and storage of whole human blood, concentrated human RBCs, dried human plasma, human fibrinogen, human thrombin, human normal immunoglobulin, human fibrin, foam plasma substitutes, - ideal requirements, PVP, dextran etc. for control of blood pressure as per I.P.

Module-3

Pharmaceutical **Aerosols:**Definition, propellants, general formulation, manufacturing and packaging methods, pharmaceutical applications. Ophthalmic Preparations: Requirements, formulation, methods of preparation, containers, evaluation.

Module-4

Cosmeticology and Cosmetic Preparations: Fundamentals of cosmetic science, structure and functions of skin and hair. Formulation, preparation and packaging of cosmetics for skin, hair, dentifrice and manicure preparations like nail polish, Lipsticks, eye lashes, baby care products etc.

Recommended Books:

1. Bently's Textbook of pharmaceutics edited by E.A. Rawlins (All India Traveller Book Seller, New Delhi)
2. The Theory and Practice of Industrial Pharmacy by Lachmann, Libermann and Kanig (Varghese Pub. House, Bombay)
3. Pharmaceutical Dosage Forms and Drug Delivery Systems by Ansel, Allen and Popovich (B.I.Waverly Pvt. Ltd., New Delhi)
4. REMINGTON : The Science and Practice of Pharmacy, (Lippincott Williams & Wilkins, Baltimore)
5. Pharmaceutics : The Science of Dosage Form Design by Aulton (Churchill Livingstone, Edinburgh)

SAMPLE TIME TABLE

MUZAFFARPUR INSTITUTE OF TECHNOLOGY							
ODD SEM (JULY- DEC 2018) TIME TABLE FOR 3 rd , 5 th & & 7 th SEMESTER, B.PHARM, WITH EFFECT FROM 16.07.20							
DAY	SEMESTER	9 AM TO 10	10 -11 AM	11- 12 AM	12 -1 PM	2- 3 PM	3 P
MON	THIRD SEM	APHE II SK	PHARM ANAL II GT	PHARMACEUTICS III AB	PHARMACOGNOSY II NRB		CLAS
	FIFTH SEM	PHARMACEUTICS V RKC	PHARMACEUTICS V LAB RKC				CLAS
	SEVENTH SEM	PHARMA. BIOTECH SNS	PHARM CHEM VII RP	PHARMA. INDUST. MANAG.	PHARMACOLOGY III RP		CLAS
TUES	THIRD SEM	PHARMACEUTICS III AB	PHARM CHEM IV SW	PHARMACEUTICS III AB(T)	PHARM ANAL II GT(T)		PHARMA LA
	FIFTH SEM	PHARM CHEM V SNS	PHARMACEUTICS VI AB	PHARMA CEUTICS V RKC	PHARMACOLOGY I SK		PHARM C S
	SEVENTH SEM	PHARMACEUTICS VIII RKC	PHARM CHEM VII RP	PHARMACOLOGY III RP	PHARMACEUTICS VIII RKC(T)		PHARMA LA
WED	THIRD SEM		PHARMACOGNOSY II NRB(T)	PHARMACOGONOSY II NRB	PHAR ANAL II GT		PHARMAC II LA
	FIFTH SEM	PHARMACOLOGY I SK	PHARM CHEM V SNS	PHARMACEUTICS VI AB	PHARMACOLOGY I SK(T)		PHARMA LA
	SEVENTH SEM	PHARM CHEM VII RP(T)	PHARMACEUTICS VIII RKC	PHARM CHEM VII RP	ELECTIVE OPT		PHARM C
THURS	THIRD SEM	APHE II SK(T)	PHARM CHEM IV SW	APHE II SK	PHARM CHEM IV SW(T)		PHARM A C
	FIFTH SEM	PHARM CHEM V SNS	PHARMACEUTICS VI AB	PHARMACOGONOSY IV SW			PHARMAC IV LA
	SEVENTH SEM	PHARMACEUTICS VIII RKC	PHARMA. BIOTECH SNS(T)	PHARMACOLOGY III RP	ELECTIVE OPT		ELECTIVE
FRI	THIRD SEM	APHE II SK	PHARMACUTICAL CHEMISTRY IV LAB SW				APHE I
	FIFTH SEM	PHARMACOGONOSY IV SW	PHARMACEUTICS V RKC	PHARMACOGONOSY IV SW(T)	PHARMACEUTICS V RKC(T)		PHARMAC LAB C

	SEVENTH SEM		ELECTIVE OPT (T)	ELECTIVE OPT	PHARMA. BIOTECH.SNS	PHARMA III RK
SAT	THIRD SEM	PHARMACOGONOSY II NRB	PHARM CHEM IV SW	PHAR ANAL II GT	PHARMACEUTICS III AB	
	FIFTH SEM	PHARM CHEM V SNS(T)	PHARMACOLOGY I SK	PHARMACEUTICS VI AB	PHARMACOGONOSY IV SW	
	SEVENTH SEM	PHARMACOLOGY III RP(T)	PHARMA. INDUST. MANAG.	PHARMA. BIOTECH SNS		

2. Program Objectives (POs)/ **Course Objective**

The graduates of the programme will possess:

1. The knowledge of pharmaceutical technology and its application to successfully compete for various entry level positions or pursue higher studies in pharmacy fields.
2. The knowledge of techniques of manufacturing of pharmaceutical product and concerned issues in dosage form design and work in multidisciplinary teams for its application in pharmaceutical industry.

