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GOVT POLYTECHNIC ROHRU DISTT. SHIMLA (HP)  
DEPARTMENT OF D. PHARMACY

BRANCH/SEMESTER: D PHARMACY

SUBJECT: BIOCHEMISTRY AND CLINICAL PATHOLOGY

PROPOSED COURSE PLAN: AS NOTIFIED BY PHARMACY COUNCIL OF INDIA

TEACHER: Manoj Shukla

YEAR- 2ND YEAR

PERIOD:

| Prepared Weak | Topic  | Instruction Reference        | Activity               | TOTTAL                   |
|---------------|--|------------------------------|------------------------|--------------------------|
| 1st WEAK      | Introduction to biochemistry. Scope of biochemistry in pharmacy Cell and its biochemical organization  | Dr r Nivasan. Ajay Pal Singh | Explain Biochemistry   | Understand biochemistry  |
| 2nd Weak      | Carbohydrates Definition, cunsification with examples, chemical properties   | DO                           | Explain CARBOHYDRATE S | UNDERSTAND CARBOHYDRATES |
| 3rd WEAK      | Monosaccharides-Structure of giocoen, fructose, and galactose  | DO                           | Explain CARBOHYDRATE S | UNDERSTAND CARBOHYDRATES |
| 4th WEAK      | sucrose Polysaccharides chemical nature of starch and Qualitative tests and biological role of carbohydrates   | DO                           | Explain CARBOHYDRATE S | UNDERSTAND CARBOHYDRATES |
| 5th WEAK      | Proteins   | DO                           | EXPLAIN PROTEIN        | UNDERSTAND PROTEIN       |
| 6th WEAK      | Definition classification of amino acids based on chemical nature and nutritional requirements with  | DO                           | EXPLAIN PROTEIN        | UNDERSTAND PROTEIN       |
| 7th WEAK      | Qualitative tests and biological role of proteins amino acids Diseases related to manubition of proteins   | DO                           | EXPLAIN AMINO ACID     | UNDERSTAND AMINO ACIDS   |
| 8th WEAK      | Lipids<br>Definition, classification with examples<br>. Structure and properties of triglycerides (oils and fats)<br>. Structure and functions of cholesterol in | DO                           | EXPLAIN LIPIDS         | UNDERSTAND LIPIDS        |

|              |  |    |                             |                                |
|--------------|--|----|-----------------------------|--------------------------------|
| 9th<br>WEAK  | the body<br>. Lipoproteins-types composition and functions in the body . Qualitative tests and functions of lipids   | DO | EXPLAIN<br>LIPIDS           | UNDERSTAND LIPIDS              |
| 10th<br>WEAK | Nucleic acids<br>Definition, purine and pyrimidine bases<br>Components of nucleosides and nucleotides with   | DO | EXPLAIN<br>NUCLEIC ACIDS    | UNDERSTAND<br>NUCLEIC ACIDS    |
| 11th<br>WEAK | . Structure of DNA (Watson and Crick model), RNA and their function Enzymes  | DO | EXPLAIN<br>STRUCTURE OF DNA | UNDERSTAND<br>STRUCTURE OF DNA |
| 12th<br>WEAK | Enzymes<br>Definition, properties and RB and MB classification<br>Factors affecting enzyme activity  | DO | EXPLAIN<br>ENZYMES          | understand<br>ENZYMES          |
| 13th<br>WEAK | Vitamins<br>• Definition and classification with examples  | DO | EXPLAIN<br>Vitamins         | UNDERSTAND<br>Vitamins         |
| 14th<br>WEAK | Sources chemical nature, functions, coenzyme form recommended dietary requirements deficiency diseases of fat-and water-soluble vitamin  | DO | EXPLAIN<br>Vitamins         | UNDERSTAND<br>VITAMINS         |
| 15th<br>WEAK | Metabolism (aludy of cyclepathways without chemical structures) Metabolism of Carbohydrates Glycolysis TCA cycle and glycogen metabolism, regulation of blood                        | DO | EXPLAIN<br>Metabolism       | UNDERSTAND<br>Metabolism       |
| 16th<br>WEAK | Metabolism of lipids: Lipolysis, $\beta$ -oxidation of Fatty acid (Palmitic acid) ketogenesis and ketolysis. Diseases related to abnormal metabolism of lipids such as Ketoacidosis, | DO | EXPLAIN<br>Metabolism       | UNDERSTAND<br>Metabolism       |
| 17th<br>WEAK | Diseases related to abnormal metabolism of amino acids, Disorders of ammonia metabolism, phenylketonuria, alkapturia and Jaundice. Biological oxidation: Electron                    | DO | EXPLAIN<br>Metabolism       | UNDERSTAND<br>Metabolism       |
| 18th<br>WEAK | Minerals: Types, recommended dietary requirements Functions, Deficiency .Water and Electrolytes<br>Distribution, functions of water in the body                                      | DO | EXPLAIN<br>Minrals          | UNDERSTAND<br>•Minrals         |
| 19th<br>WEAK | Introduction to Biotechnology  | DO | EXPLAIN<br>• Biotechnology  | UNDERSTAND<br>• Biotechnology  |

|              |   |    |                                   |                                      |
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| 20th<br>WEAK | Organ function tests Functions of kidney and routinely performed tests to assess the functions of kidney and their clinical significances | DO | EXPLAIN<br>• Organ function test  | UNDERSTAND<br>• Organ function test  |
| 21th<br>WEAK | Functions of liver and routinely performed tests to assess the functions of liver and their clinical significances                        | DO | EXPLAIN<br>• Functions of liver   | UNDERSTAND<br>• Functions of liver   |
| 22th<br>WEAK | Lipid profile tests and its clinical significances  | DO | EXPLAIN Lipid profile tests       | UNDERSTAND Lipid profile tests       |
| 23th<br>WEAK | Introduction to Pathology of Blood and Urine  | DO | EXPLAIN Introduction to Pathology | UNDERSTAND Introduction to Pathology |
| 24th<br>WEAK | Lymphocytes and Platelets, their role in health and disease<br>Erythrocytes - Abnormal cells and their significance                       | DO | EXPLAIN Lymphocytes and Platelets | UNDERSTAND Lymphocytes and Platelets |
| 25th<br>WEAK | Normal and Abnormal constituents of Urine and significance.   | DO | EXPLAIN Lymphocytes and Platelets | UNDERSTAND Lymphocytes and Platelets |

DATE: 1. 8. 2025

SIGNATURE OF TEACHER: 

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PRINCIPAL  
GOVT. POLYTECHNIC, ROHRU  
DISTT. SHIMLA 

**GOVT POLLTECHNIC ROHRU DISTT. SHIMLA (HP)**  
**DEPARTMENT OF D. PHARMACY**

**BRANCH/SEMESTER: D PHARMACY**

**SUBJECT:PHARMACEUTICS-1**

**TEACHER: MANOJ KUMAR**

**YEAR- 1st YEAR**

**PROPOSED COURSE PLAN: AS NOTIFIED BY PHARMACY COUNCIL OF INDIA**

**PERIOD:**

**TOTTAL**

| Prepared Weak | Topic   | Instruction Reference                                  | Activity                       | Learning Outcomes                     |
|---------------|---|--|--------------------------------|---------------------------------------|
| 1st WEAK      | History of the profession of Pharmacy in India in relation to Pharmacy education, industry, pharmacy practice, and various professional associations.       | Amit Chawla R M Mehta<br>*P V KASTURE<br>*S P AGGARWAL | EXPLAIN PROFESSION OF PHARMACY | KNOW ABOUT THE PROFESSION OF PHARMACY |
| 2nd Weak      | Pharmacy as a career<br><br>Pharmacopoeia: Introduction to IP, BP, USP. NF and Extra Pharmacopoeia. Salient features of Indian                              | DO   | EXPLAIN PHARMACOPOEIA          | UNDERSTAND PHARMACOPIA                |
| 3rd WEAK      | Pharmacopoeia, Packaging materials: Types,selection criteria advantages and disadvantages of glass, plastic   | DO   | EXPLAIN PACKAGING              | UNDERSTAND PACKAGING                  |
| 4th WEAK      | plastic, metal, rubber as packaging materials ,<br>Pharmaceutical aids: Organoleptic (Colouring, flavouring, and sweetening) agents                         | DO   | EXPLAIN PHARMACEUTICAL AIDS    | UNDERSTAND PHARMACEUTICAL AIDS        |
| 5th WEAK      | Preservatives: Definition, types with examples and uses.<br>Unit operations: Definition, objectives/applications, principles, construction and workings of: | DO   | EXPLAIN PRESERVATIVES          | UNDERSTAND PRESERVATIVES              |
| 6th WEAK      | Size reduction: hammer mill and ball mill<br>Size separation: Classification powder according to IP   | DO   | EXPLAIN SIZE SEPARATIONS       | UNDERSTAND SIZE SEPARATION            |
| 7th WEAK      | Cyclone separator, Sieves and standards of sieves   | DO   | EXPLAIN SEPARATORS             | UNDERSTAND SEPARATORS                 |
| 8th WEAK      | Mixing: Double cone blender, Turbine mixer,<br>Triple rollermill and Silverson mixer homogenizer  | DO   | PLAIN MIXING                   | UNDERSTAND MIXING                     |

