

Program Syllabus Booklet

Bachelor of Science in Operation Theatre Technology (BOTT - 806)



Session: 2021-22

**University College of Paramedical Sciences
Guru Kashi University, Talwandi Sabo**

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Program Name: Bachelor of Science in Operation Theatre Technology

Program Code: 806

The Program Outcomes (PO): The PO for the Program Bachelor of Science in Operation theatre technology are as follows:

PO	Statements
PO1	Operation Theatre Technology knowledge: To apply the knowledge of Operation theatre & Equipment's to the solution of complex Diagnostic problems & Surgical procedures
PO2	Problem analysis: To identify, formulate, review literature and analyse complex Surgical problems reaching substantiated conclusions by understanding, self, and others Identify and perform basic patient-care skills and techniques
PO3	Design/development of solutions: To design solutions for complex Operation theatre problems and design system components that meet the specified needs with appropriate consideration for the public health and safety, societal and environmental considerations
PO4	Conduct investigations of complex problems: To use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, synthesis of the information to provide valid conclusions
PO5	Modern tool usage: To create, select, and apply appropriate techniques, resources, and modern surgical instruments modelling to complex surgical activities with an understanding of the limitations.
PO6	The Technician and society: To apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional operation theatre practice
PO7	Environment and sustainability: To understand the impact of the professional technician diagnosis solutions and demonstrate the ability to properly operate imaging equipment,
PO8	Ethics, : To apply ethical principles and commit to professional ethics and responsibilities and norms of operation theatre practice
PO9	Individual and team work: To function effectively as an individual, and as a

	member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: To communicate effectively on complex operation theatre activities with the OT community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO11	Project management and finance: To demonstrate knowledge and understanding of the technician and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: To recognize the need, for and have the preparation and ability to engage in independent and life-long learning in the broadcast context of technological change.

The Program Specific Outcomes (PSO): The PSO for the Bachelor of Science in Operation theatre technology are as follows:

PSO	Statements
PSO1	The impart basic knowledge and skills involved in dealing with handling techniques , aesthetic equipment as well as pre-operative, intra-operative, post-operative patient monitoring and care.
PSO2	To train students to work in conjunction with multidisciplinary team to apply anaesthesia technology to the patient.
PSO3	To pursue further qualification to attain senior position in the professional field and also to keep abreast with the recent advances technology and research.

Annexure-2

Semester: 1 st										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A806101	General Anatomy-I	T	2	1	0	3	50	50	100
2	A806102	General Physiology-I	T	2	1	0	3	50	50	100
3	A806103	Introduction to Quality & Patient Safety	T	4	0	0	4	50	50	100
4	A804103	Basic in Computer & Information Science	T	2	1	0	3	50	50	100
5	A806104	Principles of Management I	T	2	0	0	2	50	50	100
6	A806105	Professionalism and Values	T	2	0	0	2	50	50	100
7	A804108	English and Communication Skills	T	2	0	0	2	50	50	100
8	A806106	General Anatomy-I (Practical)	P	0	0	4	2	60	40	100
9	A806107	General Physiology-I (Practical)	P	0	0	4	2	60	40	100
10	A806108	Introduction to Quality & Patient Safety	P	0	0	4	2	60	40	100
11	A804114	Basic in Computers and Information Science	P	0	0	2	1	60	40	100
Total No. of Credits							26			

Semester: 2 nd										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A100302	Environment Studies	T	3	0	0	3	50	50	100
2	A806201	General Anatomy-II	T	3	1	0	4	50	50	100
3	A806202	General Physiology-II	T	3	1	0	4	50	50	100
4	A806203	Principles of Management -II	T	2	0	0	2	50	50	100
5	A806204	Biochemistry	T	4	0	0	4	50	50	100
6	A806205	Medical Ethics and legal Aspects	T	3	0	0	3	50	50	100
7	A806206	General Anatomy-II	P	0	0	4	2	60	40	100
8	A806207	General Physiology-II	P	0	0	4	2	60	40	100
9	A806208	Biochemistry Practical	P	0	0	4	2	60	40	100
Total No. of Credits							26			



Semester: 3 rd										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A806301	Clinical Pharmacology	T	4	0	0	4	50	50	100
2	A806302	Clinical Microbiology	T	3	0	0	3	50	50	100
3	A806303	Basic Intensive care	T	2	0	0	2	50	50	100
4		Elective-1	T	3	0	0	3	50	50	100
5	A806305	Basic Techniques of Anaesthesia	T	3	0	0	3	50	50	100
6	A806306	Clinical Pharmacology Practical	P	0	0	4	2	60	40	100
7	A806307	Clinical Microbiology Practical	P	0	0	4	2	60	40	100
8	A806308	Basic Techniques of Anaesthesia Practical	P	0	0	4	2	60	40	100
9	A806309	Basic Intensive Care Practical	P	0	0	4	2	60	40	100
10	A806310	Basic of Surgical Procedures Practical	P	0	0	4	2	60	40	100
Total No. of Credits							25			

Elective - I (Select one of the following subjects)

Sr. No.	Subject Code	Subject Name
1	A806304	Basic of Surgical Procedures
2	805309	Advance Principle of Toxicology

Semester: 4 th										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A806401	Pathology	T	4	0	0	4	50	50	100
2	A806402	Medicine	T	4	1	0	5	50	50	100
3	A806403	Principle of the Anaesthesia	T	4	0	0	4	50	50	100
4	A806404	Pathology Practical	P	0	0	6	3	60	40	100
5	A806405	Medicine Practical	P	0	0	6	3	60	40	100
6	A806406	Principle of Anaesthesia Practical	P	0	0	6	3	60	40	100
Total No. of Credits							22			



Semester: 5 th										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A806501	CSSD Procedures	T	3	0	0	3	50	50	100
2	A806502	Advanced Anaesthetic Techniques	T	3	1	0	4	50	50	100
3	A806503	Specialized Surgery and Anaesthesia	T	4	0	0	4	50	50	100
4	A806504	Research Methodology and Biostatistics	T	3	0	0	3	50	50	100
5	A806505	Electronics and Technology in Surgery and Anaesthesia	T	3	0	0	3	60	40	100
6	A806506	CSSD Procedures Practical	P	0	0	4	2	60	40	100
7	A806507	Advanced Anaesthetic Techniques Practical	P	0	0	4	2	60	40	100
8	A806508	Specialized Surgery and Anaesthesia Practical	P	0	0	4	2	60	40	100
9	A806509	Electronics and Technology in Surgery and Anaesthesia Practical	P	0	0	4	2	60	40	100
Total No. of Credits							25			

Semester 6 th										
Sr.	Course Code	Course Name	Type of Course T/P	(Hours Per Week)			No. of Credits	Internal Marks	External Marks	Total Marks
				L	T	P				
1	A806601	Professional Training/Internship (6 Months)	NA	N A	N A	N A	20	500	500	1000



Course Name: General Anatomy-I
Course Code: A806101
Semester: 1st

Annexure-3

L T P

Credits: 03

2 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statements
CO1	Learn about the various muscles, organs, bones, joints, tendons, ligaments, blood vessels and cells.
CO2	Identify cell organelles, blood component, function, skeletal system, circulatory system, lymphatic system and its structure.
CO3	Understand the properties of nerve fiber, anatomy of neuralgia, synapse, CNS, CSF, brain, cranial nerves, demonstration of reflexes.
CO4	Gain knowledge about roles of hormones and clinical importance of pituitary gland, thyroid gland, parathyroid glands, adrenal glands, endocrine pancreas
CO5	Illustrate the malfunctioning organs, their causes, symptoms and clinical investigations.

SECTION-A

Introduction to Anatomical Terms of The Human Body- Basic anatomical terminology, anatomical position, anatomical planes, levels of organization in the body, organ systems, skeleton, and cavities of the body.

Organization of The Human Body At The Cellular Level - Structure of the cell comprising of cell membrane, cytoplasm, cell organelles, nucleus, cell extensions etc.

Organization of The Human Body At The Tissue Level- Epithelial, Connective, Muscular & Nervous tissue.

SECTION-B

Blood - Composition of blood, Features of red blood cells, white blood cells, platelets.

Lymphatic System - Features of lymph vessels, lymphatic tissue & organs, lymphatic's, spleen, tonsil, and thymus.

Nervous System - Central nervous system, brain, cerebellum, spinal cord, cranial nerves, autonomic nervous system.

Muscular System - Skeletal muscle, cardiac muscle, smooth muscle, muscles of the body.

Skeletal System - Features of bones, axial skeleton, and appendicle skeleton.

Musculoskeletal System - Joints of upper & lower limb.

SECTION-C

Respiratory System -Nose & Para nasal sinuses, pharynx, larynx, trachea, lungs.

Cardiovascular System - Heart & blood vessels.

Digestive System - Oral cavity, pharynx, salivary glands, esophagus, stomach, small intestine, large intestine, liver, gallbladder, pancreas.

Urinary System - Kidneys, juxtaglomerular apparatus, Ureter, urinary bladder, urethra.

SECTION-D

Introduction to Genetics- Features of chromosomes, DNA.

Reproductive System In Females- External & internal genital organs, breast.

Reproductive System In Males- Penis, scrotum, testes, prostate gland.

Endocrine System - Hormones, pituitary gland, thyroid gland, parathyroid glands, adrenal glands, endocrine pancreas.

Special Senses - Olfactory system, taste apparatus, external middle & internal ear, eye.

Skin - Features of skin, hair, sebaceous glands, sweat glands, nails.

References:

Chaurasia, B. D. (2010). *BD Chaurasia Human Anatomy*. CBS Publishers & Distributors Pvt. Ltd...

Mescher, A. L. (2013). *Jonquiere's basic histology: text and atlas* (Vol. 12). 13th ed. New York: McGraw-Hill

Halima, A. (2008). *Human Anatomy: Volume I: Upper Limb And Thorax*. IK International Pvt Ltd.

Hallam, J. (2009). Grey's Anatomy: Scalpels, sex and stereotypes. *Medical Humanitie*, 35(1), 60-61.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	1	-	1	1	2	-	1	2	1	1
CO2	3	2	2	2	1	2	-	1	1	2	3	2	2	1	2
CO3	3	3	2	2	3	1	-	-	1	3	1	2	2	1	3
CO4	3	2	1	2	3	1	-	-	2	3	3	2	2	2	1
CO5	3	2	2	2	2	1	1	1	2	3	2	3	2	3	2
Average	2.8	2.2	1.8	2.2	2.2	1.2	1	1	1.4	2.6	2.25	2	2	1.6	1.8

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: General Physiology-I

Course Code: A806102

Semester: 1st

L T P

Credits: 03

2 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Illustrate the functions of structures related to human body.
CO2	Learn the functions of cell and its organelles, function, skeletal system, circulatory system, lymphatic system.
CO3	Identify role of nerve fibres, function of neuralgia, synapse, CNS, CSF, brain, cranial nerves, demonstration of reflexes.
CO4	Categories functioning of Hormones of pituitary gland, thyroid gland, parathyroid glands, adrenal glands, endocrine pancreas,
CO5	Enlist the malfunctioning of the organs and diagnose the disorders.

Course Contents

SECTION-A

Composition of body, Homeostasis, Introduction to chemistry of life.

Organization of The Human Body At The Cellular Level– Function of lipids, carbohydrates, proteins & cell organelles.

Organization of the human body at the tissue level – Function of Epithelial, Connective, Muscular & Nervous tissues.

SECTION-B

Blood – Haemopoiesis, homeostasis, coagulation of blood, blood transfusion.

Lymphatic System– Function of lymph vessels, lymphatic tissue & organs, lymphatic, spleen, tonsil, thymus.

Resistance & Immunity – Innate immunity, acquired immunity, humoral & cell mediated immunity.

SECTION-C

Nervous System – Properties of nerve fibers, function of neuralgia, synapse, CNS, CSF, brain, cranial nerves, demonstration of reflexes.

Muscular System – Properties of skeletal muscle, cardiac muscle, smooth muscle, muscles of the body.

Skeletal System – Functions of bones, axial skeleton, and appendicular skeleton.

Musculoskeletal System – Movement in the joints of upper & lower limb.

Respiratory System – Physiology of respiration, pulmonary function tests, gas exchange in lungs, transport of gases between lungs & tissues, regulation of respiration.

Cardiovascular System - Heart & blood vessels: Systemic circulation, pulmonary circulation, ECG, cardiac output, blood pressure.

SECTION-D

Digestive System – Process of digestion, function of oral cavity, pharynx, salivary glands, esophagus, stomach, small intestine, large intestine, liver, gallbladder, pancreas.

Urinary System – Function of kidneys, juxtaglomerular apparatus, Ureter, urinary bladder, urethra, physiology of urine formation, Glomerular filtration, tubular re absorption, water balance, and micturition.

Introduction to Genetics - Features of chromosomes, DNA, protein synthesis, dominant inheritance, recessive inheritance, sex linked inheritance.

Reproductive System– Female: Physiology of female reproductive system.

Reproductive System – male: Physiology of male reproductive system.

Endocrine System - Mechanism of action of hormones, function of pituitary gland, thyroid gland, parathyroid glands, adrenal glands, endocrine pancreas.

Special Senses - Physiology of olfaction, taste, hearing, balance & vision.

Skin – Function of skin, hair, sebaceous glands, sweat glands, nails, temperature regulation.

References:

Aashaadha, P. R., &Deepa, G. (2012). *Textbook of Anatomy & Physiology for Nurses*. JP Medical Ltd.

Chatterjee, C. C. (2020). *Human Physiology*. (13 th edition). CBS Publisher and Distributor Pvt.Ltd.Colorimetry

Heilbrunn, L. V. (1952). *General physiology*. Saunders, Philadelphia.

Hall, J. E. 1. (2016). *Guyton and Hall textbook of medical physiology* (13th edition.). Philadelphia, PA: Elsevier

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	1	3	2	-	-	2	3	2	3	3	2	1
CO2	2	3	1	2	1	2	-	1	2	2	1	2	3	2	3
CO3	3	3	1	2	2	1	-	-	2	1	3	2	2	3	2
CO4	2	3	2	2	2	3	-	1	2	3	2	2	2	3	2
CO5	2	3	2	3	1	2	1	-	1	2	2	3	2	2	3
Average	2.2	2.8	1.6	2	1.8	2	1	1	1.8	2.2	2	2.4	2.4	2.4	2.2

The correlation levels are: “1” – Low Correlation, “2” – Medium Correlation, “3” – High Correlation and “-” indicates there is no correlation.

Course Name: Introduction to Quality & Patient Safety

Course Code: A806103

Semester: 1st

L T P

Credits: 04

4 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Narrate the health care discipline that emerged with the evolving complexity.
CO2	Absorb knowledge to prevent and reduce risks, errors and harm that occur to patients during provision of health care.
CO3	Restate continuous improvement based on learning from errors and adverse events.
CO4	Perform important role in quality improvement approaches, standards and norms.
CO5	Use quality improvement tools, introduction to NABH guidelines.

