C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutics & Pharmaceutical Technology

Semester: I

Name of Subject: Fundamentals of Pharmaceutical Industry (Theory)

Subject Code: UGBP101

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP101	Fundamentals of Pharmaceutical Industry	3	0	3	6	70	3	30	1.5	70	30	3	200

Objectives: -

The objectives of Fundamentals of Pharmaceutical Industry are: To develop the knowledge behind the basic mechanism of material transportation which involves in pharmaceutical industries. It also provides the information regarding handling of solid, liquid and gaseous material in various places in pharmacy.

Prerequisites:-

To have a more thorough theoretical background in many of the topics covered in this course, you must have taken general science before this course.

Course Outline

Sr. No	Course Contents	Hours
1	**Introduction to fundamental units and its conversion:** Pharmaceutical engineering and its significance, unit operations and unit processes. Unit systems, SI unit, CGS unit, gas constant and conversion of units. Physical quantities, dimensions and units, dimensional equations, dimensional analysis and dimensionless groups. Different types of graphical representation.	03

2	**Stoichiometry:** Unit operations processes, material and energy balance, molecular units, mole fraction, tie substances, gas laws, mole volume, primary and secondary quantities, equilibrium state, rate process, steady and unsteady states, dimensionless equations, dimensionless formulae, dimensionless groups, different type of graphical representation. (mathematical problems)	08
3	**Fluid flow:** Fluid Flow: Types of flow, Reynold's number, viscosity, concept of boundary layer, basic equations of fluid flow, valves, flow meters, Different manometers and their applications and derivation of Bernoulli's theorem, measurement of flow and pressure and non-Newtonian fluid flow .	08
4	**Heat transfer:** Modes of heat transfer, Conduction- Fourier's law, resistances in series and parallel, use of mean area and mean temperature difference, Convection-Concept of film, overall coefficient, heat transfer by forced convection in laminar and turbulent flow, condensing vapours, evaluation of individual film coefficients. Radiation-Black body, absorptivity and emmisivity. Heating of fluids, steam as heating medium, properties and uses of steam, steam traps, study of steam table. Heat exchange equipments-Heat exchangers, condensers, boilers, extended surface scraped and surface equipments etc. applications of heat transfer in industrial processes. Mathematical problems.	08
5	**Automated Process Control Systems** Temperature, pressure, vacuum, flow level and their measurements. Elements of process control systems.	04
6	**Materials for Plant construction:** General study of composition, corrosion, resistance, properties and applications of the materials of construction with special reference to stainless steel, ferrous metals, cast iron, non ferrous metals, copper and alloys, aluminum and alloys, lead, tin, silver, nickel and alloys, chromium and non metals, stone, slate, brick, asbestos, glass, plastics, rubber, timber, concrete..Corrosion and its prevention with reference to commonly used materials in pharmaceutical industry.	06

7	**Material handling system:** a) Liquid handling: different type of pumps, storage tanks for volatile and inflammable liquids. b) Gas handling, various type of fans, blowers, compressors and cylinders. c) Solid handling, bins, bunkers, conveyers, air transport.	8
Total		**45**

Learning Outcomes:-

On the completion of the course, students will be able to:

1. understand the importance of unit in pharmaceutical industry.
2. impart training for carrying out the experiments with the help of sophisticated instruments used in pharmaceutical industry.
3. understand the importance of material handling system in pharmacy.
4. acquire the knowledge regarding the selection of instrument required for the measurement of various flow of fluid.
5. know the properties of metal, plastic and rubber etc which are commonly used in pharmaceutical industry.
6. understand the role of corrosion and its possible involvement in various instrumentation.

Teaching Methodology:-

1. Lectures will be conducted with the aid of multimedia projector, black board, OHP etc.
2. Assignments based on course content will be given to the students at the end of each Unit/topic and will be evaluated at regular interval.
3. Specific discussion questions will be assigned each week.

