Total Credits = 23

SEMESTER 2nd		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BRMIS1-201	Human Anatomy & Physiology- II	3	1	0	40	60	100	4
BRMIS1-202	Microbiology	3	1	0	40	60	100	4
BRMIS1-203	Quality Management, Patient Safety & Disaster Management	1	1	0	40	60	100	2
BRMIS1-204	Applied Physics	2	1	0	40	60	100	3
BRMIS1-205	Computer Applications in Pharmacy (Theory)	3	1	0	40	60	100	4
BRMIS1-206	Human Anatomy & Physiology- II Lab	0	0	4	60	40	100	2
BRMIS1-207	Microbiology Lab	0	0	4	60	40	100	2
BRMIS1-208	Computer Applications in Pharmacy (Practical)	0	0	4	60	40	100	2
Total		--	--	--	380	420	800	23

HUMAN ANATOMY & PHYSIOLOGY- II

Subject Code: BRMIS1-201	L	T	P	C	Duration: 60 (Hrs.)
	3	1	0	4	

Course Objectives:

- Students will be able to learn the terminology of the subject and basic knowledge of the cell structure and function of organs, organ systems and body fluids in normal human body.

Course Outcomes:

- Demonstrate knowledge of general overall physiological principles associated with metabolic processes; musculoskeletal system; cardiovascular system; aerobic and anaerobic program design

UNIT-I **(15 Hrs)**

1. Respiratory system:

- Parts of Respiratory system structure of nose, nasal cavity, larynx, trachea, lungs, pleura, bronchopulmonary segments, Physiological Anatomy, Functions of the respiratory system.
- Types of respiration, respiratory membrane. - Lung volumes and capacities, vital capacity and factors affecting it.
- Transport of Oxygen-Forms of transportation, Oxy-hemoglobin dissociation curve and factors affecting it. - Transport of Carbon-Dioxide- Forms of transportation.
- Hypoxia-Definition, types, effects of hypoxia.
- Cyanosis-Definition and types.
- Artificial Respiration- CPR

UNIT-II **(15 Hrs)**

2. Nervous System.

- Neuron, classification of Nervous System. Meninges, ventricles, CSF, Gross features of cerebrum, midbrain, pons, medulla oblongata, cerebellum, name of basal nuclei. Blood supply of brain, cranial nerves. Spinal cord and spinal nerves. Visual & auditory pathways, Structure of neuron, functions of nervous system.
- Classification and properties of nerve fibres Synapse structure and types Receptors. Definition, classification, properties, Reflex Arc Ascending and Descending tracts names and functions, Functions of Hypothalamus. Functions of Cerebellum and Basal Ganglia Functions of Cerebral Cortex, Autonomic Nervous System, Actions of sympathetic and parasympathetic system and their comparison.

UNIT-III **(15 Hrs)**

3. Urinary System:

- Parts of Urinary system, location and gross structure of kidney, ureter, urinary bladder, urethra. Kidneys structure of nephron, functions of kidney, Glomerular filtration Rate (GFR) and factors affecting it , Counter Current Mechanism , Bladder-its innervation, micturition reflex.

4. Reproductive system:

- Parts of male reproductive system, gross structure of testis, vas deferens, epididymis, prostate. Parts of female reproductive system, gross structure of uterus, ovary, fallopian tube, mammary gland.
- Male Reproductive System-Stages of spermatogenesis, function of Testosterone - Female Reproductive System-Ovulation, menstrual cycle, functions of Estrogen and progesterone

UNIT-IV **(15 Hrs)**

4. Endocrine glands:

- Name of all endocrine glands, gross structure & functions of pituitary gland, adrenal gland, thyroid gland and parathyroid gland.
- Classification of Endocrine glands and their hormones. -Thyroid Gland-Physiological Anatomy, hormones secreted, functions, disorders Hypo and hyper secretion of hormone. -Adrenal Gland-Adrenal Cortex-Physiological Anatomy, its hormones and functions. - Adrenal Medulla-Hormones, functions. - Pituitary Gland- Anterior and posterior pituitary hormones and their functions, disorders.-Pancreas- Hormones and their functions, Diabetes Mellitus-types, pathophysiology, signs and symptoms. - Parathyroid Gland-Hormones and their functions.

