FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010101**

Course Title: **Human Anatomy & Physiology-I**

Course Objectives: Upon completion of the course the student shall 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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	1	-	4	25/10	75/30	-	-	100/ 50

*** J: Jury; V: Viva; P: Practical**

Detailed Syllabus:

Sr.	Contents	Hours
1	**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 signalling pathway activation by extracellular signal molecule, Forms of intracellular signalling: 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	10

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2	**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.	**10**
3	**Body fluids and blood:** Body fluids, composition and functions of blood, hemopoeisis, 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	**10**
4	**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.	**8**
5	**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 heartbeat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.	**7**

Reference Books:

1	Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2	Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3	Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
4	Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
5	Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6	Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi
7	Physiological basis of medical practice Best and Tailor. Williams & Wilkins Co, Riverview, MI USA (Latest Editions)
8	Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A. (Latest Editions)
9	Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje, Academic Publishers Kolkata (Latest Editions)
10	Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi
11	Practical workbook of Human Physiology by K. S nageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi

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12	Practical Anatomy and Physiology by Dr. R. K. Goyal & Dr. N. M. Patel, B. S. Shah Prakashan, Gujrat
13	V.N. Raje. Human Anatomy and Physiology. Kindle Edition. CBS PUBLISHERS AND DISTRIBUTORS

Pedagogy:
LCD projector, laptop
Traditional method (Black Board)
Project-based Learning (PBL)
Virtual Dissection Lab

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	**U**	**A**	**N**	**E**	**C**	
20	**20**	**15**	**15**	**30**	**0**	

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

Course Outcomes (CO):

Sr.	Course Outcome Statements	%Weightage
CO1	To analyse and explain structure and functions of human body at various level of organization enabling them to apply this knowledge in pharmacological context	**25**
CO2	To describe detailed anatomy of skeletal system and Integumentary system with interpretation of associated disorder of skeletal system and human joint.	**30**
CO3	To evaluate and illustrate the structure, functions and regulatory mechanisms of the blood and lymphatics, including related disorders.	**20**
CO4	To evaluate and illustrate the structure, functions of peripheral nervous system and special sense organs including related disorders.	**15**
CO5	To describe detailed anatomy of heart and record important cardiovascular system vitals.	**10**

Curriculum Revision:	
Version:	**1**
Drafted on (Month-Year):	**June 2020**
Last Reviewed on (Month-Year):	**April 2025**
Next Review on (Month-Year):	**April 2030**

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010102**

Course Title: **Pharmaceutical Analysis I**

Course Objectives: Upon completion of the course student shall be able to
1. Understand the principles of volumetric and electro chemical analysis
2. Carryout various volumetric and electrochemical titrations
3. Develop analytical skills

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	1	-	4	25/10	75/30	-	-	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**(a) Pharmaceutical analysis**- Definition and scope i) Different techniques of analysis ii) Methods of expressing concentration iii) Primary and secondary standard compound. 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**	**10**
2	**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	**10**

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3	**Precipitation titrations:** Mohr's method, Volhard's method, Modified Volhard's method, Fajans method, estimation of Sodium chloride. **Complexometric titration:** Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and Calcium gluconate. **Gravimetry:** Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate. **Diazotization titration**: Basic Principles, methods, and application of diazotization titration.	**10**
4	**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	**8**
5	**Electrochemical methods of analysis** **Conductometry**- Introduction, Conductivity cell, Conductometric titrations, applications. **Potentiometry**- Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), methods to determine end point of potentiometric titration and applications. **Polarography-** Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode, applications	**7**

Reference Books:

1	A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London
2	A.I. Vogel, Text Book of Quantitative Inorganic Analysis
3	P. Gundu Rao, Inorganic Pharmaceutical Chemistry
4	Bentley and Driver's Textbook of Pharmaceutical Chemistry
5	John H. Kennedy, Analytical Chemistry Principles
6	Indian Pharmacopoeia.

