SYLLABUS AND CURRICULUM OF DIPLOMA IN D O T T COURSE

DIPLOMA IN OPERATION THEATRE TECHNOLOGY (DOTT)

DOTT is a paramedical course that trains students to assist in surgical operations, manage operation theatre equipment, maintain sterile conditions, and support surgeons, anesthetists, and nurses.

Course Overview

- **Full Form**: Diploma in Operation Theatre Technology (DOTT)
- **Duration**: 2 Years + 6 Months (Internship)
- **Eligibility**:
    - 10+2 pass (Science stream – PCB or PCM usually preferred)
    - Minimum 45–50% marks
    - On the basis of 10th (Only Certificate Courses)

Career Opportunities after D O T T

- **Operation Theatre Technician**
- **Surgical Assistant**
- **Anesthesia Technician**
- **OT In-charge**
- **Emergency OT Assistant**
- **ICU/Recovery Room Technician**

SEMESTER – I

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DOTT101	HUMAN ANATOMY & PHYSIOLOGY	45 Min	1 Hrs.	50	50
DOTT102	BIOCHEMISTRY & PATHOLOGY	45 Min	1 Hrs.	50	50
DOTT103	FUNDAMENTAL OF OPERATION THEATRE	45 Min	1 Hrs.	50	50
DOTT104	BASIC CONCEPT OF SURGERY	45 Min	1 Hrs.	50	50

HUMAN ANATOMY & PHYSIOLOGY

Theory

1. Introduction to Human Body

- Definition of anatomy & physiology
- Levels of structural organization
- Anatomical terms and body positions
- Body planes, cavities, and directional terms

2. Cells and Tissues

- Structure & function of a typical cell
- Cell organelles
- Cell division: Mitosis and Meiosis
- Types of tissues and their functions (Epithelial, Connective, Muscular, Nervous)

3. Skeletal System

- Structure and function of bones
- Types of bones
- Major bones of the body (Skull, Vertebral column, Limbs, Ribs, Sternum)
- Joints and their types
- Common disorders (Fractures, Arthritis)

4. Muscular System

- Types of muscles (Skeletal, Smooth, Cardiac)
- Structure and functions of skeletal muscles

- Major muscles of the body
- Muscle contraction mechanism

5. Circulatory System

- Structure and function of heart
- Blood vessels (Arteries, Veins, Capillaries)
- Cardiac cycle and circulation
- Blood: composition, types, blood groups, clotting
- Common diseases: Hypertension, MI, Anemia

6. Respiratory System

- Anatomy of respiratory tract (Nose to alveoli)
- Mechanism of breathing
- Gas exchange in lungs and tissues
- Lung volumes
- Common disorders: Asthma, COPD, Pneumonia

7. Digestive System

- Structure and function of organs of digestion (Mouth to anus)
- Accessory organs: Liver, Pancreas, Gall bladder
- Digestive enzymes and their actions
- Common disorders: Ulcer, Hepatitis, Appendicitis

8. Nervous System

- Central nervous system (Brain & spinal cord)
- Peripheral and autonomic nervous system
- Functions of brain parts
- Reflex arc
- Common disorders: Stroke, Epilepsy

9. Endocrine System

- Major endocrine glands (Pituitary, Thyroid, Adrenal, Pancreas)
- Hormones and their functions
- Common disorders: Diabetes, Goiter

10. Urinary System

- Anatomy of kidney and urinary tract
- Formation of urine
- Role in homeostasis
- Disorders: UTI, Renal failure

11. Reproductive System

- Male & female reproductive organs
- Menstrual cycle
- Fertilization and pregnancy basics
- Contraceptive methods

12. Integumentary System

- Structure and functions of skin
- Skin appendages (hair, nails, glands)
- Temperature regulation
- Skin infections and disorders

13. Special Senses

- Eye: Structure & function
- Ear: Hearing and balance mechanism
- Nose, tongue, skin: Role in smell, taste, touch

