SunRise University
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B.Sc. Operation Theater Technology

FIRST SEMESTER

PAPER CODE	PAPER NAME	INTERNAL	EXTERNAL	TOTAL
BSOTT101	Human Anatomy Part I	40	60	100
BSOTT102	Human Physiology Part I	40	60	100
BSOTT103	General Biochemistry Nutrition	40	60	100
BSOTT104	Introduction to National Health care System (Multidisciplinary/interdisciplinary)	40	60	100
BSOTT105	English & Communication skills	40	60	100
BSOTT106	Environmental Sciences	40	60	100
PRACTICAL				
BSOTT107	Human Anatomy Part I Lab	60	40	100
BSOTT108	Human Physiology Part I Lab	60	40	100
BSOTT109	General Biochemistry Lab	60	40	100
Total		**420**	**480**	**900**

SECOND SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSOTT201	Human Anatomy Part II	40	60	100
BSOTT202	Human Physiology Part II	40	60	100
BSOTT203	General Microbiology	40	60	100
BSOTT204	Basic Pathology & Haematology	40	60	100
BSOTT205	Introduction to Quality and Patient safety (Multidisciplinary/Interdisciplinary)	40	60	100
BSOTT205	Medical Bioethics & IPR	40	60	100
PRACTICAL				
BSOTT206	Human Anatomy Part II Lab	60	40	100
BSOTT207	Human Physiology Part II Lab	60	40	100
BSOTT208	General Microbiology Lab	60	40	100

BSOTT209	Basic Pathology & Haematology Lab	60	40	100
Total		**420**	**480**	**900**

THIRD SEMESTER

PAPERS CODE	**PAPERS NAME**	**INTERNAL**	**EXTERNAL**	**TOTAL**
BSOTT301	Introduction To Operation Theatre(OT)	40	60	100
BSOTT302	Introduction to Anesthesia Technology(AT)	40	60	100
BSOTT303	Principles of Anesthesia	40	60	100
BSOTT304	ATOT Directed Clinical Education-I	40	60	100
BSOTT305	Pursuit of Inner Self Excellence (POIS)	40	60	100
BSOTT306	Organisational Behaviour	40	60	100
PRACTICAL				
BSOTT307	Introduction To Operation Theatre	60	40	100
BSOTT308	Introduction to Anesthesia Technology	60	40	100
Total		**380**	**420**	**800**

FOURTH SEMESTER

PAPERS CODE	PAPERS NAME	**INTERNAL**	**EXTERNAL**	**TOTAL**
BSOTT401	Basic techniques of Anesthesia	40	60	100
BSOTT402	Medical diseases influencing choice of Anesthesia	40	60	100
BSOTT403	Medicine relevant to OT technology	40	60	100
BSOTT404	ATOT Directed Clinical Education- II	40	60	100
BSOTT405	Computer and Applications	40	60	100
BSOTT406	Biostatistics and Research Methodology	40	60	100
PRACTICAL				
BSOTT407	Basic techniques of Anesthesia Lab	60	40	100
BSOTT408	Ability Enhancement Elective Course Lab	60	40	100
Total		**380**	**420**	**800**

FIFTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSOTT501	Basics of Surgical Procedures	40	60	100
BSOTT502	CSSD Procedures	40	60	100
BSOTT503	Advance Anesthetic Techniques	40	60	100
BSOTT504	ATOT Directed Clinical Education III	40	60	100
BSOTT505	Basic of Clinical Skill Learning	40	60	100
BSOTT506	Hospital Operation Management	40	60	100
PRACTICAL				
BSOTT507	Basics of Surgical Procedures Lab	60	40	100
BSOTT508	Advance Anesthetic Techniques Lab	60	40	100
Total		**380**	**420**	**800**

SIXTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSOTT601	Basic Intensive Care	40	60	100
BSOTT602	Specialized Surgery and Anesthesia	40	60	100
BSOTT603	Electronics and technology in Surgery and Anesthesia	40	60	100
BSOTT604	ATOT Directed Clinical Education IV	40	60	100
PRACTICAL				
BSOTT605	Internship Cardiac Evaluation and Therapies Laboratory III		200	200
BSOTT606	Project		200	200
Total		**160**	**640**	**800**

SEMESTER-I

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Human Anatomy- Part I**
Course Code	**BSOTT 1.1**

Teaching Objective	• To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system
Learning Outcomes	• Comprehend the normal disposition, interrelationships, gross, functional and applied anatomy of various structures in the human body. • Demonstrate and understand the basic anatomy of Respiratory and Circulatory system • Demonstrate and understand the basic anatomy of Digestive and Excretory system

Sr.No.	Topics	No. of Hrs.
1	**Introduction to Anatomy , Terminology, Cell and Cell division, Tissues of body, Skin**	5
2	**Skeletal System** - Classification of bones, Parts of developing long bone and its blood supply, JointsI- Classification of joints, Joints II- Synovial Joint, Appendicular skeleton I- Bones of upper Limb, Appendicular skeleton II- Bones of lower limb, Axial skeleton-I , Axial skeleton-II	8
3	**Muscular System** - Muscle I-Types, Muscle II- Muscle groups and movements, Muscles of Upper limb, Muscles of lower limb, Muscles of Neck, Muscles of back , Muscles of abdomen	7
4	**Joints** – Shoulder, Hip , Knee , Movements and muscle groups producing movements at other joints	4
5	**Respiratory System** - Introduction to Respiratory system, Larynx, Thoracic cage and diaphragm, Lung & Pleura , Trachea &Bronchopulmonary segments , Mediastinum	6
6	**Circulatory System** - Types of blood vessels, Heart& Pericardium, Coronary Circulation, Overview of mediastinum , Blood vessels of Thorax	5
7	**Digestive System** - GIT I- Pharynx, Oesophagus, GIT II-Stomach, GIT III- Small and Large Intestine, GIT IV-Liver &Gall Bladder, GIT V- Spleen, GIT VI-Pancreas , Salivary glands	7
8	**Excretory System** - Kidney, Ureter, Bladder, Urethra, Pelvis dynamic	3
Total		**45hrs**

BSOTT 1.1P - Human Anatomy Part I- (Demonstration)

Sr.No.	Topics	No of Hrs
1	**Introduction to Anatomy, Terminology, Cell and Cell division, Tissues of body, Skin**	60
2	**Skeletal System** - Classification of bones, Parts of developing long bone and its blood supply, Joints I- Classification of joints, Joints II- Synovial Joint, Appendicular skeleton I- Bones of upper Limb, Appendicular skeleton II- Bones of lower limb, Axial skeleton-I , Axial skeleton-II	
3	**Muscular System** - Muscle I-Types, Muscle II- Muscle groups and movements, Muscles of Upper limb, Muscles of lower limb, Muscles of Neck, Muscles of back , Muscles of abdomen	
4	**Joints** – Shoulder, Hip ,Knee , Movements and muscle groups producing , movements at other joints	
5	**Respiratory System** - Introduction to Respiratory system, Larynx, Thoracic cage and diaphragm, Lung & Pleura , Trachea &Bronchopulmonary segments , Mediastinum	
6	**Circulatory System** - Types of blood vessels, Heart& Pericardium, Coronary Circulation, Overview of mediastinum , Blood vessels of Thorax	
7	**Digestive System** - GIT I- Pharynx, Oesophagus, GIT II-Stomach, GIT III- Small and Large Intestine, GIT IV-Liver &Gall Bladder, GIT V- Spleen, GIT VI-Pancreas , Salivary glands	
8	**Excretory System** - Kidney, Ureter, Bladder, Urethra, Pelvis dynamic	
Total		**60 hrs**

Text Books:

1. Manipal Manual of Anatomy for Allied Health Sciences courses:Madhyastha S.
2. G.J. Tortora& N.P Anagnostakos: Principles of Anatomy and Physiology
3. B.D. Chaurasia: Handbook of General Anatomy

Reference books:

1. B.D. Chaurasia : Volume I-Upper limb & Thorax,
   Volume II- Lower limb, Abdomen &
   Pelvis Volume III- Head, Neck, Face
   Volume IV- Brain-Neuroanatomy
2. Vishram Singh: Textbook of Anatomy Upper limb &
   Thorax Textbook of Anatomy Abdomen &
   Lower limb Textbook of Head neck and
   Brain
3. Peter L. Williams And Roger Warwick:- Gray's Anatomy - Descriptive and Applied, 36th Ed; Churchill Livingstone.
4. T.S. Ranganathan : Text book of Human Anatomy
5. Inderbirsingh, G P Pal : Human Embryology
6. Textbook of Histology, A practical guide:- J.P Gunasegaran

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Human Physiology Part I**
Course Code	**BSOTT 1.2**

Teaching objective	• To teach basic physiological concepts related to General physiology, Haematology, Nerve-Muscle physiology, Cardiovascular ,Digestive & Respiratory physiology
Learning outcomes	To understand the basic physiological concepts of General physiology To understand the basic physiological concepts of Hematology To understand the basic physiological concepts of Nerve-Muscle physiology To understand the basic physiological concepts of Respiratory physiology To understand the basic physiological concepts of Cardiovascular physiology

Sr.No.	Topics	No. of Hrs.
1	**General Physiology**- Introduction to physiology, Homeostasis, Transport Across cell membrane	3
2	**Blood - Composition, properties and functions of Blood,** Haemopoesis , Haemogram (RBC, WBC, Platelet count, Hb Concentrations), Blood Groups - ABO and RH grouping, Coagulations & Anticoagulants, Anaemias: Causes, effects & treatment, Body Fluid: Compartments, Composition, Immunity – Lymphoid tissue	10
3	**Cardio vascular system** - Introduction, general organization, functions & importance of CVS , Structure of heart, properties of cardiac muscle, Junctional tissues of heart & their functions, Origin & spread of Cardiac Impulse, cardiac pacemaker, Cardiac cycle & E C G, Heart Rate & its regulation, Cardiac output, Blood Pressure definition & normal values, Physiological needs & variation, regulation of BP	10
4	**Digestive system** - General Introduction, organization, innervations & blood supply of Digestive system, Composition and functions of all Digestive juices, Movements of Digestive System (Intestine), Digestion & Absorption of Carbohydrate, Proteins & Fats	6
5	**Respiratory System** -Physiologic anatomy, functions of respiratory system, non-respiratory functions of lung, Mechanism of respiration, Lung Volumes & capacities, Transport of Respiratory GasesO_2, Transport of Respiratory Gases CO_2, Regulation of Respiration.	10
6	**Muscle nerve physiology** - Structure of neuron & types, Structure of skeletal Muscle, sarcomere, Neuromuscular junction& Transmission. Excitation & contraction coupling (Mechanism of muscle contraction)	6
Total		**45 hrs**

BSOTT 1.2P - Human Physiology Part I (Demonstration)

Sr. No.	Topics	No. of Hrs.
1	Study of Microscope and its use, Collection of Blood and study of Hemocytometer	60
2	Haemoglobinometry	
3	White Blood Cell count	
4	Red Blood Cell count	
5	Determination of Blood Groups	
6	Leishman's staining and Differential WBC Count	
7	Determination of Bleeding Time, Determination of Clotting Time	
8	Pulse & Blood Pressure Recording, Auscultation for Heart Sounds	
9	Artificial Respiration –Demonstration, Spirometry-Demonstration	
Total		**60 hrs**

Textbooks

1. Basics of medical Physiology –D Venkatesh and H.H Sudhakar, 3rd edition.
2. Principles of Physiology – Devasis Pramanik, 5th edition.
3. Human Physiology for BDS –Dr A.K. Jain, 5th edition.
4. Textbook of human Physiology for dental students-Indukhurana 2nd edition.
5. Essentials of medical Physiology for dental students –Sembulingum.