Books Recommended:

1. S.J. Carter, Cooper and Gunn's Tutorial Pharmacy 6th ed CBS publisher, Delhi.
2. C.V.S. Subramanayam, Pharmaceutial Unit Operation, Vallabh Prakashan
3. Prof. K. Samba Murthy, Pharmaceutical Engineering.
4. Badzer & Banchero, Introduction to Chemical Engineering.
5. Perry's Handbook of Chemical Engineering.
6. Unit Operations of Chemical Engineering by Mc Cabe Warren, Smith and Harriot.
7. Lippincott Williams and Wilkins: Remington Pharmaceutical Sciences.
8. EA Rawlins, Bently's Text Book of Pharmaceutics, 8th edition, ELBS

9. Principles and Practice of Automatic Process Control, C. A. Smith and A. Corripio, John Willey & Sons, Inc., USA
10. Engineering Drawing and Graphics; K Venugopal; New Age International, New Delhi; 4th Edition; 2003.

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutics & Pharmaceutical Technology

Semester: I

Name of Subject: Fundamentals of Pharmaceutical Industry (Practicals)

Subject Code: UGBP101P

PRACTICALS: 3 Hours/Week

1. To measure gas pressure using U tube manometers.
2. To measure gas pressure using inclined manometers.
3. To calibrate the given Orifice meter and to calculate its coefficient of discharge.
4. To calibrate the given Venturimeter and to calculate its coefficient of discharge.
5. To Calibrate the given Rotameter with given plummet.
6. To determine vacuum creating efficiency of an ejector pump.
7. To determine volume transfer efficiency of an ejector pump.
8. Measurement of flow of fluids and their pressure and calculate the Reynold's number.
9. To determine the overall heat transfer co-efficient (U) of the given condenser.
10. To determine efficiency of lagging in heat transfer equipment.
11. Demonstration of corrosion resistance of various materials.
12. Demonstration of orthographic and isometric projections.
13. Interpretation of pharmaceutical building drawings.
14. Flowcharting- drawing of simple flowcharts for pharmaceutical processes.
15. Demonstration of AUTOCAD.

If necessary perform other Practicals related to topics mentioned in the theory.

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutical Chemistry & Pharmaceutical Analysis

Semester: I

Name of Subject: Pharmaceutical Chemistry-I (Inorganic) Theory

Subject Code: UGBP102

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP102	Pharmaceutical Chemistry-I(Inorganic)	3	0	3	6	70	3	30	1.5	70	30	3	200

Objective of the course:-

1. To emphasize the importance of impurities in pharmaceutical materials.
2. To provide knowledge about preparation, quality standard, assay, storage and uses of important inorganic substances used for pharmaceutical purpose.
3. To describe typical therapeutic classes and inorganic agents associated with them.
4. To Study about basic analytical methods for pharmaceutical inorganic substances.
5. To highlight the domain of radiopharmaceuticals used in the diagnostics and therapy.

Prerequisites:- To have a more thorough theoretical background in many of the topics covered in this course, students should have basic knowledge of chemistry.

Course outline:- In the beginning the student is taught basic tests to determine impurities in pharmaceutical preparations like determination of various ions. As the subject progresses, he/she learns about preparation of various pharmaceuticals and their ingredients. An insight is provided into use of radiopharmaceuticals and their hazards among others.