Practical

➢ Introduction to Practical Work

- Familiarization with laboratory equipment (microscope, sphygmomanometer, stethoscope)
- Basic laboratory safety and handling of specimens
- Use of anatomical charts, models, and mannequins

➢ Cell & Tissues

- Identification of cell structure (using charts and diagrams)
- Observation of different tissue types under microscope:
    - Epithelial tissue
    - Connective tissue
    - Muscle tissue
    - Nervous tissue

➢ Skeletal System

- Identification of major bones (Skull, Femur, Humerus, Vertebrae, Pelvis, Ribs)
- Identification of joints and types of joints (hinge, ball & socket, pivot, etc.)
- Differentiating male and female pelvis (if available)
- Demonstration of bone marrow and types (if possible with models or images)

➢ Muscular System

- Identification of major muscles using charts/models
- Observation of skeletal muscle under microscope
- Demonstration of muscle movements and actions (flexion, extension, etc.)

➢ Circulatory System

- Measurement of blood pressure using sphygmomanometer
- Recording of pulse (radial, carotid)
- Study of heart anatomy using models or specimens
- Identification of major blood vessels (aorta, vena cava, carotid, etc.)

➢ Respiratory System

- Counting respiratory rate
- Demonstration of breathing movements
- Identification of parts of respiratory system using models/charts
- Use of spirometer for basic lung capacity test (if available)

➢ Digestive System

- Identification of parts of digestive system using models and charts
- Demonstration of salivary glands, liver, pancreas
- Study of digestion using visual aids

➢ Nervous System

- Demonstration of reflex arc (knee jerk, light reflex)
- Identification of brain and spinal cord parts using models
- Study of neuron structure using charts
- Observing spinal cord sections under microscope (if available)

➢ Urinary System

- Identification of kidneys, ureters, bladder, and urethra using models
- Study of nephron structure using charts
- Urine output observation and color/clarity reporting (if safe and hygienic setup is available)

➢ Reproductive System

- Identification of male and female reproductive organs using charts/models
- Observation of uterus, ovaries, testis, and sperm under microscope (prepared slides)
- Menstrual cycle chart explanation

➢ Endocrine System

- Identification and location of major endocrine glands using charts/models
- Observation of thyroid and pancreas slides (if available)

➢ Integumentary System

- Demonstration of skin layers using models
- Identification of skin appendages (hair, sweat glands)
- Observation of skin under microscope

➢ Special Senses

- Identification of eye and ear parts using models
- Testing of simple reflexes: visual reflex, auditory response
- Observation of tongue papillae (if possible)

➢ Diagrams & Labeling

- Drawing and labeling of all major systems and organs
- Chart preparation for anatomy revision
- Practice of anatomical positions and directional terms

BIOCHEMISTRY & PATHOLOGY

Theory

BIOCHEMISTRY

1. Introduction to Biochemistry

- Definition and scope of biochemistry
- Importance of biochemistry in clinical practice and OT

2. Carbohydrates

- Definition, classification, and functions
- Monosaccharides, disaccharides, polysaccharides
- Blood sugar regulation
- Tests for glucose (Benedict's, Fehling's, etc.)

3. Proteins

- Definition, classification, and biological functions
- Essential and non-essential amino acids
- Structure of proteins

- Protein metabolism
- Biuret test and other qualitative tests

4. Lipids

- Classification and functions
- Saturated and unsaturated fats
- Cholesterol – types, role, and normal values
- Lipid metabolism basics

5. Enzymes

- Definition and types
- Mechanism of enzyme action
- Factors affecting enzyme activity
- Clinical importance of enzymes (e.g., SGOT, SGPT, amylase, lipase)

6. Vitamins & Minerals

- Classification (fat-soluble & water-soluble)
- Sources, functions, and deficiency diseases
- Common clinical applications

7. Water and Electrolyte Balance

- Body water compartments
- Role of sodium, potassium, chloride
- Acid-base balance basics
- Dehydration and fluid therapy

