

NOIDA INTERNATIONAL UNIVERSITY

SCHOOL OF HEALTH SCIENCES



Curriculum for Bachelor of Science

OPERATION THEATRE TECHNOLOGY



w.e.f session -2021 onwards

Who is an Allied and Healthcare Professional?

The Ministry of Health and Family Welfare, accepted in its entirety the definition of an allied and healthcare professional based on the afore-mentioned report, though the same has evolved after multiple consultations and the recommended definition is now as follows-

*'Allied and healthcare professionals (AHPs) includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person ('s) physical, mental, social, emotional, environmental health and holistic well-being.'*¹

Scope and need for allied and healthcare professionals in the Indian healthcare system

As the Indian government aims for Universal Health Coverage, the lack of skilled human resource may prove to be the biggest impediment in its path to achieve targeted goals. The benefits of having AHPs in the healthcare system are still unexplored in India. Although an enormous amount of evidence suggests that the benefits of AHPs range from improving access to healthcare services to significant reduction in the cost of care, though the Indian healthcare system still revolves around the doctor-centric approach. The privatization of healthcare has also led to an ever-increasing out-of-pocket expenditure by the population. However, many examples assert the need of skilled allied and healthcare professionals in the system, such as in the case of stroke survivors, it is the support of AHPs that significantly enhance their rehabilitation and long term treatment ensures return to normal life. AHPs also play a significant role to care for patients who struggle mentally and emotionally in the current challenging environment and require mental health support; and help them return to well-being. Children with communication difficulties, the elderly, cancer patients, patients with long term conditions such as diabetes people with vision problems and amputees; the list of people and potential patients who benefit from AHPs is indefinite.

Thus, the breadth and scope of the allied and healthcare practice varies from one end to another, including areas of work listed below:

- Across the age span of human development from neonate to old age;
- With patients having complex and challenging problems resulting from systemic illnesses such as in the case of diabetes, cardiac abnormalities/conditions and elderly care to name a few;
- Towards health promotion and disease prevention, as well as assessment, management and evaluation of interventions and protocols for treatment;

- In a broad range of settings from a patient's home to community, primarycare centers, to tertiary care settings; and
- With an understanding of the healthcare issues associated with diverse socio- economies and cultural norms within the society.
- Learning goals and objectives for allied and healthcare professionals

Credit hours vs traditional system

Recently the National Assessment and Accreditation Council (NAAC) and the University Grants Commission (UGC) have highlighted the need for the development of a Choice-Based Credit System (CBCS), at par with global standards and the adoption of an effective grading system to measure a learner's performance.¹⁷ All the major higher education providers across the globe are operating a system of credits. The European Credit Transfer System (ECTS), the 'National Qualifications Framework' in Australia, the Pan-Canadian Protocol on the Transfer ability of University Credits, the Credit Accumulation and Transfer System (CATS) in the UK as well as the systems operating in the US, Japan, etc. are examples of these. Globally, a need now exists for the use of a fully convertible credit- based system that can be accepted at other universities. It has now become imperative to offer flexible curricular choices and provide learners mobility due to the popularity of initiatives such as 'twinning programme, 'joint degrees' and 'study abroad' programme.

In order to ensure global acceptability of the graduates, the current curriculum structure is divided into smaller sections with focus on hours of studying which can be converted into credit hours as per the international norms followed by various other countries.

Table 1 Clinical learning opportunities imparted through the use of advanced techniques

Teaching modality	Learning opportunity examples
Patients	Teach and assess in selected clinical scenarios
	Practice soft skills
	Practice physical examination
	Receive feedback on performance
Mannequins	Perform acquired techniques
	Practice basic procedural skills

	Apply basic science understanding to clinical problem solving
Simulators	Practice teamwork and leadership
	Perform cardiac and pulmonary care skills
	Apply basic science understanding to clinical problem solving
Task under trainers	As specific to Operation Theatre Technology

Background of the profession

Statement of Philosophy– Why this profession holds so much importance

A latest study by the Harvard School of Public Health has found that while the South-East Asia region has just 2.6 OTs per 1 lakh population, the number is as low as 1.3 OT per 1 lakh population in India and Pakistan. Whereas, developed regions like Eastern Europe have the highest number of OTs per 1 lakh population - 25.1, followed by Asia Pacific (high income countries) 24.3, Central Europe 15.7, Western Europe 14.7, North America and Australasia 14.3, Central Asia 11.7 and the Caribbean 10.4 OTs). So we may interpret that there is an enormous scope and need for the profession not only in India as well as in other developing countries but at the same time along with skilled manpower we need adequate manpower.

Moreover, a variety of electrical and electronic equipment are in use in modern operation theatres for monitoring anesthesia & surgical procedures, the success of the procedures and safety of patients depend largely on the reliability, smooth and trouble free performance of these equipment's and ability of skilled manpower to operate the same. Thus, there is increased need for qualified and trained professionals in the system. This course is aimed at satisfying this need.

About Operation Theatre Technology

An operation theatre (OT) technologist forms an intrinsic part of any hospital. To become a trained professional one must undertake operation theatre technology course. An OT professional is the one, who facilitates the surgical procedures, planned and emergency both, by preparing in advance the equipment that are necessary for any surgical procedures. He/she also looks after all the work and management of the operation theatre which includes managing the patients in & out of operation theatre, looking after all the surgical equipment, arrangement of operation theatre table, dressing table, anesthesia table as well as

management of the staff. As the surgical branch has various specialty including General Surgery, OBG, Cardiac, Ortho and genito-urinary, the OT technologist needs to know about these various specialties.

Scope of practice

- Setup, check, and maintain anesthesia machine, monitors life support equipment like airway equipment, ventilator, emergency equipment, defibrillator, and anesthetic and resuscitation drugs.
- Orders, Maintains and keep records of all anesthesia equipment and drug.
- Assist Anesthetist in patient procedures like setting up of invasive lines, airway management, setting up of monitors and administer anesthesia to patient
- Assists during emergency situations by assisting in basic and advanced life support, critical events
- Prepares and maintains operation table, light, electric cautery, tourniquets etc.
- Management of central sterile services department. Packing of equipment and linen. Sterilization procedures like autoclaving, plasma sterilization and disinfection procedures as per guidelines, checking, storage and dispatch.
- Management in Intensive Care unit and emergency department of equipment like ventilators, monitors, infusion pumps, defibrillators etc.
- Assist disaster team in disaster situations and national emergencies on field and safe transport in ambulance.
- Assist anesthesia and surgical team in all kinds of surgical disciplines.
- Assist anesthetist during anesthesia procedures outside operation theatres like CT and MRI suits, Cardiac catheterization laboratory, pain relief procedures etc.
- Recognition of Title and qualification
- Within the multidisciplinary team, the professional responsible for the facilitation and preparation of the surgical procedures is the Operation theatre technologist.
- The recommended title thus stands as the Operation Theatre Technologist with the acronym - OTT for this group of professionals

It is a known fact that with the career advancement, the nomenclature will also vary and will also depend on the sector and profile of the professional. Considering the 10 NSQF levels designed by the NSDA, the following level progression table has been proposed by the taskforce to map the nomenclature, career pathways and progression in different sectors of professional practice for Operation theatre technologist.

The proposed progression is for further discussion and deliberation, the implementation time of the same may vary depending on the current system and regulations in place.

The table 2 below indicates the various channels of career progression in three distinct sectors such as clinical setting, academic and industry (management/sales or technical) route. It is envisaged that the OTT will have two entry pathways – students with diploma or baccalaureate. The level of responsibility will increase as the career progresses and will start with level four (4) for diploma holders and level five (5) for baccalaureate holders. The table also indicates the corresponding level of qualification with experience required by the professional to fulfill the requirements of each level. Considering the degree of patient dealing in operation theatre technology and such other professions, government aims to phase out the Diploma and PG Diploma level courses and promote Bachelors’ and Masters’ degree courses. In the academic front, as per UGC guidelines, to work at the position of a Lecturer/Assistant Professor the candidate must attain master degree. At present there are limited master degree seats in Operation Theatre Technology in India, and thus it has been decided that eventually provisions will be made to provide bridge courses for PG Diploma holder for certain number of years to bring them at par with the master level courses and universities will be promoted to start master degree courses. The table also indicates that career progression is upto the level 10, however it needs to be stated that the ultimate signatory authority on patient documentation stands with the surgeon on role, the chief technical officer of the OT unit (clinical route) will be the ultimate authority for the management responsibilities, the final authority for the clinical decisions will be with the doctor.

Table 2 Nomenclature based on career progression for Operation Theatre Technologist (Proposed)

Levels	Nomenclature in various sectors			Qualification and experience
	Clinical	Academic	Industry	
Level 4	Operation Theatre Assistant		Technical associate	Diploma OTT with 0 - 5 years post Diploma OTT experience
Level 5	Junior Operation Theatre Technologist	Demonstr ator	Junior Operation Theatre Technologist	BSc OTT with 0-5 years post BSc OTT Diploma OTT with 6-10 years post OTT (only for Industry pathway)

Level 6	Senior Operation Theatre Technologist	Tutor	Senior Operation Theatre Technologist	PGDOTT with 0-5 years post PGDOTT BSc OTT with 6-10 post BSc OTT Diploma OTT 11-15 years' experience with General B.Sc. (only for Industry pathway)
Level 7	Junior Technical Officer	Clinical Instructor	Chief OT Technologist	PGDOTT with 6-10 years post PGDOTT BSc OTT with 11-15 years (Only clinical/industry role) post BSc OTT
Level 8	Senior Technical Officer	-	Deputy Manager for OT Technology	PGDOTT with 11-15 years post PGDOTT BSc OTT with 16-20 years (only clinical/industry role) post BSc OTT
Level 9	Chief Operation Theatre Officer	-	Additional Director for OT Technology	PGDOTT with 16-20 years post PGDOTT BSc OTT with 21-25 years (only clinical/industry role) post BSc OTT
Level 10	Chief Operation Theatre Manager	-	Director for OT Technology	PGDOTT with 21-25 years post PGDOTT BSc OTT with 26-30 years (only clinical/industry role) post BSc OTT

PGDOTT- Post Graduate Diploma for Operation Theatre Technology, this has been included in this table considering the fact that some MSc course or PG Diploma course may exist or/and can be developed for the Operation Theatre technology professionals. So the probable progression will be as indicated in the table 2 above.

Definition of Operation Theatre Technologist

Operation theatre Technologist is a member of a multidisciplinary team in operation theatres who Prepare and maintain an operating theatre. Assists an anesthetist and surgical team during peri- operative period and provides support to patients in the recovery room.

Education of the operation theatre technologist When developing any education programme it is necessary that programme planning should be outcome-based, meeting local and national manpower requirements, personal satisfaction and career potential for the professionals with supporting pathway in the development of the profession. One of the major changes is the shift from a focus based on traditional theoretical knowledge and skills to competency based education and training. Optimal education/training requires that the student is able to integrate knowledge, skills and attitude in order to be able to perform a professional act adequately in a given situation.

Thus, the following curriculum aims to focus on skills and competencies based approach for learning and is designed accordingly. The curriculum is prescriptive and is designed with an aim to standardize the content across the nation.

Entry requirements

It is recommended that the students entering the OTT programme should have completed the recognized secondary school studies as the qualification, stipulated for OTT course (diploma/degree) is 10+2 or equivalent examination with science subject from a recognized university or board which would provide the foundation for and prepare them for higher education studies with minimum 50% aggregate marks at HSC for open category and minimum 45% aggregate marks for reserve category.

Course Duration

It is recommended that any programme developed from this curriculum should have a minimum of the following duration to qualify as an entry level professional in OTT -

3.5 year programme (including 6 month of clinical training /internship)- Bachelor's degree level

The emphasis initially should be on the academic content establishing a strong scientific basis and in the latter year on the application of theory to clinical/reflective practice. In Bachelor degree programme minimum one year should be devoted to clinical practice and this should be on a continuum of rotation

from theory to practice over the programme. The aim of the 4 year degree programme is to enable the development of the OTT as a key member of the multidisciplinary team and to enable him/her to execute his/her role with ensuring quality.

With the change in the disease dynamics and multifold increase in the, it is imperative that a well-structured programme of postgraduate education is also encouraged so as to enhance research capacity within the country to widen the scope of clinical practice for the profession. Thus, a master's degree programme is recommended with minimum of two years of education in specialized field. The post graduate students can contribute significantly in research and academics. Presently, there are limited master degree courses in the country and institutes and universities should be encouraged to start such courses.

Teaching Faculty and Infrastructure

The importance of providing an adequate learning environment for the students cannot be over emphasized. Both the physical infrastructure and the teaching staff must be adequate. Teaching areas should facilitate different teaching methods. Where students share didactic lectures with other disciplines (e.g. nurses) large lecture theatres may be appropriate, but smaller teaching areas should also be provided for tutorial and problem/case-based learning approaches. In all venues where students are placed the health and safety standards must be adhered to. The recommended teachers to student ratio in the UG level should be -1:25.

Job availability

As per ILO documentation, employers worldwide are looking for job applicants who not only have technical skills that can be applied in the workplace, but who also can communicate effectively, including with customers; can work in teams, with good interpersonal skills; can solve problems; have good ICT skills; are willing and able to learn; and are flexible in their approach to work.²² After completion of the courses mentioned in following chapters, the individual will find a challenging career in a hospital, nursing homes, trauma / emergency centers, Intensive Care units, CSSD etc. Graduates are eligible for employment overseas where their qualifications, training and experience are highly regarded. With further experience, graduates may be employed by medical equipment manufacturers and development specialists.

Graduates have good employment prospects, and will enter a field in which the demand for professionals has increased in recent years and will keep on increasing due to changing environment and conditions.

B. Sc. in Operation Theater Technology

Introduction:

Learning Objectives: At the completion of this course, the student should be -

- Able to help the anesthesiologist in administering anesthesia, assist in various procedures and also help in continuous monitoring of patients during surgery.
- Able to train and develop an individual to independently handle the latest technology and high end biomedical equipment in Operation Theatre
- Able to assist anesthesiologists in developing and implementing patient anesthesia careplans, including pre-operative, surgical theater, recovery room, and post-operative intensive care procedures.
- Able to do- patient data collection, catheter insertion, airway management , assisting the administration and monitoring of regional and peripheral nerve blockades, support therapy, adjusting anesthetic levels during surgery, inter-operative monitoring, postoperative procedures, pain clinics and patient education, and administrative tasks.
- Able to manage medical gases and pipeline system
- Able to assist in Intensive care unit
- Able to manage Central sterile supply department
- Able to assist during Disaster and emergency situations.
- Expectation from the future graduate in the providing patient care.

The Course prepares the operating theatre technologist to work as a competent, reliable member of the health care team under the guidance and supervision of doctors in their delivery of patient care, training also focuses on the knowledge and skills of monitoring infection control policy and procedures in the operating theatre.

Employment opportunities can be found in hospitals in both private and public sectors as well as in independent trauma centres.

OTT graduate is encouraged to pursue further qualification to attain senior position in the professional

field, also to keep abreast with the advance and new technology, the professional should opt for continuous professional education credits offered by national and international institutes.

Eligibility for admission Selection Procedure

He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with pass marks (50%) in physics, chemistry, biology/mathematics.
OR

Diploma in Operation Theatre Technology after completing 12th class/ 10 +2 of CBSE or equivalent with minimum aggregate of 50% marks in physics, chemistry and biology/mathematics provided the candidate has passed in each subject separately.

He/she has attained the age of 17 years as on - (current year) & maximum age limit is 30 years.

