

**MRSPTU B.SC. (ANAESTHESIA TECHNOLOGY) SYLLABUS
BATCH 2021 ONWARDS (4 YEARS COURSE)**

Total Credits = 24

SEMESTER 1st		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-101	Human Anatomy & Physiology-I	3	1	0	40	60	100	4
BANTS1-102	Basic Anaesthesia Technology	3	1	0	40	60	100	4
BANTS1-103	Anaesthesia Equipments and Technology	3	1	0	40	60	100	4
BANTS1-104	Communication Skills	2	0	0	40	60	100	2
BANTS1-105	Drug Abuse: Problem, Management and Prevention	3	0	0	40	60	100	3
BANTS1-106	Human Anatomy & Physiology-I Laboratory	0	0	4	60	40	100	2
BANTS1-107	Basic Anaesthesia Technology Laboratory	0	0	4	60	40	100	2
BANTS1-108	Anaesthesia Equipments and Technology Laboratory	0	0	4	60	40	100	2
BANTS1-109	Communication Skills-Laboratory	0	0	2	60	40	100	1
Total		-	-	-	440	460	900	24

Total Credits = 24

SEMESTER 2nd		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-201	General Microbiology	3	1	0	40	60	100	4
BANTS1-202	Human Anatomy & Physiology-II	3	1	0	40	60	100	4
BANTS1-203	Anaesthesia Technology	3	1	0	40	60	100	4
BANTS1-204	Biochemistry and Metabolism	3	1	0	40	60	100	4
BANTS1-205	Environmental Studies	2	0	0	40	60	100	2
BANTS1-206	General Microbiology Laboratory	0	0	4	60	40	100	2
BANTS1-207	Human Anatomy & Physiology Laboratory- II	0	0	4	60	40	100	2
BANTS1-208	Anaesthesia Technology Laboratory	0	0	4	60	40	100	2
Total		-	-	-	380	420	800	24

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Total Credits = 24

SEMESTER 3rd		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-301	Anatomy & Physiology Relevant to Anaesthesia	3	1	0	40	60	100	4
BANTS1-302	Obstetrics & Gynecology	3	1	0	40	60	100	4
BANTS1-303	General Pharmacology	3	1	0	40	60	100	4
BANTS1-304	General Anaesthesia	3	1	0	40	60	100	4
BANTS1-305	Medical Terminology & Medical Records	2	0	0	40	60	100	2
BANTS1-306	Obstetrics & Gynecology Laboratory	0	0	4	60	40	100	2
BANTS1-307	General Pharmacology Laboratory	0	0	4	60	40	100	2
BANTS1-308	General Anaesthesia Laboratory	0	0	4	60	40	100	2
Total		-	-	-	380	420	800	24

Total Credits = 23

SEMESTER 4th		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-401	General Medicine	3	1	0	40	60	100	4
BANTS1-402	Regional Anaesthesia	3	1	0	40	60	100	4
BANTS1-403	Anaesthesia Technology	3	1	0	40	60	100	4
BANTS1-404	Haematology & Blood Bank	3	1	0	40	60	100	4
BANTS1-405	Basic Concepts of Anaesthesia	2	0	0	40	60	100	2
BANTS1-406	Health Education & Community Pharmacy	1	0	0	40	60	100	1
BANTS1-407	Regional Anaesthesia Laboratory	0	0	4	60	40	100	2
BANTS1-408	Anaesthesia Technology Laboratory	0	0	4	60	40	100	2
Total		-	-	-	360	440	800	23

**MRSPTU B.SC. (ANAESTHESIA TECHNOLOGY) SYLLABUS
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Total Credits = 21

SEMESTER 5th		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-501	Intensive Care Unit	3	1	0	40	60	100	4
BANTS1-502	Central Sterile Supply Department	3	1	0	40	60	100	4
BANTS1-503	Health Care	3	1	0	40	60	100	4
BANTS1-504	First Aid	2	0	0	20	30	50	2
BANTS1-505	Medical Law and Ethics	2	0	0	40	60	100	2
BANTS1-506	Intensive Care Unit Laboratory	0	0	4	60	40	100	2
BANTS1-507	Central Sterile Supply Department Laboratory	0	0	4	60	40	100	2
BANTS1-508	Healthcare Delivery System	1	0	0	40	60	100	1
Total		-	-	-	340	410	750	21