8. Biochemical Investigations

- Blood sugar test (FBS, PPBS)
- Blood urea, serum creatinine
- Serum electrolytes
- Liver and kidney function tests (LFT, KFT)
- Blood lipid profile

PATHOLOGY

1. Introduction to Pathology

- Definition and scope
- Types of pathology: General & Systemic
- Role of pathology in diagnosis and OT procedures

2. Inflammation & Repair

- Types of inflammation: acute and chronic
- Signs and stages of inflammation
- Healing and tissue repair

3. Cell Injury & Adaptation

- Causes and types of cell injury
- Necrosis and apoptosis
- Cellular adaptations (hypertrophy, atrophy, etc.)

4. Immunopathology

- Basic concepts of immunity
- Hypersensitivity reactions
- Autoimmune diseases (basic overview)

5. Hematology

- Composition and functions of blood
- Red blood cells (RBCs): morphology, anemia
- White blood cells (WBCs): types and leukemias
- Platelets and bleeding disorders
- ESR, Hemoglobin test, Total and Differential WBC Count

6. Clinical Pathology (Urine & Body Fluids)

- Physical, chemical, and microscopic examination of urine
- Proteinuria, glycosuria, ketonuria
- Collection and preservation of specimens
- Examination of sputum, CSF, and other fluids

7. Histopathology

- Basic tissue processing (fixation, embedding, sectioning, staining)
- Introduction to biopsy and cytology
- Role of histopathology in cancer diagnosis

8. Microbiology Basics (if integrated)

- General idea about common pathogens in OT settings
- Sterilization and infection control
- Nosocomial infections

Practical

BIOCHEMISTRY

➢ Basic Laboratory Techniques

- Proper use and handling of laboratory glassware
- Preparation of reagents and solutions
- Use of pipettes, centrifuge, colorimeter, glucometer

➢ Qualitative Analysis of Biomolecules

- **Carbohydrates:**
  - Benedict's test for reducing sugars
  - Fehling's test
  - Molisch's test
  - Barfoed's test
- **Proteins:**
  - Biuret test
  - Xanthoproteic test
  - Ninhydrin test
- **Lipids:**
  - Grease spot test
  - Saponification test

➢ Quantitative Biochemistry Tests

- Estimation of blood glucose (manual & glucometer method)
- Estimation of urea and creatinine (kit-based)
- Estimation of serum cholesterol (kit-based)
- Estimation of SGOT/SGPT (using semi-auto analyzer or kit)
- Liver and kidney function test parameters demonstration

➢ Urine Analysis (Biochemical)

- Testing for:
  - Glucose (Benedict's test)
  - Protein (Heat coagulation and Sulfosalicylic acid test)
  - Ketone bodies (Rothera's test)
  - pH, specific gravity using dipsticks

PATHOLOGY

➢ Hematology

- Collection of blood samples (venipuncture techniques – demonstration)

- Preparation of peripheral blood smear
- Staining of smear (Leishman's stain)
- Hemoglobin estimation (Sahli's method or Hemocue)
- Total Leukocyte Count (TLC)
- Differential Leukocyte Count (DLC)
- Red Blood Cell Count (manual method)
- Platelet Count (manual/demonstration)
- ESR (Westergren method)
- PCV and MCH/MCHC calculation (if applicable)

➢ Urine Analysis (Microscopic and Physical)

- Physical examination: color, clarity, volume, specific gravity
- Chemical analysis: sugar, protein, ketones
- Microscopic examination of urine sediments: pus cells, RBCs, casts, crystals

➢ Examination of Body Fluids

- Collection and preservation techniques (urine, sputum, CSF – demonstration)
- Sputum examination (physical/microscopic – stained smear if applicable)

➢ Histopathology Basics (Demonstration/Observation)

- Fixation of tissue samples (Formalin use)
- Processing of tissue: embedding, microtomy, and staining basics
- Observation of normal and pathological slides (under microscope)
    - Liver, kidney, lung, intestine, etc.
    - Tumor cells vs. normal cells