Candidates who have studied abroad and have passed the equivalent qualification as determined by the Association of Indian Universities will form the guideline to determine the eligibility and must have passed in the subjects: Physics, Chemistry, Biology and English up to 12th Standard level.

The qualifying examination passed by FN/PIO/CIWGC students should be considered equivalent to eligibility examination by the Association of Indian Universities/Academic Council

He/she has to furnish at the time of submission of application form, a certificate of Physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.

Admission to B.Sc. Operation Theatre Technology course shall be made on the basis of eligibility and an entrance test to be conducted for the purpose. No candidate will be admitted on any ground unless he/she has appeared in the admission test and interview.

Entrance test, to be conducted by the university as per the syllabus under 10 +2 scheme of CBSE, subject-wise distribution of questions will be as 40% in Physics, 25% in Biology/25% in Mathematics, 15% in Chemistry, 10% in English (Language & Comprehension) and 10% in General Awareness about health related methods.

Successful candidates on the basis of written Test will be called for the interview & shall have face an interview board. The interview board will include the Head of the Department of Surgery and/or

Anesthesia (Chairman of the Board) along with other nominees, whose recommendations shall be final for the selection of the students.

During subsequent counseling (s) the seat will be allotted as per the merit of the candidate depending on the availability of seats on that particular day.

Candidate who fails to attend the Medical Examination on the notified date(s) will forfeit the claim for admission and placement in the waiting list except permitted by the competent authority under special circumstances.

The name of the student(s) who remain(s) absent from classes for more than 15 days at a stretch after joining the said course will be struck off from the college rolls without giving any notice.

Provision of Lateral Entry:

Lateral entry to second year for allied and healthcare science courses for candidates who have passed diploma program from the Government Boards and recognized by State/Central University, fulfilling the conditions specified and these students are eligible to take admission on lateral entry system only if the same subject have been studied at diploma level.

Duration of the course

Duration of the course: 3.5 years

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:

A candidate has to secure minimum-
75% attendance in theoretical

80% in Skills training (practical) for qualifying to appear for the final examination.

No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc.

Assessment:

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training programme. To achieve this, all assessment forms and feedback should be included and evaluated.

Course Structure:

First Year

SL NO	COURSE CODE	SUBJECT	HOURS	CREDITS
1	OTT 101	Human Anatomy	125	4
2	OTT 102	Physiology	125	4
3	OTT 103	Introduction to Quality and Patient safety	90	3
4	OTT 104	Biochemistry I	90	3
7	OTT 105	Introduction to OTT	90	3
8	OTT106	Practical (Introduction to OTT)	90	3
9	OTT 107	English(Communication and soft skills)	30	1
10	OTT 108	Introduction to Healthcare Delivery System in India	90	3
11	OTT 109	Basic computers and information science	30	1
12		Clinical Lab posting	200	

Theory	760
Practical	90
Clinical	200
Total	1050

Second Year

SL NO	COURSE CODE	SUBJECT	HOURS	CREDITS
1	OTT 201	Medicine	90	3
2	OTT 202	Applied Pathology & blood banking	60	2
3	OTT 203	Applied Microbiology	60	2
4	OTT 204	Clinical Pharmacology	90	3
5	OTT 205	Psychology & Sociology	90	3
6	OTT 206	Basic of surgery	90	3
7	OTT 207	Principles & basics of Anesthesia	90	3

8	OTT 208	OTT Practical	60	3
10		Clinical Lab posting	300	

Theory	630
Practical	60
Clinical	300
Total	990

Third Year

SL NO	COURSE CODE	SUBJECT	HOURS	CREDITS
1	OTT 301	Operation theatre technology - clinical	60	2
2	OTT 302	Operation theatre technology - practical	60	1
3	OTT 303	Operation theatre technology - Applied	120	4
4	OTT 304	Operation theatre technology - practical	120	2
5	OTT 305	Operation theatre technology - Advanced	100	4
	OTT 306	Operation theatre technology – Advanced - Practical	60	2
6	OTT 307	Ethics & Database management	30	1
7	OTT 308	Research and Biostatistics	30	1
8		Clinical Lab posting	600	

Theory	340
Practical	240
Clinical	600
Total	1108

INTERNSHIP

SR. NO.	COURSE TITTLE	HOURS		
1	INTERNSHIP	THEORY	PRACTICAL	HOURS
			1000	1000

SYLLABUS FOR B.SC OPERATION THEATRE TECHNOLOGY

COURSE CODE: OTT101

COUSE NAME: HUMAN ANATOMY

COURSE CREDIT HOURS: 4

TOTAL HOURS: 125(THEORY: 100 HOURS PRACTICAL: 25 HOURS)

COURSE OBJECTIVES:

By the end of this course the students will demonstrate the anatomy of the human body regarding upper limb, lower limb thorax, abdomen, and head and neck. Also, student will demonstrate the ability to gain practical skills enabling them to recognize and differentiate bones, muscles, vessels, nerves and viscera of the body. The student can gain skill in reading and understanding radiological images of the body and identify through palpation the anatomical landmarks on the surface of the body.

COURSE DESCRIPTION:

It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies.

COURSE CONTENT:

UNIT 1

Introduction: human body as whole

Theory:

- ★ Definition of anatomy and its divisions Terms of location, positions and planes Cell and its organelles
- ★ Epithelium-definition, classification, describe with examples, function
- ★ Glands- classification, describe serous & mucous glands with examples
- ★ Basic tissues - classification with examples

Practical:

- ★ Histology of types of epithelium
- ★ Histology of serous, mucous & mixed salivary gland

Locomotion and support

Theory:

Cartilage - types with example & histology

Bone - Classification, names of bone cells, parts of long bone, names of all bones, vertebral column, fontanelles of fetal skull Joints - Classification of joints with examples, synovial joint (in detail for radiology) Muscular system: Classification of muscular tissue & histology

Names of muscles of the body

Practical:

Histology of the 3 types of cartilage

Demo of all bones showing parts, radiographs of normal bones & joints

UNIT 3

Cardiovascular system

Theory:

- ★ Heart-size, location, chambers, exterior & interior
- ★ Blood supply of heart
- ★ Systemic & pulmonary circulation
- ★ Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
- ★ Peripheral pulse
- ★ Inferior vena cava, portal vein, portosystemic anastomosis, Great saphenous vein, Dural venous sinuses
- ★ Lymphatic system- Histology of lymphatic tissues, Names of regional lymphatic, axillary and inguinal lymph nodes in brief

Practical

- ★ Demonstration of heart and vessels in the body
- ★ Histology of large artery, medium sized artery & vein, large vein
- ★ Microscopic appearance of large artery, medium sized artery & vein, large vein pericardium
- ★ Histology of lymph node, spleen, tonsil & thymus Normal chest radiograph showing heart shadows
- ★ Normal angiograms

UNIT 4

Gastro-intestinal system

Theory:

- ★ Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring) Oesophagus, stomach, small and large intestine, liver, gallbladder, pancreas
- ★ Radiographs of abdomen

UNIT 5

Respiratory system

- ★ Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- ★ Histology of trachea, lung and pleura
- ★ Names of paranasal air sinuses

Practical:

- ★ Demonstration of parts of respiratory system.
- ★ Normal radiographs of chest
- ★ Histology of lung and trachea

UNIT 6

Peritoneum

Theory: Description in brief

Practical: Demonstration of reflections

UNIT 7

Urinary system -

Theory:

- ★ Kidney, ureter, urinary bladder, male and female urethra
- ★ Histology of kidney, ureter and urinary bladder Practical:

Demonstration of parts of urinary system Histology of kidney, ureter, urinary bladder Radiographs of abdomen-IVP, retrograde cryptogram

UNIT 8

Reproductive system

Theory:

- ★ Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
- ★ Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology) Mammary gland - gross,

Practical:

Demonstration of section of male and female pelvis with organs in situ Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary Radiograph.

UNIT 9

Endocrine glands

Theory: Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland - (gross & histology)

Practical:

- ★ Demonstration of the glands
- ★ Histology of pituitary, thyroid, parathyroid, suprarenal glands

UNIT 10

Nervous system

Theory:

- ★ Neuron
- ★ Classification of NS
- ★ Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology) Meninges, Ventricles & cerebrospinal fluid

Practical:

- ★ Histology of peripheral nerve & optic nerve Demonstration of all plexuses and nerves in the body Demonstration of all part of brain
- ★ Histology of cerebrum, cerebellum, spinal

UNIT 11

Sensory organs

Theory:

- ★ Skin: Skin-histology Appendages of skin
- ★ Eye: Parts of eye & lacrimal apparatus
- ★ Ear: parts of ear- external. middle and inner ear and contents

Practical:

Histology of thin and thick skin Demonstration and histology of eyeball Histology of cornea & retina

UNIT 12

Embryology Spermatogenesis & oogenesis, Ovulation, fertilization Fetal circulation Placenta

COURSE LEARNING OUTCOMES:

CLO 1. Students can demonstrate the location, position and planes. Explain the anatomy, physiology and functions of various Tissues and cell, organization of cellular system. . They will be able to demonstrate epithelial and glands. (UNIT 1)

CLO 2. Classify different types of tissue and explain anatomy and physiology of skeletal system, joints and muscular system. Demonstrate the bones of all parts.(UNIT 2)

CLO 3. Describe how the heart is positioned in the thoracic cavity. List and describe the layers of the heart wall. Name the chambers of the heart and their valves. Name the major vessels that enter and exit the heart and their branches. Describe blood flow through the heart. Explain how the conduction system of the heart controls proper blood flow.(UNIT 3)

CLO 4. Identify the organs of the alimentary canal from proximal to distal, and briefly state their function. Identify the accessory digestive organs and briefly state their function. Describe the four fundamental tissue layers of the alimentary canal.(UNIT 4)

CLO 5. Outline the forces that allow for air movement into and out of the lungs. Outline the process of gas exchange. Summarize the process of oxygen and carbon dioxide transport within the respiratory system. Create a flow chart illustrating how respiration is controlled.(UNIT 5)

CLO 6. What are the nine regions of abdomen. Explain peritoneum, its layers, peritoneal cavity, blood supply, nerve supply, lymphatic drainage, venous drainage and functions of peritoneum.(UNIT 6)

CLO 7. Describe different parts of urinary system, their further sub divisions, dimensions, weight, size, shape, location, relations, functions, blood supply, nerve supply, lymphatic drainage, venous drainage and applied anatomy.(UNIT 7)

CLO 8. Describe different parts of male and female reproductive system, their further sub divisions, dimensions, weight, size, shape, location, relations, functions, blood supply, nerve supply, lymphatic drainage, venous drainage and applied anatomy.(UNIT 8)

CLO 9. Describe different endocrine glands (pituitary, thyroid, parathyroid and suprarenal gland), their further sub divisions, dimensions, weight, size, shape, location, relations, functions, blood supply, nerve supply, lymphatic drainage, venous drainage and applied anatomy.(UNIT 9)

CLO 10. Identify the anatomical and functional divisions of the nervous system. Relate the functional and structural differences between gray matter and white matter structures of the nervous system to the structure of neurons. List the basic functions of the nervous system.(UNIT 10)

CLO 11. Describe different sensory organs (skin, eye and ear), their further sub divisions, dimensions, weight, size, shape, location, relations, functions, blood supply, nerve supply, lymphatic drainage, venous

CLO 12. Describe spermatogenesis, oogenesis, ovulation and fertilization. Explain Fetal circulation.
Describe placenta and its functions(UNIT 12)

TEXT BOOKS:

Human Anatomy by BD Chaurasia (4 Volume)

REFERENCE BOOKS:

Gray's Anatomy by Richard Drake & A. Wayne Vogl & Adam W. M. Mitchell

WEB LINKS:

- ★ YouTube channel by Dr. Peter de Souza and Dr. Jack Hurley, U.K. Medical doctors.
- ★ <https://guides.lib.uw.edu>
- ★ [www.linkedin.com ›slideshare](http://www.linkedin.com/slideshare)

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 102
COURSE NAME: GENERAL PHYSIOLOGY
COURSE CREDIT: 4
TOTAL HOURS: 125(THEORY: 100 HOURS PRACTICAL: 25 HOURS)

COURSE OBJECTIVES:

To provide in-depth instruction in the organization, structures, and functions of the human body. Students will learn the terminology of physiology of each body system and how they interrelate to maintain homeostasis.

COURSE DESCRIPTION:

The student will demonstrate a thorough understanding of the normal physiology of each organ system of the body.

COURSE CONTENT:

UNIT1.

General Physiology: Cell: morphology, Structure and function of cell organelles Structure of cell membrane Transport across cell membrane Intercellular communication Homeostasis

UNIT 2.

Blood: Introduction-composition & function of blood W.B.C., R.B.C., Platelets formation & functions, Immunity Plasma: composition, formation & functions, Plasma Proteins:-types & functions Blood Groups- types , significance, determination Hemoglobin Haemostasis Lymph-composition, formation, circulation &functions

UNIT 3.

Cardiovascular system: Conducting system-components, impulse conduction Heart valves Cardiac cycle-definition, phases of cardiac cycle Cardiac output- definition, normal value, determinants. Stroke volume and its regulation Heart rate and its regulation: Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure Shock-definition, classification, causes and features Basic idea of ECG Cardiovascular changes during exercise

UNIT 4.

Respiratory System: Mechanics of respiration Lung volumes and capacities Pulmonary circulation, transport of respiratory gases Factors affecting respiration Regulation of respiration-neural regulation, voluntary control and chemical regulation Hypoxia,Hypercapnoea, Hypocapnoea Artificial respiration Disorders of respiration- dyspnoea, orthopnoea, hyperpnoea, hyperventilation, apnoea, tachypnoea Respiratory changes during exercise.

UNIT 5.

Nerve Muscle Physiology: Muscles- classification, structure, properties, Excitation contraction coupling Motor unit, EMG, factors affecting muscle tension, Muscle tone, fatigue, exercise Nerve –structure and function of neurons, classification, properties Resting membrane potential & Action potential their ionic basis All or None phenomenon Neuromuscular transmission Ionic basis of nerve conduction Concept of nerve injury & Wallerian degeneration Synapses Electrical events in postsynaptic neurons Inhibition & facilitation at synapses Chemical transmission of synaptic activity Principal neurotransmitters. 6. Nervous system: Introduction, central and peripheral nervous system, functions of nervous system.

UNIT 6.

Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex Sense organ, receptors, electrical & chemical events in receptors Sensory pathways for touch, temperature, pain, proprioception & others Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions Motor mechanism: motor cortex, motor pathway: the descending tracts- pyramidal & extra pyramidal tracts-origin, course, termination & functions. Upper motor neuron and lower motor neuron paralysis. Spinal cord lesions- complete transection & hemi section of the spinal cord Autonomic nervous system :features and actions of parasympathetic & sympathetic nervous system Hypothalamus Higher functions of nervous system Special senses- eye, ear, nose, mouth + - + Water excretion, concentration of urine-regulation of Na , Cl , K excretion

UNIT 7.

Renal System: Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function

UNIT 8.

Digestive System: Digestion & absorption of nutrients, Gastrointestinal secretions & their regulation

UNIT 9.

Endocrinology Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.

UNIT 10.

Male & female reproductive system Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion. Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation.

COURSE LEARNING OUTCOMES:

At the end of the course students will be able to...

CLO1. Describe the structure and function of cellular organelles.

