

GANPAT UNIVERSITY

FACULTY OF PHARMACY

TEACHING AND EXAMINATION SCHEME

Program		Bachelor of Pharmacy (B.Pharm)	Branch	-				Semester	1				Version	3.0.0.0				
Effective from		2018-19		Effective for batches admitted onwards				2018-19										
S. N	Subject Code	Subject Name	Theory / Practical	Teaching Scheme								Examination Scheme						
				Credit				Hours Per Week				Theory Marks			Practical Marks			Total Marks
				Le	Tu	Pr	Total	Le	Tu	Pr	Total	CE	SE	ES	CE	SE	ES	
1	BPH101	Human Anatomy and Physiology-I	Theory / Practical	3	1	2	6	3	1	4	8	10	15	75	10	15	75	200
2	BPH102	Pharmaceutical Analysis-I	Theory / Practical	3	1	2	6	3	1	4	8	10	15	75	10	15	75	200
3	BPH103	Pharmaceutics-I	Theory / Practical	3	1	2	6	3	1	4	8	10	15	75	10	15	75	200
4	BPH104	Pharmaceutical Inorganic Chemistry	Theory / Practical	3	1	2	6	3	1	4	8	10	15	75	10	15	75	200
5	BPH105	Communication Skills	Theory / Practical	2	-	1	3	2	-	2	4	10	15	75	10	15	75	200
6	BPH106	Remedial Mathematics ^{\$}	Theory	2	1	-	3	2	1	-	3	10	15	75	-	-	-	100
	BPH107	Remedial Biology [#]	Theory / Practical	2	-	1	3	2	-	2	4	10	15	75	10	15	75	200
Total				16	4 [#] / 5 ^{\$}	9 ^{\$} / 10 [#]	30	16	4 [#] / 5 ^{\$}	18 ^{\$} / 20 [#]	39 ^{\$} / 40 [#]	60	90	450	50 ^{\$} / 60 [#]	75 ^{\$} / 90 [#]	375 ^{\$} / 450 [#]	1100 ^{\$} / 1200 [#]

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

^{\$} Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM) course.

Students who have studied Mathematics/Biology/Chemistry/Physics at HSC shall require to opt any one from Remedial Biology or Remedial Mathematics.

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FACULTY OF PHARMACY												
Program	Bachelor of Pharmacy			Branch/Spec.			B.Pharm.					
Semester	I			Version			3.0.0.0					
Effective from Academic Year		2018-19		Effective for the batches Admitted onwards				June 2018				
Subject code	BPH101		Subject Name		Human Anatomy and Physiology - I							
Teaching scheme				Examination scheme								
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	3	1	4	8	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	3	1	2	6	Practical	10	15	75	100	Practical	4 hr.	4 hr.
Pre-requisites												
Nil												
Scope and Objectives:												
Upon completion of this course the student should be able to												
	<ul style="list-style-type: none"> Explain the gross morphology, structure and functions of various organs of the human body. Describe the various homeostatic mechanisms and their imbalances. Identify the various tissues and organs of different systems of human body. Perform the various experiments related to special senses and nervous system. Appreciate coordinated working pattern of different organs of each system. 											
Learning Outcome:												
	<ul style="list-style-type: none"> This course is designed to impart a fundamental knowledge on the structure and functions of the human body. This course increased awareness about the functioning of the human body as a coordinated homeostatic system. This course provides better understanding about the normal & abnormal status of the various body systems. At the end of course, student will discover how the body regulates its own internal environment called homeostasis and helps for basic understanding in students in a way that is understood by scientists and health-care professionals alike. 											
Syllabus- Theory												
Unit	Content											Hrs
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 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.											10
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, 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											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 heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.											7
Syllabus-Practical												
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 and clotting time
10	Estimation of hemoglobin content
11	Determination of blood group.
12	Determination of erythrocyte sedimentation rate (ESR).
13	Determination of heart rate and pulse rate.
14	Recording of blood pressure.
Text 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	Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi
8	Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee
Reference books	
1	Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2	Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3	Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