➢ Infection Control & Sample Handling

- Biomedical waste segregation
- Use of PPE in lab
- Disinfection and sterilization of lab equipment
- Sample labeling, storage, and transport protocols

FUNDAMENTAL OF OPERATION THEATRE

Theory

1. Introduction to Operation Theatre

- Definition and importance of OT
- History and development of OT techniques
- Types of operation theatres (General, Emergency, Specialized)
- Structure and layout of OT complex

2. Operation Theatre Design & Zoning

- Four zones of OT:
  - Protective zone
  - Clean zone
  - Sterile zone
  - Disposal zone
- Airflow system (Laminar flow, HEPA filters)
- Positive pressure ventilation

3. Sterilization & Disinfection

- Principles of sterilization
- Methods of sterilization:
  - Physical (Autoclave, Hot air oven)
  - Chemical (Cidex, Formalin)
  - Radiation-based (UV, gamma rays)
- Disinfection of OT instruments and surfaces
- Fumigation procedure

4. Surgical Instruments

- Classification: Cutting, Grasping, Retracting, Clamping, Suturing
- Name and uses of common instruments
- Handling, cleaning, and storage of instruments

5. Infection Control in OT

- Asepsis and antisepsis
- Universal precautions
- Surgical hand washing
- Personal Protective Equipment (PPE)
- Biomedical waste management (color coding)

6. Pre- and Post-Operative Patient Care

- Pre-operative preparation (shaving, fasting, medication)
- Patient positioning and draping
- Post-operative monitoring and shifting

- Role in recovery room

7. OT Equipment & Environment

- OT lights, tables, suction machine, cautery, anesthesia machine
- Emergency crash cart setup
- Maintenance and safety checks
- Electrical and fire safety in OT

8. Surgical Team & Duties

- Members of surgical team:
  - Surgeon
  - Assistant surgeon
  - Anesthetist
  - Scrub nurse/technician
  - Circulating nurse
- Roles and responsibilities of OT technician

9. Positioning of Patients

- Common surgical positions:
  - Supine
  - Prone
  - Lithotomy
  - Trendelenburg
  - Lateral
- Pressure point care and safety precautions

10. Preparation of Operation Theatre

- OT cleaning schedule (daily, weekly, terminal)
- Trolley setting for different surgeries
- Linen management and OT attire protocol
- Handling sterile and unsterile items

11. OT Records and Documentation

- OT register
- Consent forms
- Instrument and sponge count chart
- Incident reporting

Practical

➢ Orientation to Operation Theatre

- Demonstration of different **zones of OT** (Protective, Clean, Sterile, Disposal)
- Identification of **OT layout** and workflow
- OT attire demonstration: cap, mask, gown, gloves, shoe cover

➢ Hand Hygiene & Gowning

- Demonstration of **surgical handwashing** (7-step technique)
- Gowning and closed gloving techniques
- Aseptic precautions during dressing and setup

➢ Sterilization & Disinfection Techniques

- Operation and monitoring of **autoclave**
- Sterilization using **hot air oven**, **chemical agents**, and **UV light**
- Fumigation process (observation and steps)
- Disinfection of OT table, walls, and instruments

➢ Handling of Surgical Instruments

- Identification of basic **surgical instruments** (Scalpel, Forceps, Scissors, Retractors, etc.)
- Proper handling, cleaning, packing, and storage
- Sharps handling and disposal (needle burner, puncture-proof container)
- Trolley setup for basic procedures

➢ OT Equipment Handling

- Demonstration of **OT light**, **OT table**, **suction machine**, **cautery unit**
- Pre-use check and basic troubleshooting
- Crash cart setup and usage
- Use of oxygen cylinder and regulator

➢ Patient Preparation

- Demonstration of **pre-operative shaving and skin preparation**
- Positioning of patients for surgery:
    - Supine
    - Prone
    - Lithotomy
    - Lateral
    - Trendelenburg
- Transfer of patient using stretcher and trolley safely