CLO2. Describe the functions of blood. Classify the different types of blood cells

CLO3. Name the chambers of the heart and their valves. Name the major vessels that enter and exit the heart. Describe blood flow through the heart. Describe the stages of a cardiac cycle

CLO4. Explain the function of the respiratory system. Name the organs of the system. Define the parts of the internal nose and their functions

CLO5. Name the functions of the skeletal system. Describe and compare the basic differences between the anatomy of skeletal, smooth and cardiac muscles. List the structural and functional classification of neurons. Explain how a neuron transmits a nerve impulse. (UNIT 5)

CLO6. Describe the structure of the spinal cord. Name and number the spinal nerves. (UNIT 6)

CLO7. Define the following internal parts of the kidneys: cortex, medulla, medullary pyramids, renal papillae, renal columns and major and minor calyces. Name the parts of a nephron and describe the flow of urine through this renal tubule. List the functions of the nephrons. (UNIT 7)

CLO8. Explain the major digestive enzymes and how they function. .Explain the functions of the liver(UNIT 8)

CLO9. List the functions of hormones. Describe how the hypothalamus of the brain controls the endocrine system. Name the endocrine glands and state where they are located.List the major hormones and their effects on the body(UNIT 9)

CLO10. Name the internal parts of a testis. Explain the effects of testosterone on the male body. Describe the phases of the menstrual cycle. (UNIT 10)

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PRATICALS

- ★ Examination of pulse, B.P., Respiratory rate.
- ★ Reflexes
- ★ Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC, ERV, EC, residual volume on Spirometry.
- ★ Estimate of Haemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count. E Blood indices, Blood grouping, Bleeding & Clotting time

TEXT BOOKS:

- ★ Anatomy and Physiology for Nurses
- ★ Surface and Radiological Anatomy – Hamilton et al (Heffer)
- ★ Essentials Of Medical Physiology: by K Sembulingam
- ★ Textbook of Physiology- AK Jain

REFERENCE BOOKS :

- ★ Essentials of Human Anatomy – Russel
- ★ An Atlas of normal radiographic Anatomy – Ross and Wilson

WEB LINKS:

- ★ <https://www.physoc.org/>
- ★ <http://aups.org.au/>
- ★ <https://www.hapsweb.org/default.aspx>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 103**COURSE NAME: BASIC CLINICAL BIOCHEMISTRY****COURSE CREDIT: 3****TOTAL HOURS: 90****COURSE OBJECTIVE:**

This subject shall give information about all the major metabolic pathways occurring in our body. The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes & the deficiency diseases related to them.

COURSE DESCRIPTION:

This course involves a study of the metabolism of carbohydrates, proteins, fats, minerals, vitamins and essential enzymes. The role of these in the functioning of the human body will be discussed.

COURSE CONTENT:**UNIT 1.**

Carbohydrate Metabolism

- ★ Introduction, Importance and Classification
- ★ Digestion and Absorption
- ★ Metabolism: - Glycolysis, Citric acid cycle, Gluconeogenesis, Glycogenolysis, Glycogenesis
- ★ Disorders of carbohydrate metabolism.

UNIT 2.

Protein Metabolism

- ★ Introduction, Importance and classification
- ★ Important properties of proteins
- ★ Digestion & absorption of Proteins
- ★ Protein synthesis
- ★ Metabolism of proteins
- ★ Disorders of protein metabolism and Urea Cycle

UNIT 3.

Lipid

- ★ Introduction & Classification
- ★ Digestion & absorption of fats

- ★ Lipoproteins
- ★ Fatty acid biosynthesis & fatty acid oxidation

UNIT 4

Nucleic Acid

- ★ Introduction
- ★ Functions of Nucleic acid
- ★ Functions of energy carriers

UNIT 5

Enzymes

- ★ Introductions, Importance & Classifications
- ★ Properties of enzymes
- ★ Mechanism of enzyme action
- ★ Factors affecting enzyme action
- ★ Enzyme kinetics & enzyme inhibitors

COURSE LEARNING OUTCOMES

CLO 1. Discuss the Glycolysis, Citric acid cycle, Gluconeogenesis, Glycogenolysis, Glycogenesis (UNIT 1)

CLO 2. To explain about importance and metabolism of protein. (UNIT 2)

CLO 3. To discuss about fatty acids and fatty acid oxidation(UNIT 3)

CLO 4. At the end of the course, the students have knowledge of nucleic acid and its functions (UNIT 4)

CLO5 To explain about enzymes, its importance and mechanism of enzyme action.(UNIT 5)

TEXT BOOKS

- ★ Practical Clinical Biochemistry by Harold Varley
- ★ Text book of biochemistry by P. B. Godker
- ★ Principal of Biochemistry by u. Satyanarayana
- ★ Principal of Biochemistry by M. A. Siddiqi

REFERENCE BOOKS

- ★ Instrumental Analysis by Chatwal Anand

- ★ Text book of Medical Biochemistry by Chaterjee, Shinde
- ★ Principal of Biochemistry by Lehninger

ONLINE LINKS FOR STUDY & REFERENCE MATERIALS.

- ★ <http://www.freebookcentre.net/Chemistry/BioChemistry-Books>
- ★ <https://www.slideshare.net/>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 104
COURSE NAME: INTRODUCTION TO QUALITY AND PATIENT SAFETY
COURSE CREDIT: 3
TOTAL HOURS: 90

COURSE DESCRIPTION:-

The goal of this course is to introduce the fundamentals of patient safety, evaluation of quality and quality measures and principals of quality improvement to students working in any aspect of health care or in health services research.

COURSE OBJECTIVE:-

- ★ Understand the fundamental principles and lessons of the patient safety movement
- ★ Understand the terminology and basic methodology of quality measurement
- ★ Understand the principles of designing and evaluating quality measures
- ★ Assume a leadership role in the design and implementation of a quality monitoring system for use in quality improvement

COURSE CONTENT:

UNIT 1

Introduction to Quality and patient safety

Quality assurance and management - The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.

- ★ Concepts of Quality of Care
- ★ Quality Improvement Approaches
- ★ Standards and Norms
- ★ Quality Improvement Tools
- ★ Introduction to NABH guidelines

UNIT 2.

Basics of emergency care and life support skills –

Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental

aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:

- ★ Vital signs and primary assessment
- ★ Basic emergency care – first aid and triage
- ★ Ventilations including use of bag-valve-masks (BVMs)
- ★ Choking, rescue breathing methods
- ★ One- and Two-rescuer CPR
- ★ Using an AED (Automated external defibrillator).
- ★ Managing an emergency including moving a patient

At the end of this topic, focus should be to teach the students to perform the maneuvers in simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above mentioned modalities.

UNIT 3.

Bio medical waste management and environment safety-

The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:

- ★ Definition of Biomedical Waste
- ★ Waste minimization
- ★ BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
- ★ Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
- ★ BMW Management & methods of disinfection
- ★ Modern technology for handling BMW
- ★ Use of Personal protective equipment (PPE)
- ★ Monitoring & controlling of cross infection (Protective devices)

UNIT 4.

Infection prevention and control –

The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes.

Concepts taught should include –

- ★ 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

UNIT 5.

Antibiotic Resistance-

- ★ History of Antibiotics
- ★ How Resistance Happens and Spreads
- ★ Types of resistance- Intrinsic, Acquired, Passive
- ★ Trends in Drug Resistance
- ★ Actions to Fight Resistance
- ★ Bacterial persistence
- ★ Antibiotic sensitivity
- ★ Consequences of antibiotic resistance
- ★ Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals

UNIT 6.

Disaster preparedness and management-

The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include-

- ★ Fundamentals of emergency management,
- ★ Psychological impact management,
- ★ Resource management,
- ★ Preparedness and risk reduction,
- ★ Key response functions (including public health, logistics and governance, recovery, rehabilitation)

COURSRSE LEARING OUTCOMES

CLO 1. Recognise the magnitude and the importance of patient safety (UNIT 1)

CLO 2. Become aware of the principles and methodologies in patient safety and how this relates to delivering safe and quality services to patient (UNIT 2)

CLO 3. Reflect on how patient safety practices can help to minimize the incidence and impact of medical errors, adverse events, and maximize recovery from them (UNIT 3)

CLO 4. Become aware of the range of tools, solutions and strategies to improve patient safety(UNIT 4)

CLO5 . Aware the students regarding antibiotic resistance and disaster preparedness management (UNIT 5 & 6)

TEXT BOOKS :

- ★ Fundamentals of quality and patient safety in medicine and surgery 1st edition by wolter kluwer publication.
- ★ Quality and safety in critical care medicine.

REFERENCE BOOK:

- ★ Quality and Safety in Nursing: A Competency Approach to Improving Outcomes edited by Gwen Sherwood, Jane Barnsteiner.
- ★ Quality and Safety in Anesthesia and Perioperative Care
- ★ edited by Keith J. Ruskin, Stanley H. Rosenbaum, Marjorie P. Stiegler

WEB LINKS:

- ★ Www.ahrq.gov.in
- ★ Www.nibc.nlm.nih.gov

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE OBJECTIVES:

- ★ To prepare the students in understanding every issue and aspect related to Operation Theatre
- ★ To make the students aware of infection control policies and procedures
- ★ To provide knowledge about assisting anesthetist in handling emergencies, taking care of medical and diagnostic supplies

COURSE DESCRIPTION:

- ★ Discuss the methods of sterilization and disinfection utilized in health care system (mostly in OT).
- ★ Discuss the of chemical treatment for disinfection and physical methods for sterilization including dry and moist heat methods.
- ★ Describe and discuss anesthesia services provided in operation theatre, and in preoperative period.
- ★ The course gives a concept of emergencies which can be faced in OT and other dept. Of hospital and their initial management and assisting surgeon and anesthetist in managing emergencies in OT.

COURSE CONTENT:

UNIT 1.

C.S.S.D, and logistics:-

Cleaning and dusting - methods of cleaning, composition of dust. Advantages of CSSD .Sterilization process in CSSD .Disinfectants of instruments and Sterilization- Definition, Methods, cleaning agents, detergents, Mechanical washing, ultrasonic cleaner, lubrication inspection and pitfalls .Various methods of chemical treatment- formalin, glutaraldehyde etc, thermal. Hot Air oven-dry heat, Autoclaving, steam Sterilization water etc,. UV treatment.

- ★ Sterilization of equipments - Arthroscope, Gastroscope, imago Lamp, Apparatus, suction Apparatus Anaesthetic equipments including endotracheal tubes -

UNIT 2.

Anaesthesia Service --

History, pre-operative, Intra operative; post operative care, General Anaesthesia Techniques

- ★ Local Anaesthesia Techniques

UNIT 3.

Basic requirement before Anesthesia.

- ★ PAC (Pre Anesthesia Check-up) and Investigations/Monitoring, Equipments used in Anesthesia,
- ★ Intra-Venous Fluids used During Anesthesia, Methods of Drug Administration, Suturing

UNIT 4.

Blood Transfusion- blood, composition of blood, function of blood,

- ★ Blood grouping, cross matching and blood transfusion, transfusion hazard

UNIT 5.

Bandaging Positioning of Patient- Supine position, prone position, side lying positions, Fowler's Position, Cardiac Position, Erect position, Lithotomy position, Knee chest position, Trendelenburg position

UNIT 6.

- ★ Emergencies outside the Operation Theatre:
- ★ First Aid, Emergencies Trauma Techniques/ Accident & Emergency Department.
- ★ Duties of Nurses,
- ★ CPR (Cardiopulmonary Resuscitation), PACU (Post-Anesthesia Care Unit) ICU (Intensive Care Unit)

UNIT 7.

- ★ Hazards in OTT
- ★ Environmental hazards
- ★ Chemical hazards
- ★ Electrical hazards
- ★ Musculoskeletal and biological hazards
- ★ Radiation hazards
- ★ Technical Risks and safety

COURSE LEARNING OUTCOMES:

CLO 1. Gaining knowledge and understanding of complexities of CSSD (UNIT 1)

CLO 2. Sharpening cognitive skills to handle emergencies and patient breakdowns during

CLO3. Efficiency and skills in handling different types of equipment(UNIT 6)

CLO4. Discuss about various hazards in OT (UNIT 7)

TEXT BOOKS

- ★ Manual of instruments and procedures 3rd edition Jay pee publishers
- ★ Basics of operation theatre technology 2nd edition by Jaypee brothers

REFERENCE BOOKS

Surgical technology for surgical tech a positive care approach by AST 12th edition

WEB LINKS

www.medscape.com

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 106
COURSE NAME: ENGLISH (COMMUNICATION AND SOFT SKILLS)
COURSE CREDIT: 1
TOTAL HOURS: 30

COURSE OBJECTIVES:

This course emphasizes the fundamental language skills of reading, writing, speaking, listening, thinking, viewing and presenting. An emphasis on vocabulary and composition skills will be an on-going part of the program. The development of critical reading and writing skills is a major emphasis of the course.

COURSE DESCRIPTION

To educate the student in both the artistry and the utility of the English Language through the study of literature.

To make students aware of the different communicative skills and make them effectively communicate in written and spoken modes.

To provide students with the critical faculties necessary in an academic environment, while at job and in an increasingly complex and interdependent world.

COURSE CONTENT:

UNIT - I:

INTRODUCTION:

Study Techniques

Organization of effective note taking and logical processes of analysis and synthesis Use of the dictionary

Enlargement of vocabulary Effective diction

UNIT - II :

APPLIED GRAMMAR :

Correct usage

The structure of sentences The structure of paragraphs Enlargements of Vocabulary

UNIT - III :

WRITTEN COMPOSITION :

Precise writing and summarising Writing of bibliography Enlargement of Vocabulary

UNIT - IV :

READING AND COMPREHENSION :

UNIT - V :**THE STUDY OF THE VARIOUS FORMS OF COMPOSITION :**

Paragraph, Essay, Letter, Summary, Practice in writing

UNIT - VI :**VERBAL COMMUNICATION :**

Discussions and summarization, Debates, Oral reports, use in teaching

COURSE LEARNING OUTCOMES:

1. **CLO 1** - To develop the students' abilities in grammar, oral skills, reading, writing and study skills.(UNIT 1)
2. **CLO 2** - To improve their accuracy and fluency in producing and understanding spoken and written English.(UNIT 2)
3. **CLO 3** - To become a more competent, efficient, and perceptive academic reader who is able to communicate to others through writing and speaking the contents and main ideas of what is read.(UNIT 3)
4. **CLO 4** – To develop skills that enable them to communicate effectively in writing. They will learn to present ideas clearly and logically to achieve a specific purpose and to be appropriate for an intended audience.(UNIT 4)
5. **CLO 5** - Develop abilities as a critical reader and writer.(UNIT 5)
6. **CLO 6** - Develop public speaking abilities by giving opportunities to speak in class, both informally and formally.(UNIT 6)

TEXT BOOKS:

1. Fundamentals of Effective Communication by Dr M.P. Sinha

REFERENCE

1. English Grammar Collins, Birmingham University, International Language Data Base, Rupa & Co.1993
2. Wren and Martin - Grammar and Composition, 1989, Chanda & Co, Delhi
3. Letters for all Occasions. A S Myers. Pub - Harper Perennial
4. Spoken English V. Shasikumar and P V Dhanija. Pub. By: Tata Mcgraw Hill, New Delhi
5. Journalism Made Simple D Wainwright
6. Writers Basic Bookself Series, Writers Digest series
7. Interviewing by Joan Clayton Platkon
8. Penguin Book of Interview

ONLINE LINK FOR STUDY AND REFERENCE MATERIALS

- a. <https://guides.lib.uw.edu>
- b. <https://guides.lib.uw.edu>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE OBJECTIVES :-

- ★ Examine global health system , service delivery , health disparities and evidence based care at local state , and national level.
- ★ Demonstrate a basic understanding of a healthcare system's organizational structure, mission, vision, and values.
- ★ Examine role of local, state and national regulatory and accreditation agencies in providing quality health care
- ★ Course description : The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

COURSE CONTENT

UNIT 1.