Reference books

1. Textbook of Medical Physiology, Guyton, 2nd South AsiaEdition.
2. Textbook of Physiology Volume I & II (for MBBS) – Dr. A. K. Jain.
3. Comprehensive textbook of Medical Physiology Volume I & II – Dr. G. K. Pal.

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**General Biochemistry & Nutrition**
Course Code	**BSOTT 1.3**

Teaching Objective	At the end of the course, the student demonstrates his knowledge and understanding on: • Structure, function and interrelationship of biomolecules and consequences of deviation from normal. • Integration of the various aspects of metabolism, and their regulatory pathways. • Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation ofa given data. • to diagnose various nutritional deficiencies • Identify condition and plan for diet • Provide health education base on the client deficiencies
Learning Outcomes	• Define "biochemistry." • Identify the five classes of polymeric biomolecules and their monomeric building blocks. • Explain the specificity of enzymes (biochemical catalysts), andthe chemistry involved in enzyme action. • Explain how the metabolism of glucose leads ultimately to the generation of large quantities of ATP. • Describe how fats and amino acids are metabolized, and explain how they can be used for fuel. • Describe the structure of DNA, and explain how it carries genetic information in its base sequence. • Describe DNA replication. • Describe RNA and protein synthesis. • Explain how protein synthesis can be controlled at the level of transcription and translation. • Summarize what is currently known about the biochemical basis of cancer.

Sr. No.	Topics	No. of Hrs.
1	Introduction and scope of biochemistry	1
2	**Chemistry of carbohydrates, proteins, lipids and nucleic acid–** **Chemistry of Carbohydrates**: Definition, Functions, Properties, Outline of classification with e.g. (Definition of Monosaccharides, Disaccharides, Polysaccharides and their examples). **Chemistry of Proteins:** Amino acids (total number of amino acids, essential and non-essential amino acids) .Definition, Classification of Proteins Structural organization of protein, Denaturation of Proteins. **Chemistry of Lipids:** Definition, functions, Classification (Simple Lipids, Compound Lipids, Derived Lipids.) Essential Fatty Acids. **Chemistry of Nucleic acid**: Nucleosides and Nucleotides, Watson and Crick model of DNA, **RNA**- it's type along with functions	12
3	**Elementary knowledge of enzymes -** Classification, mechanism of enzyme action, Factors affecting activity of enzymes, enzyme specificity, Enzyme inhibition, Isoenzymes and their diagnostic importance.	8
4	**Biological oxidation** - Brief concept of biological oxidation: Definition of Oxidative phosphorylation Electron transport chain. Inhibitors and Uncouplers briefly	5
5	**Metabolism of Carbohydrate**: Glycolysis, TCA cycle, Definition and significance of glycogenesis and glycogenolysis. Definition and significance of HMP shunt, definition and significance of gluconeogenesis. Regulation of blood Glucose level, Diabetes Mellitus, Glycosuria. Glucose Tolerance Test. **Metabolism of Proteins**: Transamination, Trans methylation reactions. Urea cycle, Functions of glycine, tyrosine, phenylalanine, tryptophan and Sulphur containing amino acids. **Metabolism of Lipid:** Outline of beta oxidation with energetic, Ketone bodies (Enumerate) and its importance. Functions of cholesterol and its biomedical significance. Lipid profile and its diagnostic importance. Fatty liver, lipotropic factor, atherosclerosis. **Metabolism of Nucleic acid**: Purine catabolism (Formation of uric acid), Gout	14
6	**Vitamins and Minerals-** RDA, Sources, functions and deficiency manifestations of Fat soluble vitamins. RDA, sources, functions and deficiency manifestations of Water soluble vitamins. RDA, Sources, functions and deficiency manifestations of Calcium, Phosphorous, Iron, Iodine	5
7	**Principle and applications of :**Colorimeters, pH Meter	5
8	**Pre examination Skills -** Collection and preservation of samples (Anticoagulants), transportation & separation of biological specimens, Sample rejection criteria, Disposal of biological Waste materials.	5
9	**Nutrition:** History of Nutrition, Nutrition as a science, Food groups, RDA, Balanced diet, diet planning, Assessment of nutritional status, **Energy:** Units of energy, Measurements of energy and value of food, Energy expenditure, Total energy/calorie requirement for different age groups and diseases, Satiety value, Energy imbalance-obesity, starvation, Limitations of the daily food guide, Role of essential nutrients in the balanced diet	5
Total		**60 hrs**

BSOTT 1.3P – General Biochemistry (Demonstration)

Sr. No.	Topics	No. of Hrs
1	Introduction to Personnel protective equipment used in laboratory and their importance (LCD)	60
2	Handling of colorimeters – operation and maintenance (LCD)	
3	Serum electrolytes measurement (only demo)	
4	Demonstration of semi-automated / fully automated blood analyzer	
5	Demonstration of tests for carbohydrates (Monosaccharides, disaccharides and polysaccharides)	
6	Precipitation Reactions of protein (only demonstration)	
7	Test on bile salts (only demonstration)	
8	Tests on Normal constituents of Urine (only demo)	
9	Tests on Abnormal constituents of Urine (only demo)	
Total		**60 hrs**

Textbooks:

1. Textbook of Medical Laboratory Technology, Volume 1, 3rd Edition by Praful Ghodkar
2. Textbook of Medical Laboratory Technology, Volume 2, 3rd Edition by Praful Ghodkar
3. Medical Laboratory Technology (Volume 1): Procedure Manual for Routine Diagnostic, Kanai Mukherjee
4. Medical Laboratory Technology (Volume 2): Procedure Manual for Routine Diagnostic, Kanai Mukherjee
5. Medical Laboratory Technology (Volume 3): Procedure Manual for Routine Diagnostic, Kanai Mukherjee
6. Essentials of Biochemistry, Second Edition, Dr. (Prof) Satyanarayana
7. Essentials of Biochemistry, 2nd Edition, Dr. Pankaja Naik
8. Principles and Techniques of Biochemistry and Molecular Biology, 5Th Edition, Wilson &Walker

Reference books:

1. An Introduction to Chemistry, 8th Edition by Mark Bishop
2. Clinical Chemistry made easy, 1stEidtion by Hughes
3. Tietz Fundamentals of Clinical Chemistry, 7th Edition by Carl Burtis

Name of the Programme	B.Sc. Operation Theatre Technology
Name of the Course	Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)
Course Code	BSOTT 1.4

Teaching Objective	• To teach the measures of the health services and high-quality health care • To understand whether the health care delivery system is providing high-quality health care and whether quality is changing over time. • To provide to National Health Programme- Background objectives, action plan, targets, operations, in various National Heath Programme. • To introduce the AYUSH System of medicines.
Learning Outcomes	• The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

Sr. No.	Topics	No. of Hrs.
1	**Introduction to healthcare delivery system** - Healthcare delivery system in India at primary, secondary and tertiary car; Community participation in healthcare delivery system; Health system in developed countries; Private / Govt Sector; National Health Mission; National Health Policy; Issues in Health Care Delivery System in India	10
2	**National Health Programme-** Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.	8
3	**Introduction to AYUSH system of medicine -** Introduction to Ayurveda; Yoga and Naturopathy; Unani; Siddha; Homeopathy; Need for integration of various system of medicine	8
4	**Health Scenario of India-** past, present and future	4
5	**Demography & Vital Statistics-** Demography – its concept; Census & its impact on health policy	5
6	**Epidemiology** - Principles of Epidemiology; Natural History of disease; Methods of Epidemiological studies; Epidemiology of communicable & non-communicable diseases, disease, transmission, host defense immunizing agents, cold chain, immunization, disease, monitoring and surveillance.	10
Total		**45 hrs**

Books:

1. National Health Programs Of India National Policies and Legislations Related to Health: 1 J. Kishore (Author)
2. A Dictionary of Public Health Paperback by J Kishor
3. Health System in India: Crisis & Alternatives , National Coordination Committee, Jan Swasthya Abhiyan
4. In search In Search of the Perfect Health System
5. Central Bureau of Health Intelligence (1998). Health Information of India, Ministry of Health and Family Welfare, New Delhi.
6. Goyal R. C. (1993). Handbook of Hospital Personal Management, Prentice Hall of India, New Delhi, 17–41. Ministry of Health and Family Welfare (1984). National Health Policy, Annual Report (1983–4), Government of India, New Delhi
7. Historical Development of Health Care in India, Dr. Syed Amin Tabish,
8. cultural Competence in Health Care by Wen-Shing Tseng (Author), Jon Streltzer (Author)
9. Do We Care: India's Health System by K. Sujatha Rao (Author)

BSOTT 1.5P - Community Orientation &Clinical Visit (includingrelated practical's to the parent course)

ABILITY ENHANCEMENT COMPULSORY COURSE

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**English and Communication Skills**
Course Code	**BSOTT 1.6**

Teaching Objective	• This course deals with essential functional English aspects of the of communication skills essential for the health care professionals. • To train the students in oral presentations, expository writing, logical organization and Structural support.
Learning Outcomes	• Able to express better. • Grow personally and professionally and Develop confidence in every field

