

# G PULLA REDDY COLLEGE OF PHARMACY

## (AUTONOMOUS)

### B. PHARM SYLLABUS

(Wef: 2025-2026; Approved by the BOS meeting held on 24.01.2026 and  
Academic Council Meeting held on 31-01-2026)

## SEMESTER I

**Table-I: Course of study for semester I**

| Course code          | Name of the course                                  | No. of hours                            | Tutorial | Credit points                           |
|----------------------|---|---|----------|---|
| BP101T               | Human Anatomy and Physiology I– Theory              | 3                                       | 1        | 4                                       |
| BP102T               | Pharmaceutical Analysis I – Theory                  | 3                                       | 1        | 4                                       |
| BP103T               | Pharmaceutics I – Theory                            | 3                                       | 1        | 4                                       |
| BP104T               | Pharmaceutical Inorganic Chemistry – Theory         | 3                                       | 1        | 4                                       |
| BP105T               | Communication skills – Theory *                     | 2                                       | -        | 2                                       |
| BP106RBT<br>BP106RMT | Remedial Biology/<br>Remedial Mathematics – Theory* | 2                                       | -        | 2                                       |
| BP107P               | Human Anatomy and Physiology – Practical            | 4                                       | -        | 2                                       |
| BP108P               | Pharmaceutical Analysis I – Practical               | 4                                       | -        | 2                                       |
| BP109P               | Pharmaceutics I – Practical                         | 4                                       | -        | 2                                       |
| BP110P               | Pharmaceutical Inorganic Chemistry – Practical      | 4                                       | -        | 2                                       |
| BP111P               | Communication skills – Practical*                   | 2                                       | -        | 1                                       |
| BP112RBP             | Remedial Biology – Practical*                       | 2                                       | -        | 1                                       |
| <b>Total</b>         |   | <b>32/34<sup>§</sup>/36<sup>#</sup></b> | <b>4</b> | <b>27/29<sup>§</sup>/30<sup>#</sup></b> |

<sup>#</sup>Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

<sup>§</sup>Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

\* Non-University Examination (NUE)

***The asterisk marked subjects are also university examinations as per the Osmania University (the affiliating University) BOS decision.***

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### SEMESTER I

#### BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)

45 Hours

**Scope:** This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

**Objectives:** Upon completion of this course the student should be able to

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

#### Course Content:

##### Unit I

10 hours

##### ● Introduction to human body

Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.

##### ● Cellular level of organization

Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine

##### ● Tissue level of organization

Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

## Unit II

10 hours

- **Integumentary system**

Structure and functions of skin

- **Skeletal system**

Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system

Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction

- **Joints**

Structural and functional classification, types of joints movements and its articulation

## Unit III

10 hours

- **Body fluids and blood**

- Body fluids, composition and functions of blood, hemopoiesis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system.

- **Lymphatic system**

Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

## Unit IV

08 hours

**Peripheral nervous system:**

Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.

Origin and functions of spinal and cranial nerves.

- **Special senses**

Structure and functions of eye, ear, nose and tongue and their disorders.

## Unit V

07 hours

- **Cardiovascular system**

Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

## **BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**4 Hours/week**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones
6. Introduction to hemocytometry.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of hemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.

### **Recommended Books (Latest Editions)**

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam, 8<sup>th</sup> Edition, 2019, Jaypee brother's medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill 10<sup>th</sup> Edition, 2006, Livingstone, New York.
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, 13<sup>th</sup> Edition, 2011, Riverview, MI USA.
4. Text book of Medical Physiology- Arthur Guyton and John. Hall. 11<sup>th</sup> Edition, 2006, Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski.13<sup>th</sup> Edition, 2011, Palmetto, GA, U.S.A.

6. Textbook of Human Histology by Inderbir Singh, 11<sup>th</sup> Edition, 2025, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, 7<sup>th</sup> Edition, 2018, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, 2<sup>nd</sup> Edition, 2024, Jaypee brother's medical publishers, New Delhi.

**Reference Books (Latest Editions)**

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, 13<sup>th</sup> Edition, 2011, Riverview, MI USA.
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. 11<sup>th</sup> Edition, 2006, Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje , 15<sup>th</sup> Edition, 2025, Academic Publishers Kolkata

**BP102T. PHARMACEUTICAL ANALYSIS (Theory)**

**45 Hours**

**Scope:** This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs

**Objectives:** Upon completion of the course student shall be able to

- understand the principles of volumetric and electro chemical analysis
- carryout various volumetric and electrochemical titrations
- develop analytical skills

**Course Content:**

**UNIT-I**

**10 Hours**

- (a) **Pharmaceutical analysis-** Definition and scope
  - i) Different techniques of analysis
  - ii) Methods of expressing concentration
  - iii) Primary and secondary standards.
  - iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammonium sulphate
- (b) **Errors:** Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures
- (c) Pharmacopoeia, Sources of impurities in medicinal agents, limit tests.