Total Credits = 21

SEMESTER 6th		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-601	Anaesthesia for Specialty Surgeries	3	1	0	40	60	100	4
BANTS1-602	General Pathology	3	1	0	40	60	100	4
BANTS1-603	Medicine Relevant to Anaesthesia Technology	3	1	0	40	60	100	4
BANTS1-604	Research Methodology & Biostatistics	3	1	0	40	60	100	4
BANTS1-605	Innovation & Entrepreneurship	2	0	0	40	60	100	2
BANTS1-606	Anaesthesia for Speciality Surgeries Laboratory	0	0	4	60	40	100	2
BANTS1-607	Biomedical Waste Management	1	0	0	40	60	100	1
Total		-	-	-	300	400	700	21

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Total Credits = 20

SEMESTER 7th		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-701	Hospital Training & Report	0	0	40	80	120	200	20
	Total	0	0	40	80	120	200	20

The candidates will be supervised by the concerned faculty & the project report will be submitted following competitions. The Viva-Voce examination shall be conducted by external expert.

Total Credits = 20

SEMESTER 8th		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BANTS1-801	Internship and Dissertation	0	0	40	80	120	200	20
	Total	0	0	40	80	120	200	20

The candidate shall undergo internship in relevant departments. The internship report shall be submitted at the end and Viva-Voce examination shall be conducted by external expert.

Overall Marks / Credits

Semester	Marks	Credits
1st	900	24
2nd	800	24
3rd	800	24
4th	800	23
5th	750	21
6th	700	21
7th	200	20
8th	200	20
Total	5150	177

HUMAN ANATOMY & PHYSIOLOGY- I

Subject Code: BANTS1-101

**L T P C
3 1 0 4**

Duration: 60 Hrs

COURSE OBJECTIVES:

The objective of this course is to develop a basic. Understanding about the structure and functions of the human body and body organs.

COURSE SYLLABUS

UNIT I

12 Hours

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.

UNIT II

12 Hours

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.

UNIT III

12 Hours

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.

UNIT IV

12 Hours

Nervous system: Organization of nervous system, neuron, neuroglia, classification and properties of nerve fiber, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid, structure and functions of brain (cerebrum, brain stem and cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflex activity)

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.

UNIT V

12 Hours

Special senses: Structure and functions of eye, ear, nose and tongue and their disorders.

Endocrine system : Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland, thymus and their disorders.

Suggestive Readings

Text Books:

- Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson Churchill Livingstone, New York
- Text book of Medical Physiology by Arthur C, Guyton and John.E Hall. Miamisburg, OH, U.S.A

Reference Books:

- Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam, Jaypee brother's medical publishers, New Delhi
- Principles of Anatomy and Physiology by Tortora Grabowsk, Palmetto, GA, U.S.A

HUMAN ANATOMY & PHYSIOLOGY LABORATORY -I

Subject Code: BANTS1-106

**L T P C
0 0 4 2**

4 Hours/Week

COURSE OBJECTIVES:

This course emphasizes the importance of identification of the human body organs.

COURSE SYLLABUS

• **LIST OF PRACTICALS**

- 1) Identification of Various Organs in the human Body:
 - a) Liver
 - b) Heart
 - c) Kidney
 - d) Nephron
 - e) Lungs
 - f) Neuron
 - g) Ovary
- 2) Demonstration of various parts of body
- 3) Estimation of blood pressure, cardiac cycle and respiration.
- 4) Identification of blood cells and different counts.
- 5) The compound Microscope.
- 6) Hemoglobin percentage and color index.
- 7) Blood groups
- 8) Artificial respiration and C.P.R.
- 9) Pulse rate, Heart rate and measurement of Blood Pressure.
- 10) Demonstrate the skills of Assessment of Breath Sounds, Respiratory Rate and Pulmonary Function Tests.