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|--------------|--|----|---------------------------------|------------------------------------|
| 9th<br>WEAK  | Filtration: Theory of filtration, membrane filter and sintered glass filter .  | DO | EXPLAIN FILTERATION             | UNDERSTAND FILTERATION             |
| 10th<br>WEAK | Drying: working of fluidized bed dryer and process of freeze drying  | DO | EXPLAIN DRYING                  | UNDERSTAND DRYING                  |
| 11th<br>WEAK | Extraction: Definition, Classification, method and applications.   | DO | EXPLAIN EXTRACTION              | UNDERSTAND EXTRACTION              |
| 12th<br>WEAK | Tablets-coated and uncoated tablets  | DO | PLAIN TABLETS                   | UNDERSTAND TABLETS                 |
| 13th<br>WEAK | various modified tablets (sustained release, extended-release, fast dissolving double layered)<br>Capsules hard and soft gelatine capsules | DO | EXPLAIN MODIFICATION OF TABLETS | UNDERSTAND MODIFICATION OF TABLETS |
| 14th<br>WEAK | Liquid oral preparations solution, syrup, elixir, emulsion suspension, dry powder for reconstitution,                                      | DO | EXPLAIN PREPARATIONS OF LIQUIDS | UNDERSTAND PREPARATIONS OF LIQUIDS |
| 15th<br>WEAK | Topical preparations - ointments, creams, pastes, gels liniments and lotions   | DO | EXPLAIN TOPICAL PREPARATIONS    | UNDERSTAND TOPICAL PREPARATIONS    |
| 16th<br>WEAK | suppositories and pessaries Nasal preparations, Ear preparations , Powders and granules -  | DO | EXPLAIN TOPICAL PREPARATIONS    | UNDERSTAND TOPICAL PREPARATIONS    |
| 17th<br>WEAK | Insufflations, dusting powders, effervescent powders and effervescent granules   | DO | EXPLAIN POWDERS                 | UNDERSTAND POWDERS                 |
| 18th<br>WEAK | Sterile formulations - Injectables, eye drops and eye ointments  | DO | EXPLAIN STERILE FORMULATIONS    | UNDERSTAND STERILE FORMULATIONS    |
| 19th<br>WEAK | Immunological products: Sera, vaccines, toxoids and their manufacturing method.  | DO | EXPLAIN IMMUNOLOGICAL PRODUCTS  | UNDERSTAND IMMUNOLOGICAL PRODUCTS  |
|              | Basic structure, layout, sections and activities of  |    | EXPLAIN                         | UNDERSTAND                         |

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| 20th<br>WEAK | pharmaceutical manufacturing plants  | DO | PHARMACEUTICAL<br>MANUFACTURING          | PHARMACEUTICAL<br>MANUFACTURING                |
| 21th<br>WEAK | Quality control and quality assurance  | DO | EXPLAIN<br>QUALITY<br>CONTROL<br>AND     | UNDERSTAND<br>QUALITY<br>CONTROL<br>AND        |
| 22th<br>WEAK | Definition and concepts of quality control & quality assurance, current good manufacturing practice (cGMP) | DO | EXPLAIN<br>CGMP                          | UNDERSTAND<br>CGMP                             |
| 23th<br>WEAK | INTRODUCTION TO CONCEPT OF CALIBRATION & VALIDATION  | DO | EXPLAIN<br>CALIBRATION AND<br>VALIDATION | UNDERSTAND<br>CALIBRATION AND<br>VALIDATION    |
| 24th<br>WEAK | Novel drug delivery systems: Introduction  | DO | EXPLAIN<br>NOVEL<br>DRUG<br>DELIVERY     | UNDERSTAND<br>NOVEL DRUG<br>DELIVERY<br>SYSTEM |
| 25th<br>WEAK | Classification with examples, advantages and challenges  | DO | EXPLAIN<br>NOVEL<br>DRUG<br>DELIVERY     | UNDERSTAND<br>NOVEL DRUG<br>DELIVERY<br>SYSTEM |

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| DATE:  | 1. 8. 2025 | SIGNATURE OF TEACHER |   |
|  |            | APPROVED             | IGN. HOD  |
|  |            | DATE                 |  |
| PRINCIPAL<br>GOVT. POLYTECHNIC, ROHRU<br>DISTT. SHIMLA  |            |                      |   |

GOVT POLYTECHNIC ROHRU DISTT. SHIMLA (HP)  
DEPARTMENT OF D. PHARMACY

BRANCH/SEMESTER: D PHARMACY  
SUBJECT: COMMUNITY PHARMACY

TEACHER: Manoj Shukla

YEAR- 2nd YEAR

PROPOSED COURSE PLAN: AS NOTIFIED BY PHARMACY COUNCIL OF INDIA

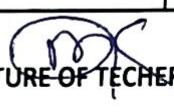
PERIOD:

| Prepared Weak | Topic   | Instruction Reference | Activity  | TOTTAL LECTURE   |
|---------------|---|-----------------------|---|--|
|               |   |                       |   | Learning Outcomes  |
| 1st WEAK      | community pharmacy practice-<br>deffination,history ,and development of<br>community pharmacy. International andindian<br>scenarios                                   |                       | Explain community<br>pharmacy                                 | Understand community<br>pharmacy                                 |
| 2nd Weak      | proffesional responsiblities of community<br>pharmacist<br>intro to the concept of god pharmaacy<br>precticeandSOPs.  | DO                    | Explain<br>PROFESSIONAL<br>RESPONSIBILITIES OF<br>PHARMACISTS | UNDERSTAND<br>PROFESSIONAL<br>RESPONSIBLITIES OF<br>PHARMACISTS  |
| 3rd WEAK      | PRESCRIPTION AND PRISRIPTIO HEADING -<br>DEFINATON ,PARRT of prescriptions, legality of<br>prescriptions,<br><br><u>prescription handling, labelling of dispensed</u> | DO                    | EXPLAIN<br>PRESCRIPTION AND<br>PRISRIPTIO<br>HEADING          | UNDERSTAND<br>PRESCRIPTION AND<br>PRISRIPTIO HEADING             |
| 4th WEAK      | Main label, ancillary label, pictograms), brief<br>instructions<br><br>on medication usage  | DO                    | EXPLAIN<br>PRESCRIPTION AND<br>PRISRIPTIO<br>HEADING          | UNDERSTAND<br>PRESCRIPTION AND<br>PRISRIPTIO HEADING             |
| 5th WEAK      | • Dispensing process, Good Dispensing<br>Practices, dispensing errors and strategies to<br>minimize them  | DO                    | EXPLAIN<br>PRESCRIPTION AND<br>PRISRIPTIO<br>HEADING          | UNDERSTAND<br>PRESCRIPTION AND<br>PRISRIPTIO HEADING             |
| 6th WEAK      | Communication skills<br><br>.. Definition, types of Communication skills  | DO                    | EXPLAIN<br>Communication skills                               | UNDERSTAND<br>Communication skills                               |
| 7th WEAK      | Interactions with professionals and patients<br>• Verbal communication skills<br>(one-to-one over the telephone)<br><br><u>Written communication skills</u>           | DO                    | EXPLAIN<br>Interactions with<br>professionals and<br>patients | UNDERSTAND<br>Interactions with<br>professionals and<br>patients |
| 8th WEAK      | Body language<br>• Patient interview techniques<br>Patient counselling<br>• Definition and benefits of patient counselling  | DO                    | EXPLAIN<br>Interactions with<br>professionals and<br>patients | UNDERSTAND<br>Interactions with<br>professionals and<br>patients |
| 9th           | Stages of patient counselling - Introduction,<br>counselling content, counselling process, and  | DO                    | EXPLAIN<br>Stages of patient                                  | UNDERSTAND<br>Stages of patient                                  |

| WEAK         | closing the counselling session. Barriers to effective counseling - Types and strategies.  | DO | STAGES OF PATIENT COUNSELLING<br>EXPLAIN<br>Interactions with professionals and patients | STAGES OF PATIENT COUNSELLING<br>UNDERSTAND<br>Interactions with professionals and patients |
|--------------|--|----|--|---|
| 10th<br>WEAK | to overcome the barriers . Patient counselling points for chronic diseases/disorders Hypertension, Diabetes, Asthma,   | DO | EXPLAIN<br>Interactions with professionals and patients                                  | UNDERSTAND<br>Interactions with professionals and patients                                  |
| 11th<br>WEAK | Tuberculosis, Chronic obstructive pulmonary disease, and AIDS • Patient Package Inserts Definition, importance and benefits, Scenarios of PPI use in India and other countries . Patient Information leaflets - Definition and | DO | EXPLAIN<br>Patient Information leaflet   | UNDERSTAND<br>Patient Information leaflet   |
| 12th<br>WEAK | Medication Adherence Definition, factors influencing non-adherence, strategies to overcome non-adherence   | DO | EXPLAIN<br>Medication Adherence Definition   | understand<br>Medication Adherence Definition   |
| 13th<br>WEAK | Health Screening Services in Community Pharmacy<br>Introduction, scope, and importance of various  | DO | EXPLAIN<br>Health Screening Service  | UNDERSTAND<br>Health Screening Service  |
| 14th<br>WEAK | services for routine monitoring of patients, early detection, and referral of undiagnosed cases:   | DO | EXPLAIN<br>Health Screening Service  | UNDERSTAND<br>Health Screening Service  |
| 15th<br>WEAK | Over The Counter (OTC) Medications<br>• Definition, need and role of Pharmacists in OTC medication dispensing  | DO | EXPLAIN<br>Over The Counter (OTC) Medications  | UNDERSTAND<br>Over The Counter (OTC) Medications  |
| 16th<br>WEAK | OTC medications in India, counseling for OTC products Self-medication and role of pharmacists in promoting the safe practices during self-medication   | DO | EXPLAIN<br>OTC medications in India  | UNDERSTAND<br>OTC medications in India  |
| 17th<br>WEAK | Responding to symptoms, minor ailments, and advice for self-care in conditions such as Pain management, Cough.   | DO | EXPLAIN<br>OTC medications in India  | UNDERSTAND<br>OTC medications in India  |
| 18th<br>WEAK | Cold, Diarrhea, Constipation, Vomiting, Fever, Sore throat, Skin disorders, Oral health (mouth ulcers, dental pain, gum swelling).   | DO | EXPLAIN<br>OTC medications in India  | UNDERSTAND<br>OTC medications in India  |
| 19th<br>WEAK | Community Pharmacy Management  | DO | EXPLAIN<br>Community Pharmacy Management   | UNDERSTAND<br>Community Pharmacy Management   |
| 20th<br>WEAK | Legal requirements to set up a community pharmacy . Site selection requirements<br>• Pharmacy designs and interiors  | DO | EXPLAIN<br>• Pharmacy designs and interiors  | UNDERSTAND<br>• Pharmacy designs and interiors  |