- ★ Introduction to healthcare delivery system
- ★ Healthcare delivery system in India at primary, secondary and tertiary care
- ★ Community participation in healthcare delivery system
- ★ Health system in developed countries.
- ★ Private Sector
- ★ National Health Mission
- ★ National Health Policy
- ★ Issues in Health Care Delivery System in India

UNIT 2.

National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.

UNIT 3.

- ★ Introduction to AYUSH system of medicine

- ★ Introduction to Ayurveda.
- ★ Yoga and Naturopathy
- ★ Unani
- ★ Siddha
- ★ Homeopathy
- ★ Need for integration of various system of medicine

UNIT 4.

Health scenario of India- past, present and future

UNIT 5.

- ★ Demography & Vital Statistics-
- ★ Demography – its concept
- ★ Vital events of life & its impact on demography
- ★ Significance and recording of vital statistics
- ★ Census & its impact on health policy

UNIT 6.

- ★ Epidemiology
- ★ Principles of Epidemiology
- ★ Natural History of disease
- ★ Methods of Epidemiological studies
- ★ Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

COURSE LEARNING OUTCOMES [CLO's]

CLO 1. Describe concepts and dimensions of health(UNIT 1)

CLO 2. Describe concepts of national health policies in India and other developing countries.(UNIT 2)

CLO 3.describe other systems of health care like unani and ayurvedic.(UNIT 3)

CLO 5.Describe concepts and scope of demography(UNIT 4 &5)

CLO 4. Describe the concept, scope and methods of epidemiology.(UNIT 6)

TEXT BOOK

- ★ Health systems science [kindle] by susan E. skochelak
- ★ Health care delivery system published by scholar select.

REFERENCE BOOKS

Understanding health care delivery system by Micheal Howell, Jennifer Stevens

WEB LINKS

- ★ http://Medscape/health/healthcare_delivery_system/html
- ★ <http://www.slideshare.net>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 108

COURSE NAME: BASIC COMPUTERS AND INFORMATION SCIENCE

COURSE CREDIT: 1

TOTAL HOURS: 30

COURSE OBJECTIVES:

The students should be able to have a working knowledge of computer software and hardware and be able to use computers for enhancing their class work.

COURSE DESCRIPTION:

This course involves an introduction to the use of computers in daily life. The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.

COURSE CONTENT:

UNIT 1

INTRODUCTION TO COMPUTER:

Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

UNIT 2

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).

UNIT 3

PROCESSOR AND MEMORY:

The Central Processing Unit (CPU), main memory.

UNIT 4

STORAGE DEVICES:

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

UNIT 5

INTRODUCTION OF WINDOWS:

History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.)

UNIT 6

INTRODUCTION TO MS-WORD:

Introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spellchecking, printing the document file, creating and editing of table, mail merge.

UNIT 7

INTRODUCTION TO EXCEL:

Introduction, about worksheet, entering information, saving work books and formatting, printing the worksheet, creating graphs.

UNIT 8

INTRODUCTION TO POWER-POINT:

Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

UNIT 9

INTRODUCTION OF OPERATING SYSTEM:

Introduction, operating system concepts, types of operating system.

UNIT 10

COMPUTER NETWORKS:

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

UNIT 11

INTERNET AND ITS APPLICATIONS:

Definition, brief history, basic services (E-Mail, File Transfer

Protocol, telnet, the World Wide Web (WWW), www browsers, use of the internet.

A). Application of Computers in clinical settings.

PRACTICAL: Practical on fundamentals of computers -

1. Learning to use MS office: MS word, MS PowerPoint, MS Excel.
2. To install different software.
3. Data entry efficiency

COURSE LEARNING OUTCOMES:

CLO 1-Students will be able to demonstrate the characteristics of computer, block diagram of computer, generations of computer, computer languages.(UNIT 1)

CLO 2- Ability to identify and demonstrate the Input devices and output devices.(UNIT 2)

CLO 3- Students will have the knowledge of The Central Processing Unit (CPU), main memory.(UNIT 3)

CLO 4- Students will be able to develop the sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.(UNIT 4)

CLO 5- Students will be able to operate the windows(UNIT 5)

CLO 6- Students will be able to use MS-word(UNIT 6)

CLO 7- Students will be introduced about excel and they will know how to work on worksheet, entering information, saving work books and formatting, printing the worksheet, creating graphs.(UNIT 7)

CLO 8 power points will be introduce to the students and they will know how to create and manipulate presentation, views, formatting and enhancing text, slide with graphs.(UNIT 8)

CLO 9 Students will know the operating system including Introduction, operating system₄₃

concepts and types.(UNIT 9)

CLO 10 Students will be able to know the Introduction, types of network, network topologies and components of network.(UNIT 10)

CLO 11 Students will be able to demonstrate the brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW), www browsers, and use of the internet.(UNIT 11)

CLO 12 Students will be able to use practically the following programmes

MS office: MS word, MS PowerPoint, MS Excel, install different software and data entry efficiency(UNIT 12)

TEXT BOOKS:

- My computer book
- Basic Computer knowledge John MonyJokMaluth\
- Computer Fundamentals. Pradeep K. Sinha, Preti Sinha

REFERENCE BOOKS:

- Computer programming
- Fundamentals of computer

ONLINE LINK FOR STUDY AND REFERENCE MATERIALS

- www.slideshare.net
- <https://www.ncbi.nlm.nih.gov/pmc/>
- Google scholar
- www.researchlink.org

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

SECOND YEAR

COURSE CODE: OTT 201

COURSE NAME: OTT MEDICINE

COURSE CREDIT: 03

TOTAL CREDIT HOURS: 90 HOURS

COURSE OBJECTIVES:

- ★ To impart knowledge about equipment support in an acute care environment
- ★ To make the students aware of infection control policies and procedures
- ★ To sharpen the students' communication skills
- ★ Describe the cause, symptoms, treatment and prevention of Medical Surgical Diseases.
- ★ Demonstrate skill in carrying out nursing technique and procedures with the application of scientific principles.
- ★ Discuss process and provide care to patients with medical surgical/ diseases
- ★ To make the students better communicators with patient while preparing them for operative procedures
- ★ They should have cared for patients of all ages; manage the care of patients with multiple medical, surgical, and/or psychiatric diagnoses.

COURSE DESCRIPTION:

- ★ The course is suitable to describe the epidemiology, etiology, Pathophysiology and diagnostic assessment of Medical Surgical conditions and helps to participate in national health programs for health promotion prevention and rehabilitation of patients with Medical – Surgical conditions.
- ★ The course offers students the opportunity to function as a clinical specialist in health promotion and restoration in acute or rehabilitative services.
- ★ Students can choose relevant concepts to explore in depth with specified groups of clients and use current research findings, theory and advanced practice skills to provide comprehensive care.
- ★ The employment opportunities in this profession are available in private and government hospitals, industries, orphanages, nursing homes, old age homes, sanatoriums and the armed forces. Indian Red Cross Society, State Nursing Councils, Indian Nursing Council and various other nursing institutions are a few other employment areas where one can find jobs.

COURSE CONTENT:

UNIT 1.

Cardiac and Respiratory diseases

- ★ Cardio vascular diseases
 - Hypertension, Ischemic heart diseases, Myocardial Infarction, arrhythmias
 - Heart failure, shock - types, causes
- ★ Respiratory diseases
 - Pneumonia, tuberculosis,
 - Chronic obstructive pulmonary disease, asthma c. Pleural effusion, pneumothorax d.interstitial lung disease

UNIT 2.

- ★ Neurological, Renal, GI and infectious diseases
- ★ Neurological diseases: Polio myelitis,, epilepsy / seizure disorder,cerebro vascular accident / stroke
- ★ Renal Disease:
 - Acute kidney injury
 - Chronic Kidney Disease
- ★ Gastro intestinal and LiverDiseases
 - ★ Gastritis, peptic ulcer
 - ★ Acute gastroenteritis
 - ★ Hepatitis.
- ★ Infectious diseases: Dengue, malaria, leptospirosis

UNIT 3.

- ★ Blood, fluid, electrolyte and acid base abnormalities
- ★ Blood loss and Anemia, thrombocytopenia

- ★ Fluid Electrolyte imbalance and corrective methods
- ★ Acid Base abnormalities and corrective methods

UNIT 4.

- ★ Health problems in specific conditions
 - ★ Pregnancy - antenatal care, disorders in pregnancy
 - ★ Children and new born
 - ★ Obesity
 - ★ Diabetes mellitus
 - ★ HIV infections and AIDS
 - ★ Elderly subjects and disability
 - ★ Brief mention about endocrine disorders
- ★ Poisoning and drug over dosing
- ★ Classification of poisons
- ★ Principles of treatment of poisoning and Primary care
- ★ Poisons and drug over dosing requiring ventilation
- ★ Miscellaneous
 - ★ Drowning
 - ★ Hanging

UNIT 5.

- ★ Common symptoms of diseases –
- ★ Pain: pathophysiology, clinical types, assessment and management
- ★ Fever: clinical assessment and management
- ★ Cough, chest pain, dyspnoea, hemoptysis
- ★ Edema, anasarca, ascites
- ★ Pallor, jaundice
- ★ Bleeding
- ★ Anorexia, nausea and vomiting
- ★ Constipation and diarrhea
- ★ Hematemesis, melena 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

UNIT 6.

- ★ 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

Practical:

- ★ History Taking and clinical examination, monitoring of patient.
- ★ Case Discussion.
- ★ Demonstration of Procedures.
- ★ Therapeutic care for various disease conditions.
- ★ Uses of different drugs, Instruments and devices.

COURSE LEARNING OUTCOME:

CLO1. This course is designed to help students to gain understanding of the concept of disease conditions.(UNIT 1)

CLO2. Introduce them to the wider horizon of rendering services to prevent diseases. (UNIT 2,3,4,5)

CLO3. Course is designed to help students acquire the disease condition according to different system. (UNIT 2,3,4,5)

CLO4. Acquire knowledge about immune response and its mechanism.(UNIT 6)

TEXTBOOKS:

- ★ Brunner &Suddarth's Textbook of Medical-Surgical Nursing (Brunner and Suddarth's Textbook of Medical-Surgical)
- ★ P.K. Panwar Textbook of Medical- Surgical

REFERENCE BOOKS:

- ★ Davidson's Principles and Practice of Medicine - Elsevier Publications
- ★ Harrison's Principle of Internal Medicine

WEB LINKS:

- ★ https://en.wikipedia.org/wiki/Medical-surgical_nursing
- ★ <https://www.nhp.gov.in/hospital/shrimati-champa-devi-medical-surgical..>
- ★ [https://jobs.mitula.in/medical and surgical nursing book/now](https://jobs.mitula.in/medical_and_surgical_nursing_book/now)
- ★ <https://www.mayoclinic.org/diseases-conditions/index>
- ★ https://www.medicinenet.com/diseases_and_conditions/article.htm
- ★ Essentials of Human Diseases and Conditions - E-Book

- Margaret Schell Frazier
- Essentials of Human Diseases and Conditions
- Margaret Schell Frazier,
- Jeanette Drzymkowski

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

Course Code: OTT 202

Course Name: APPLIED PATHOLOGY

Course Credit: 02

Total Credit Hours: 60 hours

COURSE OBJECTIVES:

- ★ To familiarize students with the basic disease patterns including definition, etiology, morphological changes in different organ system diseases in addition to their fate and complication.
- ★ To provide students with essential knowledge for gross and microscopic changes in different diseases for understanding and interpreting pathological reports.

COURSE DESCRIPTION:

- ★ Discuss the principals of general pathology (cell injury, inflammation, tissue repair, homodynamic, cellular dyspalsia , neoplasia... etc.) and explain different disease processes occurring in cardiovascular system, renal and endocrinal organs; their causes (etiology), and how the disease develops in response to the etiologic agents (pathogenesis) together with infectious diseases in all body organs.
- ★ Describe and discuss characteristic gross and microscopic pictures of different pathologic lesions within those organ systems and the associated functional disturbances.
- ★ Determine the fate and complications of different disease processes

COURSE CONTENT:

UNIT 1.

CARDIOVASCULAR SYSTEM

- ★ Atherosclerosis- Definition, risk factors, briefly Pathogenesis & morphology, clinical significance and prevention.
- ★ Hypertension- Definition, types and briefly Pathogenesis and effects of Hypertension.
- ★ Aneurysms - Definition, classification, Pathology and complications.
- ★ Pathophysiology of Heart failure.
- ★ Cardiac hypertrophy - causes, Pathophysiology & Progression to Heart Failure.
- ★ Ischemic heart diseases- Definition, Types. Pathophysiology, in brief Pathology & Complications of various types of IHD.
- ★ Valvular Heart diseases- causes, Pathology & complication. Complications of artificial valves.
- ★ Cardiomyopathy - Definition, Types, causes and significance.

- ★ Pericardial effusion- causes, effects and diagnosis.
- ★ Congenital heart diseases - Basic defect and effects of important types of congenital heart diseases.

UNIT 2.

HAEMATOLOGY

- ★ Anemia - Definition, morphological types and diagnosis of anemia. Brief concept about Hemolytic anemia and polycythemia.
- ★ Leukocyte disorders- Briefly leukemia, leukocytosis, agranulocytosis etc.
- ★ Bleeding disorders- Definition, classification, causes & effects of important types of bleeding disorders. Briefly various laboratory tests used to diagnose bleeding disorders.

UNIT 3.

RESPIRATORY SYSTEM

- ★ Chronic obstructive airway diseases - Definition and types causes, Pathology & complications of each type of COPD in brief.
- ★ Briefly concept about obstructive versus restrictive pulmonary disease.
- ★ Pneumoconiosis- Definition, types, Pathology and effects in brief.
- ★ Pulmonary congestion and edema.
- ★ Pleural effusion - causes, effects and diagnosis

UNIT 4.

RENAL SYSTEM

- ★ Clinical manifestations of renal diseases. Briefly the causes, mechanism, effects and laboratory diagnosis of ARF & CRF. Briefly Glomerulonephritis and Pyelonephritis.
- ★ End stage renal disease - Definition, causes, effects and role of dialysis and renal transplantation in its management.
- ★ Brief concept about obstructive uropathy.

PRACTICALS

- ★ Description & diagnosis of the following gross specimens.
- ★ Atherosclerosis.
- ★ Aortic aneurysm.
- ★ Myocardial infarction.
- ★ Emphysema
- ★ Chronic glomerulonephritis.

- ★ Chronic pyelonephritis.
- ★ Interpretation & diagnosis of the following charts.
- ★ Hematology Chart - AML, CML, Hemophilia, neutrophilia, eosinophilia.
- ★ Urine Chart - ARF, CRF, Acute glomerulonephritis.
- ★ Estimation of Hemoglobin.
- ★ Estimation of Bleeding & Clotting time. Interpretation of Hematology Chart Interpretation of Urine Chart Estimation of Hemoglobin
- ★ Estimation of Bleeding time & clotting time

COURSE LEARNING OUTCOME:

CLO1. Interpret gross and microscopic pictures aiming at reaching the correct diagnosis.(UNIT 1)

CLO2. Predict the diagnosis of different diseases based on the underlying gross and microscopic pictures (UNIT 2)

CLO3. Employ the different diagnostic pathological tools (UNIT 3)

CLO4. Interpret a pathology report in an accurate manner.(UNIT 4)

TEXTBOOKS:

- ★ harsh_mohan text book of pathology 6th edition.
- ★ Robbins and cot ran pathologic basis of disease , 9th edition

REFERENCE BOOKS :

Guyton and hall text book of medical physiology 13th edition

WEB LINKS:

[Http/www.pathologystudent .com](http://www.pathologystudent.com)

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
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Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE : OTT 203

COURSE NAME :APPLIED MICROBIOLOGY

COURSE CREDIT : 02

TOTAL CREDIT HOURS :60 HOURS

COURSE OBJECTIVES:

- ★ Ability to present and articulate their knowledge of Microbiology.
- ★ To make the students Understanding of diverse Microbiological processes.
- ★ To sharpen the students' communication skills
- ★ Basic skills such as culturing microbes, maintaining microbes, safety issues related to handling of microbes, Good Microbiological practices etc.
- ★ Demonstrate skill in carrying out moderately advanced skills in working with microbes such as pilot scale culturing, downstream processes, diagnostics etc.
- ★ Analysis of data collected through study and small projects.
- ★ Awareness how some microbiology leads may be developed into enterprise
- ★ They should have Ability to participate in team work through small microbiology projects.