➢ Aseptic Practices & Infection Control

- Proper **wrapping, labeling, and storage** of sterile packs
- Maintaining sterile field during minor OT procedures
- Biomedical waste segregation and disposal (as per color coding)
- Use and disposal of **Personal Protective Equipment (PPE)**

➢ Surgical Trolley & Draping

- Setting up sterile surgical trolleys for various types of surgeries
- Counting instruments, sponges, gauze (before and after procedure)
- Demonstration of **draping** techniques around operative site

➢ Emergency Procedures

- Familiarization with emergency **crash cart and defibrillator**
- OT technician's role in emergency (code blue response – demo/mock drill)
- Use of suction and oxygen during emergencies

➢ OT Documentation

- OT register maintenance
- Pre- and post-operative checklists
- Recording of sterilization cycles
- Sponge/instrument count sheet documentation

BASIC CONCEPT OF SURGERY

Theory

1. Introduction to Surgery

- Definition and history of surgery
- Classification of surgeries:
  - Elective
  - Emergency
  - Major & minor surgeries
- Aims and objectives of surgical treatment
- General principles of surgery

2. Pre-Operative Care

- Pre-operative assessment and preparation
- Patient history taking and physical examination
- Informed consent
- Pre-operative fasting and medication

- Skin preparation and hair removal
- Psychological preparation of the patient

3. Intra-Operative Care

- OT environment and aseptic techniques
- Scrubbing, gowning, and gloving
- Positioning of patient during surgery
- Use of drapes and maintenance of sterile field
- Sponge, instrument, and needle count protocols
- Role of OT technician during the surgical procedure

4. Post-Operative Care

- Immediate post-operative monitoring
- Observation of vital signs, consciousness, and wound site
- Pain management basics
- Identification and initial management of post-operative complications
- Patient transfer to recovery or ward

5. Types of Surgical Incisions & Wounds

- Common types of incisions:
  - Midline
  - Paramedian
  - Transverse
  - Oblique
  - Pfannenstiel
- Types of wounds:
  - Clean, contaminated, infected
  - Surgical wound classification
- Healing of surgical wounds
- Factors affecting wound healing

6. Sutures and Suturing Techniques

- Types of sutures: absorbable & non-absorbable
- Suture materials: catgut, silk, vicryl, nylon, etc.
- Types of suturing techniques (simple interrupted, mattress, continuous)
- Instruments used in suturing
- Removal of sutures and wound dressing techniques

7. Hemorrhage and Shock

- Types of hemorrhage (arterial, venous, capillary)
- Stages and types of shock (hypovolemic, septic, etc.)

- Recognition of signs and symptoms
- Basic management and first aid measures
- OT technician's role during hemorrhage

8. Asepsis, Antisepsis & Infection Control

- Principles of aseptic techniques
- Methods of sterilization and disinfection
- Preparation of surgical field
- Hospital-acquired infections and their prevention
- Hand hygiene and PPE protocols

9. Surgical Instruments & Equipment

- Introduction to surgical instruments: classification and use
- Handling and care of instruments
- Common instruments for general surgery
- OT lights, cautery, suction machine basics

10. Drainage & Catheterization

- Purpose and types of surgical drains (Penrose, JP, etc.)
- Insertion and care of surgical drains
- Urinary catheterization: types and techniques
- Post-operative drain and catheter care

11. Bandaging and Dressing

- Types of dressings (dry, wet, occlusive)
- Steps of wound dressing and bandaging
- Use of sterile technique in dressing changes
- Dressing trolley preparation

12. Common Surgical Conditions & Procedures *(Introductory Knowledge Only)*

- Hernia
- Appendicitis
- Cholecystectomy
- Cesarean section
- Fracture repair
- Abscess drainage

Practical

➢ Pre-operative Preparation

- Demonstration of patient shaving and skin preparation
- Recording pre-operative vital signs (BP, Pulse, Temperature, SpO_2)
- Preparation of surgical trolley
- Assisting in taking informed consent
- Preparing patient psychologically and physically before surgery