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| 21th<br>WEAK | • Vendor selection and ordering •<br>Procurement, inventory control methods, and inventory.                    | DO | EXPLAIN<br>• Vendor selection and ordering | UNDERSTAND<br>• Vendor selection and ordering |
| 22th<br>WEAK | management<br>• Financial planning and management •<br>Accountancy in community pharmacy - Day book, Cash book | DO | EXPLAIN<br>management                      | UNDERSTAND<br>MANAGEMENT                      |
| 23th<br>WEAK | Introduction to pharmacy operation softwares - usefulness and availability.                                    | DO | EXPLAIN<br>management                      | UNDERSTAND<br>MANAGEMENT                      |
| 24th<br>WEAK | Customer Relation Management (CRM) •<br>Audits in Pharmacies   | DO | EXPLAIN<br>management                      | UNDERSTAND<br>MANAGEMENT                      |
| 25th<br>WEAK | SOP of Pharmacy Management Introduction to Digital Health, mHealth and Online . Pharmacies                     | DO | EXPLAIN<br>management                      | UNDERSTAND<br>MANAGEMENT                      |

DATE: 1. 8. 2025

SIGNATURE OF TEACHER: 

PRINCIPAL  
GOVT. POLYTECHNIC, ROHRU  
DISTT. SHIMLA



| APPROVED | SIGN. HOD |  |
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| DATE     |           |   |

GOVT POLYTECHNIC ROHRU DISTT. SHIMLA (HP)  
DEPARTMENT OF D. PHARMACY

BRANCH/SEMESTER: D PHARMACY

TEACHER: SHASHI KUMAR

SUBJECT: PHARMACOGONOSY

YEAR- 1st YEAR

PROPOSED COURSE PLAN: AS NOTIFIED BY PHARMACY COUNCIL OF INDIA

TOTTAL LECTURE PLANNED-75

| PERIOD:       |  | TOTTAL LECTURE PLANNED-75 |                                 |                                    |
|---------------|--|---------------------------|---------------------------------|------------------------------------|
| Prepared Weak | Topic  | Instruction Reference     | Activity                        | Learning Outcomes                  |
| 1st WEAK      | Definition, history Of pharmacognosy                                       | CK.KOKATE                 | EXPLAIN Pharmacognosy           | KNOW ABOUT THE PHARMACOGONOSY      |
| 2nd Weak      | Present status and scope of Pharmacognosy                                  | DO                        | EXPLAIN Pharmacognosy           | KNOW ABOUT THE PHARMACOGONOSY      |
| 3rd WEAK      | Classification of drugs:<br>Alphabetical<br>Taxonomical<br>Morphological   | DO                        | EXPLAIN Classification of drugs | UNDERSTAND Classification of drugs |
| 4th WEAK      | Classification of drugs:<br>Pharmacological ,Chemical<br>Chemo-taxonomical | DO                        | EXPLAIN Classification of drugs | UNDERSTAND Classification of drugs |
| 5th WEAK      | Quality control of crude drugs   | DO                        | EXPLAIN crude drugs             | UNDERSTAND crude drugs             |
| 6th           | Different methods of adulteration of crude drugs                           | DO                        | EXPLAIN                         | UNDERSTAND                         |

| WEAK         |  |    |  |   |
|--------------|--|----|--|---|
| 7th<br>WEAK  | Evolution of crude drugs   | DO | crude drugs<br>EXPLAIN<br>Evolution of crude drugs | crude drugs<br>UNDERSTAND<br>Evolution of crude drugs |
| 8th<br>WEAK  | Brief outline of occurrence, distribution, isolation, identification tests, therapeutic activity and pharmaceutical applications of alkaloids, terpenoids, glycosides. | DO | EXPLAIN<br>alkaloids, terpenoids, glycosides       | UNDERSTAND<br>alkaloids, terpenoids, glycosides       |
| 9th<br>WEAK  | Brief outline of occurrence, distribution, isolation, identification tests, therapeutic activity and pharmaceutical applications of volatile Coils,tannins and resins: | DO | EXPLAIN<br>volatile Coils,tannins and resins:      | UNDERSTAND<br>volatile Coils,tannins and resins:      |
| 10th<br>WEAK | Biological source, chemical constituents and therapeutic efficacy of the following categories of crude drugs Laxatives, cardiotonic, carminatives, GI REGULATOR        | DO | EXPLAIN<br>crude drugs                             | UNDERSTAND<br>crude drugs                             |
| 11th<br>WEAK | Astringents, Drugs acting on nervous system, Anti-hypertensive, Anti-tussive, Anti-rheumatics  | DO | EXPLAIN<br>CRUDE DRUGS                             | UNDERSTAND<br>crude drugs                             |
| 12th<br>WEAK | Anti-tumour, Antidiabetics, Diuretics, Anti-dysenteric, Antiseptics and disinfectants  | DO | EXPLAIN<br>CRUDE DRUGS                             | UNDERSTAND<br>crude drugs                             |
| 13th<br>WEAK | Antimalarials, Oxytocic, Vitamins, Enzymes   | DO | EXPLAIN<br>CRUDE DRUGS                             | UNDERSTAND<br>crude drugs                             |
| 14th<br>WEAK | Pharmaceutical Aids, Miscellaneous   | DO | EXPLAIN<br>CRUDE DRUGS                             | UNDERSTAND<br>crude drugs                             |

| WEAK   |   | DO        | HERBAL COSMATICS                             | HERBAL COSMATICS                                |
|--|---|-----------|--|---|
| 24TH<br>WEAK   | therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil | DO        | EXPLAIN therapeutic and cosmetic uses        | UNDERSTAND therapeutic and cosmetic uses        |
| 25th<br>WEAK   | Phytochemical investigation of drugs  | DO        | EXPLAIN Phytochemical investigation of drugs | UNDERSTAND Phytochemical investigation of drugs |
| DATE:  |   |           |  | SIGNATURE OF TEACHER                            |
|  | APPROVED  | SIGN. HOD |  |   |
|  | DATE 01-08-25   |           |  |   |
| PRINCIPAL<br>GOVT. POLYTECHNIC, ROHRU<br>DISTT. SHIMLA |   |           |  |   |

**GOVERNMENT POLYTECHNIC ROHRU**  
 Rohru, DISTT. Shimla (HP) - 171207

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                                       |                          |
|---------------------------------------|--------------------------|
| <b>Academic Year</b>                  | 2025-26                  |
| <b>Semester</b>                       | FIRST YEAR               |
| <b>Course Code</b>                    | ER20-12T                 |
| <b>Subject Title</b>                  | PHARMACEUTICAL CHEMISTRY |
| <b>Name of Faculty</b>                | MOTI SINGH SHARMA        |
| <b>Semester Start &amp; End Dates</b> | 11-08-2025 TO 27-05-2026 |

**STUDY AND EVALUATION SCHEME**

| <b>Sr.<br/>No.</b> | <b>Name of the<br/>Subject</b> | Internal<br>Assessment |           |           | External Assessment |              |           |            |           | <b>Total<br/>Marks</b> |     |     |
|--------------------|--------------------------------|------------------------|-----------|-----------|---------------------|--------------|-----------|------------|-----------|------------------------|-----|-----|
|                    |                                | <b>Th</b>              | <b>Pr</b> | <b>Th</b> | <b>Pr</b>           | <b>Total</b> | <b>Th</b> | <b>Hrs</b> | <b>Pr</b> | <b>Hrs</b>             |     |     |
|                    | PHARMACEUTICAL<br>CHEMISTRY    | 3                      | 3         | 20        | 20                  | 40           | 80        | 3          | 80        | 3                      | 160 | 200 |