COURSE DISCRIPTION:

- ★ Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.
- ★ Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices.
- ★ Competent enough to use microbiology knowledge and skills to analyse problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/ studies etc.
- ★ Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

COURSE CONTENT:

UNIT 1.

Health care associated infections and Antimicrobial resistance: Infections that patients acquire during the

course of receiving treatment for other conditions within a healthcare setting like Methicillin Resistant Staphylococcus aureus infections, Infections caused by Clostridium difficile, Vancomycin resistant enterococci etc. Catheter related blood stream infections, Ventilator associated pneumonia, Catheter Related urinary tract infections, Surveillance of emerging resistance and changing flora. The impact and cost attributed to Hospital Associated infection.

UNIT 2

Disease communicable to Healthcare workers in hospital set up and its preventive measure:

Occupationally acquired infections in healthcare professionals by respiratory route (tuberculosis, varicella-zoster, respiratory syncytial virus etc.), blood borne transmission (HIV, Hepatitis B, HepatitisC, Cytomegalovirus, Ebola virus etc.), oro -fecal route (Salmonella, Hepatitis A etc.), direct contact (Herpes Simplex Virus etc.). Preventive measures to combat the spread of these infections by monitoring and control.

UNIT 3.

Microbiological surveillance and sampling: Required to determine the frequency of potential bacterial pathogens including Streptococcus pneumonia, Haemophilus influenza, and Moraxella catarrhalis and also to assess the antimicrobial resistance. Sampling: rinse technique, direct surface agar plating technique.

UNIT 4.

Importance of sterilization:

- ★ Disinfection of instruments used in patient care: Classification, different methods, advantages and disadvantages of the various methods.
- ★ Disinfection of the patient care unit
- ★ Infection control measures for ICU's 10 Hours

UNIT 5.

Sterilization:

- ★ Rooms: Gaseous sterilization, One Atmosphere Uniform Glow Discharge Plasma (OAUGDP).
- ★ Equipment's: classification of the instruments and appropriate methods of sterilization.
- ★ Central supply department: the four areas and the floor plan for instrument cleaning, high-level disinfecting and sterilizing areas.

UNIT 6.

Preparation of materials for autoclaving:

Packing of different types of materials, loading, holding time and unloading.

PRACTICALS- 30 HOURS

- ★ Principles of autoclaving & quality control of Sterilization.
- ★ Collection of specimen from outpatient units, inpatient units, minor operation theatre and major operation theatre for sterility testing.
- ★ The various methods employed for sterility testing.
- ★ Interpretation of results of sterility testing.
- ★ Disinfection of wards, OT and Laboratory

COURSE LEARNING OUTCOME:

CLO-1. This course is designed to help students to gain understanding of the microbes.(UNIT 1)

CLO-2. This course is designed to use microbiology knowledge and skills to analyze problems involving microbes.(UNIT 2 & 3)

CLO-3. This course is designed to help students to understand about sterilization and its importance.
(UNIT 4&5)

CLO-4. Acquire basic knowledge of autoclaving and packing of articles(UNIT 6)

TEXTBOOKS:

- ★ Basic laboratory methods in Parasitology, 1st Ed, J P Bros, New Delhi - 199 7. Basic laboratory procedures in clinical bacteriology, 1st Ed, J P Brothers, New Delhi 8. Medical Parasitology - Ajit Damle
- ★ Chatterjee - Parasitology - Interpretation to Clinical medicine.

REFERENCE BOOKS:

- ★ Anathanarayana&Panikar Medical Microbiology
- ★ RobertyCruckshank - Medical Microbiology - The Practice of Medical Microbiology
- ★ Rippon - Medical Mycology
- ★ Emmons - Medical mycology

WEBLINKS

- ★ <https://en.wikipedia.org/wiki/Microbiology>
- ★ <https://www.britannica.com/science/microbiology>
- ★ <https://microbiologysociety.org/why-microbiology-matters/>
- ★ <https://byjus.com/biology/microbiology>
- ★ [https://jobs.mitula.in/online microbiology course/now](https://jobs.mitula.in/online-microbiology-course/now)

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE: OTT 204
COURSE NAME: CLINICAL PHARMACOLOGY
COURSE CREDIT: 03
TOTAL CREDIT HOURS: 90 HOURS

COURSE OBJECTIVES:

- ★ Apply the nursing process to the safe administration of medications to clients.
- ★ Utilize critical thinking to evaluate potential complications of administration of various categories of drugs to clients.
- ★ Explain the physiological effects of various medications on selected body systems.
- ★ Apply nursing knowledge and concepts from the arts, sciences, and humanities in assisting clients to safely take medications.
- ★ Verbalize an understanding of professional guidelines, standards of practice , and laws regulating the use and distribution of drugs.
- ★ Discuss professional nursing responsibilities and roles in administration of medications to clients.
- ★ Apply assessment skills to determine the effectiveness of drug therapy clients.
- ★ Utilize professional research literature to expand a knowledge base to assist clients with self-administration of medications.
- ★ Discuss the use of knowledgeable caring when administering medications to clients.
- ★ Describe effective communication techniques to be used in teaching clients and their families about medications.
- ★ Discuss the importance of understanding individual socio-cultural practices when administering medications to clients.
- ★ Discuss professional nursing responsibilities regarding ethically appropriate behaviors during medication administration.

COURSE DESCRIPTION:

This course is designed to enable students to acquire understanding of Pharmacodynamics of different types of drugs

- ★ Pharmacokinetics of drugs
- ★ Mechanism of action of drugs
- ★ Indication and contraindications of drugs
- ★ Nursing implications of therapeutics

COURSE CONTENT:

UNIT 01

Introduction:

General concepts about pharmacodynamics and Pharmacokinetics Principles involved in drug activity.

UNIT 02.

Antisialagogues:

Atropine, Glycopyrrolate.

UNIT 03:-

Sedative

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

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

UNIT 04.

Antiemetic's:

Metoclopramide, Ondansetron, Dexamethasone

UNIT 05.

Induction Agent:

Thiopentone, Diazepam, Midazolam, Ketamine, Propofol, Etomidate.

UNIT 06.

Muscle Relaxants:

Depolarizing - Suxamethonium, Non depolarizing - Vecuronium, Atracurium, rocuronium

UNIT 07.

Inhalational

Gases: Gases-02, N₂O, Air,

Inhalational Agents Ether, Halothane, Isoflurane, Sevoflurane, Desflurane

UNIT 08.

Reversal Agents:

Neostigmine, Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam).

UNIT 09.

Local Anesthetics:

Xylocaine, Bupivacaine –

Topical, Prilocaine-jelly, Emla - Ointment, Etidocaine. Ropivacaine.

UNIT 10.

Emergency Drugs :

- ★ Mode or administration, dilution, dosage and effects
- ★ Adrenaline, Atropine
- ★ Ephedrine, Methocitramine
- ★ Bicarbonate, calcium, potassium.
- ★ Inotropes: dopamine, dobutamine, amiodarone
- ★ Aminophylline, hydrocortisone, antihistaminic,
- ★ Antihypertensive –Beta-blockers, Ca-channel blockers.
- ★ Antiarrhythmic- xylocard
- ★ Vasodilators- nitroglycerin & sodium nitroprusside
- ★ Respiratory system- Bronchodilators
- ★ Renal system- Diuretics, frusemide, mannitol

UNIT 11.

Miscellaneous.

- ★ IV fluids- various preparations and their usage.
- ★ Electrolyte supplements
- ★ Immunosuppressive agents
- ★ New drugs included in perfusion technology.
- ★ Drugs used in metabolic and electrolyte imbalance.

COURSE LEARNING OUTCOME:

CLO_1 Understand the basic concepts of pharmacology

CLO_2 Understand common cardiovascular, autonomic nervous system drugs, general and local anesthetic drugs, analgesics, diuretics and corticosteroids drugs (UNIT 2,3,4,5,6,7)

CLO_3 Understand common drugs of Reverse agent and local anaesthetics (UNIT 8 & 9).

CLO_4 Understand various emergency drugs(UNIT 10&11)

REFERENCE BOOKS:

- ★ R. S. Satoskar, S.D. Bhandarkar, S. S. Ainapure, Pharmacology and Pharmacotherapeutics, 18th Edition, single Volume, M/S Popular Prakashan, 350, Madan Mohan Marg, Tardeo, Bombay - 400 034.
- ★ K.D. Tripathi, Essentials of Medical Pharmacology, V. Edition, M/s. Jaypee Brothers, Post Box, 7193, G-16, EMCA House, 23/23, Bansari Road, Daryaganj, New Delhi.
- ★ Laurence and Bennet, Clinical Pharmacology, ELBS Edition, 9th Edition

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE : OTT 205
COURSE NAME : PSYCHOLOGY & SOCIOLOGY
COURSE CREDIT : 03
TOTAL CREDIT HOURS : 90 HOURS

COURSE OBJECTIVES:

- ★ This course introduces the allied health student to psychological theories and constructs that are crucial to working within the allied health professions.
- ★ Students will be provided with an introduction to psychology including a review of contemporary perspectives in psychology along with an understanding of the alignment of psychological principles with the allied health professions.
- ★ Students will cover learning theory, memory and intelligence, motivation and emotion, personality, social cognition, and health psychology. An understanding of these psychological factors is crucial as application of this knowledge is required by allied health students when undertaking professional practice placements and across their entire professional career.
- ★ Describe the history, scope and methods of psychology: Introduction • History and origin of science of psychology
- ★ Definitions & Scope of Psychology
- ★ Relevance to nursing
- ★ Methods of Psychology
- ★ To teach students the concepts, theories, and methods of the behavioral and social services
- ★ To introduce students to the basic social processes of society, social institutions and patterns of social behavior.
- ★ Introduce students to the concepts, theories, and research which define this discipline of Sociology.
- ★ Provide an understanding of the methods social scientists use to explore social phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical and interpretive analysis.
- ★ To introduce students to the basic social processes of society, social institutions and patterns of social behavior.
- ★ To enable students to cope effectively with the socio cultural and Interpersonal processes of constantly changing complex society.

COURSE DESCRIPTION:

This course is designed to help student gaining knowledge and understanding of sociology and help the students to the field by focusing on several important sociological topics, including socialization, culture, the social construction of knowledge, inequality, race and ethnic relations, poverty, and political

COURSE CONTENTS:**UNIT 1.**

Explain the biology of Human behavior:

Biology of behavior • Body mind relationship- modulation process in health and illness • Genetics and behavior: Heredity and environment • Brain and behavior: Nervous System,, Neurons and synapse, • Association Cortex, Rt and Lt Hemispheres • Psychology of Sensations • Muscular and glandular controls of behavior • Nature of behavior of an organism/Integrated responses

UNIT 2.

Describe various cognitive processes and their applications: Cognitive processes • Attention:

Types, determinants, Duration & degree, alterations • Perception: Meaning, Principles, factors affecting, Errors, • Learning: Nature, Types, learner and learning, Factors influencing, laws and theories, process, transfer, study habits • Memory: Meaning, Types, Nature Factors influencing, Development Theories and methods of memorizing and Forgetting Thinking: Types and levels, stages of development, Relationship with language and communication Intelligence: Meaning, classification, uses, theories Aptitude: Concept, types, Individual differences and variability Psychometric assessments of cognitive processes Alterations in cognitive processes Applications. Describe motivation, emotions, stress, attitudes and their influence on behavior: Motivation and Emotional Processes: • Motivation: Meaning, Concepts, Types, Theories, Motives and behavior, Conflicts and frustration, conflict resolution • Emotions & stress Emotion: Definition, components, Changes in emotions, theories emotional adjustments, emotions in health and illness Stress: stressors, cycle, effect, adaptation & coping • Attitude: Meaning, nature, development, factors affecting, Behavior and attitudes Attitudinal change • Psychometric assessments of emotions and attitudes • Alterations in emotions Applications

UNIT 3.

Explain the concepts of personality and its influence on behavior:

Personality Definitions, topography, types, Theories Psychometric assessments of personality Alterations in personality Applications.

UNIT 4.

Describe psychology of people during the life cycle:

UNIT 5.

Describe the characteristics of Mentally healthy Person.

Explain ego defense mechanisms: Mental hygiene and mental Health • Concepts of mental hygiene and mental health • Characteristics of mentally healthy person • Warning signs of poor mental health • Promotive and Preventive mental health- strategies and services • Ego Defense mechanisms and implications • Personal and social adjustments • Guidance and counseling • Role of nurse.

UNIT 6.

Explain the Psychological assessments and role of nurse:

Psychological assessment & tests • Types, development, Characteristics, Principles, Uses, Interpretations and Role of nurse in psychological assessment.

UNIT7.

Introduction

- ★ Meaning- Definition and scope of sociology
- ★ Its relation to Anthropology, Psychology, Social Psychology.
- ★ Methods of Sociological investigations- Case study, social survey, questionnaire,
- ★ Interview and opinion poll methods.
- ★ Importance of its study with special reference to Health Care Professionals.

UNIT 8.

Social Factors in Health and disease situations:

- ★ Meaning of social factors
- ★ Role of social factors in health and illness

UNIT 9.

Socialization:

- ★ Meaning and nature of socialization.

- ★ Primary, Secondary and Anticipatory socialization.
- ★ Agencies of socialization.

UNIT 10.

Social Groups:

Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

UNIT 11.

Family:

- ★ The family, meaning and definitions.
- ★ Functions of types of family
- ★ Changing family patterns
- ★ Influence of family on the individuals health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.

UNIT 12.

Community:

- ★ Rural community: Meaning and features –Health hazards of ruralities, health hazards to tribal community.
- ★ Urban community: Meaning and features- Health hazards

UNIT 13.

Culture and Health:

- ★ Concept of Health
- ★ Concept of Culture
- ★ Culture and Health
- ★ Culture and Health Disorders

UNIT 14.

Social change:

- ★ Meaning of social changes.

- ★ Factors of social changes.
- ★ Human adaptation and social change
- ★ Social change and stress.
- ★ Social change and deviance.
- ★ Social change and health programme
- ★ The role of social planning in the improvement of health and rehabilitation.

UNIT 15.

Social Problems of disabled: Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems.

Population explosion

- ★ Poverty and unemployment
- ★ Beggary
- ★ Juvenile delinquency
- ★ Prostitution
- ★ Alcoholism
- ★ Problems of women in employment
- ★ Geriatric problems
- ★ Problems of underprivileged.

Unit 16.

Social Security: Social security and social legislation in relation to the disabled.

Unit 17.

Social worker:

- ★ Meaning of Social Work
- ★ The role of a Medical Social Worker.