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Semester	I	Version	3.0.0.0									
Effective from Academic Year	2018-19	Effective for the batches Admitted onwards	June 2018									
Subject code	BPH102	Subject Name	Pharmaceutical Analysis-I									
Teaching scheme				Examination scheme								
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	3	1	4	8	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	3	1	2	6	Practical	10	15	75	100	Practical	4 hr.	4 hr.
Pre-requisites												
Nil												
Scope and Objectives:												
This course deals with the fundamentals of analytical chemistry.												
Fundamentals, principles and application of titrimetric analysis.												
Fundamentals, principles and application of electrochemical analysis of drugs.												
Learning Outcome:												
By the end of this course, the student shall have good understanding of the basic concept of the analytical chemistry, titrimetric analysis, gravimetric analysis and electrochemical analysis with its application to the pharmaceutical analysis.												
Students will be able to carry out various volumetric and electrochemical titrations and develop analytical skills												
Syllabus- Theory												
Unit	Content											Hrs.
1	Pharmaceutical analysis: Definition and scope of pharmaceutical analysis, different techniques of analysis (classification), types of analysis, factors affecting selection of method for analysis, methods of expressing concentration, chemicals (types, purification, checking purity) and glasswares (types, calibration, cleaning).											03
2	Science of errors: Explain errors, types of errors, sources of errors, methods of minimizing errors, accuracy, precision and significant figures, interferences and its removal, sampling techniques											05
3	Standardization: fundamentals of volumetric analysis, primary and secondary standards Preparation and standardization of various molar and normal solutions - sodium hydroxide, hydrochloric acid, sulphuric acid, oxalic acid, sodium thiosulphate, potassium permanganate and ceric ammonium sulphate											02
4	Acid base titration: Law of mass action, ionic products of water, pH, common ion effect, relative strength of acid and base and its effect on titration, acid base indicators, theories of acid base indicators, hydrolysis of salts, classification of acid-base titrations, back titrations, pharmacopoeial applications and neutralization curves											05
5	Non-aqueous titration: Non-aqueous solvents, titrants and indicators, differentiating and levelling solvents, pharmacopoeial applications and estimation of Sodium Benzoate and Ephedrine HCl											02
6	Precipitation titrations: Precipitation reactions, Solubility Products, factors affect upon solubility of precipitates, Mohr's method, Volhard's methods, Fajans method and estimation of sodium chloride.											05
7	Complexometric titration: Theory and types of titration, titrants, metal ion indicators, masking and demasking agents, estimation of Magnesium sulphate and calcium gluconate.											03
8	Gravimetry: Principle and steps involved in gravimetric analysis. Purity of the precipitate: coprecipitation and postprecipitation, Estimation of barium sulphate.											02
9	Diazotisation titration: Basic Principle, theory and application of diazotisation titration.											01
10	Redox titrations: Concepts of oxidation and reduction, redox indicators, types of redox titrations											05

	(Principles and applications), redox titration curve, Cerimetry, Iodimetry, Iodometry, Bromometry, Dichrometry, Titration with potassium iodate	
11	Electrochemical methods of analysis Conductometry: Introduction, factors affecting conductance, Kohlrausch law, conductivity cells, Conductometric titrations, applications.	04
12	Potential and pH metry: Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), electrodes and cell potential, methods to determine end point of potentiometric titration and applications.	04
13	Polarography -Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode, polarogram, instrumentation and applications of polarography	04
Syllabus-Practical		
	Preparation and standardization of	
1	Sodium hydroxide	
2	Sulphuric acid	
3	Sodium thiosulfate	
4	Potassium permanganate	
	Assay of the following compounds along with Standardization of Titrant	
5	Boric acid by acid base titration	
6	Ferrous sulphate by Cerimetry	
7	Copper sulphate by Iodometry	
8	Calcium gluconate by complexometry	
9	Hydrogen peroxide by Permanganometry	
10	Sodium Chloride by precipitation titration	
11	Determination of Normality by electro-analytical methods	
12	Conductometric titration of strong acid against strong base	
13	Conductometric titration of strong acid and weak acid against strong base	
14	Potentiometric – pH metric titration of strong acid against strong base	
15	Potentiometric titration of sulphamethoxazole	
Text books		
1	A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone, Press of University of London	
2	Fundamentals of Analytical Chemistry by Skoog 4 Text Book of Pharmaceutical Analysis by K. A. Connor	
3	Textbook of Quantitative Chemical Analysis by A. I. Vogel	
4	Instrumental methods of chemical analysis by G. R. Chatwal	
5	Textbook of Pharmaceutical Analysis-I & II, Vidyasagar G.	
Reference books		
1	Quantitative chemical analysis by Gilbert Ayres	
2	Fundamentals of Analytical Chemistry by Skoog	
3	Indian Pharmacopoeia Latest Edition	
4	Quantitative chemical analysis by Mendham	
5	Instrumental method of analysis by Willard Hobart H.	