Course Contents

SECTION-A

Quality Assurance and Management

Introduction, Quality improvement approaches, standards and norms, quality improvement tools, introduction to NABH guidelines.

Basic of Emergency Care and Life Support Skills

Basic life support (BLS) following cardiac arrest, recognition of sudden cardiac arrest and activation of emergency response system, early cardiopulmonary resuscitation (CPR) and rapid defibrillation with an automated external defibrillator (AED)

SECTION-B

Basic Emergency Care

First aid, choking, rescue breathing methods, ventilation including use of bag valve master (BVMs)

SECTION-C

Biomedical Waste Management

Definition, waste minimization, BMW-segregation, collection, transportation, treatment and disposal (Including color coding), Liquid BMW, Radioactive waste, metals/chemicals/drug

waste, BMW management and methods of disinfection, use of Personal protective equipment (PPE)

SECTION-D

Infection Prevention and Control

Sterilization, Disinfection, Effective hand hygiene, use of PPE, Prevention and control of common health care associated infections, Guidelines (NABH) and JCI for hospital infection control.

Disaster preparedness and management

Fundamentals of emergency management

References:

Schriefer, J., & Leonard, M. S. (2012). Patient safety and quality improvement: an overview of QI. *Pediatrics in review*,

Datta, P., Mohi, G., &Chander, J. (2018). Biomedical waste management in India: Critical appraisal. *Journal of laboratory physicians*,

Yamin, T. (2013). Chemical & Biological Weapons: Positions, Prospects and Trends. *Policy Perspectives*,

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	3	2	-	1	2	2	-	2	3	2	1
CO2	2	3	2	1	2	2	-	-	2	3	1	2	3	2	2
CO3	2	3	3	2	2	1	1	-	2	3	2	2	2	3	2
CO4	2	1	2	2	3	1	-	1	2	3	3	3	2	2	2
CO5	3	2	2	2	1	2	1	1	2	3	2	3	2	2	3
Average	2.4	2.2	2	1.8	2.2	1.6	1	1	2	2.8	1.6	2.4	2.2	2.2	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation

Course Name: Basics in Computer & Information Science

Course Code: A804103

Semester: 1st

L T P

Credits: 03

2 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Apply Computer resources for learning and made education more flexible and easy to access.
CO2	Attain knowledge and information from available online resources.
CO3	Apply video tutorials also contributes in the resources that are needed by the students.
CO4	Utilize infinite resources for learning and made education more flexible and easy to access.
CO5	Create and manipulate presentation, views, formatting and enhancing text, and slide with graphs.

Course Contents

SECTION-A

Introduction to Computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

Input Output Devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).

Processor and Memory: The Central Processing Unit (CPU), main memory.

Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

SECTION-B

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.).

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.

Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

SECTION-C

Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Introduction of Operating System: introduction, operating system concepts, types of operating system.

SECTION-D

Computer Networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Application of Computer in clinical settings.

References:

Rajaraman, V., & Radhakrishnan, T. (2006). *Digital Logic and Computer Organization*. PHI Learning Pvt. Ltd..

Mehdi, M. M. (2015). Information Technology for Management by. *FIIB Business Review*, 4(1), 46-47.

Ram, B. (2000). *Computer fundamentals: architecture and organization*. New Age International.

Basandara, S. K. (2017). *Computers Today*, Galgotia publication Pvt Ltd. Daryaganj, New Delhi.

Sadagopan, S. (1998). *Internet for everyone* by Alexis Leon and Matthews Leon, Vikas Publishing House, 1997, Rs. 128.00.

Saxena, S. (2009). *A first course in computers: Based on Windows Xp & Office*. Vikas Publishing House Pvt Ltd.

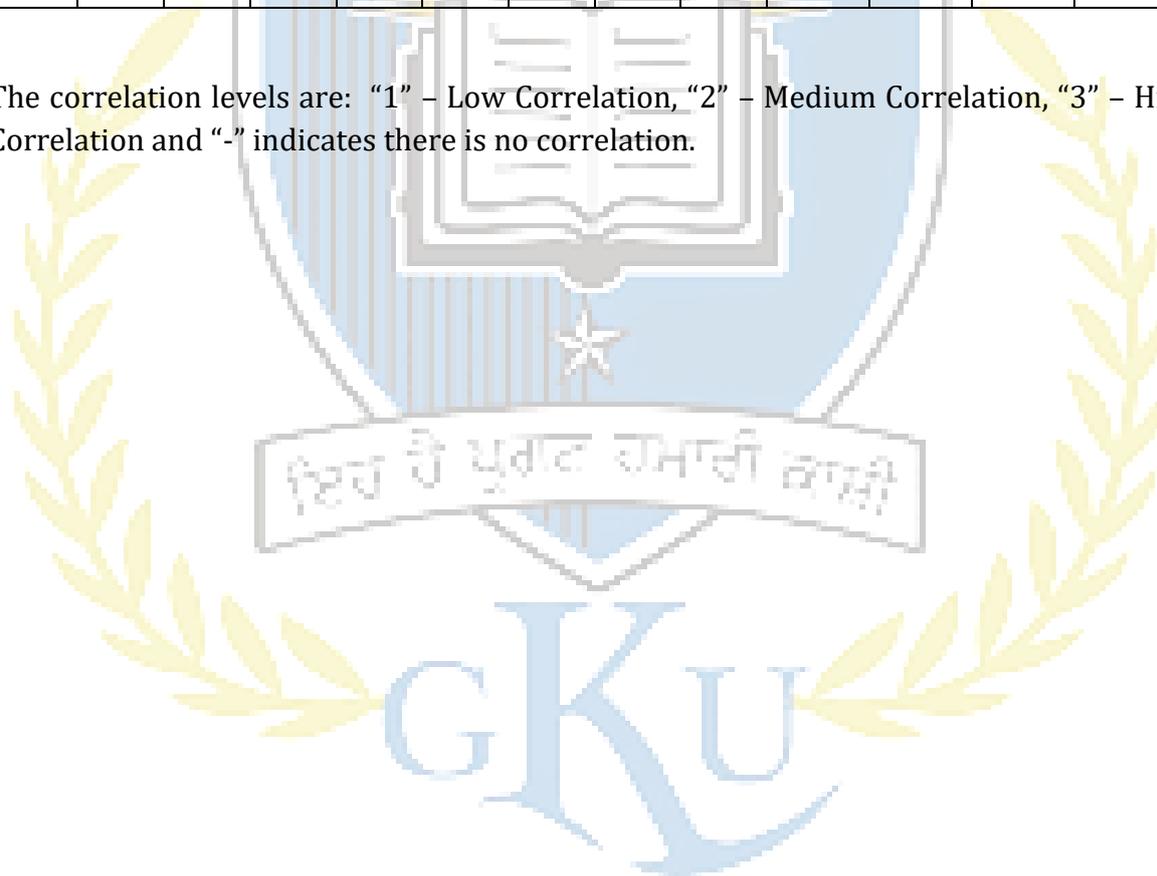
Sinha P.K. and Sinha, P. (2007) *Computer Fundamentals*, BPB Publications.

Bangia, R. (2008). *Computer Fundamentals and Information Technology*. Firewall Media.

The mapping of PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	1	2	2	2	2	-	2	1	2	1
CO2	2	3	3	3	2	-	-	2	2	2	-	2	2	1	2
CO3	3	2	3	3	3	-	-	2	2	2	-	2	2	3	1
CO4	3	3	2	3	3	-	-	2	2	2	-	2	1	2	2
CO5	2	3	3	3	3	-	-	2	2	2	-	3	1	3	1
Average	2.6	2.6	2.6	3	2.8	0.2	0.4	2	2	2	0	2.2	1.4	2.2	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Principles of Management I

Course Code: A806104

Semester: 1st

L T P

Credits 02

2 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Understand the concepts related to management in business.
CO2	Demonstrate the role, functions and skills of management.
CO3	Analyse effective application of PPM knowledge to diagnose and solve organization optimal managerial decision
CO4	Apply the concepts of Groups and Teams to work collaborator during surgeries.
CO5	Understand the concepts of Time Management.

Course Contents
SECTION-A

Introduction to Management

Strategic Management

SECTION-B

Foundations of Planning

Planning Tools and Techniques

Decision Making, conflict and stress management

SECTION-C

Managing Change and Innovation

Understanding Groups and Teams

Leadership

SECTION-D

Time Management

Cost and efficiency

The mapping of PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	1	1	-	1	1	3	2	1	1	1	3
CO2	2	3	2	2	2	2	-	-	1	2	2	2	3	2	2
CO3	3	3	2	1	2	1	1	-	1	2	3	1	1	2	1
CO4	3	2	3	1	1	2	-	1	2	1	1	2	2	2	2
CO5	3	3	2	2	2	1	1	1	2	2	2	2	2	3	2
Average	2.8	2.6	2.2	1.6	1.6	1.4	1	1	1.4	2	2	1.6	1.8	2	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Professionalism and Values

Course Code: A806105

Semester: 1st

L T P

Credits: 02

2 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Demonstrate the clinical responsibilities and role of a doctor and assistant.
CO2	Maintain confidentiality and respect regarding patients' dignity and privacy.
CO3	Manage their time and prioritise effectively.
CO4	Understand attitude and behavior- professional behavior, treating people
CO5	Manage Code of conduct, professional accountability and responsibility, misconduct.

Course Contents

SECTION-A

Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality

Personal values- ethical or moral values

SECTION-B

Attitude and behavior- professional behavior, treating people equally

Code of conduct , professional accountability and responsibility, misconduct

SECTION-C

Differences between professions and importance of team efforts

Cultural issues in the healthcare environment

References:

Rokeach, M. (2008). *Understanding human values*. Simon and Schuster.

Inglehart, R. F., Basanez, M., Basanez, M., & Moreno, A. (1998). *Human values and beliefs: A cross-cultural sourcebook*. University of Michigan Press.

Kerruish, A. (1995). Basic human values: The ethos for methodology. *Journal of community & applied social psychology*, 5(2), 121-143.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	1	-	1	1	2	-	1	2	1	1
CO2	3	2	2	2	1	2	-	1	1	2	3	2	2	1	2
CO3	3	3	2	2	3	1	-	-	1	3	1	2	2	1	3
CO4	3	2	1	2	3	1	-	-	2	3	3	2	2	2	1
CO5	3	2	2	2	2	1	1	1	2	3	2	3	2	3	2
Average	2.8	2.2	1.8	2.2	2.2	1.2	1	1	1.4	2.6	2.25	2	2	1.6	1.8

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation

Course Name: English and Communication Skills

Course Code: A804108

Semester: 1st

L T P

Credits: 02

2 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Express the viewpoints with confidence in English, discuss and socialize effectively in English
CO2	Demonstrate the skill to write in English without grammatical error, compose articles and compositions in English
CO3	Develop the ability to speak English language with the right way of pronunciation.
CO4	Analyse and restate the meaning of a text & practice listening effectively to communication in English.
CO5	Express values and skills gained through effective communication to other disciplines

Course Contents

SECTION-A

Basics of Grammar-

Vocabulary, Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words.

Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms

Writing Skills

Letter writing, E mail, and Essay, Articles, and Memos, one word substitutes, note making and Comprehension

SECTION-B

Writing and Reading

Summary writing, Creative writing, newspaper reading

Practical Exercise

Formal speech, Phonetics, semantics and pronunciation

Communication: Introduction: Communication process, Elements of communication, Barriers of communication and how to overcome them, Nuances for communicating with patients and their attendants in hospitals.

SECTION-C

Speaking: Importance of speaking efficiently; Voice culture. Preparation of speech. Secrets of good delivery. Audience psychology, handling, Presentation skills, Individual feedback for each student, Conference/Interview technique.

Listening: Importance of listening, Self-assessment, Action plan execution, Barriers in listening, Good and persuasive listening.

SECTION-D

Reading: What is efficient and fast reading, Awareness of existing reading habits, tested techniques for improving speed, Improving concentration and comprehension through systematic study.

Non Verbal Communication: Basics of non-verbal communication, Rapport building skills using Neuro- linguistic programming (NLP)

References:

- Jaidka, K.(2009). English and Communication Skills, , Prescribed by NITTTR, Chandigarh Published By Abhishek Publication,
- Pal and Rorualling (2006). The Essence of Effective Communication, Ludlow and Pantheon; Prentice Hall of India
- Kohli, A. L. (2004). New Design English Grammar, Reading and Writing Skills.Kohli publisher.
- Sasikumar, V. and P.V. Dhamija. (2006) A Practical English Taylor; Tata McGraw Hill
- Datta, R. and Dhir, K.K. Communication Skills. Vishal Publication, Jalandhar

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	2	-	1	2	1	3	2	1	2	1
CO2	2	2	2	2	2	1	-	1	2	2	2	3	2	2	2
CO3	1	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	1	2	2	2	3	-	1	3	2	3	1	3	2	2
CO5	2	2	1	1	2	2	-	-	1	1	2	2	3	2	1
Average	2	2	1.8	2	2.2	2	1	1	2	1.6	2.4	2	2.2	2	1.8

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: General Anatomy-I (Practical)

Course Code: A806106

Semester: 1st

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Demonstrate practical knowledge of human gross and microscopic anatomy using human cadavers and prepared histological slides.
CO2	Identify structures in the body and analyze their relationship with other structures.
CO3	Understand chemical and biological principles and knowledge that serve as the foundation of human anatomy and physiology.
CO4	Describe development, regeneration and normal function of body systems.
CO5	Understand the cellular and physiological mechanisms that drive tissue formation and function.

Course Contents

Section-A

Demonstration of-

Basic anatomical terminology, anatomical position, anatomical planes, levels of organization in the body, organ systems, skeleton, cavities of the body.

Lymphatic System - Features of lymph vessels, lymphatic tissue & organs, lymphatic's, spleen, tonsil, and thymus.

Nervous System - Central nervous system, brain, cerebellum, spinal cord, cranial nerves, autonomic nervous system.

Muscular System - Skeletal muscle, cardiac muscle, smooth muscle, muscles of the body.

Skeletal System - Features of bones, axial skeleton, and appendicular skeleton.

Musculoskeletal System - Joints of upper & lower limb.

Respiratory System - Nose & para-nasal sinuses, pharynx, larynx, trachea, lungs.

Cardiovascular System - Heart & blood vessels.

Digestive System - Oral cavity, pharynx, salivary glands, esophagus, stomach, small intestine, large intestine, liver, gallbladder, pancreas.

Urinary System - Kidneys, juxtaglomerular apparatus, Ureter, urinary bladder, urethra.

Introduction to Genetics - Features of chromosomes, DNA.

Reproductive System In Females - External & internal genital organs, breast.

Reproductive System In Males - Penis, scrotum, testes, prostate gland.