COURSE LEARNING OUTCOME:

CLO-1 : Describe the scientific approach of modern psychology and principles for generating knowledge.(UNIT 1)

CLO-2 : Explain the principles of major learning theories in psychology and identify implications for understanding behavior in health settings.(UNIT 2)

CLO-3 : Describe the main theories of human memory and some of their implications for understanding behavior in health settings .(UNIT 3)

CLO-4 : Explain the major theories of motivation, emotion, and personality and their use in allied health practices.(UNIT 4)

CLO-5 : Locate and extract appropriate information from electronic health databases in preparing an assessment using relevant academic conventions.(UNIT 5)

CLO 6: Recognize how and when the modern family began to emerge.(UNIT 6)

CLO 7:Identify and describe what contemporary families and households look like today.(UNIT 7)

CLO 8:Contrast variations in family structure.(UNIT 8)

CLO 9:Classify major life course transitions related to family life.(UNIT 9)

CLO 10: Analyze relationships of stratification within cities, especially race and class, and how that impacts personal interactions and political dynamics in urban settings.(UNIT 10)

CLO 11: Describe population and policy, and apply this to critically evaluate the complexity of policy and human population issues.(UNIT 11)

CLO 12: Apply theories of social change. Awareness of the debate regarding forms of culture: high, low, folk.(UNIT 12)

CLO 13: Ability to discuss the social history of amusements and the conditions necessary to create a truly 'popular' culture (UNIT 13, 14,15,16)

TEXTBOOKS:

- ★ Burton, L., Weston, D., & Kowalski, R. (2015) Psychology. (4th ed.). Milton, Queensland: Wiley.
- ★ Gazzaniga, M. S., Heatherton, T., & Halpern. D. (2012). Psychological Science (4th ed.).London: Norton.
- ★ IntroductiontoSociology-VidyaBhushan
- ★ TheStructureofSociologicalTheory-Turner
- ★ PerspectivesinSociology-Cuff,

REFERENCES:

Gerrig, R., Zimbardo, P., Campbell, A., Cumming , S., & Wilkes, F. (2009). Psychology and life: Whiten, W . (2010). Psychology: Themes and Variations (9th ed.). Wadsworth: Cengage Learning.

WEBLINK:

www.slideshare.com

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Internal Exam	10
Assignment	5
Extra Curricular activity	5
Attendance	5
Internal Assessment Exam	25

COURSE CODE : OTT 206**COURSE NAME : BASICS OF SURGERY****COURSE CREDIT : 03****TOTAL CREDIT HOURS : 90 HOURS****COURSE DESCRIPTION:-**

The course introduces students to peri- and pre-operative patient care. The students can learn about the impact of surgical intervention on the patients, reasons for surgical intervention classification of surgical interventions and their risks, safety measures to be taken while performing surgical procedures, post-operative care of patient in recovery room. The course is designed to provide knowledge about aseptic techniques, principles, and technologies used in operation theatre during surgery and in emergency situations

COURSE OBJECTIVES-

Demonstrate an understanding of process used to obtain informed consent for surgery and anesthesia.

Understand methods of preparation of operative site for surgery.

Explain principles of urinary catheterization and demonstrate the procedure.

Identify developing emergency situation, initiate appropriate action, and assist in treatment of the patient.

Discuss methods and types of documentation used in the OR.

COURSE CONTENTS:**UNIT1:-**

Preoperative and post-operative patient care

Introduction

- ★ Experience of surgery and types of surgical procedures
- ★ Preoperative phase, preoperative implications and patient preparation.
- ★ Preoperative morning care and patient care activities
- ★ Surgical check list and documentation
- ★ Information consent.
- ★ High risk consent.

UNIT 2:-

Intra-operative phase.

Introduction

- ★ Reasons for surgical intervention.

- ★ The surgical team.
- ★ Surgical risks
- ★ Counting procedure.
- ★ Safe use of pneumatic tourniquet.
- ★ Safe use pulsed lavage.
- ★ Emergency and disaster considerations.
- ★ Malignant hyperthermia.
- ★ Cardiopulmonary arrest.

UNIT3:

- The Recovery room phase

- ★ PACU or recovery room
- ★ Patient care in recovery room.
- ★ Postoperative monitoring.
- ★ Recovery room complications
- ★ Respiratory distress

UNIT 4:-

Post- operative patient care according to body system.

- ★ Respiratory system
- ★ Cardiovascular system.
- ★ Urinary system .
- ★ Gastrointestinal system.
- ★ Integumentary system.

UNIT 5:-

Principles and practice of aseptic technique .

Introduction

- ★ Principles of aseptic technique
- ★ Surgical attire.
- ★ Surgical hand washing.
- ★ Gowning and gloving.
- ★ Contamination during surgery .

UNIT 6-

Surgical skin preparation and draping

Introduction.

- ★ Patient hygiene before surgery.
- ★ Urinary catheterization.
- ★ Surgical skin preparation
- ★ Draping the surgical site.
- ★ Draping of equipment.
- ★ Removing drape.

UNIT 7:-

Technical adjuncts to surgery.

- ★ Laser technology
- ★ Endoscopy: minimal access approach
- ★ Robotics
- ★ Microsurgery
- ★ harmonic scalpel and plasma scalpel
- ★ Argon beam coagulator
- ★ Radiofrequency ablation.
- ★ Electrosurgery .

COURSE LEARNING OUTCOME:

CLO-1 Identify the nursing implications related to preparing a patient for surgery (UNIT 1)

CLO-3-To demonstrate doctor's orders for implementation of pre-operative care.(UNIT 2)

CLO-4-Examine recovery room care and complications.(UNIT 3)

CLO-5-Examine the post operative care according to body system(UNIT 4)

CLO-6-Demonstrate surgical site skin preparation and draping.(UNIT 5 &6)

CLO-7-Gaining knowledge about latest technologies used in surgery.(UNIT 7)

TEXT BOOKS:

Pocket guide for operating room third edition by Maxine A Goldman.

Text book of instruments and procedures by jay pee publishers

REFERENCE

Surgical technology for surgical technologist by AST 6th edition.

Surgical technology a positive care approach by AST { association of surgical technologists }

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

COURSE CODE : OTT 207**COURSE NAME : PRINCIPLES OF ANESTHESIA****COURSE CREDIT : 03****TOTAL CREDIT HOURS : 90 HOURS****COURSE OBJECTIVE:-**

Becoming familiar with the principles of general and local anesthesia, and the organizational structure, equipment, tools and instruments, facilities, and rules related to the field of anesthesiology. Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc . Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Perform Basic skills of cardiopulmonary resuscitation, post-operative and intensive care unit management

COURSE DESCRIPTION:

The course is designed to provide the student with a basic understanding of immediate preoperative patient management. You may or may not be permitted to attempt endotracheal intubation; however, your grade is not dependent on performance of this skill. You may also be permitted to perform intravenous access and you may wish to take advantage of this rotation to gain valuable advice regarding your access skills. The single most important technical skill you can learn is the ability to deliver effective bag-mask ventilation.

COURSE CONTENT:**PRINCIPLES OF ANESTHESIA****UNIT 1:**

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

UNIT 2:

Anesthesia machine

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

UNIT 3:

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

UNIT 4:

Face masks & Airway laryngoscopes

- ★ Types, sizes
- ★ Endotracheal tubes - Types, sizes.
- ★ Cuff syst
- ★ Fixing, removing and inflating cuff, checking tube position, complications.

UNIT 5:

Anesthesia ventilator and working principles.

UNIT 6:

Monitoring

- ★ Electrocardiography(ECG)
- ★ Pulse oximetry(SpO₂)
- ★ Temperature- central and peripheral
- ★ End tidal carbon dioxide(EtCO₂)
- ★ Anesthesia gas monitoring
- ★ Non-invasive blood pressure (NIPB) and Invasive blood pressure(IBP)
- ★ Central venous pressure(CVP)
- ★ PA Pressure, LA Pressure & cardiac output
- ★ Anesthesia depth monitor
- ★ Neuromuscular transmission monitor

BASIC TECHNIQUES OF ANESTHESIA

UNIT 1:

Resuscitation techniques:

- ★ Basic life support (Airway, breathing, circulation) and the equipment used for it.
- ★ Drugs used in CPR.
- ★ AED and Defibrillators.

UNIT 2:

Anesthesia drugs and techniques:

- ★ Principles of anesthesia.
- ★ Basics of general anesthesia depth, mechanism and intubation.
- ★ Techniques of general anesthesia.
- ★ Various intravenous and inhalational agents.
- ★ Regional anesthesia, spinal and epidural, posture and drugs.
- ★ Local Anaesthetic agents.
- ★ Neuro muscular blocking agents.
- ★ Principles of oxygen administration along with the apparatus.
- ★ Care of patient in the recovery room.
- ★ Post-operative pain: evaluation and management.
- ★ Types of fluid and therapy.

- ★ Blood and blood components transfusion.
- ★ Preparation of anesthesia machine, intubation kit, suction machine, anesthesia drugs.
- ★ Patient identification, marking, shifting to OT before surgery and out of OT to recovery room after surgery, complete takeover and handover of the patient with vital signs recording before and after surgical procedure to the nursing staff.

PRACTICAL

- ★ Supply of compressed gases:
 - a. Types of gases and their chemical and physical properties.
 - b. Types of containers.
 - c. Their checking and maintenance.
 - d. Types of compressors.
 - e. Structure and mechanism of various type of gauges, liquid oxygen storage and supply system.
- ★ Structure of reducing valves-
 - a. Mechanism of pressure reducing valves.
 - b. Their maintenance and safety checks
- ★ Structure and mechanism of flow meters, maintenance and safety checks
- ★ Volatile anaesthetic agents.
 - a. Selection of material to be used for containers of the volatile anaesthetic agents.
 - b. Structure of different types of vaporizers.
 - c. Principles of various vaporizers, their maintenance and safety precautions.
- ★ Types of circuits:
 - a. Open, Semi closed and closed circuits.
 - b. Non-rebreathing valves.
 - c. T-piece circuit and its modifications.
 - d. To and fro system and circle absorber.
- ★ Types of valves used in the different circuits. Structure and working of Heidbrink's valve, Rubin valve, man valve etc.

Practical

- ★ Anesthesia work station

- ★ Boyle's anesthesia apparatus and other Advanced Anesthesia machines.
- ★ Apparatus and technique of the intravenous injections:
 - a. Selection of the material used for intravenous injection.
 - b. Different types of intravenous needles and cannulas.
 - c. Theoretical study for testing of the toxicity of the materials.
- ★ Resuscitation equipment and Resuscitation techniques:
 - a. Endotracheal tubes :
 - b. Selection of the material used for the endotracheal tube
 - c. Study of the structure of various types of the endotracheal tubes. Cleaning and sterilization of ETT.
 - d. Connectors: Various connectors, size and material used.
 - e. Mask: Material, structure and importance of dead space of face mask.
 - f. Supraglottic airways.
 - g. Spinal and epidural blocks: equipment, types of spinal and epidural needles, their structure. Instruments used for spinal and epidural blocks.
 - h. Laryngeal sprays: Types, structure and material used, mechanism, uses and their maintenance

COURSE LEARNING OBJECTIVES:-

CLO_1 : .Work as efficient technician, excelling in theoretical knowledge and implementation of practical skills in the operation theatre.(UNIT 1)

CLO_2 : Pre-operative risk assessment of patients undergoing anesthesia.(UNIT 2)

CLO_3 : Basic understanding of immediate perioperative patient management.(UNIT 3)

CLO_4 : Learn the ability to deliver effective bag-mask ventilation.(UNIT 4)

CLO_5 : Basic knowledge and skill exposure to oral endotracheal intubation and LMA insertion.(UNIT 5)

CLO_5 : Basic knowledge and skill exposure to peripheral intravenous catheter insertion.(UNIT 6)

CLO_6 : Management of patients Anaesthesia drugs and techniques(UNIT 1& 2)

TEXT BOOKS

1:- Lawrence, Peter F. Essentials of Surgical Specialties, 3rd Ed., 2007. Lippincott, Williams and Wilkins (or newer edition).Chapter 1: Anesthesiology, pp 1-50

2 : text book of anesthesiology by ajay yadaw 5th edition

REFERENCE BOOKS

Butterworth, J., Morgan and Mikhail's Clinical Anesthesiology, 5e, McGraw-Hill Inc, 2013

Morgan GE, Mikhail MS, Murray MJ. (Eds) Clinical Anesthesiology. 4th edition, McGraw-Hill Medical. Aug 26, 2005

WEB LINKS

<http://www.virtual-anaesthesia-textbook.com/index.shtml>

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

THIRD YEAR**COURSE CODE: OTT 301****COURSE NAME: OTT CLINICALS****COURSE CREDIT: 02****TOTAL CREDIT HOURS: 60 HOURS****COURSE OBJECTIVES:**

- 1-Describe the physical, mental and social adjustment required of a sick individual and his family.
- 2 Carry out basic techniques and care with the application of sound scientific principle.
- 3 Develop skills in assessment, planning, implementation and evaluation of the care rendered to the patients.
- 4 Communicate effectively and establish good interpersonal relationship with the patients, their relatives and other health team members.
- 5 Demonstrate skills in observation, recording and reporting.
- 6 Recognize and utilize opportunities for planning and implementing need based health teaching programme (s) for individuals, groups, families and communities.
- 7- Develop an ability to meet the basic health need of the patients.

COURSE DISCRIPTION:

This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the process. Students learn concepts and theories basic to the art and science of nursing. Students are introduced to the concepts of client needs, safety, communication, teaching/learning, critical thinking, ethical-legal, cultural diversity, nursing history, and the program's. Additionally, this course introduces psychomotor skills needed to assist individuals in meeting basic human needs. Skills necessary for maintaining microbial, physical, and psychological safety are introduced along with skills needed in therapeutic interventions. At the conclusion of this course students demonstrate competency in performing basic nursing skills for individuals with common health alterations.

COURSE CONTENT :**UNIT 1:****INTRODUCTION, COMMUNICATION AND DOCUMENTATION**

- ★ Physical facility:

- a. Layout of operation theatre
 - b. Peripheral support area
 - c. Operating room
 - d. Special procedure room
-
- ★ Communication & Documentation:
 - a. Communication with doctors, colleagues and other staffs.
 - b. Non-verbal communication, Inter-personnel relationships.
 - c. Patient contact techniques, communication with patients and their relatives
-
- ★ Documentation:
 - a. Importance of documentation,
 - b. Initial and follow up notes;
 - c. Documentation of therapy, procedures and communication.

UNIT 2:

UNIVERSAL PRECAUTIONS AND INFECTION CONTROL

- ★ Hand washing and hygiene.
- ★ Injuries and Personal protection, Insulation and safety procedures.
- ★ Aseptic techniques, sterilization and disinfection.
- ★ Disinfection and Sterilization of devices and equipment
- ★ Central sterilization and supply department
- ★ Biomedical Medical waste management

UNIT 3:

MEDICATION ADMINISTRATION AND TRANSPORT OF PATIENT

- ★ Medication Administration:

Oral and Parenteral medication administration: Intra venous, intra muscular, subcutaneous, intra dermal routes, Intra venous Infusion.

- ★ Position and Transport of patient:
 - a. Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
 - b. Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel

chair, transferring from bed to stretcher.

- c. Transport of ill patients (intubated / ventilated patients)

UNIT 4:

MONITORING AND BED SIDE CARE OF PATIENT:

- ★ Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration and Temperature.
- ★ Hydration, intake and output monitoring
- ★ Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures.
- ★ Invasive monitoring techniques .