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Program	Bachelor of Pharmacy				Branch/Spec.	B.Pharm.						
Semester	I				Version	3.0.0.0						
Effective from Academic Year	2018-19			Effective for the batches Admitted onwards	June 2018							
Subject code	BPH103		Subject Name	Pharmaceutics-I								
Teaching scheme					Examination scheme							
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	3	1	4	8	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	3	1	2	6	Practical	10	15	75	100	Practical	4 hr.	4 hr.
Pre-requisites												
Nil												
Scope and Objectives:												
This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.												
Learning Outcome:												
Upon completion of this course the student should be able to: <ul style="list-style-type: none"> ➤ 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 												
Syllabus- Theory												
Unit	Content											Hrs
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. Pediatric dose calculations based on age, body weight and body surface area											10
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.											9
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											9
5	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 dosage forms											7
Syllabus-Practical												
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	Emulsions: a) Castor oil emulsion b) Calcium soap emulsion
8	Powders and Granules a) ORS powder (WHO) b) Effervescent granules c) Dusting powder d) Divided powders
9	Suppositories a) Glycero gelatin suppository b) Cocoa butter suppository c) Zinc Oxide suppository
10	Suppositories a) Eucalyptus oil suppository b) Lactic acid pessaries
11	Semisolids a) Sulphur ointment b) Non staining-iodine ointment with methyl salicylate
12	Semisolids a) Compound benzoic acid BP b) Carbopal gel
13	Gargles a a) Iodine gargle b) Potassium and phenol gargle BPC
14	Mouthwashes a) Chlorhexidine mouthwash b) Compound Zinc sulphate and zinc chloride mouthwash BPC
15	Pharmaceutical incompatibilities a) Mixture of chalk powder with tincture of catechu b) Soluble salicylate with alkali bicarbonate
Text books	
1	Dr. G. K. Jani, Pharmaceutics-2(dispensing pharmacy), B.S. Shah Prakashan, Ahmedabad.
2	Dr. A. K. Seth, A text book of pharmaceutics, S. Vikas and company, Punjab, India.
3	Pharmaceutical Dispensing by Sharma & Jain
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.
12	Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.

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FACULTY OF PHARMACY

Program	Bachelor of Pharmacy	Branch/Spec.	B.Pharm.									
Semester	I	Version	3.0.0.0									
Effective from Academic Year	2018-19	Effective for the batches Admitted onwards	June 2018									
Subject code	BPH104	Subject Name	Pharmaceutical Inorganic Chemistry									
Teaching scheme			Examination scheme									
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	3	1	4	8	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	3	1	2	6	Practical	10	15	75	100	Practical	4 hr.	4 hr.

Pre-requisites

Nil

Scope and Objectives:

This course deals with the fundamentals of inorganic chemistry.

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

Learning Outcome:

Upon completion of course students shall be able to understand the history and basic concepts of medicinal inorganic chemistry.

Students become familiar with pharmacopoeia and pharmacopoeial monograph.

Students will be able to study the method of manufacturing, physical/chemical properties, assay, storage and uses of important inorganic substances as pharmaceutical aids, therapeutic agents, radioactive substances and diagnostic agents.