Endocrine System - Hormones, pituitary gland, thyroid gland, parathyroid glands, adrenal glands, endocrine pancreas.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	1	-	1	1	2	-	1	2	1	1
CO2	3	2	2	2	1	2	-	1	1	2	3	2	2	1	2
CO3	3	3	2	2	3	1	-	-	1	3	1	2	2	1	3
CO4	3	2	1	2	3	1	-	-	2	3	3	2	2	2	1
CO5	3	2	2	2	2	1	1	1	2	3	2	3	2	3	2
Average	2.8	2.2	1.8	2.2	2.2	1.2	1	1	1.4	2.6	2.25	2	2	1.6	1.8

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation

Course Name: General Physiology-I (Practical)
Course Code: A806107
Semester: 1st

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Employ the scientific process for understanding principles of anatomy and physiology.
CO2	Understand the cellular and physiological mechanisms that drive tissue formation and function.
CO3	Demonstrate understanding of chemical and biological principles and knowledge that serve as the foundation for understanding human anatomy and physiology.
CO4	Analyze A&P observations and data and determine the potential physiological consequences.
CO5	Become familiar with current teaching practices and ways to address the various learning styles of students in the human anatomy and physiology laboratory.

Course Contents
Section-A

Blood test:

Microscope
 Haemocytometry
 Blood
 RBC count
 Hb
 WBC count
 Differential Count
 Hematocrit demonstration
 ESR
 Blood group & Rh. Type
 Bleeding time and clotting time.

Digestion

Test salivary digestions

Excretion

Examination of Urine

Specific gravity

Albumin

Sugar

Microscopic examination for cells and cysts

Respiratory System:

Clinical examination of respiratory system

Spiro-meters

Breath holding test

Cardio Vascular System:

Measurement of blood pressure and pulse rate

Effect of exercise on blood pressure and pulse rate

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	1	3	2	-	-	2	3	2	3	3	2	1
CO2	2	3	1	2	1	2	-	1	2	2	1	2	3	2	3
CO3	3	3	1	2	2	1	-	-	2	1	3	2	2	3	2
CO4	2	3	2	2	2	3	-	1	2	3	2	2	2	3	2
CO5	2	3	2	3	1	2	1	-	1	2	2	3	2	2	3
Average	2.2	2.8	1.6	2	1.8	2	1	1	1.8	2.2	2	2.4	2.4	2.4	2.2

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation

Course Name: Introduction to Quality & Patient Safety (Practical)

Course Code: A806108

Semester: 1st

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Implement the quality improvement approaches, NABH, NABL , JCI guidelines.
CO2	Rescue the patients by the basic life support skills which can save many lives in urgent cases.
CO3	Apply proper disposals of biomedical waste, reducing risk of infection to waste handling personnel
CO4	Control cross infection which can occur due to improper handling of infected waste polluting surroundings too.
CO5	Focus on the quality measures and proper handling of disposals providing quality facility to patients.

Course Contents

Section-A

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, and

Guidelines (NABH and JCI) for Hospital Infection Control

References:

Schriefer, J., & Leonard, M. S. (2012). Patient safety and quality improvement: an overview of QI. *Pediatrics in review*,

Datta, P., Mohi, G., &Chander, J. (2018). Biomedical waste management in India: Critical appraisal. *Journal of laboratory physicians*,

Yamin, T. (2013). Chemical & Biological Weapons: Positions, Prospects and Trends. *Policy Perspectives*,

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	3	2	-	1	2	2	-	2	3	2	1
CO2	2	3	2	1	2	2	-	-	2	3	1	2	3	2	2
CO3	2	3	3	2	2	1	1	-	2	3	2	2	2	3	2
CO4	2	1	2	2	3	1	-	1	2	3	3	3	2	2	2
CO5	3	2	2	2	1	2	1	1	2	3	2	3	2	2	3
Average	2.4	2.2	2	1.8	2.2	1.6	1	1	2	2.8	1.6	2.4	2.2	2.2	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation

Course Name: Basic Computers and Information Science (Practical)

Course Code: A804114

Semester: 1st

L T P

Credits: 01

0 0 2

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Apply infinite resources for learning and made education more flexible and easy to access.
CO2	Learn operating System: concepts, types of operating system, computer networking.
CO3	Utilize MS word, excel and power point presentation, their applications.
CO4	Email transfers and other ways of communication with the help of computer to make them more professional.
CO5	Create and manipulate power point presentation, views, formatting and enhancing text, and slide with graphs to interpret clinical results.

Course Contents

Section-A

Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Introduction of Operating System: introduction, operating system concepts, types of operating system.

Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Application of computer in laboratories

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	1	2	2	2	2	-	2	1	2	1
CO2	2	3	3	3	2	-	-	2	2	2	-	2	2	1	2
CO3	3	2	3	3	3	-	-	2	2	2	-	2	2	3	1
CO4	3	3	2	3	3	-	-	2	2	2	-	2	1	2	2
CO5	2	3	3	3	3	-	-	2	2	2	-	3	1	3	1
Average	2.6	2.6	2.6	3	2.8	0.2	0.4	2	2	2	-	2.2	1.4	2.2	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Environment Studies

Course Code: A100302

Semester: 2nd

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Understand Natural Resources and associated problems, use and over exploitation.
CO2	Classify causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution
CO3	Categorise the concept of ecosystem, structure, interrelationship of producers, consumers and decomposers.
CO4	Inspect sustainable development, urban problems related to energy, Water conservation, rain water harvesting.
CO5	Illustrate the issues involved in enforcement of environmental legislation Public awareness.

Course Contents

SECTION-A

Introduction

Definition and scope and importance of multidisciplinary nature of environment. Need for public awareness.

Natural Resources

Natural Resources and associated problems, use and over exploitation, case studies of forest resources and water resources.

SECTION-B

Ecosystems

Concept of Ecosystem, Structure, interrelationship, producers, consumers and decomposers, ecological pyramids-biodiversity and importance. Hotspots of biodiversity

Environmental Pollution

Definition, Causes, effects and control measures of air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards, Solid waste management: Causes, effects and control measure of urban and industrial wastes. Role of an

individual in prevention of pollution. Pollution case studies, Disaster management: Floods, earthquake, cyclone and landslides.

SECTION-C

Social blemishes and the Environment

From Unsustainable to Sustainable development, urban problems related to energy, Water conservation, rain water harvesting, water shed management Resettlement and rehabilitation of people; its pros and concerns. Case studies, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies, Wasteland reclamation, Consumerism and waste products. Environment Protection Act, Air (Prevention and Control of Pollution) Act. Water (Prevention and control of pollution) Act. Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation Public awareness.

Human Population and the Environment, Population growth, variation among nations. Population explosion–Family Welfare Program. Environment and human health, Human Rights, Value Education, HIV/AIDS. Women and child Welfare. Role of Information Technology in Environment and human health. Case studies.

SECTION-D

Understanding the Hospital Environment

Understanding the environment in the following clinical laboratories:

Microbiology, Biochemistry, Histopathology, Hematology

Clinical laboratory hazards to the environment from the following and means to prevent:

Infectious material, Toxic Chemicals, Radioactive Material, Other miscellaneous wastes

References:

Chawla S., 2012. A Textbook of Environmental Studies, Tata McGraw Hill, New Delhi.

Jadhav, H & Bhosale, V.M., 1995. Environmental Protection and Laws. Himalaya Pub. House, New Delhi.

Gadi R., Rattan, S., 2006. Environmental Studies, KATSON Books, New Delhi.

McKinney, M.L. & School, R.M., 1996. Environmental Science Systems & Solutions, Web enhanced edition.

Wanger K.D., 1998. Environmental Management. W.B. Saunders Co. Philadelphia, USA

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	1	2	-	1	1	2	3	1	3	1	1
CO2	1	1	2	1	1	1	-	1	2	1	-	1	2	1	1
CO3	3	1	1	3	1	2	1	1	1	1	-	2	1	1	1
CO4	3	1	2	3	2	2	-	1	1	2	2	1	2	1	1
CO5	1	3	2	2	3	1	3	1	1	1	2	1	1	2	1
Average	2	1.4	1.8	2	1.6	1.6	2	1	1.2	1.4	1.4	1.2	1.8	1.2	1

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: General Anatomy-II
Course Code: A806201
Semester: 2nd

L T P

Credits: 04

3 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Find out the parts of digestive system, related glands, urinary system, and genital system.
CO2	Identify the structure and features of meninges ventricles of brain, CSF circulation Development of nervous system & defects.
CO3	Learn various body fluids- site of occurrence and role, causes abnormal conditions.
CO4	Describe Structure and function of Visual system, Auditory system, Gustatory system
CO5	Understand parts and functions Cerebrum, Cerebellum, Midbrain & brain stem Blood supply & anatomy of brain.

Course Contents

SECTION-A

Classification of nervous system

Nerve – structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc.

Parts of a typical spinal nerve/Dermatome: Central nervous system – disposition, parts and functions Cerebrum, Cerebellum, Midbrain & brain stem Blood supply & anatomy of brain.

Spinal cord-anatomy, blood supply, nerve pathways Pyramidal, extra pyramidal system,

SECTION-B

Thalamus, hypothalamus, Structure and features of meninges Ventricles of brain, CSF circulation Development of nervous system & defects.

Cranial nerves – (course, distribution, functions and palsy) Sympathetic nervous system, its parts and components

SECTION-C

Parasympathetic nervous system Applied anatomy

Structure and function of Visual system, auditory system, Gustatory system, Olfactory system, Somatic sensory system. Pelvic floor, innervation's

SECTION-D

Kidney, Ureter, bladder, urethra. Reproductive system of male, Reproductive system of female

References:

Judith, A O., Jinni, P., Sharon A. S., Patricia P. J., Kuby K. (2013) A text of Immunology. New York, Freeman publisher.

Ashalath, P.R. and Deepa, (2011). *Textbook Of Anatomy And Physiology*.

Clark R.K. (2010). *Anatomy and Physiology: Understanding the Human Body*.

Pearce, E. C. (1968). *Anatomy and Physiology for Nurses*.

Sears, Gordon, W., Winwood, R. S. and Smith J. L. (1985). *Anatomy and Physiology for Nurses*.

Kumar, S. S. and Muruges, N. (2011). *Anatomy Physiology And Health Education*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	1	-	1	1	2	-	1	2	1	1
CO2	3	2	2	2	1	2	-	1	1	2	3	2	2	1	2
CO3	3	3	2	2	3	1	-	-	1	3	1	2	2	1	3
CO4	3	2	1	2	3	1	-	-	2	3	3	2	2	2	1
CO5	3	2	2	2	2	1	1	1	2	3	2	3	2	3	2
Average	2.8	2.2	1.8	2.2	2.2	1.2	1	1	1.4	2.6	2.25	2	2	1.6	1.8

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: General Physiology-II

Course Code: A806202

Semester: 2nd

L T P

Credits: 04

3 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Assess physiology of kidney and process of urine formation,
CO2	Calculate Glomerular filtration rate, composition of urine
CO3	Restate various types of hormones secreted by endocrine and exocrine glands, their clinical significance.
CO4	Understand functions of ovaries and uterus, pubertal changes, menstrual cycle.
CO5	List the functions of testes, pubertal changes in males, sex hormones

Course Contents

SECTION-A

Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function, Ureter, bladder, urethra

SECTION-B

Physiology of the endocrine glands , Hormones secreted by these glands, their classifications and functions.

Adrenal, Gonads Thymus, Pancreas. Pituitary, Pineal Body, Thyroid, Parathyroid

SECTION-C

-Male -Functions of testes, pubertal changes in males, testosterone -action & regulations of secretion.

SECTION-D

Female -Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone -action and regulation.

References;

Ashalatha, P. R., &Deepa, G. (2012). *Textbook of Anatomy & Physiology for Nurses*. JP Medical Ltd.

Chatterjee, C. C. (2020). *Human Physiology*. (13 th edition). CBS Publisher and Distributor Pvt. Ltd.

Hall, J. E. 1. (2016). *Guyton and Hall textbook of medical physiology* (13th edition.). Philadelphia, PA: Elsevier.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	3	-	-	2	2	3	2	1	2	1
CO2	2	2	2	2	3	1	-	-	3	2	3	3	2	2	3
CO3	3	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	2	2	2	2	3	-	1	3	2	3	3	3	2	2
CO5	3	2	2	3	3	2	-	-	2	1	2	2	3	3	3
Average	2.6	2.2	2.0	2.4	2.6	2.2	1	1	2.4	1.8	2.6	2.4	2.2	2.4	2.4

The correlation levels are: “1” – Low Correlation, “2” – Medium Correlation, “3” – High Correlation and “-” indicates there is no correlation

Course Name: Principles of Management -II

Course Code: A806203

Semester: 2nd

L T P

Credits: 02

2 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Evaluate the management evolution and how it will affect future management.
CO2	Practice the process of management's functions:- planning, organizing, leading, directing and controlling.
CO3	Observe and evaluate social responsibility and ethical issue involved in business situations and logically articulate own position on such issue
CO4	Observe Functions of Management: Planning – Organizing – Directing – Controlling Planning.
CO5	Learn the importance of organization – Hierarchy – Scalar chain – Organization relationship.

Course Contents

SECTION-A

- a. **Development of Management:** Definitions of Management – Contributions of F.W. Taylor, Henry Fayola and others.
- b. **Functions of Management:** Planning – Organizing – Directing – Controlling Planning: Types of planning – Short-term and long plans – Corporate or Strategic Planning – Planning premises – Policies – Characteristics and sources – principles of policy making – Strategies as different from policies – Procedures and methods– Limitations of planning.
- c. **Organizing:** Importance of organization – Hierarchy – Scalar chain – Organization relationship – Line relationship – Staff relationship - Line staff relationship – Functional relationship - Committee organization – Management committees – Departmentation.
- d. **Motivation:** Motivation theories – McGregor's theory X and theory Y – Maslow's and Herzberg's theory – Porter and Lawler model of complex view of motivation– Other theories – Diagnostic signs of motivational problems – Motivational Techniques.
- e. **Communication:** Types of communication – Barriers of effective communication–

SECTION-B

Techniques for improved communication.

Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership Styles – Delegation of authority.

Controlling: Span of control – Factors limiting effective span of control – Super management, General managers, Middle managers and supervisors – Planning and controlling relationships – Management control process – Corrective measures– Strategic control points – Budgetary control – Types of budgets.

Co-ordination: Co-ordination and co-operation – Principles of co-ordination – Techniques of co-ordination charts and records – Standard procedure instructions.

SECTION-C

Objective of Personnel Management – Role of Personnel Manager in an organization – Staffing and work distribution techniques – Job analysis and description – Recruitment and selection processes – Orientation and training – Coaching and counseling – disciplining – Complaints and grievances – Termination of employees – Performance appraisal – Health and safety of employees - Consumer Protection Act as applicable to health care services.