Sr. No	Course Contents	Hours

1	An outline of methods of preparation, uses, sources of impurities, tests for purity and identity, including limit tests for iron, arsenic, lead, heavy metals, chloride, sulphate and special tests if any of inorganic pharmaceuticals included in Indian Pharmacopoeia. Acids and Bases: Buffers, Water. Gastrointestinal Agents: Acidifying agents (Dil HCl), Antacids (Aluminium hydroxide gel, Aluminium phosphate, Magnesium carbonate, Magnesium trisilicate, combination preparations), Protectives and Adsorbents, Cathartics (Magnesium sulphate), Emetics (Copper sulphate and Sodium potassium antimony tartrate).	08
2	Essential and Trace Elements: Transition elements and their compounds of pharmaceutical importance, Iron and haematinics, mineral supplements. Cationic and anionic components of inorganic drugs useful for systemic effects.	08
3	Topical Agents: Protectives (Calamine, Zinc oxide, Talc, Titanium dioxide), Astringents (Alum, Zinc sulphate) and Anti-infective (Iodine, Povidone iodine Hydrogen peroxide, Chlorinated lime, Potassium permanganate, Silver nitrate, Boric acid)	05
4	Gases and Vapours: Oxygen, Anaesthetics and Respiratory stimulants.	05
5	Dental Products: Dentifrices, Anti-caries agents.	03
6	Major Intra and Extra-cellular Electrolytes: Physiological ions, Electrolytes used for replacement therapy, acid-base balance and combination therapy.	03
7	Miscellaneous Agents: Sclerosing agents, Expectorants, Poisons and Antidotes, Sedatives etc.	04
8	Pharmaceutical Aids: Anti-Oxidants, Preservatives, Filter Aids, Adsorbents, Diluents, Suspending agents, Colorants etc.	05
9	Inorganic radio-pharmaceuticals: Nuclear radiopharmaceuticals, nomenclature, methods of obtaining their standards and units of activity, measurement of activity, clinical applications and dosage, hazards and precautions.	04
	Total	**45**

Learning Outcomes: -

1) Learning method of manufacturing, physical/chemical properties, assay, storage and uses of important inorganic substances used for pharmaceutical purpose.

2) Learning biological role of inorganic ions and its possible involvement in various diseases.

3) Learning basic analytical methods for pharmaceutical inorganic substances.

Teaching & Learning Methodology:-

1. Lectures will be conducted with the aid of multimedia projector, black board, OHP etc.
2. Assignments based on course content will be given to the students at the end of each Unit/topic and will be evaluated at regular interval.
3. Specific discussion questions will be assigned each week.

Books Recommended:

1. Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche, Soine, Wilson.
2. Bentley and Driver's Text Book of Pharmaceutical Chemistry.
3. Pharmaceutical Chemistry – Inorganic by G.R.Chatwal.
4. Inorganic Pharmaceutical Chemistry by Dr. B.N.Suhagia, Dr. N.P.Jivani & Dr. C.N.Patel

E-Resources:

1. http://www.ionicviper.org
2. http://www.pharmainfo.net
3. http://www.chem1.com

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutical Chemistry & Pharmaceutical Analysis

Semester: I

Name of Subject: Pharmaceutical Chemistry-I (Inorganic) Practical

Subject Code: UGBP102P

(A minimum of 15 experiments shall be conducted)

1. Limit test for chlorides and sulphates in some official compounds in Pharmacopoeia.
2. Limit test for iron and lead.
3. Limit test for arsenic.
4. Identification of radicals in mixtures:
   a) Acid radicals
   b) Basic radicals.

Recommended books:

1. Indian Pharmacopoeia; Government of India; 2007.
2. Medicinal and Pharmaceutical Chemistry Inorganic; J. H. Block, E. B. Roche; Varghese Publication; Indian edition.
3. Text Book of Pharmaceutical Chemistry Revised by L. M. Atherden, Bentley & Driver's; Oxford Medical Publications, 8th edition.
4. The Science and Practice of Pharmacy by Remington, Lipincott, William and Wilkins; 20th edition.
5. Advanced Inorganic Chemistry; Cotton & Wilkinson; Wiley Eastern Ltd., Delhi, 18th Edition.
6. Inorganic Pharmaceutical Chemistry (Practical), Dhake & Belsare; 2nd Edition.
7. Text Book of Quantitative Chemical Analysis; Vogel's; ELBS UK, 5th Edition, 1996.
8. Quantitative Inorganic Analysis; Vogel's; ELBS UK, 5th Edition, 1996.
9. Practical Pharmaceutical Chemistry Vol. I & II; A.H. Beckett & J.B. Stenlake, CBS. Publishers; New Delhi, 4th Edition, 1986.
10. Inorganic Pharmaceutical Chemistry; T. O. Spine and C. O. Wilson, Roger's, Lea & Febiger, Philadelphia, USA, 8th edition, 1967.
11. Pharmaceutical Chemistry-Inorganic; G. R. Chatwal; Goel Publishing House.
12. Inorganic Pharmaceutical Chemistry : Dr. N.P.Jivani, Dr. B.N.Suhagia, Dr. C.N.Patel Nirav Prakashan , Ahmadabad