Pedagogy:

1. ICT tools (LCD projector, Laptop, Smart Board)
2. Traditional method (Black board)

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
40	30	20	10	0	0	

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

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Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Explain different types of analytical techniques, calculations, and errors	**10**
CO-2	Describe principle and theory of acid base and non-aqueous titration methods.	**30**
CO-3	Describe principles of complexometric, gravimetric and precipitation titrations.	**20**
CO-4	Describe principle and theory of Redox titrations.	**20**
CO-5	Describe principles of electroanalytical methods.	**20**

Curriculum Revision:	
Version:	1
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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010103**

Course Title: **Pharmaceutics-I**

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

1. Know the history of profession of pharmacy
2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
3. Understand the professional way of handling the prescription
4. Preparation of various conventional dosage forms

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	1	-	4	25/10	75/30	-	-	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**Historical background and development of profession of pharmacy:** History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia **Dosage forms:** Introduction to dosage forms, classification and definitions **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription **Posology:** Definition, Factors affecting posology. Paediatric dose calculations based on age, body weight and body surface area	10

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2	**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. Solubility enhancement techniques	**10**
3	**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.	**10**
4	**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	**8**
5	**Semi-solid 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	**7**

Reference Books:

1	H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2	Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3	M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4	Indian pharmacopoeia.
5	British pharmacopoeia.
6	Lachmann. Theory and Practice of Industrial Pharmacy, Lea & Febiger Publisher, The University of Michigan.
7	Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8	Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9	E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.

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10	Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11	Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12	Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.
13	Dr.Anitha Kuthuru and Keerthi Ananthula: Fundamentals of Pharmaceutics
14	Kevin M.G. Taylor and Michael E. Aulton: Aulton's Pharmaceutics: The Design and Manufacture of Medicines, FRPharmS

Pedagogy:

1. Traditional teaching methodology (Blackboard)
2. ICT Tools (PowerPoint presentation, video sharing on Projector)
3. Case Study based (Illustration)

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
30	37	14	14	5	0	

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

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Explain the historical development of pharmacy sector including dosage forms, prescription and dose calculation.	**20**
CO-2	Demonstrate knowledge of pharmaceutical calculations and solid dosage forms.	**23**
CO-3	Describe the formulation, preparation and stability considerations of monophasic and biphasic liquid dosage forms.	**22**
CO-4	Explain the basic concepts of semi – solid dosage forms.	**19**
CO-5	Apply knowledge of pharmaceutical excipients and Pharmaceutical incompatibilities.	**16**

Curriculum Revision:	
Version:	1
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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **BACHELOR OF PHARMACY (B.PHARM.)**

Semester: **I**

Course Code: **108010104**

Course Title: **Pharmaceutical Inorganic Chemistry**

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

1. Know the sources of impurities and methods to determine the impurities in inorganic drugs andpharmaceuticals.
2. Understand the medicinal and pharmaceutical importance of inorganic compounds.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	1	-	4	25/10	75/30	-	-	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**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.	10
2	**General methods of preparation, assay for the compounds superscripted with asterisk (*), properties and medicinal uses of inorganic compounds belonging to the following classes**	

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	Acids, Bases and Buffers: Acid-Base Theories and its limitations, 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.	**10**
3	**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	**10**
4	**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 **Astringents:** Zinc Sulphate, Potash Alum	**8**
5	**Radiopharmaceuticals:** Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half-life, Radio isotopes and study of radioisotopes- Sodium iodide I^{131}, Storage conditions, Precautions & pharmaceutical application of radioactive substances.	**7**

Reference Books:

1	A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol. I &II, Stahlone Press of University of London, 4th edition.
2	A.I. Vogel, Text Book of Quantitative Inorganic analysis.
3	P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition.
4	M.L Schroff, Inorganic Pharmaceutical Chemistry.
5	Bentley and Driver's Textbook of Pharmaceutical Chemistry.
6	Anand & Chatwal, Inorganic Pharmaceutical Chemistry.
7	Indian Pharmacopoeia.

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Pedagogy:

1. ICT tools (LCD projector, Laptop, Smartboard)
2. Traditional method (Black board)

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
40	40	10	5	5	0	

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

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Analyze the sources and types of impurities in pharmaceuticals and execute limit test. – pharmacopeia and its terminology to be include	**20**
CO-2	Evaluate the principles of acid-base theories, buffer systems, isotonicity, and their applications in pharmaceutical formulations.	**20**
CO-3	Assess the methods of preparation, properties, and medicinal uses of inorganic compounds used as electrolytes, dental products, and gastrointestinal agents.	**30**
CO-4	Examine the preparation methods, properties, and therapeutic applications of inorganic compounds like expectorants, emetics, haematinics, antidotes, and astringents.	**15**
CO-5	Evaluate the principles of radiopharmaceuticals, their measurement, storage conditions, precautions, and pharmaceutical applications.	**15**

Curriculum Revision:	
Version:	1
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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of**