Sr. No.	Topics	No. of Hrs.
1	**Basics of Grammar** - Vocabulary, Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words	6
2	**Basics of Grammar – Part II** - Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms	6
3	**Writing Skills** - Letter Writing, Email, Essay, Articles, Memos, one word substitutes, note making and Comprehension	3
4	Writing and Reading, Summary writing, Creative writing, newspaper reading	3
5	Practical Exercise, Formal speech, Phonetics, semantics and pronunciation	5
6	**Introduction** to communication skills - Communication process, Elements of communication, Barriers of communication and how to overcome them, Nuances for communicating with patients and their attenders in hospitals	6
7	**Speaking** - Importance of speaking efficiently, Voice culture, Preparation of speech. Secrets of good delivery, Audiencepsychology, handling , Presentation skills, Individual feedback for each student, Conference/Interview technique	4
8	**Listening** - Importance of listening , Self-assessment, Action plan execution, Barriers in listening, Good and persuasive listening	4
9	**Reading** - What is efficient and fast reading , Awareness of existing reading habits, Tested techniques for improving speed, Improving concentration and comprehension through systematic study	4
10	**Non Verbal Communication** - Basics of non-verbal communication, Rapport building skills using neuro- linguistic programming (NLP), Communication in Optometry practice	4
Total		**45 hrs**

Text books:

1. Graham Lock, Functional English Grammar: Introduction to second Language Teachers. Cambridge University Press, New York, 1996.
2. Gwen Van Servellen. Communication for Health care professionals: Concepts, practice and evidence, Jones & Bartlett Publications, USA, 2009

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Environmental Sciences**
Course Code	**BSOTT 1.7**

Teaching Objective	• To understand and define terminology commonly used in environmental science • To teach students to list common and adverse human impacts on biotic communities, soil, water, and air Quality. • To understand the processes that govern the interactions oforganisms with the biotic and abiotic. • Understand the relationship between people and the environment; Differentiate between key ecological terms and concepts
Learning Outcomes	• Current environmental issues and highlight the importance ofadopting an interdisciplinary approach. • Sample an ecosystem to determine population density anddistribution. • Create food webs and analyse possible disruption of feeding relationships.

Sr. No.	**Topics**	**No. of Hrs.**
1	**Components of Environment** – Hydrosphere, lithosphere, atmosphere and biosphere – definitions with examples; Interaction of man and environment;	4
2	**Ecosystem** : Basic concepts, components of ecosystem, Tropic levels, food chains and food webs, Ecological pyramids, ecosystem functions, Energy flow in ecological systems, Characteristics of terrestrial fresh water and marine ecosystems,	5
3	**Global Environmental Problems** – Green House Effect, Acid rain, El Nino, Ozone depletion, deforestation, desertification, salination, biodiversity loss; chemical and radiation hazards.	4
4	**Environmental pollution and degradation** – Pollution of air, water and land with reference to their causes, nature of pollutions, impact and control strategies; perspectives of pollution in urban, industrial and rural areas. Habitat Pollution by Chlorinated Hydrocarbons (DDT, PCBs, Dioxin etc., Endocrine disrupting chemicals, Nutrient pollution.	8
5	**Environmental Management** – Concept of health and sanitation, environmental diseases – infectious (water and air borne) and pollution related, spread and control of these diseases, health hazards due to pesticide and metal pollution, waste treatment, solid waste management, environmental standards and quality monitoring.	6
6	**Environmental Protection Act** – Environmental Laws, national movements, environmental ethics – holistic approach of environmental protection and conservation, IUCN – role in environmental protection. Concept with reference to UN – declaration, aim and objectives of human right policies with reference to India, recent north-south debate on the priorities of implementation, Environmental Protection Agency (EPA)	10
7	**Bioremediation** – Oil spills, Wastewater treatment, chemical degradation, heavy Metals.	8
Total		**45 hrs**

Books:

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats fromIndia's Himalaya dams. Science, 339: 36-37.
7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History ofthe Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
14. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices fromthe Tropics. John Wiley & Sons.
17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
18. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
19. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
20. World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press

SEMESTER- II

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Human Anatomy- Part II**
Course Code	**BSOTT 2.1**

Teaching Objective	• To teach the students the basic anatomy of Reproductive , Lymphatic Endocrine ,Nervous system and Special senses
Learning Outcomes	• Demonstrate and understand the basic anatomy of Reproductive and Lymphatic system. • Demonstrate and understand the basic anatomy of Endocrine, Nervous system • Demonstrate and understand the basic anatomy of Special senses

Sr. No.	Topics	No. of Hrs.
1	**Reproductive system -** Male- Testis, Spermatic Cord, Female- Ovaries & Fallopian tube, Uterus	6
2	**Lymphatic system -** Lymphoid Organs, Lymph node groups- Cervical, Axillary, Inguinal	5
3	**Endocrine system -** Thyroid, Parathyroid, Adrenal, Pituitary	4
4	**Nervous system -** Introduction to nervous system(Neuron, ANS, PNS) Meninges, Cerebrum I, Cerebrum II, Cerebellum, Blood supply of Brain, Brain stem, Spinal cord, Cranial and peripheral nerves, CSF & Ventricles	12
5	**Sensory system -** Eye (Gross anatomy), Ear	3
Total		**30 hrs**

BSOTT 2.1P - Human Anatomy Part II (Demonstration)

Sr. No.	Topics	No. of Hrs.
1	**Reproductive system -** Male- Testis, Spermatic Cord, Female- Ovaries & Fallopian tube, Uterus	60
2	**Lymphatic system -** Lymphoid Organs, Lymph node groups- Cervical, Axillary, Inguinal	
3	**Endocrine system -** Thyroid, Parathyroid, Adrenal, Pituitary	
4	**Nervous system -** Introduction to nervous system(Neuron, ANS, PNS) Meninges, Cerebrum I, Cerebrum II, Cerebellum, Blood supply of Brain ,Brain stem, Spinal cord, Cranial and peripheral nerves, CSF & Ventricles	
5	**Sensory system -** Eye (Gross anatomy), Ear	
Total		**60 hrs**

Textbooks:

1. Manipal Manual of Anatomy for Allied Health Sciences courses:Madhyastha S.
2. G.J. Tortora& N.P Anagnostakos: Principles of Anatomy and Physiology
3. B.D. Chaurasia: Handbook of General Anatomy

Reference books:

1. B.D. Chaurasia : Volume I-Upper limb & Thorax,
   Volume II- Lower limb, Abdomen &
   Pelvis Volume III- Head, Neck, Face
   Volume IV- Brain-Neuroanatomy
2. Vishram Singh: Textbook of Anatomy Upper limb &
   Thorax Textbook of Anatomy Abdomen &
   Lower limb Textbook of Head neck and
   Brain
3. Peter L. Williams And Roger Warwick:- Gray's Anatomy - Descriptive and Applied, 36th Ed; Churchill Livingstone.
4. T.S. Ranganathan : Text book of Human Anatomy
5. Inderbirsingh, G P Pal : Human Embryology
6. Textbook of Histology, A practical guide: - J.P Gunasegaran

Name of the Programme	B.Sc. Operation Theatre Technology
Name of the Course	Human Physiology Part II
Course Code	BSOTT 2.2

Teaching Objective	• To teach basic physiological concepts related to Renal physiology, Endocrinology& Reproductive physiology, CNS, Special senses
Learning Outcomes	• To understand the basic physiological concepts of Renalphysiology • To understand the basic physiological concepts of Endocrinology& Reproductive physiology • To understand the basic physiological concepts of CNS, Specialsenses

Sr. No.	Topics	No. of Hrs.
1	**Nervous system** -Functions of Nervous system , Neuron – Conduction of Impulses, factors affecting, Synapse- transmission, Receptors, Reflexes Ascending tracts, Descending tracts, Functions of various parts of the Brain. Cerebro-Spinal Fluid (CSF): Composition, functions & Circulation, Lumbar Puncture, Autonomic Nervous System (ANS): Functions.	10
2	**Special senses**- Vision: Structure of Eye, functions of different parts, Refractive errors of Eye and correction, Visual Pathway, Colour vision & tests for colour Blindness, Hearing: Structure and function of ear, Mechanism of Hearing, Tests for Hearing (Deafness)	6
3	**Skin -** Structure and function, Body temperature, Regulation of Temperature & fever.	4
4	**Endocrine System -** Short description of various endocrine glands and their functions	2
5	**Reproductive systems -** Structure & Functions of Reproductive system, Male Reproductive System: spermatogenesis, Testosterone, Female reproductive system: Ovulation, Menstrual cycle, Oogenesis, Tests for Ovulation, Estrogen & Progesterone, Pregnancy test, Parturition. Contraceptives, Lactation: Composition of Milk, advantages of breast Feeding.	4
6	**Excretory System** General Introduction, structure & functions of kidney, Renal circulation, Glomerular filtration & tubular reabsorption, Nephron, Juxta Glomerular Apparatus, Mechanism of Urine formation, Micturition, Cystomatrogram. Diuretics, Artificial Kidney.	4
Total		**30 hrs**

BSOTT 2.2P - Human Physiology Part II – (Demonstration)

Sr. No.	Topics	No. of Hrs.
1	Recording of body temperature	30
2	Examination of sensory system	
3	Examination of motor system	
4	Examination of Eye	
5	Examination of ear	
Total		**30 hrs**

Textbooks:

1. Basics of medical Physiology –D Venkatesh and H.H Sudhakar, 3rd edition.
2. Principles of Physiology – Devasis Pramanik, 5th edition.
3. Human Physiology for BDS –Dr A.K. Jain, 5th edition.
4. Textbook of human Physiology for dental students-Indukhurana 2nd edition.
5. Essentials of medical Physiology for dental students –Sembulingum.

Reference books:

1. Textbook of Medical Physiology, Guyton, 2nd South AsiaEdition.
2. Textbook of Physiology Volume I & II (for MBBS) – Dr. A. K. Jain.
3. Comprehensive textbook of Medical Physiology Volume I & II – Dr. G. K. Pal.