**Subject objectives:-**

| <b>DAYs</b>           | <b>Unit &amp; Topic of Discussion</b> | <b>Topic objectives</b>  | <b>Delivery<br/>Method</b>   |
|-----------------------|---------------------------------------|--|------------------------------|
|                       | Part-I: <del>Basics of Pharmacy</del> |  |                              |
|                       | Unit-1                                |  |                              |
| DAY<br>01<br>TO<br>08 |                                       | Introduction to Pharmaceutical chemistry: Scope and objectives Sources and types of errors: Accuracy, precision, significant figures Impurities in Pharmaceuticals: Source and effect of impurities in Pharmacopoeial substances, importance of limit test, Principle and procedures of Limit tests for chlorides, sulphates, iron, heavy metals and arsenic | Chalk & Talk                 |
| DAY<br>09<br>TO<br>16 |                                       | Volumetric analysis: Fundamentals of volumetric analysis, Acid-base titration, non-aqueous titration, precipitation titration, complexometric titration, redox titration Gravimetric analysis: Principle and method  | Chalk & Talk<br>Chalk & Talk |
|                       | Unit-3&4                              |  |                              |

|                       |  |                              |
|-----------------------|--|------------------------------|
| DAY<br>17<br>TO<br>25 | <p>Inorganic Pharmaceuticals:<br/>Pharmaceutical 7 21   Page<br/>formulations, market preparations, storage conditions and uses of •<br/>Haematinics: Ferrous sulphate, Ferrous fumarate, Ferric ammonium citrate, Ferrous ascorbate, Carbonyl iron •<br/>Antacids: Aluminium hydroxide gel, Magnesium hydroxide, Magaldrate, Sodium bicarbonate, Calcium Carbonate •<br/>Anti-microbial agents: Silver Nitrate, Ionic Silver, Chlorhexidine Gluconate, Hydrogen peroxide, Boric acid, Bleaching powder, Potassium permanganate •<br/>Dental products: Calcium carbonate, Sodium fluoride, Denture cleaners, Denture adhesives, Mouth washes •<br/>Medicinal gases: Carbon dioxide, nitrous oxide, oxygen</p> <p>Introduction to nomenclature of organic chemical systems with particular reference to heterocyclic compounds containing up to Three rings</p> | Chalk & Talk<br>Chalk & Talk |
| <b>Unit-5</b>         |  |                              |
| DAY<br>26<br>TO<br>34 | <p>Drugs Acting on Central Nervous System<br/>Anaesthetics: Thiopental Sodium*, Ketamine Hydrochloride*, Propofol •<br/>Sedatives and Hypnotics: Diazepam*, Alprazolam*, Nitrazepam, Phenobarbital* •<br/>Antipsychotics: Chlorpromazine Hydrochloride*, Haloperidol*, Risperidone*, Sulpiride*, Olanzapine, Quetiapine, Lurasidone •<br/>Anticonvulsants: Phenytoin*, Carbamazepine*, Clonazepam, Valproic Acid*, Gabapentin*, Topiramate, Vigabatrin, Lamotrigine •<br/>Anti-Depressants: Amitriptyline Hydrochloride*, Imipramine Hydrochloride*, Fluoxetine*, Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine</p>   | Chalk & Talk                 |
| <b>Unit-6</b>         |  |                              |
| DAY<br>35<br>TO<br>44 | <p>Drugs Acting on Autonomic Nervous System • Sympathomimetic Agents:<br/>Direct Acting: NorEpinephrine*, Epinephrine, Phenylephrine, Dopamine*, Terbutaline, Salbutamol (Albuterol),</p>  | Chalk & Talk                 |

Naphazoline\*, Tetrahydrozoline. Indirect Acting 9 22 | Page Agents: Hydroxy Amphetamine, Pseudoephedrine. Agents With Mixed Mechanism: Ephedrine, Metaraminol • Adrenergic Antagonists: Alpha Adrenergic Blockers: Tolazoline, Phentolamine • Phenoxybenzamine, Prazosin. Beta Adrenergic Blockers: Propranolol\*, Atenolol\*, Carvedilol • Cholinergic Drugs and Related Agents: Direct Acting Agents: Acetylcholine\*, Carbachol, And Pilocarpine. Cholinesterase Inhibitors: Neostigmine\*, Edrophonium Chloride, Tacrine Hydrochloride, Pralidoxime Chloride, Echothiopate Iodide • Cholinergic Blocking Agents: Atropine Sulphate\*, Ipratropium Bromide Synthetic Cholinergic Blocking Agents: Tropicamide, Cyclopentolate Hy

### Unit-7

|                       |   |              |
|-----------------------|---|--------------|
| DAY<br>45<br>TO<br>50 | Drugs Acting on Cardiovascular System<br>• Anti-Arrhythmic Drugs: Quinidine Sulphate, Procainamide Hydrochloride, Verapamil, Phenytoin Sodium*, Lidocaine Hydrochloride, Lorcainide Hydrochloride, Amiodarone and Sotalol<br>• Anti-Hypertensive Agents: Propranolol*, Captopril*, Ramipril, Methyldopate Hydrochloride, Clonidine Hydrochloride, Hydralazine Hydrochloride, Nifedipine, • Antianginal Agents: Isosorbide Dinitrate | Chalk & Talk |
|-----------------------|---|--------------|

### Unit-8

|                       |  |              |
|-----------------------|--|--------------|
| DAY<br>51<br>TO<br>52 | Diuretics: Acetazolamide, Frusemide*, Bumetanide, Chlorthalidone, Benzthiazide, Metolazone, Xipamide, Spironolactone | Chalk & Talk |
|-----------------------|--|--------------|

### Unit-9

|                       |   |                              |
|-----------------------|---|------------------------------|
| DAY<br>53<br>TO<br>54 | Hypoglycemic Agents: Insulin and Its Preparations, Metformin*, Glibenclamide*, Glimepiride, Pioglitazone, Repaglinide, Gliflozins, Gliptins | Chalk & Talk<br>Chalk & Talk |
|-----------------------|---|------------------------------|

### Unit-10

|                    |   |              |
|--------------------|---|--------------|
| DAY 55<br>TO<br>57 | Analgesic And Anti-Inflammatory Agents: Morphine Analogues, Narcotic Antagonists; Nonsteroidal AntiInflammatory Agents (NSAIDs) - Aspirin*, Diclofenac, Ibuprofen*, Piroxicam, Celecoxib, Mefenamic Acid, | Chalk & Talk |
|--------------------|---|--------------|

|                       |   |                              |
|-----------------------|---|------------------------------|
|                       | Unit-11   |                              |
| DAY<br>58<br>TO<br>64 | <p>Anti-Infective Agents • Antifungal Agents: Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole*, Itraconazole, Fluconazole*, Naftifine Hydrochloride • Urinary Tract Anti-Infective Agents: Norfloxacin, Ciprofloxacin, Ofloxacin*, Moxifloxacin, 8 23   Page • Anti-Tubercular Agents: INH*, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide, Rifampicin, Bedaquiline, Delamanid, Pretomanid* • Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir*, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir • Antimalarials: Quinine Sulphate, Chloroquine Phosphate*, Primaquine Phosphate, Mefloquine*, Cycloguanil, Pyrimethamine, Artemisinin • Sulfonamides: Sulfanilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide*, Mafenide Acetate, Cotrimoxazole, Dapsone</p> | Chalk & Talk<br>Chalk & Talk |
| Unit-12               |   |                              |
| DAY<br>65<br>TO<br>72 | <p>Antibiotics: Penicillin G, Amoxicillin*, Cloxacillin, Streptomycin, Tetracyclines: Doxycycline, Minocycline, Macrolides: Erythromycin, Azithromycin, Miscellaneous: Chloramphenicol*, Clindamycin</p>  | Chalk & Talk                 |
|                       |   | Chalk & Talk                 |
| Unit-13               |   |                              |
| DAY<br>73<br>TO<br>75 | <p>Anti-Neoplastic Agents: Cyclophosphamide*, Busulfan, Mercaptopurine, Fluorouracil*, Methotrexate, Dactinomycin, Doxorubicin Hydrochloride, Vinblastine Sulphate, Cisplatin*, Dromostanolone Propionate</p>   | Chalk & Talk                 |

|                  | Name of Book             | Author Name            | Publication       |
|------------------|--------------------------|------------------------|-------------------|
| Prescribed Books | PHARMACEUTICAL CHEMISTRY | N C Chaudhary          | Vallabh Prakashan |
|                  | PHARMACEUTICAL CHEMISTRY | Dr. Desh Deepak Pandey | Thakur prakashan  |
| Reference Books  |                          |                        |                   |
|                  |                          | HK Singh               | Vallabh Prakashan |



**Faculty in Charge**

(MOTI SINGH SHARMA)



**HOD**

(SHASTI SHARMA)

**GOVERNMENT POLYTECHNIC ROHRU**  
Rohru, DISTT. Shimla (HP) - 171207

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                            |                            |
|----------------------------|----------------------------|
| Academic Year              | 2025-26                    |
| Semester                   | FIRST YEAR                 |
| Course Code                | ER20-15T                   |
| Subject Title              | HUMAN ANATOMY & PHYSIOLOGY |
| Name of Faculty            | MAHESH KUMAR CHAUHAN       |
| Semester Start & End Dates | 11-08-2025 TO 27-05-2026   |

**STUDY AND EVALUATION SCHEME**

| Sr. No. | Name of the Subject        | Th Pr | Internal Assessment |    |       | External Assessment |     |    |     | Total Marks |
|---------|----------------------------|-------|---------------------|----|-------|---------------------|-----|----|-----|-------------|
|         |                            |       | Th                  | Pr | Total | Th                  | Hrs | Pr | Hrs |             |
|         | HUMAN ANATOMY & PHYSIOLOGY | 3 3   | 20                  | 20 | 40    | 80                  | 3   | 80 | 3   | 160 200     |