Pharmacy Semester: **I**

Course Code: **108010105**

Course Title: **Communication Skills**

Course 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 ofpharmaceutical 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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
2	-	-	2	15/6	35/14	-	-	50/25

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	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	7

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2	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	**7**
3	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	**7**
4	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	**5**
5	Group Discussion: Introduction, Communication skills in group discussion, Do's and Dont's of group discussion	**4**

Reference Books:

1	Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011
2	Communication skills, Sanjay Kumar, Pushpalata, 1st Edition, Oxford Press, 2011
3	Organizational Behaviour, Stephen .P. Robbins, 1st Edition, Pearson, 2013
4	Brilliant- Communication skills, Gill Hasson, 1st Edition, Pearson Life, 2011
5	The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5th 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, 2nd Edition, New arrivals – PHI, 2011
8	Personality development and soft skills, Barun K Mitra, 1st 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, 1st Edition, Mc Graw Hill Education, 2011
11	Effective communication, John Adair, 4th Edition, Pan Mac Millan,2009
12	Bringing out the best in people, Aubrey Daniels, 2nd Edition, Mc Graw Hill, 1999

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Pedagogy:
Face to Face class room Virtual Class room Online Resources Interactive Learning Personalized Learning Assessment

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
10	30	30	30	0	0	

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

Course Outcomes (CO):

Sr.	**Course Outcome Statements**	**%weightage**
CO-1	understand the fundamentals of communication, and its process, components, barriers to effective communication, perspectives.	**20**
CO-2	able to identify and explain key elements of communication and differentiate between various communication styles using the Communication Styles Matrix with relevant examples.	**20**
CO-3	able to develop basic listening skills, active listening techniques, and demonstrate effective written communication.	**20**
CO-4	Develop effective interview skills and presentations skills using appropriate delivery techniques.	**20**
CO-5	Develop confidence in Group discussion and Leadership.	**20**

Curriculum Revision:	
Version:	1
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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010106**

Course Title: **Remedial Biology**

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

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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
2	-	-	2	15/6	35/14	-	-	50/25

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**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. **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 & Dicotyledons	7

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2	**Body fluids and circulation** Composition of blood, blood groups, coagulation of blood. Composition and functions of lymph. **Human circulatory system** Structure of human heart and blood vessels, Cardiac cycle, cardiac output and ECG. **Digestion and Absorption** Human alimentary canal and digestive glands, Role of digestive enzymes, Digestion, absorption and assimilation of digested food. **Breathing and respiration** Human respiratory system, Mechanism of breathing and its regulation, Exchange of gases, transport of gases, regulation of respiration and respiratory volumes.	**7**
3	**Excretory products and their elimination** Human excretory system: structure and function, Modes of excretion, Physiology of urine formation and Renin angiotensin system. **Neural control and coordination** Definition and classification of nervous system, Structure of a neuron, Generation and conduction of nerve impulse, Structure of brain and spinal cord, Functions of cerebrum, cerebellum, hypothalamus and medulla oblongata. **Chemical coordination and regulation** Endocrine glands and their secretions. Functions of hormones secreted by endocrine glands. **Human reproduction** Parts of female reproductive system Parts of male reproductive system Spermatogenesis and Oogenesis Menstrual cycle	**7**
4	**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.	**5**

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5	**Plant respiration:** Respiration, glycolysis, fermentation (anaerobic). **Plant growth and development** Phases and rate of plant growth, Condition of growth, Introduction to plant growth regulators **Cell - The unit of life** Structure and functions of cell and cell organelles. Cell division **Tissues** Definition, types of tissues, location and functions.	**4**

Reference Books:

1	Text book of Biology by S. B. Gokhale
2	A Text book of Biology by Dr. Thulajappa and Dr. Seetaram
3	A Text book of Biology by B.V. Sreenivasa Naidu
4	A Text book of Biology by Naidu and Murthy c. Botany for Degree students By A.C.Dutta
5	Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan
6	A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate 7. Practical human anatomy and physiology. by S. R. Kale and R. R. Kale
7	A Manual of pharmaceutical biology practical by S. B. Gokhale, C. K. Kokate and S. P. Shriwastava
8	Biology practical manual according to National core curriculum. Biology forum of Karnataka. Prof. M. J. H. Shafi
9	A text book of Remedial biology by S. S. Randhawa and Atul Kabra, Pee Vee Prakashan.
10	A text book of Remedial Biology by Dr. N. Vyawahare, Dr. A. Singh, Dr. D. Shirode and A. Kulkarni, 2nd edition 2022, Technical publication.