E-Resources:

1. http://www.ionicviper.org
2. http://www.pharmainfo.net
3. http://www.chem1.com

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutical Chemistry & Pharmaceutical Analysis

Semester: I

Name of Subject: Pharmaceutical Chemistry-II (Physical) Theory

Subject Code: UGBP103

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP103	Pharmaceutical Chemistry-II(Physical)	2	0	3	5	70	3	30	1.5	70	30	3	200

OBJECTIVES: -

- To acquaint the students with the fundamental principles & their applications of various physic-chemical properties with reference to Pharmacy.
- To study the physical, colligative and thermodynamic properties of matter.
- To study physico- chemical properties of solutions like phase rule, refractive index,
  Electro chemistry etc.
- To study ionic equilibrium, kinetics and adsorption phenomenon.

Prerequisites: - The student should have fundamental knowledge regarding various physical constant & Solubility behavior of solid.

Course Outline

Sr. No	Course Contents	Number of Hrs
1	**Physical states of matter** Intermolecular forces & their impact on state of the matter, dipole moment, dielectric constant, Various physical properties of liquid: Surface tension, viscosity, refractive index, optical rotation, Parachor.	**03**

2	**Solutions** Solubility, factors affecting solubility, Types of solutions, partition coefficient, Expression of concentration of pharmaceutical solutions & calculations. Ideal & real solutions. Henry's law, Raoult's law, colligative properties, determination of molecular weight based on colligative properties.	**05**
3	**Thermodynamics & Thermochemistry** First, second & third law of thermodynamics., isothermic & adiabatic processes, reversible processes, work of expansion, heat content, carnot cycle. Thermochemical laws, enthalpy, heat capacity. Gibb's & Helmoltz equation & chemical potential.	**06**
4	**Phase rule** One, two, & three component systems along with their applications. Solid- solid, solid - liquid, & liquid-liquid systems. Distillation of binary systems, azeotropic Mixtures, steam, vacuum, & fractional distillation.	**03**
5	**Electrochemistry** Properties of electrolyte solutions, electrolysis. Faraday's law of electrolysis, electrical cell, single electrode potential, half-cells & half cell potential, , Nernst equation, salt bridge, Theory of conductivity, equivalent conductance, mobility of ions, specific conductance. molar conductance, Debye-Huckel theory	**04**
6	**Adsorption** Basic principles, Freundlich and Gibbs adsorption isotherms, Langmuir theory of adsorption, application of adsorption	**03**
7	**Photochemistry** Basic principles, Consequence of light adsorption, Jablonski diagram, Lambert-Beer Law, Quantum efficiency.	**02**
8	**Chemical Kinetics** Zero, first and second orders reactions, complex reaction, theories of reaction kinetics, characteristics of homogeneous and heterogeneous catalysts, acid base enzyme catalysis.	**04**
Total		**30**

Learning Outcomes:-

At the end of the course, the student will be able to understand the fundamental concept of physical chemistry which will be helpful in the study of several other areas of chemistry and by understanding the physico-chemical properties they will be able to correlate with the other subjects of pharmacy.

Teaching & Learning Methodology:-

Lectures using black board and Power point Presentation, Visual Graphics, Practical demonstrations and Practical working.

Books Recommended:

1. Text book of Physical Chemistry: Samuel Glasstone, Macmillan India Limited, 2nd Ed. 1995.
2. Elements of physical chemistry; Peter Atkins, Julio de paula, Oxford University Press, 4th Ed. 2007.
3. Advanced Pharmaceutical Solids; Carstensen, J. T. Marcel Dekker
4. Chemical Stability Of Pharmaceuticals; Connors, K. A. , Wiley J.
5. Physical Pharmacy; Martin, Alfred, Waverley Publishers
6. Thermodynamics Of Pharmaceutical Systems; Conners, K. A., Wiley J.
7. Physical Chemistry with Applications to Biological System; Raymond, Chang, Collier McMillan International Ed.