Suggestive Readings

Text Books:

- Basic Anatomy and Physiology by N Murgesh, Sathya.
- Anatomy and Physiology by Anne Waugh and Kathleen JW Wilson; Churchill LivingStone; London, Ross and Wilson.

Reference Books:

- Anatomy and Physiology by Pears, JP Brothers
- Anatomy and Physiology by Sears, ELBS

BASIC ANAESTHESIA TECHNOLOGY

Subject Code: BANTS1-102

**L T P C
3 1 0 4**

Duration: 60 Hrs

COURSE OBJECTIVES:

A primary purpose of the course is to know about uses of basic anesthetic instruments and basic anesthetic procedure.

COURSE SYLLABUS

UNIT I

15 Hours

Anaesthesia Equipment

Boyle's Machine & It's functioning, Boyle's vaporizers

Magill's breathing circuit, Bain's breathing circuit, pediatrics anaesthesia circuit Gas cylinders & flow meters

Carbon dioxide absorption canisters.

UNIT II

10 Hours

Suction apparatus foot operated, electrically operated AMBU bag & laryngoscope, endotracheal tubes Catheters, face masks, ventimasks

Anaesthesia Ventilators & Monitoring.

UNIT III

15 Hours

Pharmacology related to Anaesthesia

General Principles- Pharmacological classification of Drugs, Route of drug administration, precautions in administration, principles of drug toxicity, prevention & treatment of poisoning adverse drug reaction.

Sedatives & hypnotics, barbiturates, morphine & others.

UNIT IV

20 Hours

Important groups of drugs- Antimicrobial agents & anti-allergy drugs, Diuretics & NSAIDS.

Pre-anesthetic medication

Local Anesthesia - technique & agents

Spinal Anesthesia- technique & agents

General Anaesthesia - technique & agents Antiarrhythmic drugs

Treatment of shock

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Suggestive Readings

Text Books:

- Textbook of Anaesthesia by G. Smith & A.R. Aitkenhead's, ELSEVIER
- Short Textbook of Anaesthesia by Ajay Yadav, JP Brothers

Reference Books:

- Drugs & Equipments in Anaesthetic Practice by Arun Kumar Paul, Elsevier
- Equipment Drugs Waveforms in Anaesthesia Practical by P. Kumar, JP Brothers

BASIC ANAESTHESIA TECHNOLOGY LABORATORY

Subject Code: BANTS1-107

**L T P C
0 0 4 2**

4 Hours/Week

COURSE OBJECTIVES:

In this course to know about how to use anesthetic instruments and techniques in clinical area.

COURSE SYLLABUS

LIST OF PRACTICALS

- 1) Identification & demonstration of the working of equipment's.
- 2) Practical work conducting as per that theory syllabus.

Suggestive Readings

Text Books:

- Textbook of Anaesthesia by G. Smith & A.R. Aitkenhead's, ELSEVIER
- Short Textbook of Anaesthesia by Ajay Yadav, JP Brothers

Reference Books:

- Drugs & Equipments in Anaesthetic Practice by Arun Kumar Paul, Elsevier
- Equipment Drugs Waveforms in Anaesthesia Practical by P. Kumar, JP Brothers

ANAESTHESIA EQUIPMENTS AND TECHNOLOGY

Subject Code: BANTS1-103

L T P C
3 1 0 4

Duration: 60 Hrs

COURSE OBJECTIVES:

In this course to study about the basic equipments used in anaesthesia and various techniques and managements in anaesthesia.