Name of the Programme	B.Sc. Operation Theatre Technology
Name of the Course	General Microbiology
Course Code	BSOTT 2.3

Teaching Objective	• To introduce basic principles and then applies clinical relevance in four segments of the academic preparation for paramedical: immunology, bacteriology, mycology, and virology. This rigorous course includes many etiological agents responsible for global infectious diseases.
Learning Outcomes	• Upon completion, students should be able to demonstrate knowledge of microorganisms and the disease process as well as aseptic and sterile techniques. • Perform microbiological laboratory procedures according to appropriate safety standards

Sr. No.	Topics	No. of Hrs.
1	**Concepts and Principles of Microbiology -** Historical Perspective, Koch's Postulates, Importance of Microbiology, Microscopy, Classification of Microbes.	4
2	**General Characters of Microbes -** Morphology, staining methods, Bacterial growth & nutrition, Culture media and culture methods +ABS, Collection of specimen, transport and processing, Antimicrobial mechanism and action, Drug Resistance minimization.	6
3	**Sterilization and Disinfection -** Concept of sterilization, Disinfection asepsis, Physical methods of Sterilization, Chemical methods (Disinfection), OT Sterilization, Biological waste and Biosafety & Biohazard.	5
4	**Infection and Infection Control -** Infection, Sources, portal of entry and exit, Standard (Universal) safety Precautions & hand hygiene, Hospital acquired infections & Hospital Infection Control	3
5	**Immunity -** Types Classification, Antigen, Antibody – Definition and types, Ag-Ab reactions – Types and examples, Procedure of Investigation & Confidentiality, Immunoprophylaxis – Types of vaccines, cold chain, Immunization Schedule.	6
6	**Systemic Bacteriology (Morphology, diseases caused, specimen collection & lists of laboratory tests) –** Introduction, Gram Positive Cocci & Gram Negative Cocci, Enterobacteraecea & Gram negative bacilli, Mycobacteria, Anaerobic bacteria & Spirochaetes, Zoonotic diseases, Common Bacterial infections of eye.	7
7	**Mycology -** Introduction, Classification, outline of lab diagnosis, List of Fungi causing:Common fungal infections of eyes, Superficial Mycoses, Deep mycoses & opportunistic , Fungi.	3
8	**Virology -** Common Viral infection of eye, Introduction, General Properties, outline of lab diagnosis& Classification, HIV Virus, Hepatitis -B Virus.	4
9	**Parasitology** – Morphology, Life Cycle & Outline of Lab Diagnosis & Classification, Common parasite infection of eye, Protozoa- E, histolytica,Malarial Parasite, General properties, classification, list of diseases caused by:Cestodes and Trematodes, Intestinal Nematodes& Tissue Nematodes, Vectors.	7
Total		**45 hrs**

BSOTT 2.3P - General Microbiology (Demonstration)

Sr. No.	Topics	No. of Hrs.
1	Concepts and Principles of Microbiology	60
2	General Characters of Microbes	
3	Sterilization and Disinfection	
4	Infection and Infection Control	
5	Immunity	
6	Systemic Bacteriology (Morphology, diseases caused, specimen collection & lists of laboratory test)	
7	Mycology	
8	Virology	
9	Parasitology	
Total		**60 hrs**

Text Book:

1. Text Book of Microbiology for Nursing Students, AnantNarayan Panikar
2. Text Book of Ophthalmology, Khurana

Reference Book:

1. Text Book of Microbiology, Baveja.

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Basic Pathology & Hematology**
Course Code	**BSOTT 2.4**

Teaching Objective	• Understand the importance of clinical information in supporting a timely, accurate pathological diagnosis. • Describe normal and disordered hematopoiesis • Develop implement and monitor a personal continuing education strategy and critically appraise sources of pathology related medical information.• Describe mechanisms of oncogenesis&demonstrate an understanding of genetics and cytogenetics pertaining to hematology
Learning Outcomes	• The student should submit the appropriate tissue sections per protocol to demonstrate the lesion and other clinically-relevant information needed for the final pathologic report • To aid hematology in the reference ranges for hemoglobin, hematocrit, erythrocytes, and leukocytes in infants, children and adult.

Sr. No.	Topics	No. of Hrs.
1	Introduction to Pathology	1
2	Working and maintenance of instruments	2
3	General principles of Haematology techniques, blood collection, anticoagulants, fixation, processing, routine staining, Haemoglobin, TLC, DLC, Peripheral smear (CBC report), platelet counts, cell counter working	10
4	Generalprinciplesof Histopathologytechniques collection, fixation, processing & routine staining	3
5	General principles of Cytopathology techniques collection, fixation, processing & routine staining	5
6	General principles of Clinical Pathology techniques samplecollection, processingforroutine test, normal urine & urine examination, urine strip, introductions to body fluids (Distinguish between Transudate and exudate)	10
7	Generalprinciplesof Blood Bank techniques antigen, antibody, ABO & Rh system	5
8	General principles of Autopsy & Museum	4

9	**GeneralPathologyincludingintroductionto :** I) Cell Injury (Reversible, Irreversible cell injury) II) Inflammation(Acute inflammation, cells, Chronic inflammation, granuloma and examples III) Circulatorydisturbances(Thrombosis, Embolism ,Edema- ascetic, pleural, pericardial- effusions, Shock, Allergy, Anaphylaxis-Definition, Morphological features, And distinguishing features) IV) Neoplasia (Definition of Anaplasia, dysplasia, metaplasia and metastasis and difference between benign and malignant lesions)	8
10	**Systemicpathologybasis andmorphologyof common disorders like** I) Anemia(types-Iron deficiency, megaloblastic, Aplastic-Etiology, Pathogenesis Investigation)- II) Leukemia (Acute and chronic, Peripheral smear), AIDS(Definition, Pathogenesis, Mode of transmission, Two Confirmatory test Tridot, Western blot), Hepatitis (Types, Etiology, Mode of spread) III) Malaria-(Mode of spread IV) Tuberculosis-(Primary and secondary tb, Granuloma formation, Mode of transmission, Organs involved	8
11	Maintenance and medicolegal importance of records and specimens, Lab information system(LIMS)	3
12	Biomedical Waste, Universal Safety Precaution(Protocol to be followed after -Needle injury, chemical injury	1
Total		**60 hrs**

BSOTT 2.4P – Basic Pathology & Hematology (Demonstration)

Sr. No.	Topics	No. of Hrs.
1	Working and maintenance of instruments,	60
2	General principles of Haematology techniques, blood collection, anticoagulants, fixation, processing, routine staining, Haemoglobin, TLC, DLC, Peripheral smear (CBC report), platelet counts, cell counter working	
3	Generalprinciplesof Histopathologytechniques collection, fixation, processing & routine staining	
4	General principles of Cytopathology techniques collection, fixation, processing & routine staining	
5	General principles of Clinical Pathology techniques samplecollection, processingforroutine test, normal urine & urine examination, urine strip, introductions to body fluids (Distinguish between Transudate and exudate)	
6	Generalprinciplesof BloodBanktechniques antigen, antibody, ABO & Rh system	
7	General principles of Autopsy & Museum	
Total		**60 hrs**

Reference Books:

1. A *Handbook of Medical* Laboratory (Lab) Technology: *Editor*) *Second Edition*. *V.H. Talib* (Ed.).
2. Comprehensive Textbook Of Pathology For Nursing: Pathology Clinical Pathology Genetics. Ak Mandal Shramana Choudhury, Published by Avichal Publishing Compnay | Language English
3. Textbook of Medical Laboratory Technology- PrafulB. Godkar, Darshan P. Godkar
4. Medical Laboratory Technology. Methods and Interpretations – RamnikSood (volume 1&2)
5. Medical Laboratory technology a procedure manual for routine diagnostic test – vol – I, II, III. Kanai L. Mukharjee Tata Mc graw hill pub. New Delhi.
6. Practical Pathology P. Chakraborty Gargi Chakraborty New Central Book Agency, Kolkata.
7. Theory & Practice of Histological Techniques John D. Bancroft et.al. Churchill Livingstone Printed in China.
8. Histochemistry in Pathology M.I. Filipe et.al. Churchill Livingstone, London
9. Hand Book of Histopathological & Histochemical Techniques C.F.A. Culling Butterworths Company Ltd. London.
10. A Handbook of Medical Laboratory (Lab) Technology. By V.H Talib.

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Introduction to Quality and Patient safety**
Course Code	**BSOTT 2.5**

Teaching Objective	• The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system. • To understand the basics of emergency care and life support skills. • To Manage an emergency including moving a patient • To help prevent harm to workers, property, the environment and the general public. • To provide a broad understanding of the core Course areas of infection prevention and control. •To provide knowledge on the principles of on-site disaster management
Learning Outcomes	• Upon completion, Students should be able to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro-, meso-, and macro-system levels.

Sr. No.	Topics	No. of Hrs.
1	**Quality assurance and management** – Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Introduction to NABH guidelines	7
2	**Basics of emergency care and life support skills -** Basic life support (BLS), Vital signs and primary assessment, Basic emergency care – first aid and triage, Ventilations including use of bag-valve-masks (BVMs), Choking, rescue breathing methods, One- and Two-rescuer CPR	7
3	**Bio medical waste management and environment safety** -Definition of Biomedical Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including color coding), Liquid BMW, Radioactive waste, Metals/ Chemicals / Drug waste, BMW Management & methods of disinfection, Modern technology for handling BMW, Use of Personal protective equipment (PPE), Monitoring & controlling of cross infection (Protective devices)	8
4	**Infection prevention and control -** Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],Prevention & control of common healthcare associated infections, Components of an effective infection control program, Guidelines (NABH and JCI) for Hospital Infection Control	8
5	**Antibiotic Resistance -** History of Antibiotics, How Resistance Happens and Spreads, Types of resistance- Intrinsic, Acquired, Passive, Trends in Drug Resistance, Actions to Fight Resistance, Bacterial persistence, Antibiotic sensitivity, Consequences of antibiotic resistance	8
6	**Disaster preparedness and management -** Fundamentals of emergency management, Psychological impact management, Resource management, Preparedness and risk reduction, information management, incident command and institutional mechanisms.	7
Total		**45 hrs**

Reference Books:

1. Washington Manual of Patient Safety and Quality Improvement Paperback – 2016 by Fondahn (Author)
2. Understanding Patient Safety, Second Edition by Robert Wachter (Author)
3. HandbookofHealthcareQuality& Patient SafetyAuthor : Girdhar J Gyani, Alexander Thomas
4. Researching Patient Safety and Quality in Healthcare: A Nordic Perspective Karina Aase, Lene Schibevaag
5. Old) Handbook Of Healthcare Quality & Patient Safety by Gyani Girdhar J (Author)
6. Handbook of Healthcare Quality & Patient Safety by .Gyani G J/Thomas A
7. Quality Management in Hospitals by S. K. Jos

BSOTT 2.6P - Community orientation & clinical visit (including relatedpracticals to the parent course) (Total -120 hrs)

SKILL ENHANCEMENT ELECTIVE COURSE

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Medical Bioethics & IPR**
Course Code	**BSOTT 2.7**

Teaching Objective	• To introduce the wide range of ethical issues in health care. • To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked. • Imparting knowledge and skills that will enable students to develop ethical answers to these issues • To acquire acquire specialized knowledge of law and IPR. •The main objective of the IPR is to make the students aware of their rights for the protection of their invention done in their project work.
Learning Outcomes	• Upon successful completion of the course, students will be able to: Recognize what constitutes an ethical concern in health care •Understanding ethical issues in Health care. • Understand better the complexity and multi-dimensionality ofmedical ethical concerns and uniqueness of each problem. • Capacity to rationally justify your decision • Develop the ability to reason through difficult medical/clinical ethical issues BSOTTh orally, in the context of a group of their peers, and through written • The students get awareness of acquiring the patent and copyright for their innovative works. •They also get the knowledge of plagiarism in their innovations which can be questioned legally.