E-Resources:-

1. Review articles from Elsevier journals
2. Review articles from www.sciencedirect.com

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmaceutical Chemistry & Pharmaceutical Analysis

Semester: I

Name of Subject: Pharmaceutical Chemistry-II (physical) Practicals

Subject Code: UGBP103P

The practical exercises are based on topics describe under theory. The practical's should broadly cover the following:

1. Determination of specific gravity of liquid solutions.
2. Determination of the Surface tension using Stalagnometer by drop weight method.
3. Determination of the Surface tension using Stalagnometer by drop count method.
4. Determination of viscosity of the given sample with the help of Ostwald viscometer.
5. Determination of viscosity of the given sample with the help of Ostwald viscometer.
6. Determination of the effect of temperature on viscosity.
7. Determination of the effect of concentration on viscosity.
8. Determination of effect of conc. on Surface tension.
9. Determination of the parachor by measuring Surface Tension using Stalagnometer.
10. Determination of Critical Micelle Concentration of surfactant by surface tension measurement.
11. Determination of the Adsorption Isotherm for adsorption of acetic acid on charcoal
12. Determination of the order and rate constant of reaction of acid catalyzed hydrolysis of ethyl acetate
13. Determination of the partition coefficient of iodine between carbon tetrachloride (CCl_4) and distilled water
14. Determination of the partition coefficient of benzoic acid between benzene and distilled water
15. Determination of the molecular weight of a non-polar compound by elevation of boiling point method.
16. Determination of the optical activity of the given compound by polarimeter
17. Determination of the refractive index by abbe's refractometer

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmacology

Semester: I

Name of Subject: Human Anatomy & Physiology-I (Theory)

Subject Code: UGBP104

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP104	Human Anatomy & Physiology-I	3	0	2	5	70	3	30	1.5	70	30	3	200

Objective of Course: Introductory exploration and analysis of selected topics in anatomy and physiology with a specific theme indicated by course title listed in a syllabus. This subject will take three times for credit as long as different topics are selected. (3 lecture hours)

Prerequisites: Anatomy and physiology studies required in a first semester, it is the base (core) of the major subjects in pharmaceutical studies like, pharmacology, Bio pharmaceutics and Biochemistry.

Course outline:-

S No	Course Contents	No. of hours
1	**Introduction and Scope:** of Anatomy and Physiology, and basic terminology, Structural organization of various organ systems, Extra-cellular fluids and their composition.	3
2	**cell: Structure and function of cell,** Physiology of cell	4

	organelles special emphasis on plasma membrane, development of action potential, transporter mechanisms cell membrane ,Cell cycle and its significance,	
3	**body tissue:** tissues and their subtypes with Characteristics, location and functions: epithelial tissue, muscular tissue, connective tissue and nervous tissue	4
4	**skeletal system:** Structure and function of skeleton, Histology of bone, Classification of joints, types of movements of joints, Disorders of joints,	4
5	**Muscular System:** Gross anatomy and physiology of skeletal muscles, smooth muscle and cardiac muscle, Physiology of muscle contraction and its components, muscle disorders.	4
6	**Haemopoietic system:** composition and functions of blood and its components, Haemopoiesis Blood grouping and its significance, Clotting factor and mechanism of coagulation, blood disorder: Anemia and its types, bleeding and clotting disorders	7
7	**Lymph and lymphatic system:** formation, Composition, circulation and functions of lymph, Basic physiology and functions of spleen. Disorders of Lymph and lymphatic system.	3
8	**Cardiovascular System:** Anatomy and physiology of the heart, Circulatory system including coronary circulation and pulmonary circulation, cardiac cycle , heart sounds and its factor affecting, Renin Angiotensin Aldosterone system and its significance, cardiovascular disorders like hypertension, atherosclerosis, angina pectoris, myocardial ischemia and infarction, congestive cardiac failure and cardiac arrhythmias.	9
9	**Digestive system**: Gross anatomy of the gastrointestinal tract, Structure and functions of associated organs like liver, pancreas and gall bladder, Physiology of digestion and absorption, phases of gastric secretion, GI disorder	5
10	**Immunity:** principles of immunity, innate immunity, adaptive immunity, acquired immunity, immune interactions (cellular and humoral immunity).	2

Learning Outcomes:

1. Define and correctly use scientific terminology in regard to human body and processes.
2. Apply principles of scientific inquiry, differentiate a theory from a hypothesis, and differentiate fact from opinion in regard to different human system.
3. Describe and practice laboratory safety guidelines relating to working with chemicals, micro-organisms and body fluids.
4. Show proficiency in taking lab practical exams, responding to questions quickly and accurately, effectively handling the pressure of a timed exam.