SECTION-D

Definition of financial Management – Profit maximization – Return maximization– wealth maximization – Short term Financing – Intermediate Financing – Long term Financing – leasing as a source of Finance – cash and Security Management – Inventory Management – Dividend policies – Valuations of Shares – Financial Management in a hospital – Third party payments on behalf of patients. Insurance – health schemes and policies.

References:

Sproull, L. S. (1984).“The Nature of Managerial Attention,” in L. S. Sproull (ed.), *Advances in Information Processing in Organizations*. Greenwich, CT: JAI Press.

Stewart, R. (1967). *Managers and Their Jobs*. London: Macmillan.

Pondy, L. R. (1978). “Leadership Is a Language Game,” in M. W. McCall, Jr. and M. M. Lombardo (eds.), *Leadership: Where Else Can We Go?* Durham, NC: Duke University Press.

Katz, Robert L., (1974). “Skills of an Effective Administrator.” *Harvard Business Review*.

The mapping for PO/PSO/CO attainment is as follows

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	3	1	2	1	1	2	3	2	2	2	2
CO2	2	2	3	2	2	1	2	1	1	2	2	1	1	1	1
CO3	3	2	3	2	1	3	-	1	1	2	2	1	1	2	1
CO4	3	2	2	1	2	1	-	2	1	1	2	1	1	1	2
CO5	2	3	3	3	2	2	1	1	1	1	-	1	2	2	1
Average	2.4	2.2	2.6	2	2	1.6	1.6	1.2	1	1.6	2.25	1.2	1.4	1.6	1.4

The correlation levels are: “1” – Low Correlation, “2” – Medium Correlation, “3” – High Correlation and “-” indicates there is no correlation.

Course Name: Biochemistry

Course Code: A806204

Semester: 2nd

L T P

Credits: 04

4 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn the chemistry of carbohydrate, lipids, proteins and amino acid.
CO2	Narrate the significance of biochemistry in patient's status.
CO3	Clarify the importance of mineral and vitamins in human body.
CO4	Understand the Nomenclature, Classification, Factors affecting enzyme activity.
CO5	Acknowledge the brief description of chemistry of blood.

Course Contents

SECTION-A

Carbohydrates - Glucose and Glycogen Metabolism

Proteins-Classification of proteins and functions

Lipids- Classification of lipids and functions

SECTION-B

Enzymes- Definition, Nomenclature, Classification, Factors affecting enzyme activity, Active site. Coenzyme, Enzyme Inhibition, Units of enzymes, Isoenzymes and Enzyme pattern in diseases

SECTION-C

Vitamins & Minerals- Fat soluble vitamins (A, D, E, K), water soluble vitamins, B-complex vitamins, principal elements (Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and Sulphur), trace elements, calorific value of foods, Basal Metabolic Rate (BMR), Respiratory Quotient (RQ), Specific Dynamic Action (SDA), balanced diet, Marasmus and Kwashiorkor

Acids and bases-Definition, pH, Henderson – Hassel Balch equation, Buffers, Indicators, Normality, Molarity, Molality, Hormones

SECTION-D

Nomenclature of compounds containing Halogen. Alcohols and Phenol s. Ethane, Propane, Ether, Aldehydes, Ketones, Carboxylic acid, Cyanide s, Isocyanides, Nitrogen compounds and amines.

Catalysis.

Hemoglobin, Blood and respiration

References:

Textbook of Medical Biochemistry M N and Shinde Rana, Jaypee Brothers Medical Publishers Pvt. Ltd.

Textbook Of Medical Biochemistry By Godkar P.B And Godkar D.P, Bhalani Publishing House

Principles and Techniques in Practical Biochemistry By Teitz, Elsevier

Practical Biochemistry by Gupta R. C And Bhargava, S, Cbs Publisher & Distributors PVT. LTD

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	1	2	-	1	1	2	3	1	3	1	1
CO2	1	1	2	1	1	1	-	1	2	1	-	1	2	1	1
CO3	3	1	1	3	1	2	1	1	1	1	-	2	1	1	1
CO4	3	1	2	3	2	2	-	1	1	2	2	1	2	1	1
CO5	1	3	2	2	3	1	3	1	1	1	2	1	1	2	1
Average	2	1.4	1.8	2	1.6	1.6	2	1	1.2	1.4	1.4	1.2	1.8	1.2	1

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Medical Ethics & Legal Aspects

Course Code: A806205

Semester: 2nd

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Interact with the patients and health care professionals in working area.
CO2	Handle Legal Responsibilities, Patient safety and quality
CO3	Manage Biomedical waste generated from hospital or
CO4	Maintain Medical records and reports preparation.
CO5	Employs body systems-oriented, word-analysis approach to learning medical terminology.

Course Contents

SECTION-A

Role, Definition and Interaction with the patients and health care professionals, Ethical, Moral, and Legal Responsibilities, Patient safety and quality, restraint policies and role of health professionals.

SECTION-B

Biomedical waste Management, medical records and reports.

Medical terminology- The course employs a body systems-oriented, word-analysis approach to learning medical terminology.

SECTION-C

The goal of the class is to prepare students for the terminology they might encounter in their subsequent coursework, in their clinical rotations and ultimately in their roles as health care professionals.

References:

Pozgar, G. D. (2012). *Legal aspects of health care administration*. Sudbury, Mass: Jones & Bartlett Learning

Morrison, E. E., & Furlong, E. (2014). *Health care ethics: Critical issues for the 21st century*. Burlington, MA: Jones & Bartlett Learning.

Kliegman, R., Stanton, B., St. Geme, J. W., Schor, N. F., & Behrman, R. E. (2016). *Nelson textbook of pediatrics* (Edition 20.). Philadelphia, PA: Elsevier.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	3	1	2	1	1	2	3	2	2	2	2
CO2	2	2	3	2	2	1	2	1	1	2	2	1	1	1	1
CO3	3	2	3	2	1	3	-	1	1	2	2	1	1	2	1
CO4	3	2	2	1	2	1	-	2	1	1	2	1	1	1	2
CO5	2	3	3	3	2	2	1	1	1	1	-	1	2	2	1
Average	2.4	2.2	2.6	2	2	1.6	1.6	1.2	1	1.6	2.25	1.2	1.4	1.6	1.4

The correlation levels are: “1” – Low Correlation, “2” – Medium Correlation, “3” – High Correlation and “-” indicates there is no correlation.

Course Name: General Anatomy-II Practical

Course Code: A806206

Semester: 2nd

L T P

Credits: 2

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Identify and describe all anatomical structures of human body.
CO2	Demonstration of skeleton-articulated and dis articulated
CO3	Demonstration of dissected parts of bone, and muscles.
CO4	Identification surface anatomy: surface land mark-bony, muscular and filamentous s
CO5	Outline the surface anatomy of major nerves, arteries of the limbs.

**Course Contents
SECTION-A**

Identification and description of all anatomical structures.

Demonstration of dissected parts

Demonstration of skeleton-articulated and disarticulated.

Surface anatomy: Surface land mark-bony, muscular and ligamentous. Surface anatomy of major nerves, arteries of the limbs

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	3	-	0	2	2	3	2	1	2	1
CO2	2	2	2	2	3	1	-	-	3	2	3	3	2	2	3
CO3	3	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	2	2	2	2	3	-	1	3	2	3	3	3	2	2
CO5	3	2	2	3	3	2	-	-	2	1	2	2	3	3	3
Average	2.6	2.2	2.0	2.4	2.6	2.2	1	1	2.4	1.8	2.6	2.4	2.2	2.4	2.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: General Physiology-II Practical

Course Code: A806207

Semester: 2nd

L T P

Credits: 2

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Classify the different tests to check the state of kidney.
CO2	Understand the function of testis, penis and other male reproductive parts.
CO3	Understand the physiology of the endocrine glands.
CO4	Examination of urine by various techniques.
CO5	Analyse the function of ovaries, Fallopian tube and ovum in female reproductive system.

**Course Contents
SECTION-A**

Enumerate Physiology of kidney

Explain Physiology of lower Urinary tract

Label Physiology of the endocrine glands

Enumerate Physiology of reproductive system

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	3	-	-	2	2	3	2	1	2	1
CO2	2	2	2	2	3	1	-	-	3	2	3	3	2	2	3
CO3	3	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	2	2	2	2	3	-	1	3	2	3	3	3	2	2
CO5	3	2	2	3	3	2	-	-	2	1	2	2	3	3	3
Average	2.6	2.2	2.0	2.4	2.6	2.2	1	1	2.4	1.8	2.6	2.4	2.2	2.4	2.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Biochemistry Practical

Course Code: A806208

Semester: 2nd

L T P

Credits: 2

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Estimate serum Bilirubin from serum sample.
CO2	Check the level of serum calcium, Inorganic phosphate.
CO3	Measure electrolytes Sodium, Potassium & Chloride
CO4	Determine renal function test and various biochemical tests.
CO5	Estimate lipid profile tests in serum.

Course Contents

SECTION-A

Acids and bases-Definition, pH, Henderson – Hassel Balch equation, Buffers, Indicators, Normality, Molarity, Molality

Hormones

Applied Chemistry:

Nomenclature of compounds containing Halogen, Alcohols and Phenols. Ethane, Propane, Ether, Aldehydes, Ketones, Carboxylic acid, Cyanide s, Isocyanides, Nitrogen compounds and amines. Catalysis.

Hemoglobin, Blood and respiration.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	3	-	0	2	2	3	2	1	2	1
CO2	2	2	2	2	3	1	-		3	2	3	3	2	2	3
CO3	3	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	2	2	2	2	3	-	1	3	2	3	3	3	2	2
CO5	3	2	2	3	3	2	-	-	2	1	2	2	3	3	3
Average	2.6	2.2	2.0	2.4	2.6	2.2	1	1	2.4	1.8	2.6	2.4	2.2	2.4	2.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Clinical Pharmacology

Course Code: A806301

Semester: 3rd

L T P

Credits: 04

40 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn pharmacology drugs acting on blood and blood forming agents.
CO2	Enlist the drugs acting on urinary system.
CO3	Study pharmacology drugs acting on GI system.
CO4	Clarify pharmacology of chemotherapeutic agents .
CO5	Learn pharmacology drugs acting on immune system.

Course Contents

SECTION-A

Anticoagulants: Atropine, Glycopyrrolate.

Sedatives I Anxiolytics: Diazepam, Midazolam, Phenergan, Lorazepam, Chlorpromazine, and Triclofos.

Narcotics: Morphine, Pethidine, Fentanyl, Pentazozine, tramadol.

Anti emetic's: Metoclopramide, Ondansetron, Dexamethasone

SECTION-B

Induction Agent: Thiopentone, Diazepam, Midazolam, Ketamine, Propofol, Etomidate.

Muscle Relaxants: Depolarizing - Suxamethonium, Non depolarizing - Vecuronium, Atracurium, rocuranium

Inhalational Gases: Gases-02, N20, Air, Agents-Ether, Halothane, Isoflurane, And Saevoflurane, Desflurane Reversal Agents: Neostigmine, Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam).

SECTION-C

Local Anesthetics: Xylocaine, Bupivacaine - Topical, Prilocaine-jelly, Emla - Ointment, Etidocaine. Ropivacaine.

Emergency Drugs: Mode or administration, dilution, dosage and effects

Adrenaline, Atropine

Ephedrine, Mephentramine

Bicarbonate, calcium, potassium.

SECTION-D

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.

References:

- Goodman, L. S. (1996). *Goodman and Gilman's the pharmacological basis of therapeutics* (Vol. 1549). New York: McGraw-Hill.
- He, J. M., & Mu, Q. (2015). The medicinal uses of the genus *Mahonia* in traditional Chinese medicine: An ethnopharmacological, phytochemical and pharmacological review. *Journal of ethnopharmacology*,
- Zhao, B. S., Gui, H. S., Zhu, Y. D., & Xu, T. H. (2011). Research progress in chemical components, pharmacological effectiveness and toxicity of Psammosilenetunicoides. *Chin. J. Exp. Traditional Med. Form.*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	3	-	0	2	2	3	2	1	2	1
CO2	2	2	2	2	3	1	-		3	2	3	3	2	2	3
CO3	3	2	3	3	3	2	1	-	2	2	2	2	2	2	3
CO4	3	2	2	2	2	3	-	1	3	2	3	3	3	2	2
CO5	3	2	2	3	3	2	-	-	2	1	2	2	3	3	3
Average	2.6	2.2	2.0	2.4	2.6	2.2	1	1	2.4	1.8	2.6	2.4	2.2	2.4	2.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Clinical Microbiology

Course Code: A806302

Semester: 3rd

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Get detailed information about the host, parasite, their life cycle and various diseases caused by them.
CO2	Learn the procedures of sample collection and transportation for microbiology tests.
CO3	Capable to prepare various culture medias, Care & handling of laboratory animals and get their extracts for culture preparations.
CO4	Classify microbes with special reference to prokaryotes & eukaryotes, Bacterial anatomy
CO5	Care and handling of glassware, their use and cleaning techniques, sterilization processes.

Course Contents

SECTION-A

Morphology

Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.

SECTION-B

Growth and nutrition

Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology. Culture media

Use of culture media in diagnostic bacteriology, antimicrobial sensitivity test.

Sterilization and Disinfection .

Principles and use of equipment of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptic and disinfectants.

SECTION-C

Immunology, Immunity, vaccines, types of vaccine and immunization schedule, principles and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF& ELISA.

b. Rapid tests for HIV and HBsAg (excluding technical details).

6. Systematic Bacteriology

a. **Morphology**, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (excluding classification, antigenic structure and pathogenicity),

SECTION-D

Staphylococci, Streptococci, Pneumococcus, Gonococci, Meningococci, C. diphtheria, Mycobacterium, Clostridia, Bacillus, Shigella, Salmonella, E. coli, Klebsiella, Proteus, Vibrio cholerae, Pseudomonas & Spirochetes.

Parasitology

Morphology, life cycle, laboratory diagnosis of following parasites: E. histolytica, Plasmodium, tape worms, Intestinal nematodes.

Mycology

Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi

Virology

General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

References:

Practical Medical Microbiology by Mackie & McCartney Volume 1 and 2

Text book of Microbiology by Ananthanarayanan

Medical Microbiology by Paniker & Satish Gupta

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	2	1	1	1	2	3	1	2	2	2
CO2	3	1	3	2	2	2	-	1	1	1	3	1	2	2	3
CO3	1	3	1	2	2	2	1	1	1	1	2	1	2	2	2
CO4	3	1	2	2	3	2	1	1	1	2	1	2	1	2	1
CO5	2	3	3	2	1	2	1	1	1	1	2	1	2	2	2
Average	2.2	2.2	2.4	2	2.2	2	1	1	1	1.4	2.2	1.2	1.8	2	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Basic Intensive care

Course Code: A806303

Semester: 3rd

L T P

Credits: 02

2 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Evaluate and integrates the use of analytical enquiry and critical reflection.
CO2	Demonstrate knowledge of the pathophysiological nature of disorders resulting in critical illness.
CO3	Integrate advanced and integrated theoretical and clinical knowledge required for the, assessment and management of the complex critically ill patient.
CO4	Demonstrate a systems approach to the assessment, monitoring and support of physiological function in the critically ill patient
CO5	Integrates care which is patient centered and embraces cultural diversity, individuality and experience

Course Contents

SECTION-A

Care and maintenance of ventilators, suction machine, monitoring devices.