Sr. No.	Topics	No. of Hrs.
1	**Introduction to Bioethics** Bioethical issues related to Healthcare & medicine .	5
2	**Anatomy** - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counselling	7
3	**Physiology** - Animal ethics, Health policy privacy	7
4	**Biochemistry & Pathology** - Prudence of investigation confidentiality, Patients' bill of rights, Disposal of investigative material, Integrity, Blood transfusion	5
5	**Pharmacology** - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics	5
6	**Microbiology** - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Biosafety and bio hazard	5
7	**Medicolegal aspects of medical records**	3

8	**Introduction to Intellectual Property**: Concept of Intellectual Property Kinds of Intellectual Property Patents, CopyrightsDesigns, Trademarks,Geographical Indication, Infringement of IPR, Its protection and Remedies Licensing and its types	8
Total		**45 hrs**

Reference Books:

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.
2. Classic philosophical questions by Gloud (8^{th} Edition)
3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008
4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748
5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,
6. Intellectual Property Right- Wattal- Oxford Publicatiopn House.(1997) ISBN:0195905024.

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Human Rights &Professional Values**
Course Code	**BSOTT 2.8**

Teaching Objective	• To understand interaction between society and educational institutions. • To sensitize the citizens so that the norms and values of human rights and duties of education programme are realized. • To encourage research activities. • To encourage research studies concerning the relationship between Human Rights and Duties Education.
Learning Outcomes	•This course will aim at making the learners acquire conceptual clarity and develop respect for norms and values of freedom, equality, fraternity and justice. • It will include awareness of civil society organizations and movements promoting human rights. • This will make the students realize the difference between the values of human rights and their duties

Sr. No.	Topics	No. of Hrs.
1	**Background -** Introduction, Meaning, Nature and Scope, Development of Human Rights, Theories of Rights, Types of Rights	6
2	**Human rights at various level**- Human Rights at Global Level UNO, **Instruments**: U.N. Commission for Human Rights,European Convention on Human Rights.	6
3	**Human rights in India -** Development of Human Rights in India, Human Rights and the Constitution of India, Protection of Human Rights Act 1993- National Human Rights Commission, State Human Rights Commission, Composition Powers and Functions, National Commission for Minorities, SC/ST and Woman	7
4	**Human Rights Violations** -Human Rights Violations against Women, Children, Violations against Minorities SC/ST and Trans-genders, Preventive Measures.	6
5	**Professional values**- Integrity, Objectivity, Professional competence and due care, Confidentiality	6
6	**Personal values**- ethical or moral values, Attitude and behavior- professional behavior, treating people equally	6
7	**Code of conduct**- professional accountability and responsibility, misconduct, Cultural issues in the healthcare environment	8
	Total	**45 hrs**

Reference Books:

1. Jagannath Mohanty Teaching of Human sRights New Trends and Innovations Deep & Deep Publications Pvt. Ltd. New Delhi2009
2. Ram Ahuja: Violence Against Women Rawat Publications Jewahar Nager Jaipur.1998.
3. Sivagami Parmasivam Human Rights Salem2008
4. Hingorani R.C.: Human Rights in India: Oxford and IBA New Delhi.

SEMESTER-III

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Introduction To Operation Theatre Technology (OT)**
Course Code	**BSOTT 3.1**

Teaching Objective	To classify items to be sterilized or disinfected for OT To discuss different Methods of sterilization related to OT To discuss Methods of disinfection in OT
Learning Outcomes	Demonstrate ability to prepare and maintain Operation Theater Able to identify and move to maintain a sterile field Manage and maintain theatre equipments

Sr. No.	Topics	No. of Hrs.
1	**Introduction to O.T**	10
2	**Disinfectants of instruments and Sterilization**- Definition, Methods, cleaning agents, detergents, Mechanical washing, ultrasonic cleaner, lubrication inspection and pitfalls	15
3	**Various methods of chemical treatment**- formalin, glutaraldehyde, thermal. Hot Air oven- Dry Heat, Autoclaving, steam Sterilization water etc, UV treatment	10
4	**Sterilization of Equipment** - Arthroscope, Gastro scope, Imago Lamp, Apparatus, suction **Apparatus Anaesthetic equipme**nt including endotracheal tubes - OT Sterilization including Laminar Air flow (All Anaesthetic Instruments)	10
Total		**45 hrs**

BSOTT 3.1P Introduction to Operation Theatre Technology (OT)

Sr. No.	Topics	No. of Hrs.
1	Sterilization of OT	12
2	Handling of sterelized articles	12
3	Lay out of instruments trolley	12
4	Universal safety precautions	12
5	Disposal of Biomedical Waste	12
6	Preparation of Electronic	12
Total		**60 hrs**

Reference:

1. A A. Ahanatha Pillai Manual of AT/OT Technicians.
2. Berry & Kohnis-Berry and Kohnis Operating RAM Technique.

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Introduction to Anesthesia Technology (AT)**
Course Code	**BSOTT 3.2**

Teaching Objective	• To know the history of Anesthesia • To get an understanding of Positioning of Patient
Learning Outcomes	• Suggesting a simple anesthetic plan commonly used anesthesia non-invasive • Monitoring in the Operation Theatre

Sr. No.	Topics	No. of Hrs.
1	**History of Anesthesia:** First successful clinical demonstration: Pre - historic (ether) era, Regional anesthetic era, Intravenous anesthetic era, Modem anesthetic era, Minimum standard of anesthesia, who should give anesthesia **General Anesthesia Techniques:** General Anesthesia., Regional Anesthesia - Including Epidural, Spinal and Nerve Block Anesthesia., Combined General and Epidural Anesthesia, Monitored Anesthesia Care with Conscious Sedation	9
2	**Pre-Op Preparation**: Checklist , Medications, safety, consent, advanced Directives **Pre anesthetic assessment**: History – Past history - Disease / Surgery / personal history - Smoking / alcohol; **General physical assessment**, systemic examination – CVS, RS, CNS , **General examination**-,assessment and physical systemic examination	9
3	**Monitoring in the Operation Theatre** **Positioning of Patient**: **Patient-Informed consent.** NBM guidelines/ nil per orally Premedication - advantages, drugs used Special instructions - if any **Machine -** Checking the machine 02, N20, suction apparatus Laryngoscopes, ET tubes, airways, Cannula's and Catheters for IV accessibility, Cardiac Monitor Pulse oximeter, Other monitoring systems, Vaporizers (Face Mask) **Drugs-**Emergency drugs , other Drugs used patient care	9
4	**Intraoperative Management** Confirm the identification of the patient, Monitoring – minimum, Non-invasive & Invasive monitoring, Induction - drugs used, Endotracheal intubation, Maintenance of anesthesia, Positioning of the patient, Blood / fluid & electrolyte balance, Reversal from anesthesia - drugs used, Transferring the patient, Recovery room – set up and things needed.	9
5	**O.T. Techniques:** O.T. environment, infection control in O.T., scrubbing, ,Surgical Attire including lead apron and goggles, zoning in O.T.	9
Total		**45 hrs**

BSOTT 3.2P Introduction to Anesthesia Technology (AT)

Sr. No.	Topics	No. of Hrs.
1	Pre Procedure Protocol	12
2	Anesthesia Equipments	12
3	Setting Diffcult Airway Cart	12
4	Spinal Epidural Tray	12
5	Cleaning, Sterilization, Care & Maintenance of Instruments	12
Total		**60 hrs**

Reference books:

1. Anesthesia Manual-A.A.Ahanatha Pillai
2. Lee synopsis (Handbook of Anesthesia)

Name of the Programme	**B.Sc. Operation Theatre**
Name of the Course	**Technology Principles Of Anesthesia**
Course Code	**BSOTT 3.3**

Teaching Objective	• To teach the introductory principles of anesthesia • The terminologies, equipment, and techniques used for preparation and management of the OT • To learn the safe use of anesthesia delivery systems and its application to individual patient care. • To teach Anesthetic techniques with their application to surgical procedures
Learning Outcomes	• Students understand the Basic anaesthetic equipment the working principle of the AT equipment • Able to Monitor the physiological parameters

Sr. No.	Topics	No. of Hrs.
1	**Medical Gas supply:** Compressed gas Cylinders-Color coding, Cylinder valves; pin index, Gas piping system, Recommendations for piping system, Alarms &other safety devices, Scavenging of waste anesthetic gases	4
2	Breathing System: General considerations: humidity & heat Common components – connectors, adaptors, reservoir bags, Capnography, pulse, oximetry, Methods of humidification, Classification of breathing system, Mapleson system - a b c d e f, Jackson Rees system, Bain circuit, Non rebreathing valves - Ambu valves, The circle system	5
3	Mapleson system - a b c d e f, Jackson Rees system, Bain circuit, Non Care of Mouth and skin (Giving bedpan & urinals)	4
4	Administration of Oxygen	4
5	Catheterization III	4
6	Passage of Gastric Tube	4
7	Nursing care during medical illness	4
8	Injection by various routes (III)	4
9	Injection by various routes (III)	4
10	Intake output chart	4
11	Blood sugar measurement	4
Total		**45 hrs**

Reference:

1. Anesthesia Manual-A.A.Ahanatha Pillai
2. Lee synopsis (Handbook of Anesthesia)

BSOTT 3.4CP: ATOT Directed Clinical Education – I

Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The student will be introduced to terminologies, equipment, and techniques used for preparation and management of the OT. **(Total -405 hrs)**

GENERIC ELECTIVE COURSE

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Pursuit of Inner Self Excellence (POIS)**
Course Code	**BSOTT 3.5**

Teaching Objective	• To inculcate moral values in students – Self-Discipline , Time Management, Develop attitude of Service with humility, Empathy, Compassion, brotherhood, Respect for teachers, colleagues & society members. • Develop Effective means of communication & presentation skills in students • To develop wisdom in students for deciding their career based on their areas of interest and inner skills. • Introduce techniques for Relaxation, Meditation & Connecting with innerself. • Rejuvenation Techniques which can be used by students to distress themselves • To improve performance of students during various assignments, projects, elocutions, events, quiz, interviews.
Learning Outcomes	• Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter. • Student's ability to present their ideas will be developed. • Enhanced communication skills, public speaking & improved Presentation ability. • Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused. • Students will observe significant reduction in stress level. • With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.