**UNIT-II**

**10 Hours**

- **Acid base titration:** Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves
- **Non aqueous titration:** Solvents, acidimetry and alkalimetry titration and

estimation of Sodium benzoate and Ephedrine HCl

### UNIT-III

10 Hours

- **Precipitation titrations:** Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride.
- **Complexometric titration:** Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate.
- Basic Principles, methods and application of diazotisation titration.

### UNIT-IV

08 Hours

#### Redox titrations

- (a) Concepts of oxidation and reduction
- (b) Types of redox titrations (Principles and applications)

Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate

### UNIT-V

07 Hours

- *Electrochemical methods of analysis*
- Conductometry- Introduction, Conductivity cell, Conductometric titrations, applications.
- Gravimetry: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate.

## BP108P. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / Week

### I Preparation and standardization of

- (1) Sodium hydroxide
- (2) Sulphuric acid
- (3) Sodium thiosulfate
- (4) Potassium permanganate

### II Assay of the following compounds along with Standardization of Titrant

- (1) Ammonium chloride by acid base titration
- (2) Ferrous sulphate by Cerimetry
- (3) Copper sulphate by Iodometry
- (4) Calcium gluconate by complexometry
- (5) Hydrogen peroxide by Permanganometry
- (6) Sodium benzoate by non-aqueous titration
- (7) Sodium Chloride by precipitation titration

### III Determination of Normality by electro-analytical methods

- (1) Conductometric titration of strong acid against strong base
- (2) Conductometric titration of strong acid and weak acid against strong base

**Recommended Books: (Latest Editions)**

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II 4<sup>th</sup> Edition, 2005, CBS Publishers and Distributors, New Delhi.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis 4<sup>th</sup> Impression Edition, 2011, Pearson, Delhi.
3. Bentley and Driver's Textbook of Pharmaceutical Chemistry 8<sup>th</sup> Edition, 2004, Oxford University Press, New Delhi.
4. John H. Kennedy, Analytical chemistry principles, 2<sup>nd</sup> Edition, 1990, Sanders College of Publishing.
5. Indian Pharmacopoeia, 8<sup>th</sup> Edition, 2018, The Indian Pharmacopoeia Commission, Ghaziabad.

**BP103T. PHARMACEUTICS- I (Theory)**

**45 Hours**

**Scope:** This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

**Objectives:** Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

**Course Content:**

**UNIT – I**

**10 Hours**

- **Historical background and development of profession of pharmacy:** History of profession of Pharmacy in India in relation to pharmacy education, Pharmacy as a career.
- **Pharmacopoeias:** Introduction to IP, BP, USP. Detailed study of IP monograph for any two drugs.
- **Dosage forms:** Introduction to dosage forms, classification
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

**UNIT – II**

**10 Hours**

- **Pharmaceutical calculations:** Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.
- **Powders:** Definition, classification, advantages and disadvantages, Simple &

compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.

- Liquid dosage forms: Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms

● UNIT – III 08 Hours

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**
- **Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.
- **Emulsions:** Definition, classification, emulsifying agent, test for the identification of type of Emulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV 08 Hours

- **Suppositories:** Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities:** Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIV – V 07 Hours

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosages forms

## **BP109P. PHARMACEUTICS I (Practical)**

**4 Hours / week**

- 1. Syrups**
  - a) Syrup IP'66
  - b) Compound syrup of Ferrous Phosphate BPC'68
- 2. Elixirs**
  - a) Piperazine citrate elixir
  - b) Paracetamol pediatric elixir
- 3. Linctus**
  - a) Terpin Hydrate Linctus IP'66
  - b) Iodine Throat Paint (Mandles Paint)
- 4. Solutions**
  - a) Strong solution of ammonium acetate
  - b) Cresol with soap solution
  - c) Lugol's solution
- 5. Suspensions**
  - a) Calamine lotion
  - b) Magnesium Hydroxide mixture
  - c) Aluminium Hydroxide gel
- 6. Emulsions**
  - a) Turpentine Liniment
  - b) Liquid paraffin emulsion
- 7. Powders and Granules**
  - a) ORS powder (WHO)
  - b) Effervescent granules
  - c) Dusting powder
  - d) Divided powders
- 8. Suppositories**
  - a) Glycerol gelatin suppository
  - b) Cocoa butter suppository
  - c) Zinc Oxide suppository
- 9. Semisolids**
  - a) Sulphur ointment
  - b) Non staining-iodine ointment with methyl salicylate
  - c) Carbopol gel
- 10. Gargles and Mouthwashes**
  - a) Iodine gargle
  - b) Chlorhexidine mouthwash