Sterilization and disinfection of ventilators.

Care, maintenance and operational capabilities of beds, lights and other apparatus.

Air conditioning and control of pollution in ICU.

Attachment and intraoperative utility of ventilators and monitoring devices.

SECTION-B

Care of unconscious adult and pediatric patients.

Physiotherapy techniques, feeding, Ryle's tube insertion and hyper alimentation.

Suctioning and posturing of semiconscious and unconscious patients.

Oxygen therapy, maintenance of clear Airway.

Ventilation of patient in crisis:

Mouth to mouth.

Mouth to ET Tube.

Resuscitator/ bag valve mask assembly

Different types of Airways.

Short term ventilation/ Transport ventilators.

SECTION-C

ICU Laboratory; Detection of blood gases of the patient, Principles of ABG machines.

Management of asepsis.

Management of tetanus patient.

Psychological aspects of the patient, relative and staff.

Hemofiltration and hemodialysis.

SECTION-D

Ventilators: Principles of working of different ventilators:

Volume cycled/Time cycled/Pressure cycled ventilators.

High frequency ventilators and other types.

Methods of measuring the expired gases from the patient; Types of spirometers, Principles of working of spirometers. Clinical application of above apparatus.

Apparatus and techniques of measuring of blood pressure and temperature; Principle and working of direct/indirect blood pressure monitoring apparatus; structure, principle and working of the oscillotonometer. Principles and working of aneroid manometer type B.P. instrument.

Laryngeal sprays; Types, material, principle and mechanism.

Monitoring techniques and equipment; Cardiac monitors, Respiratory monitors

References:

Ranjit, S. (2010). *Manual of Pediatric Emergencies & Critical Care*. Paras.

McLean, S. F. (2016). Case-based learning and its application in medical and health-care fields: a review of worldwide literature. *Journal of Medical Education and Curricular Development*, 3, JMECD-S20377.

Spuntarelli, V., Luciani, M., Bentivegna, E., Marini, V., Falangone, F., Conforti, G., ...& Martelletti, P. (2020). COVID-19: is it just a lung disease? A case-based review. *SN Comprehensive Clinical Medicine*,

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	2	1	1	1	2	3	1	2	2	2
CO2	3	1	3	2	2	2	-	1	1	1	3	1	2	2	3
CO3	1	3	1	2	2	2	1	1	1	1	2	1	2	2	2
CO4	3	1	2	2	3	2	1	1	1	2	1	2	1	2	1
CO5	2	3	3	2	1	2	1	1	1	1	2	1	2	2	2
Average	2.2	2.2	2.4	2	2.2	2	1	1	1	1.4	2.2	1.2	1.8	2	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Basic of Surgical Procedures

Course Code: A806304

Semester: 3rd

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Generate patient assessments and devise differential diagnoses for common surgical disorder.
CO2	Apply operative and non-operative treatments for surgical patients.
CO3	Demonstrate basic technical skills such as suturing and knot tying.
CO4	Perform surgical practice in both inpatient and ambulatory settings.
CO5	Interpret the path physiology and resuscitation of critically ill patients, with the emphasis on sepsis, shock and organ failure.

Course Content-

SECTION-A

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.

SECTION-B

Various types of blood and blood products (Packed cells, PRP, FFP)

Pre-transfusion checks.

Transfusion reactions.

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.

SECTION-C

General surgical procedure and para-surgical equipment

Operating tables: structure, material used, maintenance, control, Hydraulic system and Electrical system.

Different types of diathermy machine. Monopole, Bipolar, Ligasure, Harmonic Scalpel, CUSA- Principle, hazards, prevention, functioning and maintenance.

Types of operation lights and light sources: Features, Care, cleaning, sterilization and maintenance.

SECTION-D

Operation Theatre sterilization- Different recent advances.

LAR/APR--Positioning of patient, care-Prevention of hazards.

Total thyroidectomy—with emphasis on proper positioning.

Transthoracic esophagectomy—Different approaches.

Venesection and Tracheotomy.

Laparoscopic Cholecystectomy – Pneumoperitonium - Creation and removing, principles.

Nephrectomy. . Breast surgery.

Positioning of patient for different operations: Problems and hazards

References:

Bojar, R. M. (2020). *Manual of perioperative care in adult cardiac surgery*. John Wiley & Sons.

Kamal, R., & Weiss, A. P. C. (Eds.).(2016). *Comprehensive Board Review in Orthopaedic Surgery*. Thieme.

Easley, M. E., & Wiesel, S. W. (Eds.).(2011). *Operative techniques in foot and ankle surgery*. Lippincott Williams & Wilkins.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	2	1	1	1	2	3	1	2	2	2
CO2	3	1	3	2	2	2	-	1	1	1	3	1	2	2	3
CO3	1	3	1	2	2	2	1	1	1	1	2	1	2	2	2
CO4	3	1	2	2	3	2	1	1	1	2	1	2	1	2	1
CO5	2	3	3	2	1	2	1	1	1	1	2	1	2	2	2
Average	2.2	2.2	2.4	2	2.2	2	1	1	1	1.4	2.2	1.2	1.8	2	2

The correlation levels are: “1” – Low Correlation, “2” – Medium Correlation, “3” – High Correlation and “-” indicates there is no correlation.

Course Name: Basic Techniques of Anaesthesia

Course Code: A806305

Semester: 3rd

L T P

Credits: 03

30 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Display current and emerging standards of care as an anesthesia technologist professional along with devoting themselves to lifelong learning.
CO2	Attend to the various needs of diverse multicultural and complex client populations in the delivery of culturally competent care.
CO3	Collaborate with the anesthesia multi-disciplinary care team in the development of an anesthesia plan of care for patients in areas to which they are assigned.
CO4	Assist the anesthesia provider in a variety of current anesthesia techniques and use of equipment for providing anesthesia.
CO5	Function as anesthesia technologists within appropriate professional standards, ethical and legal requirements, and accept responsibility and accountability while assisting with the delivery of patient care.

Course Contents

SECTION-A

Resuscitation techniques:

Basic life support (Airway, breathing, circulation) and the equipment used for it.

Drugs used in CPR.

AED and Defibrillators.

SECTION-B

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.

SECTION-C

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.

SECTION-D

Blood and blood components transfusion.

Preparation of anesthesia machine, intubation kit, suction machine, anesthesia drugs.

n. Patient identification, marking, shifting to OT before surgery and out of OT to recovery room after surgery, complete takeover and handover of the patient with vital signs recording before and after surgical procedure to the nursing staff.

References:

DiLorenzo, A. N., & Schell, R. M. (2014). Morgan & Mikhail's clinical anesthesiology. *Anesthesia & Analgesia*.

Miller, R. D., & Pardo, M. (2011). *Basics of anesthesia e-book*. Elsevier Health Sciences.

Ke, J. X. C. (2018). *Basics of Anesthesia*.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	1	3	-	1	1	2	3	1	2	2	2
CO2	2	1	2	2	3	2	1	1	1	2	2	1	1	2	1
CO3	2	3	1	1	2	2	1	1	1	2	3	1	2	1	2
CO4	3	3	3	2	2	3	2	1	1	2	2	1	2	2	3
CO5	3	2	3	2	1	2	1	1	1	2	3	1	2	1	2
Average	2.6	2.2	2.2	1.8	1.8	2.4	1.25	1	1	2	2.6	1	1.8	1.6	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation

Course Name: Clinical Pharmacology Practical

Course Code: A806306

Semester: 3rd

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Know the use of various types of emergency drugs, their dosage and effects.
CO2	Understand the action of drugs on the neuromuscular system, cardiovascular system.
CO3	Application of Bicarbonate, calcium, potassium in patient care.
CO4	Understand the mode of action of pain killer drugs and their effects.
CO5	Illustrate mechanism of absorption and distribution of different drugs in body.

**Course Contents
SECTION-A**

Visit Pharmacology lab/Hospital

Emergency Drugs: Mode or administration, dilution, dosage and effects

Adrenaline, Atropine

Ephedrine, Mephentramine

Bicarbonate, calcium, potassium.

Inotropes: dopamine, dobutamine, amidarone

Aminophylline, hydrocortisone, antihistaminic,

Antihypertensive –Beta-blockers, Ca-channel blockers.

Antiarrhythmic- xylocard

Vasodilators- nitroglycerin & sodium nitroprusside

Respiratory system- Bronchodilators

Renal system- Diuretics, frusemide, mannitol

References:

Goodman, L. S. (1996). Goodman and Gilman's the pharmacological basis of therapeutics (Vol. 1549). New York: McGraw-Hill.

He, J. M., & Mu, Q. (2015). The medicinal uses of the genus Mahonia in traditional Chinese medicine: An ethnopharmacological, phytochemical and pharmacological review. *Journal of ethnopharmacology*,

Zhao, B. S., Gui, H. S., Zhu, Y. D., & Xu, T. H. (2011). Research progress in chemical components, pharmacological effectiveness and toxicity of Psammosilenetunicoides. *Chin. J. Exp. Traditional Med. Form.*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	1	2	1	1	1	2	1	2	1	1
CO2	3	1	3	2	2	1	1	2	1	2	3	1	2	1	1
CO3	2	3	2	2	1	1	-	1	1	1	2	1	1	2	1
CO4	3	3	2	3	3	2	1	1	1	2	2	2	2	2	2
CO5	3	2	2	2	2	1	1	1	1	2	1	2	1	1	2
Average	2.4	2.2	2.4	2.2	2.2	1.2	1.25	1.4	1	1.6	2	1.4	1.6	1.4	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Clinical Microbiology Practical

Course Code: A806307

Semester: 3rd

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Collect sample for identification of bacteria, virus, fungi or parasite.
CO2	Cleaning techniques of glassware by various methods according to their uses in laboratory.
CO3	Operating microscope, cleaning and maintenance of microscope and objectives.
CO4	Sterilization techniques- dry and moist heat, working of hot air oven and autoclave
CO5	Preparation of culture media and culturing techniques for the identification of bacteria.

Course Contents

SECTION-A

Mycology
Virology
Morphology
Vidal
VDRL
ASLO
CRP
RF & ELISA.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	1	2	1	1	1	2	1	2	1	1
CO2	3	1	3	2	2	1	1	2	1	2	3	1	2	1	1
CO3	2	3	2	2	1	1	-	1	1	1	2	1	1	2	1
CO4	3	3	2	3	3	2	1	1	1	2	2	2	2	2	2
CO5	3	2	2	2	2	1	1	1	1	2	1	2	1	1	2
Average	2.4	2.2	2.4	2.2	2.2	1.2	1.25	1.4	1	1.6	2	1.4	1.6	1.4	1.4

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: Basic Techniques of Anaesthesia Practical

Course Code: A806308

Semester: 3rd

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Attain knowledge about anaesthesia procedure and make good profession in this field as an Anaesthesia Technician.
CO2	Understand the uses of all drugs which are used for the anaesthesia procedures during any surgeries in hospitals.
CO3	Apply all machines, devices, instruments, drugs quantity according to patient's requirements.
CO4	Operate Regional anesthesia, spinal and epidural, posture and drugs.
CO5	Perform General anesthesia depth, mechanism and intubation.

Course Contents

SECTION-A

Anesthesia work station

Boyle's anesthesia apparatus and other Advanced Anaesthesiamachines.

Apparatus and technique of the intravenous injections:

Selection of the material used for intravenous injection.

Different types of intravenous needles and cannula s.

Theoretical study for testing of the toxicity of the materials.

Resuscitation equipment and Resuscitation techniques:

End trachealtubes:

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.

Connectors: Various connectors, size and material used.

Mask: Material, structure and importance of dead space of face mask.

Supraglottic airways.

Spinal and epidural blocks: equipment, types of spinal and epidural needles, their structure.

Instruments used for spinal and epidural blocks.

Laryngeal sprays: Types, structure and material used, mechanism, uses and their maintenance.

References:

DiLorenzo, A. N., & Schell, R. M. (2014). Morgan & Mikhail's clinical anesthesiology. *Anesthesia & Analgesia*.

Miller, R. D., & Pardo, M. (2011). *Basics of anesthesia e-book*. Elsevier Health Sciences.

Ke, J. X. C. (2018). *Basics of Anesthesia*.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	2	1	1	1	2	3	1	2	2	2
CO2	3	1	3	2	2	2	-	1	1	1	3	1	2	2	3
CO3	1	3	1	2	2	2	1	1	1	1	2	1	2	2	2
CO4	3	1	2	2	3	2	1	1	1	2	1	2	1	2	1
CO5	2	3	3	2	1	2	1	1	1	1	2	1	2	2	2
Average	2.2	2.2	2.4	2	2.2	2	1	1	1	1.4	2.2	1.2	1.8	2	2

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: Basic Intensive care Practical

Course Code: A806309

Semester: 3rd

L T P

Credits: 03

2 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Knowledge about all ICU and Operation theatre machines.
CO2	Understand the uses of instruments which are used in OT, ICU, CCU.
CO3	Care and maintenance of all devices in OT.
CO4	Learn care, maintenance and operational capabilities of beds, lights and other apparatus.
CO5	Apply Physiotherapy techniques, feeding, Ryle's tube insertion and hyperalimentation.

Course Contents

SECTION-A

Ventilators: Principles of working of different ventilators:

Volume cycled/Time cycled/Pressure cycled ventilators.

High frequency ventilators and other types.

Methods of measuring the expired gases from the patient; Types of spirometers, Principles of working of spirometers. Clinical application of above apparatus.

Apparatus and techniques of measuring of blood pressure and temperature; Principle and working of direct/indirect blood pressure monitoring apparatus; structure, principle and working of the oscillotonometer. Principles and working of aneroid manometer type B.P. instrument.

Laryngeal sprays; Types, material, principle and mechanism.

Monitoring techniques and equipment; Cardiac monitors, Respiratory monitors,

References:

Ranjit, S. (2010). *Manual of Pediatric Emergencies & Critical Care*. Paras.

McLean, S. F. (2016). Case-based learning and its application in medical and health-care fields: a review of worldwide literature. *Journal of Medical Education and Curricular Development*, 3, JMECD-S20377.