COURSE SYLLABUS

UNIT I

12 Hours

Preanesthetic Checkup (PAC)

History, pre-operative, Intra operative & post operative care

UNIT II

12 Hours

Anaesthesia techniques

Historical background, Types of Anaesthesia, Choice of Anaesthesia

General Anaesthesia-Indication of general anaesthesia

Endotracheal intubations

General Anesthesia Techniques

Local Anaesthesia Techniques

Blood Transfusion

Monitoring in the Operation Theatre

Positioning of Patient

UNIT III

12 Hours

Anaesthesia Instrument

Anaesthesia Instrument planning for various surgical procedure and Auxiliary instrumentation

Boyles apparatus, face mask, types of circuits, T-piece, Circle system

Supply of compressed gases, liquid oxygen, storage & supply system, reducing pressure valves.

Vaporisers

Intubation equipment

Artificial airways (oral and nasal endotracheal tubes, Tracheostomy tubes)

Parts of airway and features, Types, sizes and methods of insertion, Indications for use

Care of long-term airways and complications, Face masks – Types, sizes and its usage.

Monitoring devices (ECG pads, oximeters, etc.)

UNIT IV

12 Hours

Pain control

Labor analgesics -Technical terms used

Methods of Pain Control- Patient Controlled Analgesia, Multimodal Technique, Epidural

Analgesia.

Manual Resuscitators: Types of resuscitator bags

Methods of increasing oxygen delivery capabilities while using oxygen with resuscitator bags.

Recent advances in CPR, BLS

UNIT V

12 Hours

Minimum Standards for Anaesthesia

Patient assessment and preparation

Checking the drugs and equipment

Keeping the airway clear

Be ready to control ventilation

Monitor pulse and BP

Suggestive Readings

Text Books:

- Equipments in Anaesthesia and Critical Care by Daniel Auston, Augus Rivers, Scion.
- Short Textbook of Anaesthesia by Ajay Yadav, JP Brothers

Reference Books:

- Drugs & Equipments in Anaesthetic Practice by Arun Kumar Paul, Elsevier
- Essentials of Anaesthesia Equipments by Baha Al- Shaikh, Stacey, Elsevier.

ANAESTHESIA EQUIPMENTS AND TECHNOLOGY LABORATORY

Subject Code: BANTS1-108

**L T P C
0 0 4 2**

4 Hours/Week

COURSE OBJECTIVES:

In this course to study about the various Anaesthetic equipments and items and their practical use in OT.

COURSE SYLLABUS

LIST OF PRACTICALS

- 1) Observation & Demonstration of Preparation of Anaesthetic equipments, drugs & techniques.
- 2) Instrumental trolley setting for common anaesthetic procedures.
- 3) Methods of sterilisation in OT- Autoclaving, Fumigation
- 4) Identification & knowledge of equipments for anesthesia.

Suggestive Readings

Text Books:

- Textbook of Anaesthesia by G. Smith & A.R. Aitkenhead's, Elsevier.
- Short Textbook of Anaesthesia by Ajay Yadav, JP Brothers

Reference Books:

- Drugs & Equipments in Anaesthetic Practice by Arun Kumar Paul, Elsevier
- Essentials of Anaesthesia & Critical Care by Anshul Jain, Jaypee.

COMMUNICATIONS SKILLS

Subject Code: BANTS1-104

**L T P C
2 0 0 2**

Duration: 30 Hrs

COURSE OBJECTIVES:

- The students will be able to appreciate communication skills as these are important to everyone - those are how we give and receive information and convey our ideas and opinions with those around us.
- The topic shall also include the 'Soft skills' which is a term often associated with a person's "EQ" (Emotional Intelligence Quotient) which is an important part of their individual contribution to the success of an organization.

COURSE SYLLABUS

UNIT I

7 Hours

Basic Language Skills: Grammar and Usage. Business Communication Skills with focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.

UNIT II

7 Hours

Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization. Basic concepts & principles of good communication

UNIT III

8 Hours

Special characteristics of health communication. Types & process of communication. Barriers of communication & how to overcome.