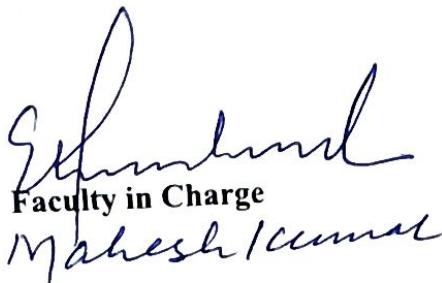
**Subject objectives:**

| DAY                    | Unit & Topic of Discussion | Topic objectives  | Delivery Method |
|------------------------|----------------------------|---|-----------------|
| <b>Unit- 1,2,3,4,5</b> |                            |   |                 |
| DAY 1 TO 22 DAYS       |                            | <p>Scope of Anatomy and Physiology<br/>Definition of various terminologies</p> <p><b>2 Structure of Cell:</b> Components and its functions</p> <p><b>3 Tissues of the human body:</b><br/>Epithelial, Connective, Muscular and Nervous tissues – their sub-types and characteristics.</p> <p><b>4 Osseous system:</b> structure and functions of bones of axial and appendicular skeleton Classification, types and movements of joints, disorders of joints 3</p> <p><b>5 Haemopoietic system</b> • Composition and functions of blood • Process of Hemopoiesis • Characteristics and functions of RBCs, WBCs and platelets • Mechanism of Blood Clotting Importance</p> | Chalk & Talk    |

|                               |   |  |
|-------------------------------|---|--|
|                               | of Blood groups   |  |
| DAY<br>23<br>TO<br>40<br>DAYS | <b>Unit-6,7</b><br><br><b>Lymphatic system •</b><br>Lymph and lymphatic system, composition, function and its formation. • Structure and functions of spleen and lymph node.<br><b>7 Cardiovascular system •</b><br>Anatomy and Physiology of heart • Blood vessels and circulation (Pulmonary, coronary and systemic circulation) • Cardiac cycle and Heart sounds, Basics of ECG • Blood pressure and its regulation  | Chalk & Talk<br>Chalk & Talk                                 |
| DAY<br>41<br>TO<br>52<br>DAYS | <b>Unit - 8,9</b><br><br><b>Respiratory system •</b><br>Anatomy of respiratory organs and their functions. • Regulation Mechanism of respiration. • Respiratory volumes and capacities – definitions<br><br><b>9 Digestive system •</b><br>Anatomy and Physiology of GIT • Anatomy and functions of accessory glands • Physiology of digestion and absorption   | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk                 |
| DAY<br>53<br>TO<br>62<br>DAYS | <b>Unit- 10,11</b><br><br><b>Skeletal muscles •</b><br>Histology • Physiology of muscle contraction • Disorder of skeletal muscles 2<br><br><b>11 Nervous system •</b><br>Classification of nervous system • Anatomy and physiology of cerebrum, cerebellum, mid brain • Function of hypothalamus, medulla oblongata and basal ganglia • Spinal cord-structure and reflexes • Names and functions of cranial nerves. • Anatomy and physiology of sympathetic and parasympathetic nervous system (ANS) | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk                 |
| DAY<br>63<br>TO<br>69<br>DAYS | <b>Unit -12 ,13</b><br><br><b>Sense organs</b> - Anatomy and physiology of •<br>Eye • Ear • Skin • Tongue Nose<br><br><b>13 Urinary system •</b>  | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk |

|                               |  |  |  |
|-------------------------------|--|--|--|
| <b>Unit - 14</b>              |  | Anatomy and physiology of urinary system • Physiology of urine formation   |  |
| DAY<br>70<br>TO<br>75<br>DAYS |  | <b>Endocrine system (Hormones and their functions)</b> <ul style="list-style-type: none"> <li>• Pituitary gland •</li> <li>Adrenal gland •</li> <li>Thyroid and parathyroid gland •</li> <li>Pancreas and gonads</li> </ul>                    | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk |
| <b>Unit- 15</b>               |  |  |  |
| DAY<br>74 To<br>75            |  | <b>Reproductive system •</b><br>Anatomy of male and female reproductive system<br><ul style="list-style-type: none"> <li>• Physiology of menstruation •</li> <li>Spermatogenesis and Oogenesis •</li> <li>Pregnancy and parturition</li> </ul> | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk                 |

|                         | Name of Book                          | Author Name              | Publication                       |
|-------------------------|---------------------------------------|--------------------------|-----------------------------------|
| <b>Prescribed Books</b> | <b>HUMAN ANATOMY &amp; PHYSIOLOGY</b> | <b>Dr. Avinash Kumar</b> | <b>Thakur Publication Pvt Ltd</b> |
|                         | <b>HUMAN ANATOMY &amp; PHYSIOLOGY</b> | <b>Dr. V Raghunandan</b> | <b>Vallabh prakashan</b>          |
| <b>Reference Books</b>  |                                       |                          |                                   |
|                         |                                       |                          |                                   |

  
**Faculty in Charge**  
**Mahesh Kumar**

  
**HOD**  
**SHASHI SHARMA**

**GOVERNMENT POLYTECHNIC ROHRU**  
Rohru, DISTT. Shimla (HP) - 171207

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                            |                          |
|----------------------------|--------------------------|
| Academic Year              | 2025-26                  |
| Semester                   | FIRST YEAR               |
| Course Code                | ER20-15T                 |
| Subject Title              | SOCIAL PHARMACY          |
| Name of Faculty            | UDAY SINGH CHAUHAN       |
| Semester Start & End Dates | 11-08-2025 To 27-05-2026 |

**STUDY AND EVALUATION SCHEME**

| Sr.<br>No. | Name of the<br>Subject | Th | Pr | Internal<br>Assessment |    |       | External Assessment |     |    |     | Total<br>Marks |     |
|------------|------------------------|----|----|------------------------|----|-------|---------------------|-----|----|-----|----------------|-----|
|            |                        |    |    | Th                     | Pr | Total | Th                  | Hrs | Pr | Hrs |                |     |
|            | SOCIAL PHARMACY        | 3  | 3  | 20                     | 20 | 40    | 80                  | 3   | 80 | 3   | 160            | 200 |

**Subject objectives:**

| DAY          | Unit & Topic of Discussion                                  | Topic objectives  | Delivery Method              |
|--------------|---|---|------------------------------|
|              | Unit- 1   |   |                              |
| DAY 1-9      | Introduction to Social Pharmacy                             | <p>Definition and Scope. Social Pharmacy as a discipline and its scope in improving public health. Role of Pharmacists in Public Health. (2)</p> <p>Concept of Health - WHO Definition, various dimensions, determinants, and health indicators. (3)</p> <p>National Health Policy – Indian perspective (1)</p> <p>Introduction to Millennium Development Goals, Sustainable Development Goals, FIP Development Goals (1)</p>   | Chalk & Talk                 |
| DAY 10 To 27 | Preventive Health care- Role of Pharmacist in the Following | <p>Demography and Family Planning (3)</p> <p>Mother and child health, importance of breastfeeding, ill effects of infant milk substitutes and bottle feeding (2)</p> <p>Overview of Vaccines, types of immunity and immunization (5)</p> <p>  Page Effect of Environment on Health – Water pollution, importance of safe drinking water, waterborne diseases, air pollution, noise pollution, sewage and solid waste disposal, occupational illnesses, Environmental pollution due to pharmaceuticals (6)</p> <p>Psychosocial Pharmacy: Drugs of misuse and abuse – psychotropics, narcotics, alcohol, tobacco products. Social</p> | Chalk & Talk<br>Chalk & Talk |

|                 |   |  |  |
|-----------------|---|--|--|
|                 |   | Impact of these habits on social health and productivity and suicidal behaviours (2)   |  |
| DAY 28<br>To 37 | Unit - 3<br><b>Nutrition and Health</b>                       | <p><b>Basics of nutrition – Macronutrients and Micronutrients (2)</b></p> <p><b>Importance of water and fibres in diet (1)</b></p> <p><b>Balanced diet, nutrition deficiency diseases, ill effects of junk foods, calorific and nutritive values of various foods, fortification of food (3)</b></p> <p><b>Introduction to food safety, adulteration of foods, effects of artificial ripening, use of pesticides, genetically modified foods (1)</b></p> <p><b>Dietary supplements, nutraceuticals, food supplements – indications, benefits, Drug-Food Interactions (2)</b></p>   | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk                 |
| Unit- 4         |   |  |  |
| DAY 38<br>To 65 | <b>Introduction to Microbiology and common microorganisms</b> | <p><b>Introduction to Microbiology and common microorganisms</b></p> <p><b>(3) Epidemiology: Introduction to the terms Epidemiology, its applications, terms such as epidemic, pandemic, endemic, mode of transmission, quarantine, isolation, incubation period, contact tracing. (2)</b></p> <p><b>Causative agents, epidemiology and clinical presentations and Role of Pharmacists in educating the public in prevention of the following communicable diseases:</b></p> <p><b>Respiratory infections – chickenpox, measles, rubella, mumps, influenza (including Avian-Flu, H1N1, SARS, MERS, COVID-19), diphtheria, whooping cough, meningococcal meningitis, acute respiratory infections, tuberculosis, Ebola</b></p> <p><b>(10) Intestinal infections – poliomyelitis, viral hepatitis, cholera, acute diarrheal diseases, typhoid, amebiasis, worm infestations, food poisoning (8)</b></p> <p><b>Arthropod-borne infections - dengue, malaria, filariasis 33 38   P a g e and, chikungunya (4)</b></p> <p><b>Surface infections – trachoma, tetanus, leprosy (3) STDs, HIV/AIDS (3)</b></p> | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk                 |
| Unit -5         |   |  |  |
| DAY 66<br>To 71 | <b>National Health Programs</b>                               | <b>Introduction to health systems and all ongoing National health programs in India, their objectives, functioning, outcome and the role of pharmacists.</b>   | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk |
| Unit -6         |   |  |  |
| DAY72<br>To 73  | <b>Disaster Management</b>                                    | <b>Role of Pharmacists in disaster management.</b>   | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk |

|                         |                   |  |
|-------------------------|-------------------|--|
| 15.00                   | Unit- 7           |  |
| 10.00<br>10.00<br>10.00 | Pharmacoeconomics | Chalk & Talk<br>Chalk & Talk<br>Chalk & Talk |

|                  | Name of Book    | Author Name        | Publication                 |
|------------------|-----------------|--------------------|-----------------------------|
| Prescribed Books | SOCIAL PHARMACY | Dr. Virendra Kumar | Thakur Publication Pvt .Ltd |
|                  | SOCIAL PHARMACY | Dr. S.B BHISE      | Nirali Publication          |
| Reference Books  |                 |                    |                             |
|                  |                 |                    |                             |
|                  | SOCIAL PHARMACY | Geoff Harding      | The Pharmaceutical Press    |

  
 Faculty in Charge  
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 Rohru, DISTT. Shimla (HP) - 171207

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                            |                              |  |
|----------------------------|------------------------------|--|
| Academic Year              | 2025-26                      |  |
| Semester                   | SECOND YEAR                  |  |
| Course Code                | ER20-25T                     |  |
| Subject Title              | HOSPITAL & CLINICAL PHARMACY |  |
| Name of Faculty            | UDAY SINGH CHAUHAN           |  |
| Semester Start & End Dates | 04-08-2025 to 27-05-2026     |  |

**STUDY AND EVALUATION SCHEME**

| Sr. No. | Name of the Subject          | Th | Pr | Internal Assessment |    |       | External Assessment |     |    |     | Total Marks |
|---------|------------------------------|----|----|---------------------|----|-------|---------------------|-----|----|-----|-------------|
|         |                              |    |    | Th                  | Pr | Total | Th                  | Hrs | Pr | Hrs |             |
|         | HOSPITAL & CLINICAL PHARMACY | 3  | 2  | 20                  | 20 | 40    | 80                  | 3   | 80 | 3   | 160 200     |

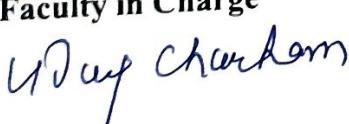
**Subject objectives:-**

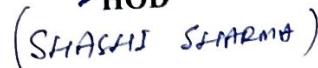
| Days                             | Unit & Topic of Discussion | Topic objectives   | Delivery Method              |
|----------------------------------|----------------------------|--|------------------------------|
| <b>Part-I: Hospital Pharmacy</b> |                            |  |                              |
| <b>Unit-1</b>                    |                            |  |                              |
| DAY 01 To 06                     | Hospital Pharmacy          | Hospital Pharmacy Definition, scope, national and international scenario Organisational structure Professional responsibilities, Qualification and experience requirements, job specifications, work load requirements and inter professional relationships Good Pharmacy Practice (GPP) in hospital Hospital Pharmacy Standards (FIP Basel Statements, AHSP) Introduction to NABH Accreditation and Role of Pharmacists | Chalk & Talk                 |
| <b>Unit-2</b>                    |                            |  |                              |
| DAY 07 To 10                     | Committees in the Hospital | Different Committees in the Hospital Pharmacy and Therapeutics Committee - Objectives, Composition and functions Hospital Formulary - Definition, procedure for 66   Page development and use of hospital formulary Infection Control Committee – Role of Pharmacist in preventing Antimicrobial Resistance  | Chalk & Talk<br>Chalk & Talk |
| <b>Unit-3&amp;4</b>              |                            |  |                              |

|                 |  |   |                              |
|-----------------|--|---|------------------------------|
|                 | Supply Chain and Inventory Control   | Supply Chain and Inventory Control<br>Preparation of Drug lists - High Risk drugs, Emergency drugs, Schedule H1 drugs, NDPS drugs, reserved antibiotics<br>Procedures of Drug Purchases – Drug selection, short term, long term and tender/e-tender process, quotations, etc. Inventory control techniques: Economic Order Quantity, Reorder Quantity Level, Inventory Turnover etc. Inventory Management of Central Drug Store – Storage conditions, Methods of storage, Distribution, Maintaining Cold Chain, Devices used for cold storage (Refrigerator, ILR, Walk-in-Cold rooms) FEFO, FIFO methods Expiry drug removal and their disposal methods e.g., Narcotics<br>Documentation - purchase and inventory                                     | Chalk & Talk<br>Chalk & Talk |
|                 | <b>Unit-5</b>  |   |                              |
| DAY 25<br>To 31 | Drug Distribution  | Drug distribution Drug distribution (in- patients and out - patients) – Definition, advantages and disadvantages of individual prescription order method, Floor Stock Method, Unit Dose Drug Distribution Method, Drug Basket Method. Distribution of drugs to ICCU/ICU/NICU/Emergency wards. Automated drug dispensing systems and devices Distribution of Narcotic and Psychotropic substances and their storage  | Chalk & Talk                 |
|                 | <b>Unit-6</b>  |   |                              |
| DAY 32<br>To 35 | Compounding  | Compounding in Hospitals. Bulk compounding, IV admixture services and incompatibilities, Total parenteral nutrition   | Chalk & Talk                 |
|                 | <b>Unit-7</b>  |   |                              |
| DAY 36<br>To 37 | Radiopharmaceuticals   | Radio Pharmaceuticals - Storage, dispensing and disposal of radiopharmaceuticals  | Chalk & Talk                 |
|                 | <b>Unit-8</b>  |   | Chalk & Talk                 |
| DAY 38<br>To 39 | Computer Applications in pharmacy  | Application of computers in Hospital Pharmacy Practice, Electronic health records, Softwares used in hospital pharmacy  | Chalk & Talk                 |
|                 | <b>Unit-9</b>  |   |                              |
| DAY 40<br>To 51 | Clinical Pharmacy , Daily activities of clinical pharmacist , Pharmaceutical care. | Clinical Pharmacy: Definition, scope and development - in India and other countries<br>Technical definitions, common terminologies used in clinical settings and their significance such as Paediatrics, Geriatric, Anti-natal Care, Post-natal Care, etc. 12 67   Page<br>Daily activities of clinical pharmacists: Definition, goal and procedure of Ward round participation<br>Treatment Chart Review Adverse drug reaction monitoring Drug information and poisons information Medication history Patient counselling Interprofessional collaboration<br>Pharmaceutical care: Definition, classification of drug related problems. Principles and procedure to provide pharmaceutical care Medication Therapy Management, Home Medication Review | Chalk & Talk<br>Chalk & Talk |
|                 | <b>Unit-10</b>   |   |                              |
| DAY 52<br>To 61 | Clinical laboratory tests and evaluations of disease state.                        | Clinical laboratory tests used in the evaluation of disease states - significance and interpretation of test results Haematological, Liver function,  | Chalk & Talk                 |

|                         |   |   |                              |
|-------------------------|---|---|------------------------------|
|                         |   | Renal function, thyroid function tests Tests associated with cardiac disorders Fluid and electrolyte balance Pulmonary Function Tests   |                              |
|                         | <b>Unit-11</b>                          |   |                              |
| DAY 62<br>To 67<br>DAYS | Poisoning                               | Poisoning: Types of poisoning; Clinical manifestations and Antidotes Drugs and Poison Information Centre and their services – Definition, Requirements, Information resources with examples, and their advantages and disadvantages | Chalk & Talk<br>Chalk & Talk |
|                         | <b>Unit-12</b>                          |   |                              |
| DAY 68<br>To 69         | Pharmacovigilance                       | Pharmacovigilance Definition, aim and scope Overview of Pharmacovigilance   | Chalk & Talk                 |
|                         |   |   | Chalk & Talk                 |
|                         | <b>Unit-13</b>                          |   |                              |
| DAY 70-75               | Medication error and drug interactions. | Medication errors: Definition, types, consequences, and strategies to minimize medication errors, LASA drugs and Tallman lettering as per ISMP Drug Interactions: Definition, types, clinical significance of drug interactions     | Chalk & Talk                 |

|                         | Name of Book                 | Author Name         | Publication         |
|-------------------------|------------------------------|---------------------|---------------------|
| <b>Prescribed Books</b> | Hospital & Clinical Pharmacy | Dr. N MURUGESH      | Sathya Publications |
|                         | Hospital & Clinical Pharmacy | Dr. Hemendra Gautam | Thakur Publication  |
| <b>Reference Books</b>  |                              |                     |                     |
|                         |                              |                     |                     |
|                         |                              |                     |                     |