Pedagogy:

1. Using chalk and blackboard
2. ICT tools (PowerPoint and projector)
3. Worksheets and visual Aids.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
40	55	05	0	0	0	

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

Course Outcomes (CO):

Sr.	Course Outcome Statements	%Weightage
CO 1	Explain the characteristics and diversity of living organisms, binomial nomenclature, the basis of classification, and the salient features of the five kingdoms of life.	**10**

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CO 2	Explain the plant cell and tissue structure, morphology of different parts of flowering plants, and histology of dicot and monocot plants.	**20**
CO 3	Elaborate on plant and mineral nutrition, photosynthesis, plant respiration, plant growth & development.	**20**
CO 4	Explain the composition, functions, and regulation of body fluids, including blood, lymph, and the human circulatory, digestive, respiratory, and excretory systems.	**25**
CO 5	Understand neural and chemical coordination in humans, including the structure and function of the nervous and endocrine systems, and the processes of human reproduction.	**25**

Curriculum Revision:	
Version:	1
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FACULTY OF FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **BACHELOR OF PHARMACY (B.PHARM.)**

Semester: **I**

Course Code: **108010107**

Course Title: **Remedial Mathematics**

Course 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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
2	-	-	2	15/6	35/14	-	-	50/25

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**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 **Function** Real Valued function, Classification of real valued functions, **Limits and continuity** Introduction , Limit of a function, Definition of limit of a function $(\in -\delta\ definition)$, $\lim_{x \to a} \frac{x^n - a^n}{x - a} = na^{n-1}$, $\lim_{\theta \to o} \frac{\sin\theta}{\theta} = 1$,	6

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2	**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 coFactors, Adjoint or adjugate of a square matrix , Singular and nonsingular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley– Hamilton theorem Application of Matrices in solving Pharmacokinetic equations	6
3	**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 *xn w.r.t*x, where *n* is any rational number, Derivative of *ex,*, Derivative of loge *x* , Derivative of *ax,* Derivative of trigonometric functions from first principles **(without Proof)**, Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point. Application	6
4	**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	6
5	**Differential Equations:** Some basic definitions, Order and degree, Equations in separable form , Homogeneous equations, Linear Differential equations, Exact equations, **Application in solving** **Pharmacokinetic equations Laplace Transform:** Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**	6

Reference Books:

1	Differential Calculus by Shanthinarayan
2	Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3	Integral Calculus by Shanthinarayan

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4	Higher Engineering Mathematics by Dr.B.S.Grewal

Pedagogy:

1. Conventional method of teaching using black board

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
30	45	20	05	00	00	

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

Course Outcomes (CO):

Sr.	Course Outcome Statements	%Weightage
CO-1	Apply knowledge of calculus in problem solving in pharmacy	**25**
CO-2	Apply knowledge of matrices and determinants in pharmacy	**25**
CO-3	Learn analytical geometry and differential equations	**30**
CO-4	Understand the concept of logarithms, fractions and limits in pharmacy	**20**

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010111**

Course Title: **Human Anatomy & Physiology-I Practical**

Course Objectives: Upon completion of the course the student shall 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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	4	2	-	-	25/10	75/30	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practicals:

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 hemocytometer.
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.

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15	Recording of blood pressure.

Reference Books:

1	Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2	Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3	Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
4	Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
5	Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6	Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi
7	Physiological basis of medical practice Best and Tailor. Williams & Wilkins Co, Riverview, MI USA **(Latest Editions)**
8	Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A. **(Latest Editions)**
9	Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje, Academic Publishers Kolkata **(Latest Editions)**
10	Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi
11	Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi
12	Practical Anatomy and Physiology by Dr. R. K. Goyal & Dr. N. M. Patel, B. S. Shah Prakashan, Gujrat
13	V.N. Raje. Human Anatomy and Physiology. Kindle Edition. CBS PUBLISHERS AND DISTRIBUTORS

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO1	Distinguish various tissues by observing morphology and structure through microscopy.	**10**
CO2	Identify various bones	**20**
CO3	Perform various tests related to blood cells counts and coagulation parameters	**40**
CO4	Describe diagnostic parameters related to blood Pressure and ESR, haemodynamic	**30**