Sr. No.	Topics	No. of Hrs.
1	**Spiritual Values for human excellence :** The value of human integration; Compassion, universal love and brotherhood (Universal Prayer) ; Heart based living ; Silence and its values, Peace and non-violence in thought, word and deed ; Ancient treasure of values - Shatsampatti , Patanjali's Ashtanga Yoga ,Vedic education - The role of the Acharya , values drawn from various cultures and religious practices - Ubuntu, Buddism, etc.; Why spirituality? Concept – significance ; Thought culture	10

2	**Ways and Means :** Correlation between the values and the Courses ;Different teaching techniques to impart value education; Introduction to Brighter Minds initiative; Principles of Communication; Inspiration from the lives of Masters for spiritual values - Role of the living Master	15
3	**Integrating spiritual values and life:** Relevance of VBSE (Value Based Spiritual Education) in contemporary life ; Significant spiritual values ; Spiritual destiny ; Principles of Self-management; Designing destiny	10
4	**Experiencing through the heart for self-transformation (Heartfulness Meditation):** Who am I? ; Introduction to Relaxation; Why, what and how HFN Meditation?; Journal writing for Self-Observation ; Why, what and how HFN Rejuvenation (Cleaning)? ; Why, what and how HFN connect to Self (Prayer)?; Pursuit of inner self excellence ; Collective Consciousness-concept of *egregore effect;*	10
Total		**45 hrs**

Books:

- The Art of Learning: **A Journey in the Pursuit of Excellence,** Josh Waitzkin, Simon and Schuster, 2007
- Reality at Dawn. By Shri Ram Chandra, Published by ISRC

Name of the Programme	B.Sc. Operation Theatre Technology
Name of the Course	Organizational Behavior
Course Code	BSOTT 3.6

Teaching Objective	• To understand the initial insights into underlying principles and fundamental theories of organizational behaviour. • The Student should develop a sense of what falls under the domain of organizational behaviour. • He should develop an understanding of academic views on the behaviour and motivations of people in organizations and the purposes of organizations. • This course clearly takes an academic and scientific lens with the aim of understanding human behaviour in organizations.
Learning Outcomes	• Describe and apply motivation theories to team andorganizational scenarios in order achieve a team's or an organization's goals and objectives. • Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizationalsettings. • Explain types of teams and apply team development, teameffectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.

Sr. No.	Topics	No. of Hrs.
1	Organizational Behavior - Definition - Importance - Historical Background - Fundamental concepts of OB - 21st Century corporate - Different models of OB i.e. autocratic, custodial, supportive	6
2	**Organization Structure and Design** - Authority and Responsibility Relationships - Delegation of Authority and Decentralization - Interdepartmental Coordination - Emerging Trends in Corporate Structure, Strategy and Culture - Impact of Technology on Organizational design - Mechanistic vs Adoptive Structures – Formal and Informal Organization	8
3	Perception Process - Nature & Importance - Perceptual Selectivity - Perceptual Organization - Social Perception - Impression Management	6
4	Learning - Process of Learning - Principles of Learning - Organizational Reward Systems - BehavioralManagement	6
5	Motivation - Motives - Characteristics - Classification of motives - Primary Motives - Secondary motives - Morale - Definition and relationship with productivity - MoraleIndicators	6
6	Leadership - Definition - Importance - Leadership Styles - Models and Theories of LeadershipStyles	7
7	Conflict Management - Traditional vis-a-vis Modern view of conflict - Constructive and Destructive conflict - Conflict Process - Strategies for encouraging constructive conflict - Strategies for resolving destructiveconflict	6
Total		**45 hrs**

Books:

1. Organizational Behavior, 9th Ed. - Stephen Robbins
2. Human Behaviour at work - Davis and Newstorm
3. Organizational Behaviour - Uma Sekaran
4. Organizational Behaviour - Fred Luthans
5. Organizational Behaviour - K.Aswathappa
6. Human Behaviour at Work - Keith Davis
7. Organizational Behaviour - Jit S.Chandran
8. Human Relations & Organizational Behaviour - R.S.Dwivedi
9. Organizational Behaviour - McShane

SEMESTER-IV

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Basic Techniques of Anesthesia**
Course Code	**BSOTT 4.1**

Teaching Objective	• To explain the rational selection of regional Anesthesiastechniques and the choice of local Anesthesia. • To teach the depth of general anesthesia and its mechanism
Learning Outcomes	• Student learns the rational use selection of regional Anesthesia techniques and the choice of local Anesthesia. • Incorporates Basic understanding of immediate in preoperative patient management. • Performs skills for Management of patients in post-anesthesia recovery room

Sr. No.	Topics	No. of Hrs.
1	**Resuscitation techniques:** . Basic life support (Airway, breathing, circulation) and the equipment used for it, Drugs used in CPR, AED and Defibrillators	15
2	**Anesthesia drugs and techniques:** Principles of anesthesia, Basics of general anesthesia depth, mechanism and intubation, Techniques of general anesthesia, Various intravenous and inhalational agents, Regional anesthesia, spinal and epidural, posture and drugs, Local Anesthetic agents, Neuro muscular blocking agents, Principles of oxygen administration along with the apparatus, Care of patient in the recovery room, Post-operative pain: evaluation and management, Types of fluid and therapy, Blood and blood components transfusion, Preparation of anesthesia machine, intubation kit, suction machine, anesthesia drugs, Patient identification, marking, shifting to OT before surgery and out of OT, to recovery roomafter surgery, complete takeover and handover of the patient with vital signs recording before and after surgical procedure to the nursing staff.	15
Total		**30 hrs**

BSOTT 4.1P- Basic techniques of Anesthesia

Sr. No.	Topics	No. of Hrs.
1	**Types of Anesthesia (Preparation)**	4
2	Boyle's anesthesia apparatus and other Advanced Anesthesia machines	4
3	Endotracheal tubes: Selection of the material used for the endotracheal tube Study of the structure of various types of the endotracheal tubes. Cleaning and sterilization of ETT	4
4	Mask: Material, structure and importance of dead space of face mask, Cleaning and sterilization.	4
5	Supraglottic airways.	4
6	Spinal and epidural blocks: equipment, types of spinal and epidural needles, their structure	4
7	Laryngeal sprays: Types, structure and material used, mechanism, uses and their maintenance	4
8	Surgical Safety Checklist	4
9	Intraoperative Monitoring	4
10	Pre-operative Evaluation and consent for surgery	4
11	Pediatric Anesthesia	4
12	Assisting Anesthetist	4
13	Various Gas Cylinders, Central Gas Pipeline, CENTRAL Suction, Explosion Risk	4
14	Surgical Safety Checklist	4
15	Intraoperative Monitoring	4
Total		**60 hrs**

Reference:

1. Anesthesia manual –A.A. Ahanatha Pillai
2. Lee synopsis (Handbook of Anesthesia)

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Medical Diseases Influencing Choice of Anesthesia**
Course Code	**BSOTT 4.2**

Teaching Objective	• The students will learn the application of anaesthetic medications in Various Heart diseases**.** • Respiratory diseases such asChronic Obstructive PulmonaryDisease and Acute Respiratory Failure in renal diseases, diseases of Liver and endocrine disorders and In metabolic Diseases
Learning Outcomes	• Students understand the apply the knowledge related to drugs, calculations of anesthetic medications in different cardiovascular, respiratory and renal diseases.

Sr. No.	**Topics**	**No. of Hrs.**
1	**Ischemic Heart Disease: Risk factors**: Medications, Acute MI, and Anesthesia for IHD cases. Post op management	4
2	**Valvular Heart Disease:** Mitral stenosis: Anaesthetic problems , Aortic regurgitation	4
3	Hypertension: Drugs Anesthesia for Hypertension. Hypertensive Crises. Complications	4
4	**Respiratory Diseases:** COPD, Bronchiectasis, Asthma, Pneumonia, Acute Respiratory Failure , Tuberculosis	4
5	**Diseases of CNS**- Cerebral Oedema & Its Management, Ocular Trauma, Meningitis, Encephalitis	4
6	**Disearses of Liver and Biliary Tract**-Liver Functions, Liver Function Tests, Hepatitis, Jaundice, Types, Cirrhosis; Hepatorenal Syndrome	4
7	**Renal Disease:** Functions of Kidney, Kidney Function, tests, Renal Failure, Anesthesia for renal failure patients (Acute and Chronic), Urinary Tract Infection	4
8	**Water Electrolyte & Acid Base Disturbances:** Distribution of Body Water, Dehydration, Hyperkalaemia, Hypokalaemia, Sodium, Calcium, **Acid Base Disturbances** – Types And Treatment	4
9	**Endocrine Disease :**Diabetes Mellitus, **Thyroid Dysfunction** – Thyrotoxicosis, Hypothyroidism, Adrenal Gland Dysfunction, Diabetes Insipidus.	4
10	Obesity, Anaemia, Iron Deficiency Anaemia	3
11	**Head Injury:** Classification, Mechanisim of Head Injury, SDH, EDH, SAH	3
12	**Introduction To Obestertrics**	3
Total		**45 hrs**

Reference:

1. George Mathews:- Handbook Medicine
2. Lee Synosis: Anaethesia Handbook

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Medicine Relevant To Operation Theatre Technology**
Course Code	**BSOTT 4.3**