Recommended Text Books / Reference Books:

1. Ross and Wilson, ‘Anatomy & Physiology.
2. Clark, ‘Anatomy and Physiology: Understanding the Human Body’.
3. Pearce, ‘Human Anatomy for Nurses’.

MICROBIOLOGY

Subject Code: **BRMIS1-202** **L T P C** **Duration: 60 (Hrs.)**
3 1 0 4

Course Objectives:

- To introduce to the students regarding various kinds of microbes in terms of their structure, growth etc. & collection of clinical samples their processing and identification.

Course Outcomes:

- Describe/explain the processes used by microorganisms for their replication, survival, and interaction with their environment, hosts, and host population.

Unit-1 **10 Hours**

1. **Introduction and History of Microbiology**
   - Classification-Prokaryotes, Eukaryotes, Viruses, Fungi.
   - Morphology-size, shape, arrangement
   - Special characteristics–spores, capsules, enzymes, mortality, reproduction
   - Gram staining, ZN staining (e) Different types of microscopes

Unit-2 **20 Hours**

1. **Sterilization:**
   - Definition and different methods of sterilization including – Gaseous sterilization Plasma sterilization.
   - Advantage and disadvantage of various methods and their controls.
   - Sterilization of different instruments used in patients.
   - Preparation of materials for Autoclaving: packing, loading, holding time, unloading
2. **Disinfection**:
   - Definition and different type of methods including High level disinfectants
   - Disinfection of patient care unit and rooms(O.T., Wards, ICUs & Laboratories)
   - Central supply department Areas and floor plan for instrument cleaning high level disinfection & sterilizing area.
3. **Asepsis:**
   - Universal Precautions
   - Use of aseptic precautions to prevent infection,
   - Safety mechanisms including vaccination in prevention of blood borne infections

Unit-3 **20 Hours**

- **Culture media**- Liquid and Solid, Collection & transport of specimens for Microbiological Investigations
- **Infection** - Source - Portals of entry - Spread of infection. Antimicrobial agents - Fundamental aspects - Antibiotic sensitivity testing.
- **Immunity** – Non specific - Natural & Acquired - Allergy and Anaphylaxis Outline of common infections, diseases, etiology, treatment and prevention. - Skin and soft tissue infections - Respiratory tract infections - Meningitis - Enteric infections - Urinary tract infections - Ocular infections - Wound infections - PUO Hospital acquired infections - Catheter associated urinary tract infections (CAUTI) - Ventilator associated pneumonia (VAP) - Catheter related blood stream infections (CRBSI) - Surgical Site Infection (SSI 10. Pathogenic yeasts and fungi.

Unit-4 **10 Hours**

1. **Virology.**
   - With special reference to hepatitis, poliomyelitis, HIV & Influenza.
   - Viruses relevant in dialysis patients including their modes of transmission.

- Diseases communicable to healthcare workers in hospital set up and their prevention.
- Prevention measures to combat spread of these infections by monitoring and control.

2. Microbial surveillance and sampling.

- Bacteriology of air, water and food.
- Hospital infection Control & Influenza.
- Viruses relevant in dialysis patients including their modes of transmission.
- Diseases communicable to healthcare workers in hospital set up and their prevention.
- Prevention measures to combat spread of these infections by monitoring and control.
- Microbial surveillance and sampling.
  a) Bacteriology of air, water and food
  b) Hospital infection Control.