Teaching & Learning Methodology:-

1. Lectures will be conducted with the aid of multimedia projector, black board, OHP etc.
2. Assignments based on course content will be given to the students at the end of each Unit/topic and will be evaluated at regular interval.

Specific discussion questions will be assigned each week.

Books Recommended:

1. Guyton A.C. and Hall J.E.: Textbook of Medical Physiology – 10th Edition– W. B. Saunders
2. Tortora G. J. and Anagnodokos, N. P. Principles of Anatomy and Physiology (Harper and Colling Publishers, New York)
3. Chatterjee C. C. Human Physiology (Medical Allied Agency, Calcutta)
4. Goyal R. K. et al.: Practical Anatomy Physiology and Biochemistry (B.S. Shah Prakashan, Ahmedabad)
5. Ross and Wilson Anatomy and Physiology ,Churchill Livingstone ,Elsevier

E-Resources:

1. http://faculty.sdmiramar.edu/dtrubovitz/anatomy/
2. http://academic.pg.cc.md.us/~aimholtz/AandP/AandPLinks/ANPlinks.html
3. https://sites.google.com/site/bio2324atbcc/Home/bio23

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: Pharmacology

Semester: I

Name of Subject: Human Anatomy & Physiology-I (Practicals)

Subject Code: UGBP104P

The practical exercises are based on topics describe under theory. The practicals should broadly cover the following:

Sr. No	Course Contents
1	**Blood experiments:** Total count of RBC a. Total count of WBC b. Deferential leucocytes counts c. Determination Erythrocytes sedimentation rate d. Estimation of hemoglobin in blood e. Determination Blood group f. Determination of bleeding time and clotting time g. Effect of Osmosis on RBC
2	Microscopic study of different tissues and various organs of Cardiovascular, Digestive and Muscular System
3	Study of different systems with the help of charts and models: a. Study of the human skeleton and joints b. Muscular system c. Haemopoietic system d. Lymph and lymphatic system e. Cardiovascular System f. Digestive system
4	Recording of pulse rate, heart rate and blood pressure, basic understanding of Electrocardiogram-PQRST waves and their significance.

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: General

Semester: I

Name of Subject: Biostatistics and Computer Applications (Theory)

Subject Code: UGBP105

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP105	Biostatistics and computer applications	3	0	3	6	70	3	30	1.5	70	30	3	200

Objectives: -

Computer is very essential in each and every department. Especially basic. Excel, word, PowerPoint, internet basic and all this things we deal in our day to day life everywhere. So this subject will help students to be friendly with computer and be capable to work in today's innovative environment everywhere. To equip the students about the fundamental of biostatics in pharmaceutical science.

Prerequisites: - Student should have basic knowledge of computers, which would enable them to learn the course in a more effective manner.

Course outline:-

Sr. No	Course Contents	No. of Hours
1	**Basic fundamentals of computer.** Definition, characteristics, history, computer terminology, computer organization, input & output devices, storage devices (including latest devices), classifications of computers (including current computer systems), application of computers in pharmacy, introduction to computer virus, problems associated with virus infection and its remedies	04