Spuntarelli, V., Luciani, M., Bentivegna, E., Marini, V., Falangone, F., Conforti, G., ...& Martelletti, P. (2020). COVID-19: is it just a lung disease? A case-based review. *SN Comprehensive Clinical Medicine*,

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	1	3	-	1	1	2	3	1	2	2	2
CO2	2	1	2	2	3	2	1	1	1	2	2	1	1	2	1
CO3	2	3	1	1	2	2	1	1	1	2	3	1	2	1	2
CO4	3	3	3	2	2	3	2	1	1	2	2	1	2	2	3
CO5	3	2	3	2	1	2	1	1	1	2	3	1	2	1	2
Average	2.6	2.2	2.2	1.8	1.8	2.4	1.25	1	1	2	2.6	1	1.8	1.6	2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Basic of Surgical Procedures Practical

Course Code: A806310

Semester: 3rd

L T P

Credits: 03

2 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn basic practice for preparation for the operation theatre in the hospitals.
CO2	Assist the surgeon during various types of surgeries.
CO3	Operate all types of devices, instruments, positions of patient in operation theatre during surgeries.
CO4	Collect of blood samples, its preservation, transportation and standardization.
CO5	Transfer of various types of blood and blood products(Packed cells, PRP, FFP)

Course Contents

Visit Hospital and Case study of various surgical Procedures

References:

Bojar, R. M. (2020). *Manual of perioperative care in adult cardiac surgery*. John Wiley & Sons.

Kamal, R., & Weiss, A. P. C. (Eds.).(2016). *Comprehensive Board Review in Orthopaedic Surgery*. Thieme.

Easley, M. E., & Wiesel, S. W. (Eds.).(2011). *Operative techniques in foot and ankle surgery*. Lippincott Williams & Wilkins.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	1	-	1	1	2	3	2	2	2	1
CO2	3	2	3	2	2	2	2	1	1	2	2	1	2	1	1
CO3	2	2	2	1	1	1	-	1	1	2	3	1	1	1	1
CO4	3	2	3	2	1	2	1	1	1	2	3	1	2	2	1
CO5	3	3	3	1	1	2	1	1	1	2	3	1	2	2	2
Average	2.6	2.2	2.6	1.6	1.2	1.6	1	1	1	2	2.8	1.2	1.8	1.6	1.2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Pathology

Course Code: A806401

Semester: 4th

L T P

Credits: 04

4 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Recognize the major cell and tissue alterations associated with these diseases.
CO2	Understand organ dysfunction or clinical signs and symptoms.
CO3	Learn how pathological analysis is used to recognize, classify, grade and stage the major types of malignancy.
CO4	Know that how pathological analysis contributes to disease surveillance and the evaluation of therapeutic interventions.
CO5	Analyse to recognize, classify, grade and stage the major types of malignancy.

SECTION-A

Cellular adaptation and cell death, Inflammation and repair, infection, circulatory disorders, immune defense Genetics of disease, Neoplasia Cell injury and adaptation
Atrophy, hypertrophy, metaphase, hyperplasia
Classification of tumors, premalignant lesion

SECTION-B

Types of inflammation & system manifestations of inflammation
Disorders of vascular flow & shock (brief introduction)
Edema, hyperemia or congestion, thrombosis, embolism, infarction shock, ischemia, over hydration, dehydration

SECTION-C

The response to infection, Categories of infectious agents, host barriers to infection How disease is caused Inflammatory response to infectious agents Hematopoietic and lymphoid System
Hemorrhage, various types of anemia, leucopenia, leukocytosis, bleeding disorders

References:

Dolinak, D., Matshes, E., & Lew, E. O. (2005). *Forensic pathology: principles and practice*. Elsevier

Lacey, L. A. (Ed.).(1997). *Manual of techniques in insect pathology*. Academic Press

Steinhaus, E. (Ed.). (2012). *Insect Pathology VI: An Advanced Treatise* (Vol. 1). Elsevier

Morison, J. E. (1952). *Foetal and neonatal pathology*. Butterworths

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	1	2	1	1	1	2	1	2	1	1
CO2	3	1	3	2	2	1	1	2	1	2	3	1	2	1	1
CO3	2	3	2	2	1	1	-	1	1	1	2	1	1	2	1
CO4	3	3	2	3	3	2	-	1	1	2	2	2	2	2	2
CO5	3	2	2	2	2	1	1	1	1	2	1	2	1	1	2
Average	2.4	2.2	2.4	2.2	2.2	1.2	1.3	1.2	1	1.6	2	1.4	1.6	1.4	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Medicine
Course Code: A806402
Semester: 4th

L T P

Credits: 05

4 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Obtain an accurate and complete medical history of the patient.
CO2	Perform complete and organ-system specific examinations, including a mental status examination.
CO3	Recommend and interpret the results of commonly used diagnostic procedures and tests.
CO4	Understand Common urinary symptoms- dysuria, pyuria, anuria, oliguria, polyuria
CO5	Approach to infectious diseases – diagnostic and therapeutic principles.

SECTION-A

Common symptoms of diseases –

Pain: pathophysiology, clinical types, assessment and management

Fever: clinical assessment and management

Cough chest pain, dyspnoea, and hemoptysis

Edema, anasarca, ascites

Pallor, jaundice

Bleeding

Anorexia, nausea and vomiting

Constipation and diarrhea

SECTION-B

Hematemesis, malena and hematochezia

Common urinary symptoms- dysuria, pyuria, anuria, oliguria, polyuria, nocturia, enuresis

Body pains and joint pains

Headache, seizures, fainting, syncope, dizziness, vertigo

Disturbances of consciousness and coma

Weight loss and weight gain

SECTION-C

Immune Response and Infections

Approach to infectious diseases – diagnostic and therapeutic principles

Immune defense mechanisms

Laboratory diagnosis of infections

Principles of immunization and vaccine use

Immunodeficiency disorders - acquired

Immunodeficiency disorders – congenital

SECTION-D

Cardiovascular system- Clinical examination of the cardiovascular system, major manifestations of cardiovascular disease

Respiratory system - Clinical examination of the respiratory system, major manifestations of respiratory disease

Renal and genito-urinary system- Major manifestations of renal and urinary tract disease

Liver and biliary tract disease - Viral hepatitis, alcoholism.

Endocrinology and metabolism - Diabetes mellitus, Hyper - and hypothyroidism.

Disorders of the Immune System, Connective Tissue and Joints

Disorder of haemopoiesis - Anemia - iron deficiencies anemia. Types

References:

Jameson, J. L. (2018). *Harrison's principles of internal medicine*. McGraw-Hill Education

Frey, D. (2002). *Harrison's principles of internal medicine*

Jameson, J. L., & De Groot, L. J. (2010). *Endocrinology-E-Book: Adult and Pediatric*. Elsevier Health Sciences

Gross man, A. B., Jameson, J. L., & De Groot, L. J. (2013). *Endocrinology adult and pediatric: the adrenal gland e-book*. Elsevier Health Sciences

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	2	2	-	1	1	2	1	1	2	1	1
CO2	3	2	3	2	2	2	1	1	1	2	3	1	3	2	1
CO3	2	3	2	2	2	1	-	1	2	3	2	1	2	1	2
CO4	3	2	2	3	1	1	1	1	1	2	3	1	1	2	1
CO5	2	3	1	2	2	2	1	1	1	2	3	1	2	2	2
Average	2.2	2.6	2	2.2	1.8	1.6	1	1	1.2	2.2	2.4	1	2	1.6	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Principle of Anaesthesia

Course Code: A806403

Semester: 4th

L T P

Credits: 04

40 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn the techniques “No Sensation, No Pain” to the patient who goes under the surgical procedure.
CO2	Apply anaesthesia to patients in different way: General, Local and Regional anaesthesia.
CO3	Use drugs and their action, duration time, anaesthesia trolley and patient position.
CO4	Learn vaporizers - types, hazards, maintenance, filling and draining, etc
CO5	Operate common components - connectors, adaptors, reservoir bags.

**Course Contents-
SECTION-A**

Medical gas supply

Compressed gas cylinders
Color coding
Cylinder valves; pin index.
Gas piping system
Recommendations for piping system
Alarms & safety devices.
Scavenging of waste anesthetic gases

Anesthesia machine

Hanger and yoke system
Cylinder pressure gauge
Pressure regulator
Flow meter assembly
Vaporizers - types, hazards, maintenance, filling and draining, etc.

SECTION-B

Breathing system

General considerations: humidity & heat

Common components - connectors, adaptors, reservoir bags.

Capnography

Pulse oximetry

Methods of humidification.

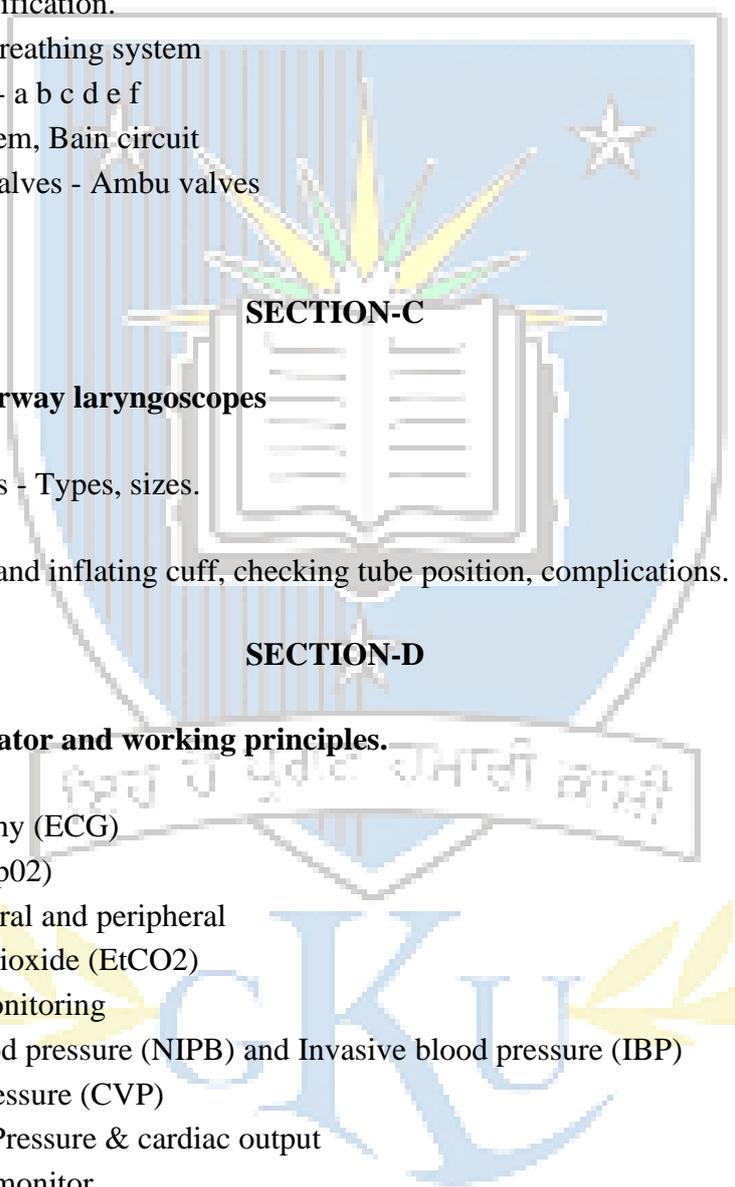
Classification of breathing system

Mapleson system - a b c d e f

Jackson Rees system, Bain circuit

Non rebreathing valves - Ambu valves

The circle system



SECTION-C

Face masks & Airway laryngoscopes

Types, sizes

Endotracheal tubes - Types, sizes.

Cuff system

Fixing, removing and inflating cuff, checking tube position, complications.

SECTION-D

Anesthesia ventilator and working principles.

Monitoring

Electrocardiography (ECG)

Pulse oximetry (SpO₂)

Temperature- central and peripheral

End tidal carbon dioxide (EtCO₂)

Anesthesia gas monitoring

Non-invasive blood pressure (NIBP) and Invasive blood pressure (IBP)

Central venous pressure (CVP)

PA Pressure, LA Pressure & cardiac output

Anesthesia depth monitor

Neuromuscular transmission monitor

References:

Chestnut, D. H., Wong, C. A., Tsen, L. C., Kee, W. D. N., Beilin, Y., & Mhyre, J. (2014). *Chestnut's obstetric anesthesia: principles and practice e-book*. Elsevier Health Sciences

Miller, R. D., Eriksson, L. I., Fleisher, L. A., Wiener-Kronish, J. P., Cohen, N. H., & Young, W. L. (2014). *Miller's anesthesia e-book*. Elsevier Health Sciences

Hemming s, H. C., & Egan, T. D. (2012). *Pharmacology and Physiology for Anesthesia E-*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	3	2	1	-	1	1	2	3	1	2	2	1
CO2	3	2	3	3	2	3	1	1	1	2	3	3	2	2	2
CO3	2	2	2	3	2	2	1	1	1	2	2	1	2	1	2
CO4	3	2	3	2	2	3	1	1	1	2	3	2	2	1	2
CO5	3	2	3	3	2	2	1	1	1	2	3	2	2	2	1
Average	2.6	2.2	2.6	2.8	2	2.2	1	1	1	2	2.8	1.8	2	1.6	1.6

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: Pathology Practical

Course Code: A806404

Semester: 4th

L T P

Credits: 03

0 0 6

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Prepare various types of fixatives.
CO2	Embedding of given tissue in paraffin block.
CO3	Process tissue by manual and automated processor method.
CO4	Perform & practice the Haematoxylin and Eosin staining technique and special staining.
CO5	Use of antiseptics, disinfectants and insecticides in a tissue culture processing laboratory

Course Contents

Hospital visit and learn basics of pathology department.

Hb

Blood Cell count.

Urine routine

Slide preparation

References:

Dolinak, D., Matshes, E., & Lew, E. O. (2005). *Forensic pathology: principles and practice*. Elsevier

Lacey, L. A. (Ed.).(1997). *Manual of techniques in insect pathology*. Academic Press

Steinhaus, E. (Ed.). (2012). *Insect Pathology VI: An Advanced Treatise* (Vol. 1). Elsevier

Morison, J. E. (1952). *Foetal and neonatal pathology*. Butterworths

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	2	2	-	1	1	2	1	1	2	1	1
CO2	3	2	3	2	2	2	1	1	1	2	3	1	3	2	1
CO3	2	3	2	2	2	1	-	1	2	3	2	1	2	1	2
CO4	3	2	2	3	1	1	1	1	1	2	3	1	1	2	1
CO5	2	3	1	2	2	2	1	1	1	2	3	1	2	2	2
Average	2.2	2.6	2	2.2	1.8	1.6	1	1	1.2	2.2	2.4	1	2	1.6	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Medicine Practical

Course Code: A806405

Semester: 4th

Credits: 03

L T P

0 0 6

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Recognize adverse reactions and interactions of commonly used drugs.
CO2	Evaluate experiments designed for study of effects of drugs, bioassay and interpretation of the experimental data.
CO3	Scan information on common pharmaceutical preparations and critically evaluate drugformulations.
CO4	Follow up to report outcomes in terms of therapeutic as well as adverse effects and ensure patient compliance
CO5	Communicate effectively with patients to ensure understanding of the of drugs prescribed

Course Contents

Visit Pharmacology lab/ Industrial visit (Pharmaceutical) and prepare report on Drugs as described.