  
**Faculty in Charge**  


  
**HOD**  


**GOVERNMENT POLYTECHNIC ROHRU**  
**ROHRU, DISTT. SHIMLA (HP) - 171207**

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                            |                      |
|----------------------------|----------------------|
| Academic Year              | 2025-26              |
| Semester                   | SECOND YEAR          |
| Subject Code               | IV                   |
| Subject Title              | PHARMOTHERAPEUTICS   |
| Name of Faculty            | MOTI SINGH SHARMA    |
| Semester Start & End Dates | 04-08-20 To 27-05-26 |

**STUDY AND EVALUATION SCHEME**

| Sr.<br>No. | Name of the<br>Subject | Th | Pr | Internal<br>Assessment |    |       | External Assessment |     |    |     | Total<br>Marks |     |
|------------|------------------------|----|----|------------------------|----|-------|---------------------|-----|----|-----|----------------|-----|
|            |                        |    |    | Th                     | Pr | Total | Th                  | Hrs | Pr | Hrs |                |     |
|            | PHARMOTHERAPEUTICS     | 3  | 2  | 20                     | 20 | 40    | 80                  | 3   | 80 | 3   | 160            | 200 |

**Subject objectives:**

| DAY                   | Unit & Topic of Discussion   | Topic objectives   | Delivery Method |
|-----------------------|--|--|-----------------|
|                       | <b>Unit-1</b>  |  |                 |
| DAY 1<br>To 08        | Introduction   | Pharmacotherapeutics – Introduction, scope and objectives. Rational use of Medicines, Evidence Based Medicine, Essential Medicines List, Standard Treatment Guidelines (STGs)  | Chalk & Talk    |
|                       | <b>Unit-2</b>  |  |                 |
| DAY 09-75<br>day<br>s | Definition, etiopathogenesis, clinical manifestations, nonpharmacological and pharmacological management of the diseases associated with | (a) <b>Cardiovascular System</b><br><br>Hypertension<br>Angina and Myocardial infarction<br>Hyperlipidaemia<br>Congestive Heart Failure<br><br>(b) <b>Respiratory System</b><br><br>Asthma<br>COPD<br><br>(c) <b>Endocrine System</b><br><br>Diabetes<br>Thyroid disorders- Hypo and Hyperthyroidism | Chalk & Talk    |

## **Central Nervous System**

Epilepsy  
Parkinson's disease  
Alzheimer's disease  
Stroke  
Migraine

## **Gastro Intestinal Disorders**

Gastro oesophageal reflux disease  
Peptic Ulcer Disease  
Alcoholic liver disease  
Inflammatory Bowel Diseases (Crohn's Disease and Ulcerative Colitis)

## **(f) Haematological disorders**

Iron deficiency anaemia  
Megaloblastic anaemia

## **(g) Infectious diseases**

Tuberculosis Pneumonia  
Urinary tract infections  
Hepatitis  
Gonorrhoea and Syphilis  
Malaria  
HIV and Opportunistic infections  
Viral Infections (SARS, CoV2)

## **Musculoskeletal disorders**

Rheumatoid arthritis  
Osteoarthritis

## **Dermatology**

Psoriasis  
Scabies  
Eczema

## **Psychiatric Disorders**

Depression  
Anxiety  
Psychosis

**Ophthalmology**

Conjunctivitis  
(bacterial and viral)  
Glaucoma

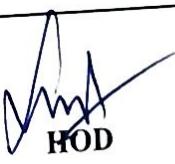
**(I) Anti-microbial Resistance****Women's Health**

Polycystic Ovary Syndrome  
Dysmenorrhea  
Premenstrual Syndrome

|                         | Name of Book         | Author Name         | Publication         |
|-------------------------|----------------------|---------------------|---------------------|
| <b>Prescribed Books</b> | Pharmacotherapeutics | Dr Preeti Chaudhary | S Vikas and company |
|                         | Pharmacotherapeutics | Dr. Vishal Garg     | Thakur Publication  |
| <b>Reference Books</b>  |                      |                     |                     |
|                         |                      |                     |                     |

  
Faculty in Charge

(MOTI SINGH SHARMA)

  
HOD  
(SHASHI SHARMA)

**GOVERNMENT POLYTECHNIC ROHRU**  
**ROHRU, DISTT SHIMLA (HP) -171207**

**DEPARTMENT OF PHARMACY**  
**LESSON PLAN**

|                            |                          |
|----------------------------|--------------------------|
| Academic Year              | 2025-26                  |
| Semester                   | SECOND YEAR              |
| Subject Code               | VI                       |
| Subject Title              | PHARMACY LAW AND ETHICS  |
| Name of Faculty            | MOTI SINGH SHARMA        |
| Semester Start & End Dates | 04-08-2025 TO 27-05-2026 |

**STUDY AND EVALUATION SCHEME**

| Sr. No. | Name of the Subject     | Th | Pr | Internal Assessment |    |       | External Assessment |     |    |     | Total Marks |     |
|---------|-------------------------|----|----|---------------------|----|-------|---------------------|-----|----|-----|-------------|-----|
|         |                         |    |    | Th                  | Pr | Total | Th                  | Hrs | Pr | Hrs |             |     |
|         | PHARMACY LAW AND ETHICS | 3  | 0  | 20                  | 0  | 20    | 80                  | 3   | 0  | 0   | 80          | 100 |

**Subject objectives:**

| DAYS         | Unit & Topic of Discussion            | Topic objectives  | Delivery Method              |
|--------------|---------------------------------------|---|------------------------------|
|              | Part-I: <del>Basics of Pharmacy</del> |   |                              |
|              | Unit-1                                |   |                              |
| Day 01 To 02 | INTRODUCTION                          | General Principles of Law, History and various Acts related to Drugs and Pharmacy profession  | Chalk & Talk                 |
| Day 03 to 07 | Unit-2                                | Pharmacy Act-1948 and Rules: Objectives, Definitions, Pharmacy Council of India: its constitution and functions, Education Regulations, State and Joint state pharmacy councils, Registration of Pharmacists, Offences and Penalties, Pharmacy Practice Regulations 2015  | Chalk & Talk<br>Chalk & Talk |
| Day 08 to 30 | Unit-3                                | <b>Drugs and Cosmetics Act 1940 and Rules 1945 and New Amendments</b><br>Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit, Manufacture of drugs – Prohibition of manufacture and 23 72   Page sale of | Chalk & Talk<br>Chalk & Talk |

|              |               |   |                              |
|--------------|---------------|---|------------------------------|
|              |               | certain drugs, Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license. Study of schedule C and C1, G, H, H1, K, P, M, N, X and Y. Sale of Drugs – Wholesale, Retail sale and Restricted license, Records to be kept in a pharmacy Drugs Prohibited for manufacture and sale in India Administration of the Act and Rules – Drugs Technical Advisory Board, Central Drugs Laboratory, Drugs Consultative Committee, Government analysts, licensing authorities, controlling authorities, Drug Inspectors |                              |
|              | <b>Unit-4</b> |   |                              |
| Day 31 to 32 | Manufacturing | Medicinal and Toilet Preparations Act 1955: Objectives, Definitions, Licensing, Offences and Penalties  | Chalk & Talk                 |
|              | <b>Unit-5</b> |   |                              |
| DAY 33 to 34 |               | Narcotic Drugs and psychotropic substances Act 1985 and Rules Objectives, Definitions, Authorities and Officers, Prohibition, Control and Regulation, Offences and Penalties  | Chalk & Talk                 |
|              | <b>Unit-6</b> |   |                              |
| Day 35 to 36 |               | Drugs and Magic Remedies (Objectionable Advertisements) Act 1954 Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties   | Chalk & Talk                 |
|              | <b>Unit-7</b> |   |                              |
| Day 37 to 38 |               | Prevention of cruelty to Animals Act-1960: Objectives, Definitions, CPCSEA - brief overview, Institutional Animal Ethics Committee, Breeding and Stocking of Animals, Performance of Experiments, Transfer and Acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties  | Chalk & Talk                 |
|              | <b>Unit-8</b> |   |                              |
| Day 39 to 40 |               | Poisons Act-1919: Introduction, objective, definition, possession, possession for sales and sale of any poison, import of poisons   | Chalk & Talk<br>Chalk & Talk |

|                 |   |                              |
|-----------------|---|------------------------------|
|                 | <b>Unit-9</b>   |                              |
| Day 41<br>to 45 | FSSAI (Food Safety and Standards Authority of India) Act and Rules: brief overview and aspects related to manufacture, storage, sale and labelling of Food Supplements  | Chalk & Talk                 |
|                 | <b>Unit-10</b>  |                              |
| Day 46<br>to 50 | National Pharmaceutical Pricing Authority: Drugs Price Control Order (DPCO) - 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, pharmaceutical 5 73   Page policy 2002, National List of Essential Medicines (NLEM) | Chalk & Talk<br>Chalk & Talk |
|                 | <b>Unit-11</b>  |                              |
| DAY 51<br>to 52 | Code of Pharmaceutical Ethics: Definition, ethical principles, ethical problem solving, registration, code of ethics for Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath.  | Chalk & Talk                 |
|                 |   | Chalk & Talk                 |
|                 | <b>Unit-12</b>  |                              |
| Day 53          | Medical Termination of Pregnancy Act and Rules – basic understanding/salient features   | Chalk & Talk                 |
|                 | <b>Unit-13</b>  |                              |
| Day 54<br>to 56 | Role of all the government pharma regulator bodies – Central Drugs Standards Control Organization (CDSCO), Indian Pharmacopoeia Commission (IPC)  | Chalk & Talk                 |
|                 | <b>Unit-14</b>  |                              |
| Day 57<br>to 63 | Good Regulatory practices (documentation, licenses, renewals, e-governance) in Community Pharmacy, Hospital pharmacy, Pharma Manufacturing, Wholesale business, inspections, import, export of drugs and medical devices  | Chalk & Talk                 |
|                 | <b>Unit-15</b>  |                              |
| Day 64<br>to 65 | Introduction to BCS system of classification, Basic concepts of Clinical Trials, ANDA, NDA, New Drug  | Chalk & Talk<br>Chalk & Talk |