**Recommended Books: (Latest Editions)**

1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, 8th edition, 2005 Lippincott Williams and Walkins, New Delhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, 12<sup>th</sup> edition, 2008, CBS publishers, New Delhi.
3. M.E. Aulton, Pharmaceutics, The Science & Dosage Form Design, 2<sup>nd</sup> edition, 2002, Churchill Livingstone, Edinburgh.
4. Mehta RM, Dispensing Pharmacy, 4<sup>th</sup> Edition, 2017, Vallabh Prakhshan, Delhi.
5. Indian Pharmacopoeia, 8<sup>th</sup> Edition, 2018, The Indian Pharmacopoeia Commission, Ghaziabad.
6. British pharmacopoeia.
7. Lachmann. Theory and Practice of Industrial Pharmacy, 4<sup>th</sup> edition, 2014, CBS Publishers & Distributors, New Delhi
8. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
9. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, 1<sup>st</sup> Indian Reprint, 2015, CBS Publishers & Distributors, New Delhi
10. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, 8<sup>th</sup> edition, 1996, Bailliere Tindall, London,
11. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
12. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
13. Françoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.

## BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours Scope:

This subject deals with the monographs of inorganic drugs and pharmaceuticals.

**Objectives:** Upon completion of course student shall be able to

- know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
- understand the medicinal and pharmaceutical importance of inorganic compounds

### Course Content:

#### UNIT I

10 Hours

- **Impurities in pharmaceutical substances:** History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate  
**General methods of preparation**, assay for the compounds superscripted with **asterisk (\*)**, **properties** and medicinal uses of inorganic compounds belonging to the following classes

#### UNIT II

10 Hours

- **Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes:** Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride\*, Potassium chloride, Calcium gluconate\* and Oral Rehydration Salt (ORS), Physiological acid base balance.
- **Dental products:** Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.

#### UNIT III

10 Hours

- **Gastrointestinal agents**  
**Acidifiers:** Ammonium chloride\* and Dil. HCl  
**Antacid:** Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate\*, Aluminum hydroxide gel, Magnesium hydroxide mixture  
**Cathartics:** Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite  
**Antimicrobials:** Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide\*, Chlorinated lime\*, Iodine and its preparations

#### UNIT IV

08 Hours

- **Miscellaneous compounds**  
**Expectorants:** Potassium iodide, Ammonium chloride\*.  
**Emetics:** Copper sulphate\*, Sodium potassium tartarate

**Haematinics:** Ferrous sulphate\*, Ferrous gluconate

**Poison and Antidote:** Sodium thiosulphate\*, Activated charcoal, Sodium nitrite<sup>333</sup>

**Astringents:** Zinc Sulphate, Potash Alum

## UNIT V

**07 Hours**

- **Radiopharmaceuticals:** Radio activity, Measurement of radioactivity, Properties of  $\alpha$ ,  $\beta$ ,  $\gamma$  radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide  $I^{131}$ , Storage conditions, precautions & pharmaceutical application of radioactive substances.

### Recommended Books (Latest Editions)

1. G.R. Chatwal, Pharmaceutical chemistry – inorganic, Vol.I, 5<sup>th</sup> revised edition, 2024, Himalaya publishing house, New Delhi.
2. Surendra N.Pandeya, A text book of inorganic medicinal chemistry, 2<sup>nd</sup> edition, 2006, SG Publisher, Varanasi.
3. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, 4<sup>th</sup> edition, 2005, CBS Publisher and distributors, New Delhi.
4. A.I. Vogel, Text Book of Quantitative Inorganic analysis 4<sup>th</sup> Impression Edition, 2011, Pearson, Delhi.
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry 8<sup>th</sup> Edition, 2004, Oxford University Press, New Delhi.
6. Indian Pharmacopoeia, 8<sup>th</sup> Edition, 2018, The Indian Pharmacopoeia Commission, Ghaziabad.