Pain killer

Anesthetic

References:

Jameson, J. L. (2018). *Harrison's principles of internal medicine*. McGraw-Hill Education

Frey, D. (2002). *Harrison's principles of internal medicine*

Jameson, J. L., & De Groot, L. J. (2010). *Endocrinology-E-Book: Adult and Pediatric*. Elsevier Health Sciences

Grossman, A. B., Jameson, J. L., & De Groot, L. J. (2013). *Endocrinology adult and pediatric: the adrenal gland e-book*. Elsevier Health Sciences

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	1	-	1	1	2	3	2	2	2	1
CO2	3	2	3	2	2	2	2	1	1	2	2	1	2	1	1
CO3	2	2	2	1	1	1	-	1	1	2	3	1	1	1	1
CO4	3	2	3	2	1	2	1	1	1	2	3	1	2	2	1
CO5	3	3	3	1	1	2	1	1	1	2	3	1	2	2	2
Average	2.6	2.2	2.6	1.6	1.2	1.6	1	1	1	2	2.8	1.2	1.8	1.6	1.2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Principle of Anaesthesia Practical

Course Code: A806406

Semester: 4th

L T P

Credits: 03

0 0 6

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn the techniques “No Sensation, No Pain” to the patient who goes under the surgical procedure.
CO2	Apply anaesthesia to patients in different way: General, Local and Regional anaesthesia.
CO3	Use drugs and their action, duration time, anaesthesia trolley and patient position.
CO4	Learn vaporizers - types, hazards, maintenance, filling and draining, etc
CO5	Operate common components - connectors, adaptors, reservoir bags.

Course Contents

Supply of compressed gases:

Types of gases and their chemical and physical properties.

Types of containers.

Their checking and maintenance.

Types of compressors.

Structure and mechanism of various type of gauges, liquid oxygen storage and supply system.

Structure of reducing valves-

Mechanism of pressure reducing valves.

Their maintenance and safety checks

Structure and mechanism of flow meters, maintenance and safety checks

Volatile anesthetic agents.

Selection of material to be used for containers of the volatile anesthetic agents.

Structure of different types of vaporizers.

Principles of various vaporizers, their maintenance and safety precautions.

Types of circuits:

Open, Semi closed and closed circuits.

Non-rebreathing valves.

T-piece circuit and its modifications.

To and fro system and circle absorber.

Types of valves used in the different circuits. Structure and working of Heidbrink's valve, Rubin valve nu-man valve etc.

References:

Chestnut, D. H., Wong, C. A., Tsen, L. C., Kee, W. D. N., Beilin, Y., & Mhyre, J. (2014). *Chestnut's obstetric anesthesia: principles and practice e-book*. Elsevier Health Sciences

Miller, R. D., Eriksson, L. I., Fleisher, L. A., Wiener-Kronish, J. P., Cohen, N. H., & Young, W. L. (2014). *Miller's anesthesia e-book*. Elsevier Health Sciences

Hemmings, H. C., & Egan, T. D. (2012). *Pharmacology and Physiology for Anesthesia E-Book: Foundations and Clinical Application*. Elsevier Health Sciences

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	1	2	1	1	1	2	1	2	1	1
CO2	3	1	3	2	2	1	1	2	1	2	3	1	2	1	1
CO3	2	3	2	2	1	1	-	1	1	1	2	1	1	2	1
CO4	3	3	2	3	3	2	-	1	1	2	2	2	2	2	2
CO5	3	2	2	2	2	1	1	1	1	2	1	2	1	1	2
Average	2.4	2.2	2.4	2.2	2.2	1.2	1.3	1.2	1	1.6	2	1.4	1.6	1.4	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: CSSD Procedures

Course Code: A806501

Semester: 5th

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Enables the students to understand the central sterile department.
CO2	Maintain an accurate record of the effectiveness of the cleaning, disinfecting and sterilizing processes.
CO3	Manage adequate inventory of supplies and equipment.
CO4	Apply sterilization by radiation (Gamma rays, ultraviolet rays)
CO5	Learn decontamination, Assembly and processing, sterilizing, sterile storage and distribution

Course Contents

SECTION-A

Principles of sterilization and disinfection.

Methods of sterilization

Dry Sterilization.

Wet sterilization.

SECTION-B

Gaseous sterilization.

Chemical sterilization.

Sterilization by radiation (Gamma rays, ultraviolet rays)

Techniques of sterilization of rubber articles. (LMA, FOB, ETT, Laryngoscopes, Anaesthesiamachines and circuits.)

SECTION-C

Technique of sterilization of carbonized articles.

Methods of disinfection.

Boiling.

Chemical disinfection.

SECTION-D

Hazards of sterilization.

Prevention of hazards of sterilization.

Precautions to be taken during sterilization.

Recent advances in the methods of sterilization

References:

Karpinski, C., & Rosenbloom, C.A. (2017). *Sports nutrition: a handbook for professionals*. Academy of Nutrition and Dietetics

Kusuda, K., Yamashita, K., Ohnishi, A., Tanaka, K., Komino, M., Honda, H. & Oh-ta, Y. (2016). Management of surgical instruments with radio frequency identification tags: A 27-month in hospital trial. *International journal of health care quality assurance*

Ayliffe, G. A. J. (1987). Hospital hygiene: By Isobel M. Maurer. 1985, 3rdedn. Edward Arnold (Publisher) Ltd, London. Pp. vii and 152. £ 6.95. *Journal of Medical Microbiology*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	1	-	1	1	2	3	2	2	2	1
CO2	3	2	3	2	2	2	2	1	1	2	2	1	2	1	1
CO3	2	2	2	1	1	1	-	1	1	2	3	1	1	1	1
CO4	3	2	3	2	1	2	1	1	1	2	3	1	2	2	1
CO5	3	3	3	1	1	2	1	1	1	2	3	1	2	2	2
Average	2.6	2.2	2.6	1.6	1.2	1.6	1	1	1	2	2.8	1.2	1.8	1.6	1.2

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Advanced Anaesthetic Techniques

Course Code: A806502

Semester: 5th

L T P

Credits: 04

3 1 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn the knowledge of advance techniques regarding anaesthesia.
CO2	Understand about the advance heart surgery techniques and machinery.
CO3	Use of all types of clinically techniques of ventilation.
CO4	Apply Cardiac Arrhythmias (atrial fibrillation, ventricular tachycardia, extra systoles)
CO5	Understand Principles of oxygen administration and methods used to deliver oxygen

Course Contents

SECTION-A

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.

SECTION-B

Cardiac failure.

Physics of blood flow and pressure.

Measurement of blood flow.

Electromagnetic flow meter, ultrasonic flow meter, plethysmography.

Regulation of arterial pressure and hypertension (Drugs used for treatment of hypertension)

Arterial circulation including cardiopulmonary bypass.

SECTION-C

Artificial ventilation and related equipment:

Physiology of IPPV (Intermittent positive pressure ventilation)

Principles of mechanical ventilation.
 Various modes of IPPV.
 Automatic pressure and time cycled ventilators.
 Operating room ventilators.
 Other types of ventilators (HFJV, NIV)

SECTION-D

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.

References:

Malamed, S. F. (2014). *Handbook of local anesthesia-e-book*. Elsevier Health Sciences
 Miller, R. D., Eriksson, L. I., Fleisher, L. A., Wiener-Kronish, J. P., Cohen, N. H., & Young, W. L. (2014). *Miller's anesthesia e-book*. Elsevier Health Sciences
 Alam, A., Rampes, S., Patel, S., Hana, Z., & Ma, D. (2021). Anesthetics or anesthetic techniques and cancer surgical outcomes: a possible link. *Korean Journal of Anesthesiology*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	2	2	-	1	1	2	1	1	2	1	1
CO2	3	2	3	2	2	2	1	1	1	2	3	1	3	2	1
CO3	2	3	2	2	2	1	-	1	2	3	2	1	2	1	2
CO4	3	2	2	3	1	1	1	1	1	2	3	1	1	2	1
CO5	2	3	1	2	2	2	1	1	1	2	3	1	2	2	2
Average	2.2	2.6	2	2.2	1.8	1.6	1	1	1.2	2.2	2.4	1	2	1.6	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Specialized Surgery and Anaesthesia

Course Code: A806503

Semester: 5th

L T P

Credits: 04

4 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn the various diseases of cardiovascular system and related surgeries.
CO2	Understand the respiratory issues and their correlated surgeries.
CO3	Operate perfusion machine and operational capabilities.
CO4	Positioning of the patient during various types of surgeries.
CO5	Positioning and techniques for: Radial artery, Central venous /pulmonary artery catheter. Femoral artery/venous cannulation

COURSE CONTENTS

SECTION-A

Cardiovascular and Respiratory System– Techniques, equipment, procedures and instruments

Diseases of cardiovascular and respiratory systems.

Types of perfusion machines.

Techniques of Perfusion and operational capabilities.

Intra-aortic Balloon pump.

Cell saver techniques.

Care, maintenance and working of Heart lung Machine.

Patient's record keeping preoperative, during anesthesia and post-operative.

Principles and techniques of temperature monitoring.

Positioning during cardio-thoracic surgical procedures.

Positioning and techniques for:

Radial artery cannulation.

Central venous cannulation/pulmonary artery catheter.

Femoral artery/venous cannulation.

SECTION-B

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

Positioning-

During various neurosurgical procedures including sitting, prone, lateral and position for trans-sphenoidal hypo-hysterectomy.

Fixation of head during various neurosurgical procedures.

Prone and Knee chest position for spine surgery.

SECTION-C

Requirements during intubation in a case of cervical spine fracture including fiber- optic laryngoscope, awake intubation, LMA family especially ILMA. Anesthetic and surgical requirements during aneurysm surgery.

Surgical and Anesthetic requirements during micro neurosurgery including types of microscopes, principle, structural features, microscopic photography and cameras used.

Anesthetic and surgical requirements during thyroid surgery, adrenal surgery.

SECTION-D

Anesthetic and surgical requirements during abdominal surgery including Laparoscopic surgery, genitourinary surgery including percutaneous nephrolithotomy, Endoscopic surgery, TURP, TURBT, Lithotripsy, ESWL (Extracorporeal shock wave therapy)

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.

Anesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like trachea-esophageal fistula. Sub diaphragmatic hernia, major abdominal and thoracic procedures. Foreign body bronchus and esophagus.

References:

Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for Noncardiac Surgery E-Book: A Companion to Kaplan's Cardiac Anesthesia*. Elsevier Health Sciences

Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd

Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of cardiothoracic and vascular anesthesia*

Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	2	2	1	-	1	1	2	3	1	2	2	1
CO2	3	3	3	2	2	2	-	1	1	2	2	2	1	1	1
CO3	3	2	3	2	2	1	1	1	1	2	2	2	2	2	1
CO4	2	3	2	2	1	1	1	1	1	2	-	1	1	2	1
CO5	3	2	2	2	2	2	1	1	2	1	2	1	1	2	1
Average	2.2	2.6	2.4	2	1.8	1.4	1	1	1.2	1.8	2.25	1.4	1.4	1.8	1

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Research Methodology and Biostatistics

Course Code: A806504

Semester: 5th

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Learn methods, identifying research problem, Ethical issues in research, Research design.
CO2	Overview types of Data, Research tools and Data collection methods, Sampling methods.
CO3	Understand data representation in Biostatistics, How to get relevant data, Relation between data & variables.
CO4	Summarize data on the pretext of underlined study, Understanding of statistical analysis
CO5	Understand How & where to get relevant data, Relation between data & variables

Course Contents

SECTION-A

Need for Research in the field of cardiology. Introduction to research methods, conducting a literature review, Research design, Sampling methods, Data collection and data collection tools, Data analysis: Quantitative and Qualitative, Public health research, Issues in Research of research problems and writing research questions, Hypothesis, Null and Research Hypothesis, Type I and Type II errors in hypothesis testing

SECTION-B

Introduction of epidemiology, Descriptive epidemiology, Experimental and non-experimental research designs, Screening, Sampling methods, Biological variability, normal distribution.

Module 3: Bias and Confounding, Association and causation, Odds ratio and relative risk, Sensitivity and specificity Data collection methods- Observation method, Interview method, Questionnaires and schedules Construction,

SECTION-C

Module 4: Critical analysis of research papers, conducting a literature review, Writing Research proposals, Development of conceptual framework in research

Module 5: Introduction to Biostatistics

SECTION-D

Introduction to Statistics, Classification of data, Source of data, Method of scaling - nominal, ordinal, ratio and interval scale, measuring reliability and validity of scales, Measures of Central tendency, Measures of Dispersion, Skewness and kurtosis, Sampling, Sample size determination, Introduction and method of collecting and presenting of statistical data. Calculation and interpretation of various measures like mean, median, standard deviations, Skewness and Kurtosis, Probability distribution, Correlation and regression Significance tests and confidence intervals

References:

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International

Mahajan, B. K. (1997). *Methods in Biostatistics for medical students and research workers*

Spiegel, M. R., Schiller, J. J., & Srinivasan, R. A. (2013). *Schaum's outline of probability and statistics*. McGraw-Hill Education

Smith, E. R., Shapiro, G., & Sarani, B. (2018). Fatal wounding pattern and causes of potentially preventable death following the pulse night club shooting event. *Prehospital emergency care*.

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	2	2	-	1	1	2	1	1	2	1	1
CO2	3	2	3	2	2	2	1	1	1	2	3	1	3	2	1
CO3	2	3	2	2	2	1	-	1	2	3	2	1	2	1	2
CO4	3	2	2	3	1	1	1	1	1	2	3	1	1	2	1
CO5	2	3	1	2	2	2	1	1	1	2	3	1	2	2	2
Average	2.2	2.6	2	2.2	1.8	1.6	1	1	1.2	2.2	2.4	1	2	1.6	1.4

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: Electronics and Technology in Surgery and Anaesthesia

Course Code: A806505

Semester: 5th

L T P

Credits: 03

3 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Maintain the electronic clinical record and prescribing system and drugs timing.
CO2	Provide electronic automatic coding, recovery progress, activity analysis.
CO3	Manage financial analysis, identification of staff, all record of patients .
CO4	Find out Engineering aspects of operation theatre equipment, power supplies, CVT, servo-stabilizers, and ups etc
CO5	Co-ordination with all working personal in operation Theatre.

Course Contents

SECTION-A

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.

SECTION-B

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.