2	**Windows Basic introduction.** **Operating Systems** Definition, functions of an operating system, types of operating systems and their characteristics, difference between operating system and application Software. Basic Dos commands both internal and external.	04
3	**MS Word:** Word Essentials, the word workplace, Parts of MS Word screen, Typing and Editing, Finding and Replacing, Autocorrect and Auto text, Reusing Text and Graphics, use of spell-check & grammar, thesaurus and scientific symbols, viewing of document by various ways Editing Tools, Formatting Text Formatting Text Character, Formatting Paragraphs, Formatting and Sorting Lists, Page Design and Layout, Page Setup : Margins, Page Numbers, and Other Items, Newspaper -style Columns, Working with Tables Creating and formatting of tables and sorting, merging etc. of data in tables. Inserting, deleting and sizing of rows and columns in tables, Opening, Saving and Protecting Documents, locating and Managing Documents Printing, Assembling Documents with Mail Merge, references.	06
4	**Ms Excel:** Introduction to EXCEL worksheet, calculations in EXCEL, preparation of templates for application in pharmaceutical chemistry, pharmaceutical technology, pharmacology and Pharmacognosy (statistical treatment of data for Beers Lamberts curve, solution of problems based on physical chemistry, pharmaceutical engineering, stability study, area under the curve, bio-assay, bioequivalence study, extraction, Rf value, etc.)	06
5	**MS PowerPoint** Creating and viewing a presentation, adding animations and managing slides etc	04
6	**Networking & Internet:** Computer networks, networking technology, components of network. Internet – Basic terms, software and hardware requirement for internet, process of internetworking, internet tools, Email- components and working, study of pharmaceutical	04

	web sites and search engines, searching through pharmaceutical data bases, study of patent websites.	
7	**Introduction to the following software** MS Paint, MS Access, Outlook, Adobe acrobat reader, Adobe Professional, Chemdraw, ISIS Draw, Nero Burning ROM.	04
8	**Basic Biostatistics** Introduction, Mean, Median; Standard error, Standard deviation, Variance. Special attention must be given to arithmetic expressions. Hierarchy of operation, library functions such as logarithm, square root, standard deviation, sum, average, t-test, ANOVA, Z-test, etc. Drawing graphs in EXCEL line graph, histogram, pie-chart- At least one graph for each discipline of chemistry, pharmaceutical technology, pharmacology and Pharmacognosy –Editing chart features such as annotation, labeling of axis, changing legends etc.	13

Learning Outcomes:-

1. **Contributions:**
   a. Students will be able to work in computer freely.
   b. Good enough in making any short of files which will help them in studies and in future when they will go for work.
   c. With the help of internet they will be more innovative in their ideas and this will have good impact in their result also.
2. **Logic:**

   a. This subject have many good things like word, word will help students to make proper official things for their studies and work.
   b. Excel will help them in calculation, and then graph and all which help them in studies where they will be need excel charts and all for their experiments.
   c. PowerPoint which help them in their college time and also when they will face outer world.

   Most important internet, this part of subject is a need in today's world; it will help students grow more with their ideas

Teaching & Learning Methodology:-

- Lectures will be conducted with the aid of multimedia projector.
- More and more practice on computer.

Books Recommended:

1. Taxali R.K., P.C. Software for Windows 98 made simple – 8th Edition – 2002 – Tata Mc, New Delhi.
2. WORD 2000, Guy Hart Davis, BPB Publications, New Delhi, 1999
3. MS Office: Step by Step, Joyce Cox, Prentice Hall of India, New Delhi, 2007
4. Accessing and Analysing Data with MS EXCEL, Cornell, Prentice Hall of India,
5. New Delhi, 2007.
6. Manuals available with the software

E-Resources:

1. http://www.gcflearnfree.org
2. http://www.gcflearnfree.org
3. http://www.electricteacher.com/tutorials.htm
4. http://publiclibrary.cc/computerinternettutorial.htm
5. http://www.comptechdoc.org/basic/basictut/

Faculty: - Pharmaceutical Sciences

Department: General

Semester: I

Name of Subject: Biostatistics and Computer Applications (Practicals)

Subject Code: UGBP105P

The practical exercises are based on topics describe under theory. The practicals should broadly cover the following:

1. Exercises on word processing to execute various commands in preparing and editing documents.
2. Preparation of documents and implementing various formatting parameters in MS Word.
3. Working with footnotes and endnotes, referencing documents
4. Working with auto-indexing, table and figure numbering
5. Preparing and editing worksheets in MS EXCEL, Inserting formulas for different functions in MS EXCEL like sum, average, standard deviation, logarithm, square root etc.
6. Drawing various charts using pharmaceutical experimental data
7. Preparation of power point presentation with animation
8. Working with internet browsing and using search engines
9. E-mailing using address book and applying mail merge
10. Surfing various pharmaceutical web sites, online journals and patent search
11. Exercise on Mean, Median, Mode, T-test, ANOVA etc. (Minimum 5 practicals)

C. U. SHAH UNIVERSITY

Faculty: - Pharmaceutical Sciences

Department: General

Semester: I

Name of Subject: Communication Skill

Subject Code: UGBP106

Teaching & Evaluation Scheme:-

Sr. No	Subject Code	Subject Name	Teaching Scheme (Hrs)				Evaluation Scheme							
			T	TU	P	Total	TH Ext	Hrs	TH Int	Hrs	Pract Ext	Pract Int	Hrs. Ext/Int	Total
1	UGBP106	Communication Skill	2	0	0	2	70	3	30	1.5	---	---	---	100

Objectives: - To impart basic skills of communication in English through intensive practice to the students of Pharmacy so as to enable them to function confidently and effectively in that language in the professional sphere of their life.

Prerequisites: - English is an International Language so basic knowledge of English is desirable.

Course Content:-

Sr. No	Course Contents	No. of hours
1	Grammar – Structure of sentences – Active / Passive Voice – Direct / Indirect Narration.	5
2	Essay – Descriptive – Comparative – Argumentative – Thesis statement-Structure of opening / concluding paragraphs – Body of the essay.	5
3	Reading Comprehension – Global – Contextual – Inferential – Select passages from recommended text.	4

4	Business Correspondence – Letter Writing – Formal. Drafting. Biodata-Resume′- Curriculum Vitae.	4
5	Report Writing – Structure, Types of report – Practice Writing.	5
6	Communication / Public Speaking skills, Features of effective speech, verbal/nonverbal.	5
7	Group discussion – principle – practice.	2

Learning Outcomes:-

The course would help the student to achieve more confidence in terms of conversation/communication.

Teaching & Learning Methodology:-

The topics must be conveyed through plenty of examples. Lecture classes must be conducted as lecture-cum-tutorial classes. It is a course that aims to develop skills and therefore "practical" in orientation. Plenty of exercises of various kinds must be done by the students both inside and outside the classroom. The teacher must not depend on a single or a set of two or three text books, but choose his/her materials from diverse sources. Keeping in view the requirements of his/her students, the teacher may have to prepare some teaching and exercise material. For practice in listening, good tape recorders can be used if the more advanced facilities (for example, language laboratory) are not available. In fact they can be used very fruitfully. The teacher must function as a creative monitor in the class-room. Minimum time should be spent in teaching phonetic symbols, stress, intonation, etc. The aim should be to enable the students to find out for him/herself the correct pronunciation of a word from a learner's dictionary. In teaching speaking, emphasis should be on clarity, intelligibility and reasonable fluency rather than on "correct" pronunciation of words. Classroom presentation and group discussion sessions should be used to teach speaking.

Books Recommended:

1. Mark MaCormack : "Communication"
2. John Metchell " How to write reports"
3. S R Inthira & V Saraswathi " Enrich your English – a) Communication skills b) Academic skills " Publisher CIEFL & OUP
4. R.C. Sharma and K.Mohan , "Business Correspondence and Report Writing " , Tata McGraw Hill , New Delhi , 1994
5. L.Gartside , "Model Business Letters" , Pitman , London , 1992

6. Longman , "Longman Dictionary of Contemporary English" (or 'Oxford Advanced Learner's Dictionary of Current English' , OUP, 1998.
7. Maxwell Nurnberg and Rosenblum Morris, "All About Words", General Book Depot, New Delhi , 1995

E-Resources:

1. www.edufind.com/english/grammar/
2. www.englishclub.com › Learn English
3. www.englishgrammarsecrets.com/
4. www.englishleap.com/grammar