UNIT 5:

ICU CARE

- ★ Care and maintenance of ventilator , suction and monitoring devices
- ★ Air conditioning and control of pollution/ environmental control in ICU
- ★ Care of unconscious adult and pediatric patient.
- ★ Physiotherapy techniques
 - a. Royel's tube insertion
 - b. Hyper alimentation
- ★ Suctioning and positioning of semi and unconscious patients
- ★ O2 therapy , maintenance of clear airway
- ★ Ventilation of patient in crisis
 - a. Mouth to mouth
 - b. Mouth to ventilator
 - c. Short term ventilator / transport ventilator
- ★ Detection of blood gas
- ★ Principles of ABG
- ★ Invasive and noninvasive monitoring

UNIT 6:

DRESSING AND WOUND CARE:

- ★ Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
- ★ Surgical dressing: observation of dressing procedures.
- ★ Suture materials and suturing techniques

- ★ Splinting
- ★ Basic care of patient with burns

Practical:

Demonstration of Patient care Procedures:

- ★ Positioning of patient, transport of the patient, Dressing and Bandaging, Care of inter costal drain tube, Insertion of naso-gastric tube and feeding
- ★ Obtaining blood samples, Arterial Blood sampling for ABG
- ★ Injections: intra muscular, intra venous, sub cutaneous, intra dermal
- ★ Insertion of intra venous catheter and infusion of medications, blood transfusion
- ★ Recording of ECG and monitoring of patient
- ★ Oxygen therapy: oxygen cannula masks. nebulization, inhalers
- ★ Suctioning and care of artificial airway
- ★ Insertion of urinary bladder catheter

COURSE LEARNING OUTCOME:

CLO-1 : This course is designed to help students to develop an ability to meet basic health needs.(UNIT 1& 2)

CLO-2 : Acquire knowledge about basic needs of patient regard to care.(UNIT 3)

CLO-3: To develop skill in the competencies required for rendering effective patient care.(UNIT 4,5 &6)

TEXTBOOKS:

- Kozier and Erb's Fundamentals of Nursing: Concepts, Process and Practice | Tenth Edition
| By Pearsonby Audrey Berman, Shirlee J. Snyder, et al
- Clinical Nursing Procedures: The Art of Nursing Practice Paperback – 1 January 2019by
Annamma Jacob (Author)

Reference Books:

1. Principles and practice of Nursing - Sr Nancy
2. Introduction to Critical Care Nursing - Mary Lou Sole

3. First Aid - Redcross society guidelines

Online links for study and reference materials

1- dlsii.com/blog/tag/what-are-the-fundamentals-of-nursing/

2-<https://www.goodwin.edu/enews/what-are-the-fundamentals-of-nursing>

3-https://www.jica.go.jp/nepal/english/office/topics/pdf/topics02_01.pdf · PDF file

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

COURSE CODE- 303

COURSE NAME- OTT APPLIED

COURSE CREDIT-04

TOTAL CONTACT HOUR: 120 (THEORY HOURS: 100 & PRACTICAL HOURS: 20)

COURSE OBJECTIVE

- ★ To prepare the students in understanding issues and aspects related to operation Theater.
- ★ To impart knowledge about equipment support in an acute care environment.
- ★ To make the students aware of effective policies and procedures.
- ★ To sharpen the students communication skill.
- ★ To create responsible professional competent to understand how to follow biomedical waste management / disposals support in an acute care environment.
- ★ To provide complete knowledge about assisting anesthetist in handling emergencies ,taking care of medical and diagnostic supplies .

COURSE DESCRIPTION

This course is designed to help student gaining knowledge and understanding of complexities of operation theatre technologies, and sharpening cognitive to handle emergencies and patient break downs during complex procedures.

COURSE CONTENT

★ **UNIT 1**

Medical gas supply

- a. Compressed gas cylinders
- b. Color coding
- c. Cylinder valves; pin index.
- d. Gas piping system
- e. Recommendations for piping system
- f. Alarms & safety devices.

★ Anesthesia machine

- a. Hanger and yoke system
- b. Cylinder pressure gauge
- c. Pressure regulator

- d. Flow meter assembly
- e. Vaporizers - types, hazards, maintenance, filling and draining, etc.

★ **UNIT 2**

Breathing system

- a. General considerations: humidity & heat
- b. Common components - connectors, adaptors, reservoir bags.
- c. Capnography
- d. Methods of humidification.
- e. Classification of breathing system
- f. Mapleson system
- g. Jackson Rees system, Bain circuit
- h. Non rebreathing valves - ambu valves
- i. The circle system
- j. Components
- k. Sodalime, indicators

★ **UNIT 3**

Face masks & airway laryngoscopes

- a. Types, sizes
- b. Endotracheal tubes - Types, sizes.
- c. Cuff system
- d. Fixing, removing and inflating cuff, checking tube position complications.

★ **UNIT 4**

Basic anesthetic techniques

- a. Inhalational anesthetic era
- b. local & Regional anesthetic era
- c. Intravenous anaesthetic era
- d. Modern anaesthetic era
- e. Minimum standard of anaesthesia
- f. Spinal and epidural anaesthesia

★ **UNIT 5**

Artificial and mechanical ventilation

- a. Introduction of artificial ventilation
- b. Principles of mechanical ventilation

- c. Intermittent positive pressure ventilation
- d. Modes of IPPV
- e. Automated pressure and time cycled ventilator
- f. Operating room ventilators
- g. Other types (HFJV , NIV)
- h. General care of patients on ventilator
- i. Complications of patients on ventilator
- j. Sterilization and disinfectioning of ventilators
- k. Humidification
- l. Principles of oxygen administration and methods used
- m. Acid base balance

★ **UNIT 6**

Diagnostic procedures

- a. Pathological examinations (CBC,LFT,KFT)
- b. Radiological examinations (CT SCAN,MRI,X-RAY)
- c. Nuclear medicine studies (USG,ENDOSCOPY,LYRENGOSCOPY)

PRACTICAL EXAMINATION

One common practical for all the three papers with equal weight age of marks i.e. 50 practical marks for each paper.

COURSE LEARNING OUTCOMES (CLOS)

CLO 1. Apply the knowledge and skills of handling operation theatre room to provide safe and effective care. (UNIT 1)

CLO 2. Demonstrate relative knowledge and understanding of Anaesthesia procedure and equipment to be maintained(UNIT 2)

CLO 3. Skill to assess , analyse and evaluate the information regarding medical gas supply and the treatment.(UNIT 3)

CLO 4. Demonstrate the procedure of laryngoscope ability to plan , organize and repeat different diagnosis related to its treatment.(UNIT 4)

CLO 5. Understand professional and ethical responsibilities in patient care.(UNIT 5)

CLO 6. Apply the knowledge regarding the various procedures and examinations done for the treatments given.(UNIT 6)

TEXT BOOKS-

Dr.GN Sharma & A.L.Agarwal (2013) Text Book of Operation Theatre Technique and Management, 3rd Edition Medico Refresher Publications.

REFERENCES BOOK:

Neelam Rai & Arpit Ravindra lal (2017) Text Book of Operation Theatre Technician, 1st Edition, Jaypee Publications.

ONLINE LINKS FOR STUDY & REFERENCES MATERIALS:

www.slideshare.com

www.wikipedia.com

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

COURSE CODE- OTT 305**COURSE NAME- OTT****ADVANCE COURSE****CREDIT- 4****TOTAL CONTACT HOUR - 100****COURSE OBJECTIVE:**

- ★ To prepare the students understanding in anaesthesia for speciality surgeries.
- ★ To provide complete knowledge and understanding in the safe anaesthesia techniques for various elective and emergencies surgeries in and outside the operation theatre.
- ★ To Perform Basic skills of cardiopulmonary resuscitation, post-operative and intensive care unit management.
- ★ To make students better communicators with patient while preparing them for operative procedure.
- ★ To impart knowledge of various surgical procedures including the surgical instruments used in operation theatre.
- ★ To provide complete knowledge about assisting anesthetist in handling emergencies ,taking care of medical and diagnostic supplies .

COURSE DESCRIPTION:

This course is designed to help student gaining knowledge and understanding of types of anaesthesia for speciality surgeries, instruments, emergencies related to anaesthesia and treatment, skills in handling different types of instruments, policies and procedures for biomedical waste disposal and infection control , maintain s practice standards, code of ethics, code of conduct.

The course is intended to describe the process use to obtain an informed consent for surgical treatment and discuss the legal restrictions involved.

COURSE CONTENT**UNIT 1:**

- ★ Basics of surgery
 - a. History of Surgery, role of the surgeon, importance of team work and anticipating the needsof surgeons; stresses that may arise during operative procedure
 - b. Surgical terminology, types of incision and indications for the use of particular incision;

- c. Identification of types of tourniquets reasons for use and duration of application, dangers of use;
- d. Wounds, types, process of healing, treatment and complications; inflammation; wound infections causes and treatment; incision and drainage of abscesses; importance of personal cleanliness and aseptic techniques;
- e. Knowledge of surgical asepsis, skin preparation for invasive procedures

★ **SURGICAL PROCEDURES**

- a. GI procedures
- b. Extra intestinal abdominal procedures
- c. Genitourinary procedures

★ **Emergencies in OT**

Intraoperative

- a. Regional drug toxicity
- b. Cardiopulmonary arrest
- c. Laryngospasm
- d. Anaphylaxis
- e. Shock
- f. Malignant hyperthermia
- g. Hemorrhage
- h. Hemolytic reaction
- i. Deep vein thrombosis

Postoperative

- a. Pain
- b. Airway obstruction
- c. Pulmonary embolism
- d. Nausea vomiting
- e. Hypo / hyperthermia

UNIT 2:

Regional Anesthetic techniques.

- ★ Local anesthetic technique
- ★ Nerve blocks
- ★ Spinal Anesthesia epidural anesthesia
- ★ Regional nerve blocks

UNIT 3**Anesthesia for specialty Surgeries****NEURO ANAESTHESIA**

- ★ Neurological surgeries .
- ★ Glasgow coma scale
- ★ Premedication
- ★ Special investigation - CT, Angiography and MRI
- ★ Checklist
- ★ Reinforced Endotracheal tubes
- ★ Positioning in neuron surgery
- ★ I.C.P.
- ★ Air embolism
- ★ Reversal of the patient
- ★ Transferring to I.C.U. / Ward

UNIT 4**OBSTETRIC ANAESTHESIA**

- ★ Obstetric procedures
- ★ Differences between a pregnant and a normal lady
- ★ Risks for anesthesia.
- ★ Precautions to be taken
- ★ Check list
- ★ Regional vs. general anesthesia
- ★ Induction / maintenance and recovery .
- ★ Resuscitation of the new born, Apgar score
- ★ Reversal and estuation
- ★ Emergencies - manual removal of placenta
 - a. P .H.
 - b. P.P.H.
 - c. Ruptures uterus
 - d. Ectopic Pregnancy

UNIT 5**PAEDIATRIC ANAESTHESIA**

- ★ Pediatric patients general introduction
- ★ Pediatric advanced life support skills
- ★ .Theatre settings.
- ★ Check list
- ★ Pediatric procedures
- ★ Premedication - modes
- ★ Induction
- ★ Intubation - Securing the EIT
- ★ Reversal & extubation – Problems
- ★ Transferring / ICU management
- ★ Pain management

UNIT 6

ENT ANAESTHESIA

- ★ ENT procedures
- ★ Emergency tracheostomy
- ★ Anesthesia for adenotonsillectomy
- ★ Anesthesia for mastoidectomy

UNIT 7

CARDIAC ANAESTHESIA

- ★ cardiovascular procedures
- ★ Arrhythmias
- ★ Angina
- ★ Dyspnea
- ★ Special investigations
 - a. echo cardiograph
 - b. angiography
- ★ Premedication
- ★ Setting up of monitoring system
- ★ Monitoring - invasive and non - invasive
- ★ Getting ready for the case
- ★ Induction of cardiac patient, precautions to be taken
- ★ Cardiopulmonary bypass

- ★ I.C.U management.

UNIT 8

ANAESTHESIA OUTSIDE THE O.R.

- ★ Situations
- ★ Cath Lab
- ★ Radiology
- ★ E.C.T.
- ★ Short comings

UNIT 9

DAY CARE ANAESTHESIA

- ★ Special features
- ★ Set up
- ★ Advantages
- ★ Disadvantages
- ★ Complications
- ★ Future

UNIT 10

GERIATRIC ANAESTHESIA

- ★ Physiological changes
- ★ Diseases of aging
- ★ Nervous system
- ★ Geriatric pharmacodynamics / pharmacokinetics
- ★ Postoperative nervous system dysfunction.

UNIT 11

ANAESTHESIA FOR TRAUMA & SHOCK

- ★ Resuscitation
- ★ Pre-Operative investigation & assessment
- ★ Circulatory management
- ★ Management of anesthesia

- ★ Rapid sequence induction
- ★ Other problems

UNIT 12

THORACIC ANAESTHESIA

- ★ Thoracic procedures
- ★ Preoperative preparations
- ★ Premedication
- ★ Check list
- ★ Induction. Intubation
- ★ Double lumen tubes
- ★ Monitoring
- ★ Pain management
- ★ Exudation
- ★ ICU management

UNIT 13

EQUIPMENT'S USED IN OT

- ★ Thermal high frequency coagulator
- ★ Argon beam coagulator
- ★ Harmonic scalpel / plasma scalpel
- ★ Radiofrequency ablation
- ★ Diathermy
- ★ Auto transfusion
- ★ Pneumatic tourniquet
- ★ Microsurgery
- ★ Laser technology
- ★ Laparoscopic surgical system
- ★ Cell saver
- ★ CUSA

COURSE LEARNING OUTCOMES (CLOS):

CLO-1:Demonstrate ability to prepare and maintain asepsis operation theatre.(UNIT-1)

CLO-2:Demonstrate ability to maintain equipment support in acute care environment. (UNIT - 1)

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

COURSE CODE- OTT 307

COURSE NAME- ETHICS AND DATA BASE

MANAGEMENT COURSE CREDIT- 1

TOTAL CONTACT HOUR - 30 HOUR

COURSE OBJECTIVE:

- ★ To provide the students understanding in history , theories & guidelines of ethics.
- ★ To provide complete knowledge and understanding in ethical principles for perioperative settings.
- ★ To Perform Basic skills for managing budget and finance of health care department.
- ★ To make students better understanding for rules and responsibilities of professional conduct & scope of practice.
- ★ To impart knowledge of hospital management , organization , staffing & time management.
- ★ To provide complete knowledge about handling administration in health care department.

COURSE DESCRIPTION:

This course is designed to help students gaining information about roles and responsibilities of health care workers, standard of practice and code of conduct. This course help for apply evidence based practice in all areas of clinical duties, professional and government licencing , certification and registration. It helps to identify the common area of negligence in perioperative practice, importance of documentation in perioperative settings.

COURSE CONTENT:

UNIT 1:

Introduction:

- ★ History, Theories and Guidelines of Ethics
- ★ Belmont report
- ★ Ethics Principles For Ethical Decision Making
- ★ Ethics and Regulatory issues on Human Research in Public Health (ICMR guidelines, OHRP & FWA).
- ★ Major ethical principles applied to moral issues in health care
- ★ Rules of professional conduct & scope of practice.
- ★ Confidentiality and responsibility
- ★ Professional and government licensing accreditation and education standards.

UNIT 2:

General Management.

- ★ Planning & Organisation: Planning Cycle, Quality management, Planning change
- ★ Financial issues including budget and income generation
- ★ Hospital Management: Hospital Organisation, Staffing, information.
- ★ Self-Management
 - a. Preparing for first job
 - b. Time Management
 - c. Career development

UNIT 3:

Management and administration

Unit 4:

Recent advances in Health organization.