SECTION-C

Computer data processing, software information and Data management. Logging on and off, Security concepts, Sending and receiving Emails. \ Hospital information system.

References:

El-Hindy, N., Johnston, R. L., Jays cock, P., Eke, T., Braga, A. J., Tole, D. M., ...& Sparrow, J. M. (2009). The Cataract National Dataset Electronic Multi-centre Audit of 55 567 operations: anaesthetic techniques and complications. *Eye*

Sanborn, K. V., Castro, J., Kuroda, M., &Thys, D. M. (1996). Detection of intraoperative incidents by electronic scanning of computerized anesthesia records: comparison with voluntary reporting. *The Journal of the American Society of Anesthesiologists*

Baddour, L. M., Epstein, A. E., Erickson, C. C., Knight, B. P., Levison, M. E., Lockhart, P. B., ... & Interdisciplinary Council on Quality of Care and Outcomes Research. (2010). Update on cardiovascular implantable electronic device infections and their management: a scientific On successful completion of this course, the students will be able to learn: from the American Heart Association. *Circulation*,

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	2	2	1	-	1	1	2	3	1	2	2	1
CO2	3	3	3	2	2	2	-	1	1	2	2	2	1	1	1
CO3	3	2	3	2	2	1	1	1	1	2	2	2	2	2	1
CO4	2	3	2	2	1	1	1	1	1	2	-	1	1	2	1
CO5	3	2	2	2	2	2	1	1	2	1	2	1	1	2	1
Average	2.2	2.6	2.4	2	1.8	1.4	1	1	1.2	1.8	2.25	1.4	1.4	1.8	1

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: CSSD Procedures Practical

Course Code: A806506

Semester: 5th

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Understand the central sterile services department, Assembly and processing, sterile storage and distribution.
CO2	Maintain an accurate record of the effectiveness of the cleaning, disinfecting and sterilizing processes in medical professions.
CO3	Provide adequate inventory of supplies and equipments in hospitals.
CO4	Apply sterilization by radiation (Gamma rays, ultraviolet rays).
CO5	Protect decontamination, sterilizing, sterile storage and distribution.

Course Contents

Technique of sterilization of carbonized articles.

Methods of disinfection.

Physical and chemical methods

References:

Karpinski, C., & Rosenbloom, C.A. (2017). *Sports nutrition: a handbook for professionals*. Academy of Nutrition and Dietetics

Kusuda, K., Yamashita, K., Ohnishi, A., Tanaka, K., Komino, M., Honda, H. & Ohta, Y. (2016). Management of surgical instruments with radio frequency identification tags: A 27-month in hospital trial. *International journal of health care quality assurance*

Ayliffe, G. A. J. (1987). *Hospital hygiene*: By Isobel M. Maurer. 1985, 3rd edn. Edward Arnold (Publishers) Ltd, London. Pp. vii nd 152. £ 6.95. *Journal of Medical Microbiology*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	3	2	1	-	1	1	2	3	1	2	2	1
CO2	3	2	3	3	2	3	1	1	1	2	3	3	2	2	2
CO3	2	2	2	3	2	2	1	1	1	2	2	1	2	1	2
CO4	3	2	3	2	2	3	1	1	1	2	3	2	2	1	2
CO5	3	2	3	3	2	2	1	1	1	2	3	2	2	2	1
Average	2.6	2.2	2.6	2.8	2	2.2	1	1	1	2	2.8	1.8	2	1.6	1.6

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Advanced Anaesthetic Techniques Practical

Course Code: A806507

Semester: 5th

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Practice in hospitals by advance techniques regarding anaesthesia with good recovery of patients.
CO2	Understand about the advance heart surgery techniques and machineries.
CO3	Enables the students to use of all types of clinically techniques of ventilation.
CO4	Understand Neurosurgical department has its own different instrument and drugs, Cardiology department has its own different devices
CO5	Understand Drugs and machines and Dialysis department has its different techniques and drugs for surgery.

Course Contents

Physiology of IPPV (Intermittent positive pressure ventilation)

Principles of mechanical ventilation.

Various modes of IPPV.

Automatic pressure and time cycled ventilators.

Operating room ventilators.

Other types of ventilators (HFJV, NIV)

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

References:

- Malamed, S. F. (2014). *Handbook of local anesthesia-e-book*. Elsevier Health Sciences
 Miller, R. D., Eriksson, L. I., Fleisher, L. A., Wiener-Kronish, J. P., Cohen, N. H., & Young, W. L. (2014). *Miller's anesthesia e-book*. Elsevier Health Sciences
 Alam, A., Rampes, S., Patel, S., Hana, Z., & Ma, D. (2021). Anesthetics or anesthetic techniques and cancer surgical outcomes: a possible link. *Korean Journal of Anesthesiology*

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	3	2	1	-	1	1	2	3	1	2	2	1
CO2	3	2	3	3	2	3	1	1	1	2	3	3	2	2	2
CO3	2	2	2	3	2	2	1	1	1	2	2	1	2	1	2
CO4	3	2	3	2	2	3	1	1	1	2	3	2	2	1	2
CO5	3	2	3	3	2	2	1	1	1	2	3	2	2	2	1
Average	2.6	2.2	2.6	2.8	2	2.2	1	1	1	2	2.8	1.8	2	1.6	1.6

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Course Name: Specialized Surgery and Anaesthesia Practical

Course Code: A806508

Semester: 5th

L T P

Credits 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Practice of surgeries and able about to gain more knowledge for clinically.
CO2	By this course student know about what the differences between different and various organs and drugs which are used for individually organ during surgery.
CO3	In this specialized surgery, there are used special techniques and machines accordingly required.
CO4	Neurosurgical department has its own different instrument and drugs
CO5	Cardiology department has its own different devices, drugs and machines.

Course Contents

Surgical management of endoscopies, laryngectomy with RND and cochlear implant.

Management of PPV and perforating eye injury.

Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table)

References:

Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for Noncardiac Surgery E-Book: A Companion to Kaplan's Cardiac Anesthesia*. Elsevier Health Sciences

Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd

Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of cardiothoracic and vascular anesthesia*

Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	2	2	-	1	1	2	1	1	2	1	1
CO2	3	2	3	2	2	2	1	1	1	2	3	1	3	2	1
CO3	2	3	2	2	2	1	-	1	2	3	2	1	2	1	2
CO4	3	2	2	3	1	1	1	1	1	2	3	1	1	2	1
CO5	2	3	1	2	2	2	1	1	1	2	3	1	2	2	2
Average	2.2	2.6	2	2.2	1.8	1.6	1	1	1.2	2.2	2.4	1	2	1.6	1.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.



Course Name: Electronics and Technology in Surgery and Anaesthesia Practical

Course Code: A806509

Semester: 5th

L T P

Credits: 02

0 0 4

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Maintain the clinical record and prescribing system and drugs timing by the electronic system.
CO2	Provide electronic automatic coding, recovery progress, activity analysis.
CO3	Maintain financial analysis, identification of staff, all record of patients and their medical status, all can be maintained by electronic techniques in proper way.
CO4	Management of operation theatre in routine and emergency.
CO5	Use computer data processing, software information and Data management.

Course Contents

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

References:

El-Hindy, N., Johnston, R. L., Jaycock, P., Eke, T., Braga, A. J., Tole, D. M., ...& Sparrow, J. M. (2009). The Cataract National Dataset Electronic Multi-centre Audit of 55 567 operations: anaesthetic techniques and complications. *Eye*

Sanborn, K. V., Castro, J., Kuroda, M., &Thys, D. M. (1996). Detection of intraoperative incidents by electronic scanning of computerized anesthesia records: comparison with voluntary reporting. *The Journal of the American Society of Anesthesiologists*

Baddour, L. M., Epstein, A. E., Erickson, C. C., Knight, B. P., Levison, M. E., Lockhart, P. B., ... & Interdisciplinary Council on Quality of Care and Outcomes Research. (2010).

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	3	2	1	-	1	1	2	3	1	2	2	1
CO2	3	2	3	3	2	3	1	1	1	2	3	3	2	2	2
CO3	2	2	2	3	2	2	1	1	1	2	2	1	2	1	2
CO4	3	2	3	2	2	3	1	1	1	2	3	2	2	1	2
CO5	3	2	3	3	2	2	1	1	1	2	3	2	2	2	1
Average	2.6	2.2	2.6	2.8	2	2.2	1	1	1	2	2.8	1.8	2	1.6	1.6

The correlation levels are: "1" - Low Correlation, "2" - Medium Correlation, "3" - High Correlation and "-" indicates there is no correlation.

Course Name: Professional Training/Internship

Course Code: A806601

Semester: 6th

L T P

Credits: 20

0 0 0

Course Outcomes: On successful completion of this course, the students will be able to:

CO	Statement
CO1	Prepare and maintain Operation Theatre as well as patients before surgery.
CO2	Maintain a sterile field and theatre equipment and follow infection control policies.
CO3	Manage hazardous waste and follow biomedical waste disposal protocols.
CO4	Demonstrate skills and knowledge to assist anaesthetist in handling emergencies.
CO5	Provide intra-operative equipment and technical support outside of OT Room.

Course Contents

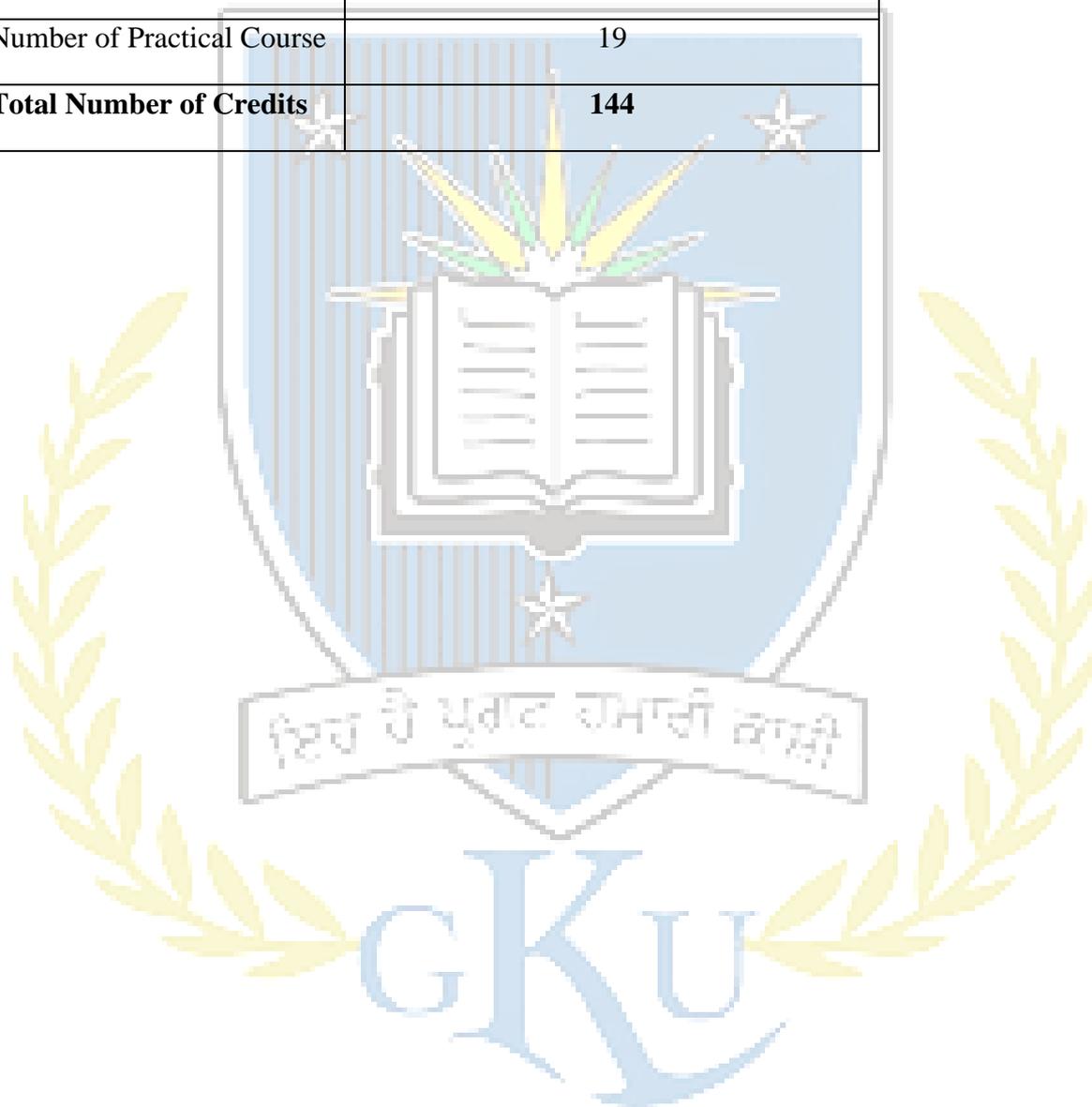
Students have to carry out a research project (on any topic related to operation theatre technology) under the supervision of a faculty. The project report has to be prepared on the basis of the research work carried out. The assessment is done on the basis of the work done and the presentation and viva

The mapping for PO/PSO/CO attainment is as follows:

PO/PSO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	3	3	2	3	3	1	3	1	2	3	2
CO2	3	3	3	3	2	2	2	3	1	2	1	1	2	2	2
CO3	2	2	3	3	1	3	3	1	1	2	2	2	3	2	3
CO4	3	2	1	2	3	1	2	1	1	2	3	1	3	2	2
CO5	1	2	3	3	2	3	2	3	3	2	2	1	3	2	3
Average	2.2	2.2	2.4	2.8	2.2	2.4	2.2	2.2	1.8	1.8	2.2	1.2	2.6	2.2	2.4

The correlation levels are: "1" – Low Correlation, "2" – Medium Correlation, "3" – High Correlation and "-" indicates there is no correlation.

Total Number of Course	44
Number of Theory Course	25
Number of Practical Course	19
Total Number of Credits	144



ACADEMIC INSTRUCTIONS

Attendance Requirements

A student shall have to attend 75% of the scheduled periods in each course in a semester; otherwise he / she shall not be allowed to appear in that course in the University examination and shall be detained in the course(s). The University may condone attendance shortage in special circumstances (as specified by the Guru Kashi University authorities). A student detained in the course(s) would be allowed to appear in the subsequent university examination(s) only on having completed the attendance in the program, when the program is offered in a regular semester(s) or otherwise as per the rules.

Assessment of a course

Each course shall be assessed out of 100 marks. The distribution of these 100 marks is given in subsequent sub sections (as applicable).

	Internal (50)				External (50)	Total		
Components	Attendance	Assignment			MST 1	MST2	ETE	
		A1	A2	A3				
Weightage	10	10	10	10	30	30	50	
Average Weightage	10	10			30		50	100

Passing Criteria

The students have to pass both in internal and external examinations. The minimum passing marks to clear in examination is 40% of the total marks.