UNIT IV

8 Hours

Soft Skills - with important sub-elements: Communication Styles, Team work, Leadership Skills Effective & Excellent Customer Service, Decision Making & Problem Solving, Managing Time and Pressures, Self-Management & Attitude.

Recommended Text Books / Reference Books:

- Effective Communication and Soft Skills by Nitin Bhatnagar Pearson Education India, 2011
- Communication N Soft Skills Paperback – 2013 by Niraj Kumar, Chetan Srivastava

COMMUNICATION SKILLS LABORATORY

Subject Code: BANTS1-109

**L T P C
0 0 2 1**

2 Hrs/Week

COURSE SYLLABUS

LIST OF PRACTICALS

1. Précis writing and simple passage from a prescribed text books. Atleast100 words should be chosen and few questions from the passage may be said to answer.
2. Speaking skill testing: Giving as small topic and to speak for at least two minutes on it.
3. Group discussion on profession related topics
4. To practice all forms communication i.e. drafting report, agenda notes, précis writing, E. mail drafting, circular, representations, press release, telephonic communication, practice of writing resume and Writing application of employment.
5. Organising a mock interview.
6. Locate a specified book in the library Find out some words in the dictionary Pronunciation, stress and intonation Give abbreviations of particular words and vice-versa Give meaning of some words Spell some words Practice of handling some communication system like telephone and noting down and conveying message.

DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION

Subject Code: BANTS1-105

L T P C
3 0 0 3

45 Hours

COURSE OBJECTIVES:

- To make students understand the concept of drug abuse and their impact on public health.
- To make students understand the types of drugs.
- To make them aware of the impact of drugs addiction on families and peers.
- To make students understand the management and prevention of drug abuse.

COURSE SYLLABUS

UNIT-I

15 Hours

- **Problem of Drug Abuse:** Concept and Overview; Types of Drug Often Abused
- **Concept and Overview**
 - What are drugs and what constitutes Drug Abuse?
 - Prevalence of menace of Drug Abuse
 - How drug Abuse is different from Drug Dependence and Drug Addiction?
 - Physical and psychological dependence- concepts of drug tolerance
- **Introduction to drugs of abuse: Short Term, Long term effects & withdrawal symptoms**
- **Stimulants:** Amphetamines, Cocaine, Nicotine
- **Depressants:** Alcohol, Barbiturates- Nembutal, Seconal, Phenobarbital Benzodiazepines Diazepam, Alprazolam, Flunitrazepam
- **Narcotics:** Opium, morphine, heroin
- **Hallucinogens:** Cannabis & derivatives (marijuana, hashish, hash oil), Steroids and inhalants.

UNIT-II

10 Hours

- **Nature of the Problem:** Vulnerable Age Groups, Signs and symptoms of Drug Abuse
 - Physical indicators.
 - Academic indicators.
 - Behavioral and Psychological indicators.

UNIT-III

10Hours

- **Causes and Consequences of Drug Abuse**
- **Causes**
 - (a) Physiological
 - (b) Psychological

(c) Sociological

Consequences of Drug Abuse

(a) For individuals

(b) For families

(c) For society & Nation

UNIT-IV

10 Hours

• **Management & Prevention of Drug Abuse**

Management of Drug Abuse

Prevention of Drug Abuse

Role of Family, School, Media, Legislation & Deaddiction Centers

Recommended Text Books / Reference Books:

1. Kapoor. T., Drug Epidemic among Indian Youth, Mittal Pub, New Delhi, 1985.
2. Modi, Ishwar and Modi, Shalini, Drugs: Addiction and Prevention, Rawat Publication, Jaipur, 1997.
3. Ahuja, Ram, Social Problems in India, Rawat Publications, Jaipur, 2003.
4. National Household Survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
5. World Drug Report , United Nations Office of Drug and Crime, 2011
6. World Drug Report, United nations Office of Drug and Crime, 2010.
7. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
8. The Narcotic Drugs and Psychotropic Substances Act, 1985, New Delhi: Universal, 2012.