|              |                |   |                              |
|--------------|----------------|---|------------------------------|
|              |                | development, Schedule Y, Brand v/s Generic, Trade name concept, Introduction to Patent Law and Intellectual Property Rights, Emergency Use Authorization                    |                              |
|              | <b>Unit-16</b> |   |                              |
| Day 66 to 67 |                | Blood bank – basic requirements and functions   | Chalk & Talk                 |
|              | <b>Unit-17</b> |   |                              |
| Day 68 to 69 |                | Clinical Establishment Act and Rules – Aspects related to Pharmacy  | Chalk & Talk<br>Chalk & Talk |
|              | <b>Unit-18</b> |   |                              |
| Day 70 to 71 |                | Biomedical Waste Management Rules 2016 – Basic aspects, and aspects related to pharma manufacture to disposal of pharma / medical waste at homes, pharmacies, and hospitals | Chalk & Talk                 |
|              | <b>Unit-19</b> |   |                              |
| Day 72       |                | Bioethics - Basic concepts, history and principles. Brief overview of ICMR's National Ethical Guidelines for Biomedical and Health Research involving human participants    | Chalk & Talk                 |
|              | <b>Unit-20</b> |   |                              |
| Day 73       |                | Introduction to the Consumer Protection Act   | Chalk & Talk                 |
|              | <b>Unit-21</b> |   |                              |
| Day 74 to 75 |                | Medical Devices – Categorization, basic aspects related to manufacture and sale   | Chalk & Talk                 |

|                         | Name of Book            | Author Name     | Publication        |
|-------------------------|-------------------------|-----------------|--------------------|
| <b>Prescribed Books</b> | PHARMACY LAW AND ETHICS | Dr Tulsidas     | S vikas Company    |
|                         | PHARMACY LAW AND ETHICS | Dr Lokesh Kumar | Thakur Publication |
| <b>Reference Books</b>  |                         |                 |                    |
|                         |                         |                 |                    |
|                         |                         |                 |                    |

*M*  
Faculty in Charge

*HOD*  
HOD

(MOTI SINGH SHARMA)

(SHASHI SHARMA)

# GOVERNMENT POLYTECHNIC ROHRU

ROHRU, DISTT. SHIMLA (HP) - 171207

## DEPARTMENT OF PHARMACY LESSON PLAN

|                            |                               |  |
|----------------------------|-------------------------------|--|
| Academic Year              | 2025-26                       |  |
| Semester                   | 2 <sup>ND</sup> YEAR PHARMACY |  |
| Subject Code               | III                           |  |
| Subject Title              | PHARMACOLOGY & TOXICOLOGY     |  |
| Name of Faculty            | MAHESH KUMAR CHAUHAN          |  |
| Semester Start & End Dates | 01-08-2025 To 27-05-2026      |  |

### STUDY AND EVALUATION SCHEME

| Sr.<br>No. | Name of the<br>Subject       | Th | Pr | Internal<br>Assessment |    |       | External Assessment |     |    |     | Total<br>Marks |     |
|------------|------------------------------|----|----|------------------------|----|-------|---------------------|-----|----|-----|----------------|-----|
|            |                              |    |    | Th                     | Pr | Total | Th                  | Hrs | Pr | Hrs |                |     |
| 1          | PHARMACOLOGY &<br>TOXICOLOGY | 3  | 4  | 20                     | 20 | 40    | 80                  | 3   | 80 | 3   | 160            | 200 |

### Subject objectives:

| Day              | Unit & Topic of Discussion | Topic objectives  | Delivery Method |
|------------------|----------------------------|---|-----------------|
| Day 1 To day 10  | General Pharmacology       | General Pharmacology Introduction and scope of Pharmacology Various routes of drug administration - advantages and disadvantages Drug absorption - definition, types, factors affecting drug absorption Bioavailability and the factors affecting bioavailability Drug distribution - definition, factors affecting drug distribution Biotransformation of drugs - Definition, types of biotransformation reactions, factors influencing drug metabolisms Excretion of drugs - Definition, routes of drug excretion General mechanisms of drug action and factors modifying drug action | Chalk & Talk    |
| Day 11 to day 21 | Drugs acting on PNS        | Steps involved in neurohumoral transmission Definition, classification, pharmacological actions, dose, indications, and contraindications of a) Cholinergic drugs b) Anti-Cholinergic drugs c) Adrenergic drugs d) Anti-adrenergic drugs e) Neuromuscular blocking agents f) Drugs used in Myasthenia gravis g) Local anaesthetic agents h) Non-Steroidal Anti-Inflammatory drugs   | Chalk & Talk    |
| Day 22-day 23    | drugs acting on the Eyes   | Definition, classification, pharmacological actions, dose, indications and contraindications of Miotics Mydriatics Drugs used in Glaucoma   | Chalk & Talk    |

|                          |  |  |              |
|--------------------------|--|--|--------------|
| Day 24<br>to 32<br>days  | Drugs acting on CNS                            | Definition, classification, pharmacological actions, dose, indications and contraindications of General anaesthetics Hypnotics and sedatives Anti-Convulsant drugs Anti-anxiety drugs Anti-depressant drugs Anti-psychotics Nootropic agents Centrally acting muscle relaxants Opioid analgesics | Chalk & Talk |
| Day 33<br>to 38<br>days  | Drugs acting on Cardiovascular system          | Definition, classification, pharmacological actions, dose, indications and contraindications of Anti-hypertensive drugs Anti-anginal drugs Anti-arrhythmic drugs Drugs used in atherosclerosis and Congestive heart failure  | Chalk & Talk |
| Day 39-44<br>days        | drugs acting on Blood and blood forming organs | Definition, classification, pharmacological actions, dose, indications and contraindications of Hematinic agents Anti-coagulants Anti-platelet agents Thrombolytic drugs   | Chalk & Talk |
|                          |  | Definition, classification, pharmacological actions, dose, indications and contraindications of Bronchodilators Expectorants Anti-tussive agents Mucolytic agents  |              |
| Day 45<br>to 49<br>days  | Drugs acting on GIT                            | Definition, classification, pharmacological actions, dose, indications and contraindications of Anti-ulcer drugs Anti-emetics Laxatives and purgatives Anti-diarrheal drugs  | Chalk & Talk |
| Day 50-<br>to 51<br>days | Drugs acting on the Kidney                     | Definition, classification, pharmacological actions, dose, indications, and contraindications of Diuretics Anti-Diuretics  | Chalk & Talk |
| Day 52-D<br>ay 59        | Hormones and hormone Antagonists               | Physiological and pathological role and clinical uses of Thyroid hormones Anti-thyroid drugs Parathormone Calcitonin Vitamin D Insulin Oral hypoglycemic agents Estrogen Progesterone Oxytocin Corticosteroids   | Chalk & Talk |
| Day 60<br>to 62<br>days  | Autocoids                                      | Physiological role of Histamine, 5 HT and Prostaglandins Classification, clinical uses and   | Chalk & Talk |

|                              |                         |  |              |
|------------------------------|-------------------------|--|--------------|
|                              |                         | adverse effects of antihistamines and 5 HT antagonists   |              |
| Day 63<br>to 73<br>days      | Chemotherapeutic Agents | Introduction, basic principles of chemotherapy of infections, infestations and neoplastic diseases, Classification, dose, indication and contraindications of drugs belonging to<br>Penicillins      Cephalosporins      Aminoglycosides<br>Fluoroquinolones      Macrolides      Tetracyclines<br>Sulphonamides      Anti-tubercular drugs<br>Anti-fungal drugs      Anti-viral drugs<br>Anti-amoebic agents      Anthelmintics<br>Anti-malarial agents      Anti-neoplastic agents | Chalk & Talk |
| Day 74<br>to days<br>75 days | Biologicals             | Definition, types and indications of biological agents with examples   | Chalk & Talk |

|                  | Name of Book                          | Author Name            | Publication        |
|------------------|---------------------------------------|------------------------|--------------------|
| Prescribed Books | Elements of Pharmacology              | Dr. Ramesh Goyal       | B S Shah prakashan |
|                  | Pharmacology & Toxicology             | Mr. SR Kale & R.R Kale | Nirala Prakashan   |
| Reference Books  | Pharmacological Basis of Therapeutics | Goodman & Gillman      | Mcgraw Hill        |
| Practical Books  | Hand Book of Experimental Pharmacolgy | S.K. Kulkarni          | Vallabh Prakashan  |

  
**Faculty in Charge**  
  
 Mahesh Kumar

  
**HOD**  
 (SANTOSH SINGH)