➢ Surgical Hand Hygiene

- 7-step surgical hand washing technique
- Use of antiseptic hand rub
- Closed gloving and gowning (self and assisted method)

➢ Patient Positioning

- Demonstration of various surgical positions:
  - Supine
  - Prone
  - Lithotomy
  - Lateral
  - Trendelenburg
- Use of safety straps and padding over pressure points

➢ Draping Techniques

- Use of sterile drapes
- Demonstration of four-corner draping method
- Draping of different regions (abdomen, limbs, perineum)

➢ Sponge, Instrument & Needle Count

- Pre-operative and post-operative count procedures
- Maintenance of count record
- Identification and handling of surgical sponges, gauze, and instruments

➢ Identification & Handling of Surgical Instruments

- Recognition and demonstration of:
  - Cutting instruments (scissors, scalpel)
  - Grasping instruments (forceps, clamps)
  - Retractors
  - Suturing instruments
- Passing instruments correctly to the surgeon
- Cleaning and sorting of used instruments post-surgery

➢ Suturing & Suture Removal (Demo/Practice on Dummy)

- Types of suture materials and their identification
- Practice of simple interrupted suturing (on sponge pads or dummies)
- Demonstration of suture removal and dressing

➢ Preparation and Use of Drains & Catheters

- Demonstration of different types of surgical drains (Penrose, JP drain)
- Assisting in drain insertion/removal
- Catheterization: insertion of Foley catheter (male/female models)
- Drain and catheter care

➢ Dressing & Bandaging Techniques

- Preparation of dressing trolley
- Wound dressing using aseptic technique
- Use of bandages: roller, triangular, elastic
- Demonstration of pressure bandage application

➢ Assisting During Surgical Procedure (Simulated or Live Observation)

- Setting up minor OT
- Scrubbing in for minor procedures (under supervision)
- Maintaining sterile field
- Providing instruments to surgeon
- Managing instrument tray and surgical site cleanup

➢ Handling Emergencies (Demo/Mock Drills)

- Recognizing signs of shock and hemorrhage
- Crash cart setup and emergency supply identification
- Assisting during resuscitation (CPR – demo on mannequin)
- Oxygen therapy setup demonstration

SEMESTER – II

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS

DOTT201	MICROBIOLOGY & INFECTION CONTROL	45 Min	1 Hrs.	50	50
DOTT202	OPERATION THEATRE TECHNIQUES	45 Min	1 Hrs.	50	50
DOTT203	EMERGENCY CARE & CPR	45 Min	1 Hrs.	50	50
DOTT204	PREPARATION OF SURGERY & ITS PRINICIPLES	45 Min	1 Hrs.	50	50

MICROBIOLOGY & INFECTION CONTROL

Theory

1. Introduction to Microbiology

- History and scope of microbiology
- Classification of microorganisms
- Differences between bacteria, viruses, fungi, and protozoa
- Microscopy – types and use in microbiology
- Morphology of bacteria (shape, size, arrangement)

2. Sterilization & Disinfection

- Definitions: sterilization, disinfection, antisepsis
- Physical methods of sterilization:
  - Heat (Autoclave, Hot air oven)
  - Radiation (UV, Gamma)
  - Filtration
- Chemical disinfectants: types and uses (glutaraldehyde, phenol, alcohol)
- Biological indicators and sterility monitoring
- Sterilization control and validation

3. Bacteriology

- Classification and structure of bacteria
- Pathogenic bacteria:
  - Staphylococcus aureus
  - Escherichia coli
  - Pseudomonas aeruginosa
  - Clostridium tetani
  - Mycobacterium tuberculosis
- Gram staining and acid-fast staining

- Normal flora vs. pathogenic organisms

4. Virology

- General structure and classification of viruses
- Common viral infections in OT settings:
  - Hepatitis B and C
  - HIV/AIDS
  - Influenza
  - Herpes virus
- Modes of viral transmission
- Prevention and control in clinical environments