Recommended Text Books / Reference Books:

1. M.J. Jr., Pelczar, E.C.S., Chan and R. Krieg, 'Microbiology', McGraw Hill.
2. G.J. Tortora, B.R. Funke and C.L. Case, 'Microbiology-An Introduction', Benjamin Cummings.
3. B.D. Davis, R. Dulbecco, H.N. Eisen and H.S. Ginsber, 'Microbiology', Harper & Row, Publishers.
4. R.Y. Stainer, J.L. Ingraham, M.L. Wheelis and P.R. Palmer, 'General Microbiology', MacMilan Press Ltd.

QUALITY MANAGEMENT, PATIENT SAFETY AND DISASTER MANAGEMENT

Subject Code: **BRMIS1-203** **L T P C** **Duration: 30 (Hrs.)**
1 1 0 2

Course Objective:

- The course will help students to understand the basic concepts of quality health Care and develop skills to implement sustainable quality assurance, Quality control and Quality improvement program in the healthcare system particularly in Operation theatre services.
- They shall be prepared to work in healthcare system primarily taking care of patient safety.

Course Outcomes:

- By learning Biomedical Waste management they will help prevent harm to workers, property, the environment and the general public from hazardous and infectious waste.
- While living on this earth humans and all other living creatures may face many types of natural and manmade disasters. Some contents of this subject are focused on preparing the students to deal with healthcare requirement during these disasters and help the life.

Unit -1 **(10 Hrs)**

1. Quality management system (QMS):

- Understanding Quality and components of QMS i.e. Quality assurance, Quality control and Quality improvement.
- The basic concepts of quality in health Care.
- Standards and Norms.
- Quality Improvement Tools.
- Introduction to NABH guidelines.
- Implementation of QMS in Operation theatres.

Unit -2. **(5 Hrs)**

1. Basics of emergency care and life support skills:

- Vital signs and primary assessment.
- Basic emergency care – first aid and triage.
- Basic life support (BLS) following cardiac arrest.

Unit -3. **(10 Hrs)**

1. **Fundamental aspects of BLS:**

- immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system,
- Initial recognition and response to heart attack and stroke.
- Ventilations including use of bag-valve-masks (BVMs) d. Choking, rescue breathing methods e. One- and Two-rescuer CPR.

Unit -4. **(5Hrs)**

1. Fundamental aspects of BLS:

- Early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED).
- Managing an emergency including moving a patient
- Testing student's skills with focus on airways management and chest compressions.

Recommended Text Books / Reference Books:

1. Hospital Emergency Management Dr Robbert D.Mullar
2. Gis In Hospital And Healthcare Emergency Mangement Edited By Ricskinner
3.Handbook Of Disaster & Emergencuy Management Aarimkhoram & Mahesh

APPLIED PHYSICS

Subject Code: BRMIS1-204 **L T P C** **Duration: 45 (Hrs.)**
2 1 0 3

Objective:

- The subject will make them capable of understanding the physics involved in working of various instruments used in operation theatres.

UNIT-1 **(10 Hrs)**

- Energy: Potential energy and Kinetic energy, Mechanical efficiency, Energy and mass.
- Density of Gases: Molecular weight, Gram molecular weight. Avogadro number, Molecular agitation, Density.

UNIT-2 **(10 Hrs)**

- Heat: Thermometry, Thermistor, Thermocouple. Heat capacity of gases. Newton's Law of cooling, Convection, Conduction, Thermal Conductivity and Specific heat capacity.

UNIT-3 **(10 Hrs)**

- Pressure: Dalton's Law of partial pressure, Pressure gauges vapour pressure and ambient pressure.
- Compressed gases, Gas laws and their applications, filling of compressed gases and Filling ration.

UNIT-4 **(15 Hrs)**

- Flow of fluids: Viscosity, Law and laminar flow rate. Turbulent flow pressure loss due to abrupt change in bore of tube. Bernoulli's principle and clinical application of Bernoulli theorem,
- Diffusion, Osmosis, Law of diffusion, Isotonic solution. Oxidation, combustion, flames, deflagrations. Prevention of explosions

Recommended Text Books / Reference Books:

1. A Textbook of Fluid Mechanics R.K. Bansal
2. Schaum's Easy Outline of Applied Physics, Revised Edition
3. Optical Propagation in Linear Media.