3.Course Outcomes (COs)

After completion of the course, the students are will be able to:

1. Analyze dosage form and related concern for design of capsule dosage form. (Blooms Level IV).
2. Describe different type of Tablet dosage form, their coating with its design & development. (Blooms Level II).
3. Explain sterile dosage form and criteria concern with techniques applicable in pharmaceutical industries. (Blooms Level II).
4. Illustrate packaging components, their types with its specification. (Blooms Level II).

4. Mapping of COs with Pos

PO	CO1	CO2	CO3	CO4
1				
2				
3				
4				
5				
6				
7				

8				
9				
10				
11				
12				

5. Assessment Methods for Cos

5.1. Theory

S.No	Assessment Tools	Marks	Outcomes
1	Sessional Examination	20	CO1 CO2 CO3 CO4
2	Assignment	02	CO1 CO2 CO3 CO4
3	Presentation	02	CO1 CO2 CO3 CO4
4	Quizzes	01	CO1 CO2 CO3 CO4
5	Attendance	05	NA

6	University Examination	70	NA

5.2. Practical

S.No	Assessment Tools	Marks	Outcomes
1	Attendance	05	CO1 CO2 CO3 CO4
2	Experiment valuation	10	CO1 CO2 CO3 CO4
3	Internal Viva- voce	05	CO1 CO2 CO3 CO4
4	University Practical Exam	30	CO1 CO2 CO3 CO4

6. Delivery Methodology

Outcomes	Methods	Supporting Tools
CO 1	Chalk-Talk, Interactive classroom, ICT usage, Group discussions, Web based learning	Board, Laptop, Projector, You Tube, Whatsapp, Google,

CO2	Chalk-Talk, Interactive classroom, ICT usage, Web based learning	Board, Laptop, Projector, You Tube, Whatsapp, Google,
CO3	Chalk-Talk, Interactive classroom, ICT usage, Group discussions, , Web based learning	Board, Laptop, Projector, You Tube, Whatsapp, Google,
CO4	Chalk-Talk, Interactive classroom, ICT usage, Group discussions, , Web based learning	Board, Laptop, Projector, You Tube, Whatsapp, Google,

7. Teaching plan

7.1. Theory

Lecture No.	Contents

1	Introduction to the syllabus.
2	Introduction to the capsule dosage form. Advantages and disadvantages
3	Introduction to types of capsule, gelatin formation and types of gelation.
4	Hard gelatin capsule
5	Method of capsule filling, preparation of capsule shell from gelation
6	Method of manufacturing
7	Soft gelatin capsule
	Class Test-1
8	Method of manufacturing
9	Base absorption and minimum / gm factors in soft capsules
10	Quality control test for capsules
11	Quality control test for capsules
12	Storage of capsules, vegetable capsules
13	Stability testing for capsules
14	Introduction to tablets. types of tablets
15	Granulation formation for tablets.
16	Various techniques for large scale production
17	Physics of tablet making
	Class-2
18	Different methods for preparation of tablets
19	Different equipment and machinery for tablet preparation
20	Evaluation of tablets
21	Evaluation of tablets
22	Introduction to coating , advantages and disadvantages
23	Types of coating
24	Film forming materials with examples
25	Formulation of coating solution
26	Equipment for coating
27	Coating process
28	Evaluation of coated tablets
29	Evaluation of coated tablets
	Class test -3

30	Introduction to parenteral products
31	Preformulation factors
32	Routes of administration
33	Water for injection
34	Pyrogenicity
35	Non-aqueous vehicles for preparation of sterile dosage form
36	Isotonicity
37	Methods for adjustment of isotonicity
38	Formulation details for parenterals
39	Containers and closures used for parenterals and its selection
40	Prefilling treatment
41	Washing of containers and closures
42	Preparation of solution and suspensions filling
43	Closing of ampoules
44	Vials, infusion fluids, lyophilization
45	Preparation of sterile powders
46	Equipment for large scale manufacturing of sterile dosage form
47	Evaluation of parenteral products
48	Aseptic techniques , source of contamination; Methods of prevention
49	Design of aseptic area , laminar flow bench services and its maintenance , sterility testing of pharmaceuticals
50	Introduction to ophthalmic dosage form, requirements and formulation; Methods of preparation , containers used for storage and evaluation
51	Stability kinetics , in process quality control and quality assurance
52	ICH Guidelines for stability testing of active and finished pharmaceutical products
53	Packing components , types , specification and methods of evaluation
54	Stability aspects of packaging, packaging equipments, factors influencing choice of containers
55	

7.2. Practical

Exp. No	Experiment
1	To study and perform evaluation parameters of capsule (hard and soft).
2	To study different types of tablets and various evaluation parameters for tablets.
2	To perform quality control parameter for hard gelatin capsule (omeprazole capsule)..
3	To perform quality control test for given marketed tablet.
4	To prepare and evaluate eye drop.
5	To prepare and evaluate diclofenac sodium tablet.
6	To determine the quality control test for the identification of glass container
7	To prepare and evaluate sodium chloride injection
8	To determine quality control parameters of closures (vials).
9	To determine the stability test of stability test of plastic containers.