## **BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)**

**4 Hours / Week**

### **I Limit tests for following ions**

Limit test for Chlorides and Sulphates

Modified limit test for Chlorides and Sulphates

Limit test for Iron

### **II Identification test**

Magnesium hydroxide

Ferrous sulphate

Sodium bicarbonate

Calcium gluconate

Copper sulphate

### **III Test for purity**

Swelling power of Bentonite

Neutralizing capacity of aluminum hydroxide gel

Determination of potassium iodate and iodine in potassium Iodide

### **IV Preparation of inorganic pharmaceuticals**

Boric acid

Potash alum

Ferrous sulphate

### **Recommended Books (Latest Editions)**

1. G.R. Chatwal, Pharmaceutical chemistry – inorganic, Vol.I, 5<sup>th</sup> revised edition, 2024, Himalaya publishing house, New Delhi.
2. Surendra N.Pandeya, A text book of inorganic medicinal chemistry, 2<sup>nd</sup> edition, 2006, SG Publisher, Varanasi.
3. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, 4<sup>th</sup> edition, 2005, CBS Publisher and distributors, New Delhi.
4. A.I. Vogel, Text Book of Quantitative Inorganic analysis 4<sup>th</sup> Impression Edition, 2011, Pearson, Delhi.
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry 8<sup>th</sup> Edition, 2004, Oxford University Press, New Delhi.
6. Indian Pharmacopoeia, 8<sup>th</sup> Edition, 2018, The Indian Pharmacopoeia Commission, Ghaziabad.

## **BP105T.COMMUNICATION SKILLS (Theory)**

**30 Hours**

**Scope:** This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.

### **Objectives:**

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
2. Communicate effectively (Verbal and Non Verbal)
3. Effectively manage the team as a team player
4. Develop interview skills
5. Develop Leadership qualities and essentials

### **Course content:**

#### **UNIT – I**

**07 Hours**

- **Communication Skills:** Introduction, Definition, The Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context
- **Barriers to communication:** Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotional barriers
- **Perspectives in Communication:** Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings, Environment

#### **UNIT – II**

**07 Hours**

- **Elements of Communication:** Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication
- **Communication Styles:** Introduction, The Communication Styles Matrix with example for each -Direct Communication Style, Spirited Communication Style, Systematic Communication Style, Considerate Communication Style

#### **UNIT – III**

**07 Hours**

- **Basic Listening Skills:** Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in Difficult Situations
- **Effective Written Communication:** Introduction, When and When Not to Use Written Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of Meaning, Formal Communication
- **Writing Effectively:** Subject Lines, Put the Main Point First, Know Your Audience, Organization of the Message

**UNIT – IV**

**05 Hours**

- **Interview Skills:** Purpose of an interview, Do's and Dont's of an interview
- **Giving Presentations:** Dealing with Fears, Planning your Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques of Delivery

**UNIT – V**

**04 Hours**

- **Group Discussion:** Introduction, Communication skills in group discussion, Do's and Dont's of group discussion

## **BP111P.COMMUNICATION SKILLS (Practical)**

**2 Hours / week**

The following learning modules are to be conducted using wordsworth<sup>®</sup> English language lab software

### **Basic communication covering the following topics**

Meeting People

Asking Questions

Making Friends

What did you do?

Do's and Dont's

### **Pronunciations covering the following topics**

Pronunciation (Consonant Sounds)

Pronunciation and Nouns

Pronunciation (Vowel Sounds)

### **Advanced Learning**

Listening Comprehension / Direct and Indirect Speech

Figures of Speech

Effective Communication

Writing Skills

Effective Writing

Interview Handling Skills

E-Mail etiquette

Presentation Skills

### **Recommended Books: (Latest Edition)**

1. Basic communication skills for Technology, Andreja. J. Ruther Ford, 2<sup>nd</sup> Edition, Pearson Education, 2011
2. Communication skills, Sanjay Kumar, Pushpalata, 1<sup>st</sup> Edition, Oxford Press, 2011
3. Organizational Behaviour, Stephen .P. Robbins, 1<sup>st</sup> Edition, Pearson, 2013
4. Brilliant- Communication skills, Gill Hasson, 1<sup>st</sup> Edition, Pearson Life, 2011
5. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5<sup>th</sup> Edition, Pearson, 2013
6. Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD, 2010
7. Communication skills for professionals, Konar nira, 2<sup>nd</sup> Edition, New arrivals – PHI, 2011
8. Personality development and soft skills, Barun K Mitra, 1<sup>st</sup> Edition, Oxford Press, 2011
9. Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011
10. Soft skills and professional communication, Francis Peters SJ, 1<sup>st</sup> Edition, Mc Graw Hill Education, 2011
11. Effective communication, John Adair, 4<sup>th</sup> Edition, Pan Mac Millan, 2009
12. Bringing out the best in people, Aubrey Daniels, 2<sup>nd</sup> Edition, Mc Graw Hill, 1999

## **BP 106RBT. REMEDIAL BIOLOGY (Theory)**

**30 Hours**

Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.