COMPUTER APPLICATIONS IN PHARMACY (Theory)

Subject Code: BRMIS1-205 **L T P C** **Duration: 60(Hrs.)**
3 1 0 4

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

- know the various types of application of computers in pharmacy
- know the various types of databases
- know the various applications of databases in pharmacy.

Course Outcomes:

- This subject deals with the introduction Database, Database Management system,
- computer application in clinical studies and use of databases.

UNIT -1. **(10 hours)**

1. **Number system**:
    - Binary number system, Decimal number system, Octal number system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division.
    - Concept of Information Systems and Software : Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the products.

UNIT-2. **(10 hours)**

1. **Web technologies**:
    - Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and Server Products
2. **Introduction to databases**:
    - MYSQL, MS ACCESS, Pharmacy Drug Database.

Unit-3. **(15 Hours)**

1. **Computer networks:**
    - introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
    - Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer
    - Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Unit-4. **(25 Hours)**

1. **Introduction to MS-Word:**
    - introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

2. **Introduction to Excel:**
    - introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
3. **Introduction to power-point:** introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
4. **Introduction of Operating System:**
    - introduction, operating system concepts, types of Operating system.
5. **Computers as data analysis in Preclinical development**.
    - Chromatographic dada analysis (CDS), Laboratory Information management System (LIMS) and Text Information Management System (TIMS).

LAB HUMAN ANATNOMAY & PHYSIOLOGY II

Subject Code: **BRMIS1-206** **L T P C** **Duration: 30 Hrs**
0 0 4 2

Objective: Demonstrations can be done with the help of models, charts and histological slides.

1. Demonstration of parts of excretory system
2. Demonstration of various parts of nervous system (brain and spinal cord)
3. Demonstration of reflex action
4. Demonstration of various parts of human reproductive system
5. To study digestive system from charts and TS of liver, spleen and pancreas from permanent slides.
6. Study of Urinary system
7. Study of Genital system (male & female) from charts and TS of testis and ovaries.
8. To study nervous system
9. To study various body fluids.

MICROBIOLOGY PRACTICAL LAB

Subject Code: **BRMIS1-207** **L T P C** **Duration: 30 Hrs**
0 0 4 2

EXPERIMENTS

1. To prepare cleaning agents & to study the technique for cleaning & sterilization of glassware.
2. To demonstrate the working & handling of Compound microscope.
3. To demonstrate the method of sterilization by autoclave, hot air oven.
4. To demonstrate the method of sterilization of media/solution by filtration.
5. To prepare working dilution of commonly used disinfectants.
6. To demonstrate the different morphological types of bacteria.

7. Preparation of culture media from each type.
8. To demonstrate aerobic culture and anaerobic culture.
9. To demonstrate biomedical waste segregation.
10. To plot growth curve of bacteria.

COMPUTER APPLICATIONS IN PHARMACY (Practical)

Subject Code: BRMIS1-208 **L T P C** **Duration: 30(Hrs.)**
0 0 4 2

1. Design a questionnaire using a word processing package to gather information
2. About a particular disease.
3. Create a HTML web page to show personal information.
4. Retrieve the information of a drug and its adverse effects using online tools.
5. Creating mailing labels Using Label Wizard , generating label in MS WORD.
6. Create a database in MS Access to store the patient information with the required fields Using access.
7. Design a form in MS Access to view, add, delete and modify the patient record in the database.
8. Generating report and printing the report from patient database.
9. Creating invoice table using – MS Access.
10. Drug information storage and retrieval using MS Access.
11. Creating and working with queries in MS Access.
12. Exporting Tables, Queries, Forms and Reports to web pages.
13. Exporting Tables, Queries, Forms and Reports to XML pages.

Recommended books (Latest edition):

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins – Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Infopath – Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi – 110002.