Teaching Objective	• To learn in detail about the medicines relevant to OT such as Antisialagogues, Sedatives, Anxiolytics and Narcotics • To learn also about Antiemetic's, Muscle Relaxants and Local Anaesthetics commonly used in OT and Emergency Medications
Learning Outcomes	• Students know thoroughly the medicines relevant to OT such Antisialagogues, Sedatives, Anxiolytics and Narcotics understand the use of muscle relaxant and Local Anaesthetics commonly used in OT have knowledge and use of Emergency medicines

Sr. No.	Topics	No. of Hrs.
1	Antisialagogues: Atropine, Glycopyrrolate, Sedatives I Anxiolytics:Diazepam, Midazolam, Phenergan, Lorazepam, **Narcotics:** Morphine, Pethidine, Fentanyl, Pentazozine, tramadol.	9
2	**Antiemetic's:** Metoclopramide, Ondansetron, Dexamethasone **Induction Agent:**Thiopentone, Diazepam, Midazolam, Ketamine, Propofol Etomidate **Reversal Agents:** Neostigmine, Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam).	9
3	**Muscle Relaxants**: Depolarizing - Suxamethonium, Non depolarizing – Vecuronium Atracurium, Rocuranium. **Inhalational Gases:** Gases-02, N20, Air, Agents-Ether, Halothane, Isoflurane, Sevoflurane, Desflurane, **Reversal Agents**: Neostigmine, Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam).	9
4	**Local Anesthetics:** Xylocaine, Bupivacaine-Topical,PRilocaine-Jelly, Emla-Ointment, Etidocaine, Ropivacaine	9
5	**Emergency Drugs :** Mode or administration, dilution, dosage and effects Adrenaline, Atropine, Ephedrine, Mephentramine, Bicarbonate, calcium, potassium, Inotropes: dopamine, dobutamine, amiodarone, Aminophylline, hydrocortisone, antihistaminic, Antihypertensive –Beta-blockers, Ca-channel blockers, Antiarrhythmic- xylocard, Vasodilators- nitroglycerin & sodium nitroprusside, Respiratory system-Bronchodilators. Renal system- Diuretics, frusemide, mannitol	9
Total		**45 hrs**

Reference:

1. Lee Synosis
2. Morgan (Anesthesia Books)
3. Tripathi (Book of Pharmacology)

BSOTT 4.4CP: ATOT Directed Clinical Education – Part II

Students will gain additional skills in clinical preparation, interaction with patients and professional personnel. Students apply knowledge from previous clinical learning experience under the supervision of a senior technical officer

(Total – 450 hrs.)

ABILITY ENHANCEMENT ELECTIVE COURSE

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Computers and Applications**
Course Code	**BSOTT 4.5**

Teaching Objective	• Learn IT applications in medicine and allied health care field. • Introduction to health informatics. • Understand the theories and practices adopted in Hospital Information Systems in the light of medical standards, medical data formats and recent trends in Hospital Information Systems.
Learning Outcomes	• Discuss about health informatics and different IT applications in allied health care. • Explain the function of Hospital Information Systems • Analyze medical standards

Sr. No.	Topics	No. of Hrs.
1	Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.	1
2	Input output devices: Input devices(keyBSOTTrd, point and draw devices, data scanningdevices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).	3
3	Processor and memory: The Central Processing Unit (CPU), main memory.	4
4	Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.	3
5	Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).	5
6	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.	5
7	Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.	5
8	Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.	5
9	Introduction of Operating System: introduction, operating system concepts, types of operating system.	4
10	Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.	5
11	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.	4

12	Application of Computers in clinical settings.	1
Total		**45 hrs**

Text books:

(1) Mausner & bahn : Epidemiology-An Introductory text, 2nd Ed.,W.B.Saunders Co.
(2) Richard f. Morton & j. Richard hebd : A study guide to Epidemiology and Biostatistics, 2nd Ed., University Park Press, Baltimore.
(3) Sylvia W Smoller, J Smoller, Biostatistics & Epidemiology A Primer for healthand Biomedical professionals, 4th edition, Springs, 2015

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Biostatistics and Research Methodology**
Course Code	**BSOTT 4.6**

Teaching Objective	• To enable students to present, analyze and interpret data. • To enable students to use concepts of probability in business situations. • To enable students to make inferences from samples drawn from large datasets. • To enable students to apply univariate and multivariate statistical techniques.
Learning Outcomes	• To understand the importance & Methodology for research • To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.

Sr. No.	**Topics**	**No. of Hrs.**
1	Introduction to research methods	5
2	Identifying research problem	5
3	Ethical issues in research	5
4	Research design	5
5	Basic Concepts of Biostatistics	5
6	Types of Data	5
7	Research tools and Data collection methods	5
8	Sampling methods	5
9	Developing a research proposal	5
Total		**45 hrs**

Text books:

(1) Mausner & bahn : Epidemiology-An Introductory text, 2nd Ed.,W.B.Saunders Co.
(2) Richard f. Morton & j. Richard hebd : A study guide to Epidemiology and Biostatistics, 2nd Ed., University Park Press, Baltimore.
(3) Sylvia W Smoller, J Smoller, Biostatistics & Epidemiology A Primer for healthand Biomedical professionals, 4th edition, Springs, 2015

SEMESTER-V

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Basics of Surgical Procedures**
Course Code	**BSOTT 5.1**

Teaching Objective	• To learn to assist in General surgical procedure and learn about para-surgical equipment • To learn about Blood Transfusion and its procedures
Learning Outcomes	• Able to assist anesthesiologists in pre-operative, surgical theater, recovery room, and post-operative intensive care procedures in BSOTThminor and major surgeries.

Sr. No.	Topics	No. of Hrs.
1	**Blood Transfusion:** History of discovery of blood groups and genetics of blood groups, Types of blood groups and Rh factor, Coombs test, Collection of blood, its preservation and standardization, Various types of blood and blood products(Packed cells, PRP, FFP), Pre-transfusion checks, Pre-transfusion checks, Fluids and electrolytes, Body fluid compartments and the effect of fluid administration on them, Types of fluids (crystalloids and colloids) and their chemical composition, Indications of specific fluids and their complications	15
2	**General surgical procedure and para-surgical equipment:** Operating tables: structure, material used maintenance, control, Hydraulic system, and Electrical system, Different types of diathermy machine. Monopola, Bipolar, Scalpel, Principle, hazards, prevention, functioning and maintenance, Types of operation lights and light sources: Features, Care, cleaning, sterilization, and maintenance, Operation Theatre sterilization-Different recent advances, LAR/APR--Positioning of patient, care-Prevention of hazards, Venesection and Tracheostomy, Laparoscopic Cholecystectomy – Pneumoperitoneum - Creation and removing, principles, Emergency surgical procedures and trauma, Shock, Positioning of patient for different operations: Problems and hazards, Hypothermia and hyperthermia.	15
Total		**30 hrs**

BSOTT 5.1P –Basics of surgical procedures

Sr. No.	Topics	No. of Hrs.
1	Positioning during surgeries	10
2	Use of Comfort Devices –Bed Cradle, sand bags, bed Blocks, Cardiac Table	10
3	Assist in venesection Collection/ assist in collection of Blood, gastric Contents, I V. infusion,	20
4	Calculation of fluid , starting/administration of iv Fluids ,	5
5	use of infusion pumps, Assist with blood transfusion Total parenteral Nutrition, Administration of Topical applications	10
6	Assist in dressing , Suture care, Care of Drain	5
Total		**60 hrs**

Reference:

1. Anesthesia Manual A.A
2. Less Synopsis- Book of Anesthesia
3. Medical Surgical- Brunner & Siddharath

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**CSSD procedures**
Course Code	**BSOTT 5.2**

Teaching Objective	• To learn in detailPrinciples of sterilization and disinfection. • Methods of sterilization • Methods of disinfection • Hazards and Prevention of hazards of sterilization
Learning Outcomes	• Able to manage Central sterile supply department. • Show efficiency in methods of sterilization • Independently demonstrated skills of disinfection and sterilization • Verbalizes methods and prevention of infection

Sr. No.	Topics	No. of Hrs.
1	Principles of sterilization and disinfection, Methods of sterilization, Dry Sterilization, Wet sterilization, Gaseous sterilization, Chemical sterilization, Sterilization by radiation (Gamma rays, ultraviolet rays), Techniques of sterilization of rubber articles. (LMA, FOB, ETT, Laryngoscopes, Anesthesia machines and circuits.), Technique of sterilization of carbonized articles, Methods of disinfection, Boiling, Chemical disinfection, Hazards of sterilization, Prevention of hazards of sterilization, Precautions to be taken during sterilization, Recent advance in the methods of sterilization	30
Total		**30 hrs**

Reference:

1 Anesthesia Manual- A. A. Ahanatha Pillai

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Advance Anesthesia Techniques**
Course Code	**BSOTT 5.3**

Teaching Objective	• Students will Demonstrate competence in advanced Anesthesia procedures such as Artificial ventilation and cardiopulmonary bypass and other procedures performed in Minor OT
Learning Outcomes	• Able to assist anaesthesiologists in advanced Anesthesia procedures such as artificial ventilation and cardiopulmonary bypass.

Sr. No.	Topics	No. of Hrs.
1	Heart as a pump, Cardiac cycle, Cardiac contractility and stroke volume, Cardiac output and its measurement, Various ECG Leads, their placement and Normal ECG, Cardiac Arrhythmias (atrial fibrillation, ventricular tachycardia, extra systoles) , Circulatory shock and its physiology, Cardiac failure, Regulation of arterial pressure and hypertension (Drugs used for treatment of hypertension), , Artificial ventilation and related equipment, Physiology of IPPV (Intermittent positive pressure ventilation), Principles of mechanical ventilation, Various modes of IPPV, Operating Room Ventilators, Complications in patients on Ventilators, General care of a patient on ventilator, Disinfection and sterilization of ventilators, Humidification, Principles of oxygen administration and methods used to deliver oxygen, Acid base balance, Electrolyte imbalance and its relevance to anesthesia	45
Total		**45 hrs**

BSOTT 5.3P –Advance Anesthesia Techniques

Sr. No.	Topics	No. of Hrs.
1	Heart lung machine –catheters , Rollers , Pumps	15
2	ECG , Leads , Placement, assessment, Recording and Reporting	15
3	Modes of Ventilator, Ventillatory setting and monitoring	15
4	Oxygen Therapy	15
Total		**60 hrs**

Reference:

1. Lee Synopsis:- Anesthesia Book 2.Mechanical Ventilation Book – By Chang

BSOTT 5.4CP: ATOT Directed Clinical Education – Part III

Students will improve their skills in clinical procedures. Progressive interaction with patients and professional personnel are monitored as students practice in a supervised setting. Additional areas include problem solving, identifying machine components and basic side effect management. Students will demonstrate competence in beginning, intermediate, and advanced procedures.