Objectives: Upon completion of the course, the student shall be able to

- know the classification and salient features of five kingdoms of life
- understand the basic components of anatomy & physiology of plant
- know understand the basic components of anatomy & physiology animal with special reference to human

### **UNIT I**

**07 Hours**

Living world:

- Definition and characters of living organisms
- Diversity in the living world
- Binomial nomenclature
- Five kingdoms of life and basis of classification. Salient features of Monera, Protista, Fungi, Animalia and Plantae, Virus

### **UNIT II**

**07 Hours**

Morphology of Flowering plants

- Morphology of different parts of flowering plants – Root, stem, inflorescence, flower, leaf, fruit, seed.
- General Anatomy of Root, stem, leaf of monocotyledons & Dicotyledones.

### **UNIT III**

**07 Hours**

- Cell - The unit of life (Plant)  
Structure and functions of cell and cell organelles. Cell division
- Tissues  
Definition, types of tissues, location and functions.

### **UNIT IV**

**05 Hours**

Plants and mineral nutrition

- Essential mineral, macro and micronutrients
- Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation

Photosynthesis

- Autotrophic nutrition, photosynthesis, Photosynthetic pigments, Factors affecting photosynthesis.

## UNIT V

04 Hours

- Plant respiration: Respiration, glycolysis, fermentation (anaerobic).  
Plant growth and development
- Phases and rate of plant growth, Condition of growth, Introduction to plant growth regulators

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### Reference Books

1. Dutta AC; Botany for Degree students; 16<sup>th</sup> Edition; India; Oxford University Press; 1980
2. Sai Jyoti U; A Textbook of Remedial Biology; 6<sup>th</sup> Edition; SIA Publishers; 2021.
3. Intermediate Botany for first year; New Edition; Vikram modern series.
4. Prasad SRK, Sarathchandra Naidu N, Krishna Murthy B; Intermediate Botany for second year; New Edition; Vikram modern series.
5. Chakrapani E, Venkateswara Rao P, Narasimha Rao G; Intermediate Zoology for first year; New Edition; Vikram modern series.

### BP112RBP. REMEDIAL BIOLOGY (Practical)

1. Introduction to experiments in biology
  - a) Study of Microscope
  - b) Section cutting techniques
  - c) Mounting and staining
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower

### Reference Books

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi

## BP 106 RMT. REMEDIAL MATHEMATICS (Theory)

30 Hours

**Scope:** This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.

**Objectives:** Upon completion of the course the student shall be able to:-

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

### Course Content:

#### UNIT – I

06 Hours

##### ● Partial fraction

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction, Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics

##### ● Logarithms

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

#### UNIT –II

06 Hours

##### ● Matrices and Determinant:

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants, Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix, Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule.

#### UNIT – III

06 Hours

##### ● Calculus

**Differentiation** : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function, Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions (Quotient formula) – Without Proof, Derivative of  $x^n$  w.r.t  $x$ , where  $n$  is any rational number, Derivative of  $e^x$ , Derivative of  $\log_e x$ , Derivative of  $a^x$ .  
Limits of Algebraic and Trigonometric functions (Only problems)

## UNIT – IV

06 Hours

### ● Analytical Geometry

**Introduction:** Signs of the Coordinates, Distance formula,

**Straight Line :** Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight line

### **Integration:**

Introduction, Definition, Standard formulae, Rules of integration, Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application

## UNIT-V

06 Hours

- **Laplace Transform :** Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Laplace transform of derivatives, Application to solve Linear differential equations.

### **Reference books:**

1. Differential Calculus by Shanthinarayan
  2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H., 1<sup>st</sup> edition, 2025, Pharma Med Press, Hyderabad
  3. Integral Calculus by Shanthinarayan
  4. Textbook for Intermediate First year Paper –IA, Paper –IB, 1<sup>st</sup> Edition, 2019, Telugu Akademi, Hyderabad
  5. Textbook for Intermediate Second Year Paper –IIA, Paper –IIB, 1<sup>st</sup> Edition, 2019 Telugu Akademi. Hyderabad
  6. New intermediate mathematics, vol I for junior intermediate by V.Venkateswara Rao, N.Krishna Murthy & BVSS Sarma , 28<sup>th</sup> Edition , 2006, S.Chand & Co, New Delhi.
  7. New intermediate mathematics, vol I for senior intermediate by V.Venkateswara Rao, N.Krishna Murthy & BVSS Sarma , 27<sup>th</sup> Edition , 2006 , S.Chand & Co, New Delhi.
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