Syllabus- Theory

Unit	Content	Hrs.
1	Introduction to inorganic chemistry and pharmacopoeia.	3
2	Impurities in Pharmaceuticals: Sources and types of impurities, limit tests and principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate.	6
3	General methods of preparation , assay for the compounds superscripted with asterisk(*), properties and medicinal uses of inorganic compounds belonging to the following classes	
a	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	6
b	Topical agents Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations	3
c	Acids, Bases and Buffers: Acid base theories , Buffer mechanism and action Henderson Heselbalchequations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.	5
d	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.	4
e	Dental products: Dentifrices and Anticaries agents, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.	3
f	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 333	8

	Astringents: Zinc Sulphate, Potash Alum	
4	Radiopharmaceuticals: Radio activity, Measurement of radioactivity, Properties of α , β , γ radiations, Half-life, radio isotopes and study of radio isotopes - Sodium iodide I131, Storage conditions, precautions & pharmaceutical application of radioactive substances.	7
Syllabus-Practical		
	Limit tests for following ions	
1	Limit test for Chlorides and Sulphates	
2	Modified limit test for Chlorides and Sulphates	
3	Limit test for Iron	
4	Limit test for Arsenic	
5	Limit test for Lead	
	Test for purity	
6	Swelling power of Bentonite	
7	Neutralizing capacity of aluminum hydroxide gel	
8	Determination of potassium iodate and iodine in potassium iodide	
	Identification test for following compounds	
9	Magnesium hydroxide	
10	Copper sulphate	
11	Sodium bicarbonate	
12	Calcium gluconate	
	Preparation of inorganic pharmaceuticals	
13	Boric acid	
14	Potash alum	
15	Ferrous sulphate	
Text books		
1	Practical Pharmaceutical Chemistry Vol. I edited by A.H. Beckett & J.B. Stenlake, CBS Publishers, New Delhi, 4 th Edition, 1986.	
2	Inorganic Pharmaceutical Chemistry (Practical) by Dhake & Belsare; 2 nd Edition.	
3	Inorganic Medicinal and Pharmaceutical Chemistry: J. H. Block, E. B. Roche, T. O. Soine, C. O. Wilson, Varghese Publishing House, Indian edition.	
4	Pharmaceutical inorganic chemistry by G.R. Chatwal, volume-I, Himalaya Publishing house, Bombay.	
5	Pharmaceutical Chemistry – I by A. V. Kasture and S. G. Vadodkar, 25 th Edition, Nirali Prakashan, Pune, 2008.	
Reference books		
1	Bentley and Driver's Textbook of Pharmaceutical Chemistry: Revised by L. M. Atherden, 8 th Edition, Oxford University Press, London, 1969.	
2	The Indian Pharmacopoeia, 6 th Edition, Controller of Publications – the Indian Pharmacopoeia Commission, Ghaziabad, 2010.	
3	Vogel's Qualitative Inorganic Analysis Revised by G. Svehla, 7 th Edition, Longman Group Ltd., London, 1996.	
4	A textbook of quantitative inorganic chemistry by A. I. Vogel, 3 rd Edition, The language book society, Longman, London.	

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Program	Bachelor of Pharmacy			Branch/Spec.			B.Pharm.					
Semester	I			Version			3.0.0.0					
Effective from Academic Year		2018-19		Effective for the batches Admitted onwards				June 2018				
Subject code	BP105TP		Subject Name		COMMUNICATION SKILLS							
Teaching scheme				Examination scheme								
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	2	-	2	4	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	2	-	1	3	Practical	10	15	75	100	Practical	2 hr.	2 hr.
Pre-requisites												
Nil												
Scope and Objectives:												
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.												
Learning Outcome:												
Upon completion of this course the student should be able to: <ul style="list-style-type: none"> ➤ Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation ➤ Communicate effectively (Verbal and Non Verbal) ➤ Effectively manage the team as a team player ➤ Develop interview skills ➤ Develop Leadership qualities and essentials 												
Syllabus- Theory												
Unit	Content											Hrs
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
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
Syllabus-Practical												
The following learning modules are to be conducted using Any Software English language lab software												
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
Recommended Books:	
1	Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011
2	Communication skills, Sanjay Kumar, Pushpalata, 1stEdition, Oxford Press, 2011
3	Organizational Behaviour, Stephen .P. Robbins, 1stEdition, Pearson, 2013
4	Brilliant- Communication skills, Gill Hasson, 1stEdition, Pearson Life, 2011
5	The Ace of Soft Skills: Attitude, Communication and Etiquette for success, GopalaSwamy Ramesh, 5thEdition, 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, Konarnira, 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 indiapvt.ltd, 2011
10	Soft skills and professional communication, Francis Peters SJ, 1stEdition, McGraw Hill Education, 2011
11	Effective communication, John Adair, 4thEdition, Pan Mac Millan,2009
12	Bringing out the best in people, Aubrey Daniels, 2ndEdition, McGraw Hill, 1999