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010112**

Course Title: **Pharmaceutical Analysis I Practical**

Course Objectives: Upon completion of the course student shall be able to
1. Understand the principles of volumetric and electro chemical analysis
2. Carryout various volumetric and electrochemical titrations
3. Develop analytical skills

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	4	2	-	-	25/10	75/30	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practicals:

1	**Preparation and standardization of** A. Sodium hydroxide B. Sulphuric acid C. Sodium thiosulphate D. Potassium permanganate E. Ceric ammonium sulphate
2	**Assay of the following compounds along with Standardization of Titrant** A. Ammonium chloride by Acid base titration B. Ferrous sulphate by Cerimetry C. Copper sulphate by Iodometry D. Calcium gluconate by Complexometry E. Hydrogen peroxide by Permanganometry F. Sodium benzoate by Non-aqueous titration G. Sodium chloride by Precipitation titration
3	**Determination of Normality by electro-analytical methods** A. Conductometric titration of strong acid against strong base B. Conductometric titration of strong acid and weak acid against strong base C. Potentiometric titration of strong acid against strong base

Reference Books:

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1	A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London
2	A.I. Vogel, Text Book of Quantitative Inorganic Analysis
3	P. Gundu Rao, Inorganic Pharmaceutical Chemistry
4	Bentley and Driver's Textbook of Pharmaceutical Chemistry
5	John H. Kennedy, Analytical Chemistry Principles
6	Indian Pharmacopoeia.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Perform assay of chemicals using volumetric methods of analysis.	**40**
CO-2	Calculate strength of reagents used in pharmaceuticals using volumetric methods of analysis.	**40**
CO-3	Calculate strength of reagents used in pharmaceuticals using electroanalytical method.	**10**
CO-4	Provide written responses to questions related to various aspects of the practicals performed.	**10**

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010113**

Course Title: **Pharmaceutics-I Practical**

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

1. Know the history of profession of pharmacy
2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
3. Understand the professional way of handling the prescription
4. Preparation of various conventional dosage forms

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	4	2	-	-	25/10	75/30	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practical's:

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) Aluminum 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) Glycero gelatin suppository b) Coca butter suppository c) Zinc Oxide suppository

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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

Reference Books:

1	H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2	Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3	M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4	Indian pharmacopoeia.
5	British pharmacopoeia.
6	Lachmann. Theory and Practice of Industrial Pharmacy, Lea & Febiger Publisher, The University of Michigan.
7	Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8	Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9	E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.
10	Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11	Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12	Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Develop skill in formulating biphasic and semisolid preparations ensuring quality, accuracy and safety in pharmaceutical compounding.	**45**
CO-2	Formulate monophasic and solid formulations as per pharmacopeial standards.	**35**
CO-3	Understand the theoretical principles, composition, stability, labelling conditions, packaging and therapeutic applications of various pharmaceutical dosage forms, ensuring compliance with pharmacopeial guidelines.	**10**
CO-4	The student will be able to effectively articulate and justify the concepts related to various dosage forms in an oral discussion.	**10**

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025 - 26

Programme: **BACHELOR OF PHARMACY (B.PHARM.)**

Semester: **I**

Course Code: **108010114**

Course Title: **Pharmaceutical Inorganic Chemistry Practical**

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

1. Know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
2. Understand the medicinal and pharmaceutical importance of inorganic compounds.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	4	2	-	-	25/10	75/30	100/50

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practicals:

1	**Limit tests for following ions** Limit test for Chlorides and Sulphates Modified limit test for Chlorides and Sulphates Limit test for Iron Limit test for Heavy metals Limit test for Lead Limit test for Arsenic
2	**Identification test**: Magnesium hydroxide, Ferrous sulphate, Sodium bicarbonate, Calciumgluconate, Copper sulphate

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3	**Test for purity** Swelling power of Bentonite Neutralizing capacity of aluminum hydroxide gel Determination of potassium iodate and iodine in Potassium iodide
4	**Preparation of inorganic pharmaceuticals** Boric acid, Potash alum, Ferrous sulphate

Reference Books:

1	A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol. I & II, Stahlone Press of University of London, 4th edition.
2	A.I. Vogel, Text Book of Quantitative Inorganic analysis.
3	P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition.
4	M.L Schroff, Inorganic Pharmaceutical Chemistry.
5	Bentley and Driver's Textbook of Pharmaceutical Chemistry.
6	Anand & Chatwal, Inorganic Pharmaceutical Chemistry.
7	Indian Pharmacopoeia.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Perform and evaluate limit tests for various ions including chlorides, sulphates, iron, heavy metals, lead, and arsenic according to pharmacopeial standards.	**35**
CO-2	Identify inorganic pharmaceutical compounds through systematic chemical tests and analyze their distinguishing properties.	**25**
CO-3	Determine the purity parameters of inorganic pharmaceuticals by conducting swelling power, neutralizing capacity.	**10**
CO-4	Synthesize inorganic pharmaceutical compounds following standard procedures and evaluate their quality.	**20**
CO-5	Interpret experimental data, analyze results critically, and prepare comprehensive laboratory reports with appropriate conclusions.	**10**

Curriculum Revision:	
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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of**

Pharmacy Semester: **I**

Course Code: **108010115**

Course Title: **Communication Skills Practical**

Course 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 ofpharmaceutical 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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	2	1	-	-	15/6	35/14	50/25

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practicals:

1	Basic communication covering the following topics Meeting People Asking Questions Making Friends What did you do? Do's and Dont's
2	Pronunciations covering the following topics Pronunciation (Consonant Sounds) Pronunciation and Nouns Pronunciation (Vowel Sounds)
3	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

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Reference Books:

1	Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, PearsonEducation, 2011
2	Communication skills, Sanjay Kumar, Pushpalata, 1st Edition, Oxford Press, 2011
3	Organizational Behaviour, Stephen.P. Robbins, 1st Edition, Pearson, 2013
4	Brilliant- Communication skills, Gill Hasson, 1st Edition, Pearson Life, 2011
5	The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5th 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, 2ndEdition, New arrivals – PHI, 2011
8	Personality development and soft skills, Barun K Mitra, 1stEdition, 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, 1stEdition, Mc Graw Hill Education, 2011
11	Effective communication, John Adair, 4th Edition, Pan Mac Millan,2009
12	Bringing out the best in people, Aubrey Daniels, 2nd Edition, Mc Graw Hill, 1999

Course Outcomes (CO):

Sr.	Course Outcome Statements	%Weightage
CO-1	Demonstrate basic communication skills	**30**
CO-2	Differentiate consonant and vowel sounds for proper pronunciation	**20**
CO-3	Communicate effectively using various soft skills	**50**

Curriculum Revision:	
Version:	1
Drafted on (Month-Year):	June 2020
Last Reviewed on (Month-Year):	April 2025
Next Review on (Month-Year):	April 2030

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FACULTY OF PHARMACEUTICAL SCIENCES

Effective from Academic Batch: 2025-26

Programme: **Bachelor of Pharmacy**

Semester: **I**

Course Code: **108010116**

Course Title: **Remedial Biology Practical**

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

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

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
-	-	2	1	-	-	15/6	35/14	50/25

* **J**: Jury; **V**: Viva; **P**: Practical

List of Practicals:

1	Introduction to experiments in biology a) Study of Microscope b) Section cutting techniques c) Mounting and staining d) Permanent slide preparation
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
6	Identification of bones
7	Determination of blood group
8	Determination of blood pressure
9	Determination of tidal volume

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Reference Books:

1	Text book of Biology by S. B. Gokhale
2	A Text book of Biology by Dr. Thulajappa and Dr. Seetaram
3	A Text book of Biology by B.V. Sreenivasa Naidu
4	A Text book of Biology by Naidu and Murthy c. Botany for Degree students By A.C.Dutta
5	Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan
6	A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate 7. Practical human anatomy and physiology. by S. R. Kale and R. R. Kale
7	A Manual of pharmaceutical biology practical by S. B. Gokhale, C. K. Kokate and S. P. Shriwastava
8	Biology practical manual according to National core curriculum. Biology forum of Karnataka. Prof. M. J. H. Shafi
9	Practical book of human anatomy and physiology-II by Mahesh Prasad, Dr. Antesh K Jha and Ritesh K Srivastav, Nirali Prakashan, Pune Maharashtra.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%Weightage
CO-1	Demonstrate parts and functions of microscope, section cuttings, mounting and staining techniques and permanent slide preparation	**10**
CO-2	Describe physiological parameters of frog using models	**10**
CO-3	Identify plant parts modifications and different bones of human body	**20**
CO-4	Perform microscopic study and tissue identification, cells and its inclusions in plant parts	**30**
CO-5	Perform blood group determination, blood pressure and tidal volume measurement.	**30**

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