COURSE HANDOUT

REMEDIAL BIOLOGY (THEORY)

COURSE CODE: BP106 RBT

VISION

Train the minds to think logically and become a success

MISSION

To Develop inventive, pioneering research & high-quality technical education

PROGRAMME EDUCATIONAL OBJECTIVES

PEO 1: To produce graduates with sound theoretical knowledge and technical skills required for career opportunities in various domains.

PEO 2: To incite the students towards research and to address the challenges with their innovative Contributions for the benefit of mankind.

PEO 3: To bring forth a quality professional equipped with technological advances to adapt easily to changes in the ever-evolving pharma and allied industry, hospital and clinical pharmacy setup, pharma retailing and distribution, and governmental and health agencies.

PEO 4: To engage graduates in professional ethical practices in a multidisciplinary environment, while contributing to organization through leadership and building team spirit.

PEO 5: Pharmacists can become lifelong learners, absorb new technologies, and then offer leadership roles in society.

Programme Name	Bachelor of Pharmacy (B. Pharmacy)
Course Name	Remedial Biology (Theory)
Course Code	BP106RBT
Session	
Semester	I
Lecture/Tutorial(Per Week)	2
Course Credit	2
Course Coordinator Name	

1. Scope of the Course:

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

2. Course Outcomes(COs):

106.1. To understand the characters of living organisms, kingdoms and morphology of various plant parts.

106.2. To analyze functions of organs in the cardiovascular, digestive and respiratory systems of human body.

106.3. To assess the excretory products and their elimination role of kidney in regulation of body fluids.

106.4. To determine role of hormones in the body and process of gene is and spermatogenesis.

106.5. To elaborate the physiology, nutrient requirements for plants and to predict plant/animal tissues.

3. Text Books:

TB.1 Gokhale SB, Kokate CK, Bidarkar DS. Pharmaceutical Biology. Nirali Prakashan, New Delhi.
TB.2 Naidu BVS, Murthy PK. Text Book of Biology. Prakasha Sahithya, Bangalore.

4. Reference Books:

RB.1 Ekambara natha Ayyer M, Anantha Krishnan TN. Outlines of Zoology. S. Viswanathan Pvt. Ltd.
RB.2 Dutta AC. Botany for Degree Students. Oxford University Press.

5. Other Readings & Relevant Websites:

Sr. No.	Link of Journals, Magazines, Websites and Research Papers
1	https://www.slideshare.net/
2	https://www.thepharmacystudy.com/remedial-biology-notes-pdf-free-download/
3	https://www.teachmint.com/tfile/studymaterial/class-1st/
4	https://www.researchgate.net/publication/321316555_Remedial_Biology/
5	https://scholar.google.com/schhp?hl=en/

6. Course Plan:

Subject: Remedial Biology(Theory)		**SubjectCode:**BP106RBT
Sr. No.	**Topics**	**No. of Lectures**
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, Potista, Fungi, Animalia and Plantae, Virus **Morphology of Flowering plants:** Morphology of different parts off lowering plants– Root, stem, inflorescence, flower, leaf, fruit, seed. General Anatomy of Root, stem, leaf of monocotyledons & Dicotylidones	07
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 and regulation of respiration. Respiratory volumes	07
	ST-I (Syllabus Covered from Lecture 01 to 14)	
3	**Excretory products and their elimination:** Modes of excretion. Human excretory system- structure and function. Urine formation. Rennin 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	07
4	**Plants and mineral nutrition:** Essential mineral, macro and micro nutrients. Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation **Photosynthesis**: Auto trophic nutrition, photo synthesis, Photo synthetic pigments, Factors Affecting photosynthesis.	05
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.	04
	ST-II (Syllabus Covered from Lecture 15 to 30)	