COURSE LEARNING OUTCOMES (CLOS):

CLO-1: Gaining knowledge and understanding for theoris & guidelines of ethics.(UNIT-1)

CLO-2: Efficiency and skills for understanding the ethical principles, rules & regulations of health care department(UNIT - 1)

CLO-3: Ability to understand the planning, hospital management , organization and staffing pattern.(UNIT -2)

CLO-4:Work as a efficient technician with the understanding of professional ethical conduct.(UNIT - 2)

CLO-5: Ability to understanding the management and administration. (UNIT -3)

CLO-6: Efficiency and skills in handling legal and ethical issues in perioperative settings.(UNIT-4)

TEXT BOOKS:

Handbook for Rural health care ethics : a practical guide for professional.

Ethics, Legal Issues and Professionalism in Surgical Technology by Julia & Jackson 2007

REFERENCES BOOK:

Ethics, prevention and public health by Angus Dawson, Marcel Verweij

ONLINE LINKS FOR STUDY & REFERENCES MATERIALS

www.slideshare.com

www.wikipedia.com

[Www.classcentral.com/ethics/healthcare](http://www.classcentral.com/ethics/healthcare)

<http://www.ncbi.nlm.nih.gov>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

COURSE CODE:-OTT308

COURSE NAME: RESEARCH METHODOLOGY AND BIOSTATISTICS

COURSE CREDIT: 01

TOTAL HOURS: 30 HRS

COURSE DESCRIPTIONS:

This course involves a description of principles for conducting research. The goal of the research is to describe or define a particular phenomenon. In this case, descriptive research would be an appropriate strategy. A descriptive may, for example, aim to describe a pattern. Descriptive research has many useful applications, and you probably rely on findings from descriptive research without even being aware that that is what you are doing.

COURSE OBJECTIVES

- ★ Identify and discuss the role and importance of research in the social sciences.
- ★ Identify and discuss the issues and concepts salient to the research process.
- ★ Identify and discuss the complex issues inherent in selecting a research problem, selecting an appropriate research design, and implementing a research project.
- ★ Identify and discuss the concepts and procedures of sampling, data collection, analysis, and reporting.
- ★ To familiarize participants with the basics of research and the research process.

- ★ To enable the participants in conducting research work and formulating research synopsis and report.
- ★ To familiarize participants with Statistical packages such as SPSS/EXCEL.
- ★ To impart knowledge for enabling students to develop data analytics skills and m

COURSE CONTENT :

RESEARCH METHODOLOGY

UNIT 1

:Introduction to Research methodology:

Meaning of research, objectives of the research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by

researchers in India.

UNIT 2:

Research problem:

Statement of the research problem, Statement of purpose and objectives of the research problem,

Necessity of defining the problem

UNIT 3:

Research design:

Meaning of research design, Need for research design, Features for good design, Different research

8designs, Basic principles of research design

UNIT 4:

Sampling Design:

Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design

UNIT 5:

Measurement & scaling techniques:

Measurement in research - Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification. Important scaling techniques.

UNIT 6:

Methods of data collection:

Collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.

UNIT 7:

Sampling fundamentals:

Need for sampling & some fundamental definitions, important sampling distributions.

UNIT 8:

Processing & analysis of data:

Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.

UNIT 9:

Testing of hypothesis:

What is a hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis

UNIT 10:

Computer technology:

Introduction to Computers, computer application in research, computers & researcher.

BIOSTATISTICS

UNIT 1:

Introduction:

Meaning, definition, characteristics of statistics., Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.

UNIT 2:

Tabulation of Data:

Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.

UNIT 3:

The measure of Central Tendency:

Need for measures of central Tendency, Definition, and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped., Meaning and calculation of mode, Comparison of the mean, median, and mode, Guidelines for the use of various measures of central tendency.

UNIT 4:

Probability and Standard Distributions:

Meaning of probability of standard distribution, the binomial distribution, the normal distribution,

Divergence from normality – skewness, kurtosis.

Sampling techniques: Need for sampling –

Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling design errors, Sampling variation, and tests of significance.

UNIT 5:

Analysis of variance & covariance:

Analysis of variance (ANOVA), what is ANOVA? The basic principle of ANOVA, ANOVA technique, Analysis of Covariance (ANCOVA).

UNIT 6:

Format of scientific documents:

Structure of protocols, formats reporting in scientific journals, systematic reviews, and meta-analysis).

COURSE LEARNING OUTCOMES

Students who successfully complete this course will be able to:

CLO. 1. Explain key research concepts and issues (UNIT1),(UNIT2,3)

CLO 2. Read, comprehend, and explain research articles in their academic discipline.

CLO3. Develop an understanding of various kinds of research, objectives of doing research, research process, research designs, and sampling. (UNIT5)

CLO4. They have basic knowledge of qualitative research techniques(UNIT8)

CLO5. They have adequate knowledge of measurement & scaling techniques as well as quantitative data analysis (UNIT9)

CLO6. Have a basic awareness of data analysis and hypothesis testing procedures. (UNIT9)

CLO7. Basics knowledge of Analysis of variance & covariance.(UNIT6)

TEXTBOOKS :

Handbook Of Research In Physical Therapy. CE Bork

REFERENCE BOOKS:

Physical Therapy Research: Principles And Application. E Domholdt

Research Methodology For Physical Therapists. C Hicks.

Kothari, C.R. Research Methodology (Methods and Techniques), New Age Publisher.

Fundamentals of modern statistical methods by Rand R.wilcox

WEB LINKS:

<https://scholar.google.com/>

<https://pubmed.ncbi.nlm.nih.gov/>

<https://www.researchgate.net/>

ASSESSMENT METHOD

Assessment method (Continue Internal Assessment=25%, final Examination=75%)

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Assessment	Grades
Assignment	10
Class test	5
Quiz	5
Question & Answer Session	5

OTT Directed Clinical Education – (Internship)

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

Specialized anesthesia and surgery

★ Cardiovascular and Respiratory System- Techniques, equipment, procedures and instruments

- a. Diseases of cardiovascular and respiratory systems.
- b. Types of perfusion machines.
- c. Techniques of Perfusion and operational capabilities.
- d. Intra-aortic Balloon pump.
- e. Cell saver techniques.
- f. Care, maintenance and working of Heart lung Machine.
- g. Patient's record keeping preoperatively, during anesthesia and post-operatively.
- h. Principles and techniques of temperature monitoring.
- i. Positioning during cardiothoracic surgical procedures.
- j. Positioning and techniques for:
 - i. Radial artery cannulation.
 - ii. Central venous cannulation/pulmonary artery catheter.
 - iii. Femoral artery/venous cannulation.

★ Monitoring Techniques and Equipment:

- a. Cardiac monitors, blood pressure and ECG monitoring.
- b. Respiratory monitors, respiratory rate, Spirometers, SpO₂, and EtCO₂.
- c. Temperature monitors.
- d. TEE and echocardiography machine
- e. Non- invasive cardiac output machine

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★ Positioning-

- a. During various neurosurgical procedures including sitting, prone, lateral and position for trans-sphenoidal hypo-physectomy.
- b. Fixation of head during various neurosurgical procedures.

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c. Prone and Knee chest position for spine surgery.

- ★ Requirements during intubation in a case of cervical spine fracture including fiber- optic laryngoscopy, awake intubation, LMA family especially ILMA.
- ★ Anaesthetic and surgical requirements during aneurysm surgery.
- ★ Surgical and Anaesthetic requirements during micro neurosurgery including types of microscopes, principle, structural features, microscopic photography and cameras used.
- ★ Anaesthetic and surgical requirements during thyroid surgery, adrenal surgery.
- ★ Anaesthetic and surgical requirements during abdominal surgery including Laproscopic surgery, genitourinary surgery including percutaneous nephrolithotomy, Endoscopic surgery, TURP, TURBT, Lithotripsy, ESWL (Extracorporeal shock wave therapy)
- ★ Anaesthetic and surgical requirement during renal transplant donor and recipient surgery including care and precautions during operative procedures of hepatitis B & hepatitis C positive patients.
- ★ Anaesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like tracheo-esophageal fistula. Sub diaphragmatic hernia, major abdominal and thoracic procedures. Foreign body bronchus and esophagus.
- ★ Apparatus and techniques for measuring blood pressure and temperature.
- ★ Principle and working of direct/Indirect blood pressure monitoring apparatus.
- ★ Intraoperative and postoperative problems and complications of general surgery.
- ★ Management of emergency caesarean section.
- ★ Management of massive obstetrical hemorrhage.
- ★ Surgical management in major burns and craniofacial surgery.
- ★ Surgical management of joint replacement and arthroscopy.
- ★ 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 etc.)

Skills based outcomes and monitorable indicators for Operation Theatre Technologist

Competency statements

- ★ Demonstrate ability to prepare and maintain Operation Theater
- ★ Demonstrate ability to maintain equipment support in an acute care environment
- ★ Identify and move to maintain a sterile field
- ★ Follow infection control policies and procedures
- ★ Manage and maintain theater equipment
- ★ Demonstrate ability to prepare the patient for operative procedures
- ★ Provide intra-operative equipment and technical support
- ★ Demonstrate skills and knowledge to assist anesthetist in handling emergencies outside of OT Room
- ★ Manage hazardous waste and follow biomedical waste disposal protocols
- ★ Ensure availability of medical and diagnostic supplies
- ★ Monitor and assure quality

- ★ Act within the limits of one's competence and authority
- ★ Work effectively with others
- ★ Manage work to meet requirements
- ★ Maintain a safe, healthy, and secure working

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S. no.	Learning outcomes	Knowledge/comprehension	Applications / synthesis /evaluation	Hours
1	Prepare and maintain Operation Theatre	Be familiar with the Operation Theatre and all the equipment. Know the protocols used in Operation Theatre	Prepare the OT for the operation along with all the necessary equipment. Interpret and understand all planning techniques to keep an OT functional.	300

	Maintain equipment support in an acute care environment	Use basic knowledge of surgical procedures to assist and identify the needs of equipment of Operating teams.	Clean and store equipment safely Position equipment in accordance with set up procedures	300
3	Assist anaesthetist in handling emergencies outside of OT Room.	Knowledge of assisting anaesthetist outside OT Room.	Prepare emergency kit to handle areas outside OT Room. Ensure any signs or symptoms of a clinical emergency is identified correctly and reported to the appropriate clinician.	300

4	Follow infection control policies and procedures	Knowledge of effective infection control strategy that ensures the safety of the patient.	Preform the standard precautions to prevent the spread of infection in accordance with organization	220
5	Ensure availability of medical and diagnostic supplies	Anticipating demand and ensuring availability of adequate medical and diagnostic supplies.	Maintain adequate supplies of medical and diagnostic supplies. Arrive at actual demand as accurately as possible	100
6	Prepare patient for operative procedures	Knowledge of preparing patients as required before the operation.	Safely position patient to meet the requirements of the anaesthetist and Surgeon.	200
7	Provide intra-operative equipment and technical support	Knowledge to assist the anaesthetist and provide technical support during surgical procedure.	Monitoring the performance of equipment used and adjusting surgical equipment.	200
8	Work effectively with others	Working with other people to meet requirements	Identify any problems with team members and other people and take the initiative to solve these problems.	100
		Communicating with other team members and people internal or external to the	Communicate with other people clearly and effectively	

		organisation		
9	Be able to demonstrate professional behavior	Explain the legal and ethical guidelines related to the profession Be aware of your own competency levels	Promote collaborative practice	100
10	Be able to complete accurate treatment documentation	Recognize the importance of accurate documentation	Complete the treatment documentation accurately	50
11	Manage hazardous waste	Knowledge of Handle, collect and dispose of the hazardous waste.	Coordinate the hazardous waste management program. Properly identify, segregate, handle, label, and store waste.	100
12	Maintain a safe, healthy and secure working environment.	Complying the health, safety and security requirements and procedures for Workplace.	Identify individual responsibilities in relation to maintaining workplace health safety and security requirements. Follow the organization's emergency procedures promptly, calmly, and Efficiently.	100
13	Monitor and assure quality	Monitor treatment	Evaluate potential faults	200

		process/outcomes process/outcomes	in treatment procedures.	
		Identify problems in treatment	Identify breaches in health, safety and security procedures.	
		Solve treatment process/outcome problems	Follow the organization's emergency procedures promptly, calmly and efficiently.	
	Total			2270

Job Description for all levels

Level 4- OT Assistant

★ **JOB TITLE** - Operation Theatre Assistant

★ **JOB PURPOSE**

- a. Assisting team in pre-operative arrangements.
- b. Assisting during intra-operative with surgeons & anesthesiologist.
- c. Assisting team post-operative.
- d. Maintenance of machines.

★ **ACCOUNTABLE TO** - HOD- Anesthesia Department / Senior OT Technologist/ OT Technologist

★ **QUALIFICATION** - Diploma in Operation Theatre Technology (2 years)

RESPONSIBILITIES:

- a. Responsible for the transportation of patients to and from the theatre and wards
- b. Assist staff with the mobilization of the patient within the Operation Theatre
- c. Assist with patient procedures as required
- d. Maintain procedure room/operating theatre equipment so as to ensure a clean, safe and efficient environment for patients and staff
- e. Assist in the preparation of patient prior to surgery, e.g. pre-operative shave, patient positioning.
- f. Ensure that the patient is positioned securely and safely on the operating table prior to surgery and on the patient trolley at the completion of surgery
- g. Provide assistance to medical and nursing staff
- h. Promote patient safety at all the times
- i. Assist in other areas within the theatre complex as workload permits
- j. Maintain good communications with other staff in the theatre complex
- k. Maintain patient confidentiality at all the times
- l. Be familiar with the correct operation of all equipment
- m. Collect and return all necessary equipment for the procedure and patient safety
- n. Report malfunctioning equipment to person as per protocol
- o. Follow the hospital's Health and Safety policies and procedures
- p. Be aware of the OH&S guidelines for the safe transport of beds and patients throughout the hospital

Level 5 onwards – Operation Theatre Technologist

- ★ JOB TITLE - Operation Theatre Technologist
- ★ JOB PURPOSE
 - a. Assisting team in pre-operative arrangements.
 - b. Assisting during intra-operative with surgeons & anesthesiologist.
 - c. Assisting team post-operative.
 - d. Maintenance of machines
- ★ ACCOUNTABLE TO - HOD/ Senior Operation Theatre Technologist
- ★ QUALIFICATION - B.Sc. Operation Theatre Technology (3 ½ years including 6 months internship)

RESPONSIBILITIES:

- ★ Supporting the multidisciplinary team in providing a safe, high quality environment for the carrying out of surgical procedures by:
 - ★ Assisting in skin preparation and draping of the surgical field.
 - ★ Supporting and observing the patient throughout the operation.
 - ★ Assisting in the measurement and recording of fluid input / output.
 - ★ Working as part of the multidisciplinary team for the benefit of the patient, appreciating each member of the team's needs and role.
 - ★ Anticipating the needs of the surgical team and responding effectively.
 - ★ Safely handling, recording and used instruments in line with Policy.
 - ★ Disposing of clinical waste safely and appropriately in line with Policy.
 - ★ Capturing and maintaining patient data / documentation and any information required for auditing / quality issues. Documentation will be countersigned by the Registered Practitioner.
 - ★ Utilizing communication skills, preparing the environment and equipment and acting as a link between the surgical team and other parts of the theatre and hospital.
 - ★ Assisting the Registered Practitioner in the handover of the patient to the recovery staff, providing appropriate information and documentation.
 - ★ Notifies appropriate health physicians when immediate clinical response is necessary based on emergency in Operation Theater.
 - ★ Involvement in research and development.