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Semester	I			Version	3.0.0.0							
Effective from Academic Year	2018-19			Effective for the batches Admitted onwards	June 2018							
Subject code	BPH106			Subject Name	Remedial Mathematics							
Teaching scheme				Examination scheme								
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	2	1	-	3	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	2	1	-	3	Practical	-	-	-	-	Practical	-	-
Pre-requisites												
Nil												
Scope and Objectives:												
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.												
Learning Outcome:												
Upon completion of this course the student should be able to: <ul style="list-style-type: none"> ➤ Know the theory and their application in Pharmacy ➤ Solve the different types of problems by applying theory ➤ Appreciate the important application of mathematics in Pharmacy 												
Syllabus- Theory												
Unit	Content											Hrs
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											6
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 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, 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 x^n , where n is any rational number, Derivative of e^x , Derivative of $\log_e x$, Derivative of $\sin x$, 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

Recommended Books	
1	Differential Calculus by Shanthinarayan
2	Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H
3	Integral Calculus by Shanthinarayan
4	Higher Engineering Mathematics by Dr.B.S.Grewal

GANPAT UNIVERSITY												
FACULTY OF PHARMACY												
Program	Bachelor of Pharmacy			Branch/Spec.	B.Pharm.							
Semester	I			Version	3.0.0.0							
Effective from Academic Year	2018-19			Effective for the batches Admitted onwards	June 2018							
Subject code	BP106TP			Subject Name	REMEDIAL BIOLOGY							
Teaching scheme				Examination scheme								
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	2	-	2	4	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	2	-	1	3	Practical	10	15	75	100	Practical	2 hr.	2 hr.
Pre-requisites												
Nil												
Scope and Objectives:												
To learn and understand the components of living world, structure and functional system of plant and animal kingdom.												
Learning Outcome:												
Upon completion of this course the student should be able to: <ul style="list-style-type: none"> ➤ know the classification and salient features of five kingdoms of life ➤ understand the basic components of anatomy & physiology of plant ➤ know and understand the basic components of anatomy & physiology of an animal with special reference to human 												
Syllabus- Theory												
Unit	Content											Hrs
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
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											7
3	Excretory products and their elimination Modes of excretion Human excretory system-structure and function Urine formation 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											7

	<p>Functions of hormones secreted by endocrine glands</p> <p>Human reproduction</p> <p>Parts of female reproductive system</p> <p>Parts of male reproductive system</p> <p>Spermatogenesis and Oogenesis</p> <p>Menstrual cycle</p>	
4	<p>Plants and mineral nutrition:</p> <p>Essential mineral, macro and micronutrients</p> <p>Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation</p> <p>Photosynthesis</p> <p>Autotrophic nutrition, photosynthesis, Photosynthetic pigments, Factors affecting photosynthesis.</p>	5
5	<p>Plant respiration: Respiration, glycolysis, fermentation (anaerobic).</p> <p>Plant growth and development</p> <p>Phases and rate of plant growth, Condition of growth, Introduction to plant growth regulators</p> <p>Cell-The unit of life</p> <p>Structure and functions of cell and cell organelles. Cell division</p> <p>Tissues</p> <p>Definition, types of tissues, location and functions.</p>	4
Syllabus-Practical		
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	
Text books		
1	Textbook of Biology by S.B. Gokhale	
2	A Textbook of Biology by Dr. Thulajappa and Dr. Seetaram.	
Reference books		
1	A Textbook of Biology by B.V. Sreenivasa Naidu	
2	A Textbook of Biology by Naidu and Murthy	
3	Botany for Degree students by A.C. Dutta.	
4	Outlines of Zoology by M. Ekambaranathaayyer and T. N. Ananthakrishnan.	
5	A manual for pharmaceutical biology practical by S.B. Gokhale and C.K. Kokate	
6	Practical human anatomy and physiology. by S.R. Kale and R.R. Kale.	
7	Biology practical manual according to National core curriculum. Biology forum of Karnataka. Prof. M.J.H. Shafi	