7. **Lecture Plan:**

Lect. No.	Topics	Dates (Tentative)	CO
1.	Definition and characters of living organisms, Diversity in the living world	19.09.23	106.1
2.	Binomial nomenclature	20.09.23	106.1
3.	Five kingdoms of life and basis of classification. Salient features of Monera	03.10.23	106.1
4.	Salient features of Potista, Fungi, Animalia and Plantae, Virus	04.10.23	106.1
5.	Morphology of different parts of flowering plants, Rootstem, inflorescence	10.10.23	106.1
6.	Morphology of different parts of flowering plants, Flower ,leaf, fruit, seed	11.10.23	106.1
7.	General Anatomy of Root, stem, leaf of mono cotyledons & Dicotylidones	17.10.23	106.1
8.	Body fluids and circulation**,** Composition of blood, blood groups	18.10.23	106.2
9.	Coagulation of blood, Composition and functions of lymph	24.10.23	106.2
10.	Human circulatory system, Structure of human heart and blood vessels, Cardiac cycle, cardiac output and ECG	25.10.23	106.2
11.	Digestion and Absorption, Human alimentary canal and digestive glands	31.10.23	106.2
12.	Role of digestive enzymes, Digestion, absorption and assimilation of digested food	07.11.23	106.3
13.	Breathing and respiration: Human respiratory system, Mechanism of breathing and its regulation	8.11.23	106.3
14.	Exchange of gases, transport of gases and regulation of respiration, Respiratory volumes	14.11.23	106.3
15.	Excretory products and their elimination, Modes of excretion	15.11.23	106.3
16.	Human excretory system, structure and function, Urine formation, Rennin angiotensin system	21.11.23	106.3
17.	Neural control and coordination: Definition and classification of nervous system	22.11.23	106.4
18.	Structure of a neuron, Generation and conduction of nerve impulse, Structure of brain and spinal cord, Functions of cerebrum, cerebellum, hypothalamus and medulla oblongata	28.11.23	106.4
19.	Chemical coordination and regulation: Endocrine glands and their secretions, Functions of hormones secreted by endocrine glands	29.11.23	106.4
20.	Human reproduction, Parts of female reproductive system, Parts of male reproductive system	05.12.23	106.4
21.	Spermatogenesis and Oogenesis, Menstrual cycle	06.12.23	106.4
22.	Plants and mineral nutrition, Essential mineral, macro and micronutrients	12.12.23	106.5
23.	Nitrogen metabolism, Nitrogen cycle	13.12.23	106.5
24.	Biological nitrogen fixation	19.09.23	106.5
25.	Photosynthesis, Auto trophic nutrition, photosynthesis	20.12.23	106.5
26.	Photosynthetic pigments, Factors affecting photosynthesis.	09.01.24	106.5
27.	Respiration, glycolysis, fermentation, plant growth regulators	10.01.24	106.5
28.	Structure and functions of cell, Definition, types of tissues, location and functions	16.01.24	106.5
29.	Cell organelles. Cell division	17.01.24	106.5
30.	Definition, types of tissues, location and functions	23.01.24	106.5

8. Assignments Plan:

Sr. No.	Type of Assignment	Assignment	Marks	CO	PO (Annexure I)	Tentative Date
1	Problem-solving	Morphology of Flowering Plants 1. Collect at least three different specimens of the unknown flowering plant, including leaves, flowers, and fruits, if available. 2. Take clear photographs or make detailed sketches of each specimen	10	106.1	PO1,PO6, PO11	04.10.23
2	Mind Gap	Prepare a model on cardiovascular, digestive and respiratory systems of Human body	10	106.2	PO1,PO4, PO6,PO11	18.10.23
3	Objective	MCQ on excretory products and their Elimination role of kidney in regulation of body fluids	10	106.3	PO1,PO4, PO6,PO11	27.10.23
4	Subjective	PPT on role of hormones in regulation of various organs functioning in the body	10	106.4	PO1,PO4, PO6,PO11	25.11.23
5	Subjective	Write note on physiology, nutrient requirements for plants	10	106.5	PO1,PO6, PO11	31.1.24

9. Class Tests Schedule:

Sr. No.	Test Type	Topics	Marks	CO	PO (Annexure I)	Tentative Date
1	Subjective	Living world & Morphology of flowering plants	10	106.1	PO1,PO3, PO6,PO8, PO11	04.10.23
2	Subjective	Body Fluid, Digestion	10	106.2	PO1,PO4	20.10.23
3	Subjective	Excretory Product	10	106.3	PO1,PO5, PO6	01.11.23
4	Subjective	Role of Hormones regulation in body	10	106.4	PO1,PO7	20.11.23
5	Subjective	Plant Mineral, Nutrition & Respiration	10	106.5	PO1,PO8	11.1.24

10. Content Beyond Syllabus (CBS):

Sr. No.	Topics	PO to be Achieved (AnnexureI)
1	Emphasizes the fundamental understanding of animal and plant anatomy and physiology	PO1,PO4,PO6,PO11
2	Basic understanding and techniques of tissues of plant	PO1,PO6,PO11

11. Proposed Activity:

Sr. No.	Type of Activity	Topics	Tentative Date
1	Model Preparation	Respiration, Digestion	23.12.23

12. Evaluation Scheme:

The marks allocated for continuous mode of internal assessment shall be awarded for attendance, academic activities and student-teacher interaction. Two sessional exams shall be conducted during mid of the semester. The average marks of two sessional exams shall be computed for internal assessment. Sessional exam shall be conducted for 30marksandshall be computedfor10marks.Weightagefor various evaluation components is as below:

Sr. No.	Evaluation Component	Weightage
1	Internal Assessment 1. Continuous Mode 2. Sessional Exams	 05 10
2	End Semester Exam	35
	Total	**50**

As per PCI and University guidelines minimum 75% attendance is required to become eligible for appearing in the End Semester Examination.

This Document is approved by:

Designation	Name	Signature
Course Coordinator		
HOD		
Principal		

ANNEXUREI: PROGRAM OUTCOMES

1. **Pharmacy knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2. **Planning abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3. **Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5. **Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
6. **Professional identity:** Understand, analyze and communicate the value of their professional roles in society (e.g., health care professionals, promoters of health, educators, managers, employers, employees).
7. **Pharmaceutical ethics:** Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8. **Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
9. **The pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10. **Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.