(Total- 450 hrs)

CORE ELECTIVE COURSES

Name of the Programme	B.Sc. Operation Theatre Technology
Name of the Course	Basics of Clinical Skill Learning
Course Code	BSOTT 5.5

Teaching Objective	• To Understand the basic ideas on how to check for Vital Signs of the Patient • This course the Student will learn how to handle the patients and their positioning • They will also learn on the Basics of Nasal-Gastric Tube • The Students will learn on Administration of IV, IV and Medication • Also they will know about Cleanliness in the Asepsis
Learning Outcomes	• After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines • The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients

Sr. No.	Topics	No. of Hrs.
1	**MEASURING VITAL SIGNS:** Temperature: Axillaries Temperature, Pulse: Sites of pulse, Measurement, Respiratory, Blood Pressure, Pain: Pain Scale	5
2	**PHYSICAL EXAMINATION:**Observation, Auscultation(Chest), Palpation, Percussion, History Taking	10
3	**FEEDING: ENTRAL FEEDING, NG TUBE:** Measurement, Procedure, Care, Removal of Nasal-Gastric Tube, Nasal-Gastric Tube Feeding, and Parentral Nutrition.	10
4	**ADMINISTRATIONS:**Oral, Intravenous, Intramuscular, Subcutaneous, Recapping of Syringe, Loading of Drugs, Calculation of Drugs, Venipuncture, IV Infusion, Cannula, Attachment of IV infusion Set, Fluid Collection, Heparin Lock, Maintenance of IV set, Performing Nebulizer Therapy, Inhaler, Oxygen Therapy (Nasal, prongs, nasal Catheter,Venturi Mask, face mask)	10
5	**ASEPSIS:**Hand wash Techniques,(Medical, Surgical) Universal Precaution, Protecting Equipments: Using Sterile Gloves, Opening a Sterile package and Establishing a Sterile Field, Sterile Dressing Changes, Surgical Attire ,Wound Dressing, Suture Removal, Cleaning and Application of Sterile Dressing, Wearing and Removal of personal protective Equipment	5
6	**MOBILITY AND SUPPORT:**Moving and Positioning, range of Motion exercises (Active & Passive) Assisting for Transfer, Application of Restraints	5
Total		**45 hrs**

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Hospital Operation Management**
Course Code	**BSOTT 5.6**

Teaching Objective	• To promote scientific management of hospital and advancement ofhealth care systems so as to make it rational, responsive and cost efficient • To promote the development of high quality of hospital care inthe community and the country. • It has to provide a satisfactory environment to the patient and also to the doctors for clinical research.
Learning Outcomes	• Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors • Communicate effectively and develop their leadership and teambuilding abilities • Apply modern change management and innovation management concepts to optimize structures • Analyze existing hospital service policies and enhance their alignment within the local and national context

Sr. No.	Topics	No. of Hrs.
1	**MEDICO-LEGAL CASES:** Introduction,Laws associated with Medico-Legal Cases, Three Core Contents in Medico-legal cases w.r.t Doctors, Patient & Profession,	5
2	**CONSIDERATIONS OF ETHICS:** Consent, Confidentiality, Mental Health, End of life and Organ Transportation, Research & Clinical Trials	10
3	**HOSPITAL INFORMATION SYSTEM(HIS):** Hospital Information System Management, software applications in registration, billing, investigations, reporting, medical records management, Security and ethical challenges	10
4	**EQUIPMENT OPERATIONS MANAGEMENT:** Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS	10
5	**ROLE OF MEDICAL RECORDS IN HEALTH CARE MANAGEMENT:** Computers for Medical records, Developments of computerized medical record information processing system(EMR's), Computer stored (Vs) Manual hand written record, Advantages of EMR (Vs) Manual	10
Total		**45 hrs**

SEMESTER-VI

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Basic Intensive Care**
Course Code	**BSOTT 6.1**

Teaching Objective	• To learn Ventilation of patient in crisis: • To know basic Physiotherapy techniques, feeding, Ryle's tube insertion. Suctioning and posturing of semiconscious and unconscious patients • To learn the principles of working of different ventilators:
Learning Outcomes	• Should be able to demonstrate all the basic intensive care required at operation theatre and in handling patient in crisis

Sr. No.	**Topics**	**No. of Hrs.**
1	Care and maintenance of ventilators, suction machine, monitoring devices.	30
2	Care, maintenance and operational capabilities of beds, lights and other apparatus.	
3	Air conditioning and control of pollution in ICU	
4	Attachment and intraoperative utility of ventilators and monitoring devices.	
5	Care of unconscious adult and pediatric patients.	
6	Physiotherapy techniques, feeding, Ryle's tube insertion and hyper alimentation.	
7	Suctioning and posturing of semiconscious and unconscious patients.	
8	Oxygen therapy, maintenance of clear Airway	
9	Ventilation of patient in crisis:	
10	Mouth to mouth	
11	Mouth to ET Tube.	
12	Resuscitator/ bag valve mask assembly	
13	Short term ventilation/ Transport ventilators.	

14	ICU Laboratory; Detection of blood gases of the patient, Principles of ABG machines.	
15	Management of asepsis.	
16	Psychological aspects of the patient, relative and staff.	
Total		**30 hrs**

Reference:

1. Mechanical Ventilation Book 1 –By Chang

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Specialized Anesthesia and Surgery**
Course Code	**BSOTT 6.2**

Teaching Objective	To learn Patient's record keeping preoperatively, during anesthesia and post-operatively To learn Principles and techniques of temperature monitoring. Positioning during cardiothoracic surgical procedures. To know Anesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like tracheo-esophageal fistula.
Learning Outcomes	• Able to help the anaesthesiologist in administering Anesthesia, assist in various procedures and also help in continuous monitoring of patients during surgery.

Sr. No.	**Topics**	**No. of Hrs.**
1	**Cardiovascular and Respiratory System**- Techniques, equipment, procedures and instruments Cell saver techniques, Care, maintenance and working of Heart lung Machine. Patient's record keeping preoperatively, during anesthesia and post-operatively Principles and techniques of temperature monitoring. Positioning during cardiothoracic surgical procedures. **Positioning and techniques for**: Radial artery cannulation, Central venous cannulation/pulmonary artery catheter, Femoral artery/venous cannulation,	15
2	**Monitoring Techniques and Equipment:** Cardiac monitors, blood pressure and ECG monitoring, Respiratory monitors, respiratory rate, Spirometers, SpO2, and EtCO2, Temperature monitors, TEE and echocardiography machine, Non- invasive cardiac output machine	15
3	**1. Positioning**- During various neurosurgical procedures including sitting, prone, lateral and position for trans-sphenoidal hypo-physectomy, Fixation of head during various neurosurgical procedures, Prone and Knee chest position for spine surgery. 2.Anaesthetic and surgical requirements during abdominal surgery including Laparoscopic surgery, genitourinary surgery 3. Anesthetic and surgical requirement during renal transplant donor and recipient surgery including care and precautions during operative procedures of hepatitis B & hepatitis C positive patients.	15
4	Anesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like tracheo-esophageal fistula. Sub diaphragmatic hernia, major abdominal and thoracic procedures. Foreign body bronchus and esophagus	15
Total		**60 hrs**

Reference:

1. Lee Synopsis Lee synopsis
2. MRogan
3. Medical surgical – Brunner & Siddharth
4. Ortho-Lippincctt
5. OBG/GYN – D.C. Dutta

Name of the Programme	**B.Sc. Operation Theatre Technology**
Name of the Course	**Electronics and Technology in Surgery and Anesthesia**
Course Code	**BSOTT 6.3**

Teaching Objective	• To learn the electrical safety precautions in operation theatre. Management of operation theatre in routine and emergency • Record keeping and Inventory maintenance.
Learning Outcomes	• Knowable about Basic electronics, basic principle, care and maintenance of machine at OT. • Able to manage Indenting, Record keeping and inventory maintenance

Sr. No.	Topics	No. of Hrs.
1	**Electronics and electro mechanical techniques-** Electrical safety precautions in operation theatre. OT tables, OT lights, suction, machines, electrodes, pressure transducers, electrical safety, application, handling Operation, Basic electronics, basic principle, care and maintenance and uses of surgical diathermy machine, defibrillator, Boyle's apparatus, anesthesia machine, monitors, pace-makers and stimulators etc. Engineering aspects of operation theatre equipment, power supplies, CVT, servo-stabilizers, and ups etc.	25
2	**Book keeping and Stock maintenance.** Moral aspects and duties of OT technologist, Indenting, Book keeping and storage procedures of different articles, Co-ordination with all working personal in operation Theatre, Psychological aspects of patient, staff and relatives of the patient, Management of operation theatre in routine and emergency, Computer data processing, software information and Data management, Logging on and off, Security concepts, Sending and receiving Emails, Hospital information system	20
Total		**45 hrs**

BSOTT 6.4CP: ATOT Directed Clinical Education – IV

The course provides students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in BSOTTh areas. Students will participate in advanced and specialized treatment procedures.

(Total-675 hrs.)

INTERNSHIP

Guidelines:

1. The internship shall commence after the student has completed and passed all Courses up to VI semesters.
2. The internship is compulsory.
3. The duration of the internship shall be 6 Months.
4. The degree of Bachelor in Allied Health Sciences shall be awarded after the satisfactory completion of the internship.

Evaluation of Internees:

Formative Evaluation:

Day to day assessment of the internees during their internship postings should be done by the Head of the Department/Faculty assigned. The objective is that all the interns must acquire necessary minimum skills required for carrying out day to day professional work competently. This can be achieved by maintaining Records/Log Book by all internees. This will not only provide a demonstrable evidence of the processes of training but more importantly of the internee's own acquisition of competence as related to performance.

Summative Evaluation:

It shall be based on the observation of the Sr. Technical staff / Faculty of the department concerned and Record / Log book maintained by the interns. Based on these two evaluations, the Head of the Department shall issue certificate of satisfactory completion of training, following which the university shall award the degree or declare him/her eligible for it.

To implement the project work uniformly for all the specialties in view of the curriculum and training to be acceptable internationally and the students to get opportunity for higher studies and employment.