5. Mycology

- Classification and types of fungi
- Common fungal infections:
  - Candidiasis
  - Aspergillosis
  - Dermatophytosis
- Prevention of fungal contamination in OT

6. Parasitology (Basic Overview)

- Common parasites:
  - *Entamoeba histolytica*
  - *Plasmodium* spp. (malaria)
  - *Ascaris*, *Hookworm*
- Mode of transmission and prevention

7. Hospital-Acquired Infections (HAIs)

- Definition and causes of nosocomial infections
- Sources of infection in hospital and OT
- Common HAIs:
  - Catheter-associated infections
  - Surgical site infections (SSI)
  - Ventilator-associated pneumonia (VAP)
  - Bloodstream infections (BSI)

8. Infection Control Practices

- Standard precautions (hand hygiene, PPE, safe injection practices)
- Surgical asepsis vs. medical asepsis
- Use of personal protective equipment (PPE)
- Isolation techniques and barrier nursing

- Needle stick injury: prevention and post-exposure prophylaxis (PEP)

9. Biomedical Waste Management

- Categories and segregation of biomedical waste
- Color coding and container types
- Collection, storage, and transportation of waste
- Legal and environmental aspects (BWM Rules 2016 – overview)

10. Role of OT Technician in Infection Control

- Disinfection of OT surfaces, floors, and air
- Personal hygiene and aseptic behavior
- Role in infection surveillance
- Cleaning and disinfection of instruments and equipment
- Fumigation and fogging procedures

Practical

MICROBIOLOGY

➢ Laboratory Orientation

- Introduction to microbiology lab equipment
  - Microscope, autoclave, hot air oven, incubator
- Rules of aseptic laboratory techniques
- Hand hygiene and use of PPE in lab settings

➢ Microscopy

- Demonstration of microscope use (light microscope)
- Observation of prepared slides:
  - Bacteria (cocci, bacilli)
  - Fungi (yeast, molds)
  - Parasites (e.g., *Entamoeba*, *Plasmodium*)

➢ Staining Techniques

- Preparation of bacterial smear
- **Gram staining procedure** (demo and practice)
- **Acid-Fast Staining** (Ziehl-Neelsen technique – observation)
- Simple staining for shape and arrangement of bacteria

➢ Culture Techniques (Demonstration or Practice)

- Preparation of media (Nutrient agar, MacConkey agar – demo)

- Inoculation of culture media using aseptic technique
- Observation of colony characteristics
- Aerobic vs. anaerobic culture setup (demo only)

➢ Identification of Common Pathogens *(observation-based)*

- Staphylococcus aureus
- E. coli
- Pseudomonas
- Clostridium tetani
- Mycobacterium tuberculosis

➢ Antimicrobial Sensitivity Testing (Demo)

- Disc diffusion method (Kirby-Bauer method)
- Antibiotic zones of inhibition – interpretation basics

INFECTION CONTROL PRACTICALS

➢ Hand Hygiene Practices

- **Demonstration of medical and surgical hand washing techniques**
- Use of alcohol-based hand rub
- Monitoring hand hygiene compliance (observation checklist)

➢ Personal Protective Equipment (PPE)

- Donning and doffing PPE
- Mask types and proper use
- Use of gloves, apron, face shield, goggles

➢ Sterilization and Disinfection

- **Autoclave operation and demonstration**
- Monitoring sterilization with indicators (chemical and biological)
- Hot air oven and chemical disinfection (glutaraldehyde, hypochlorite)
- Preparation of disinfectant solutions (0.5% chlorine, alcohol)

➢ Biomedical Waste Management

- **Segregation of biomedical waste by color coding**
- Identification of types of waste (sharps, soiled, general)
- Use of needle burner and puncture-proof container
- Chart of BMW categories (as per BMW Rules 2016)

➢ Surface & Equipment Disinfection in OT

- Cleaning protocols for OT tables, lights, suction, cautery units
- Floor and wall disinfection methods
- OT fumigation and fogging demonstration
- High-touch surface disinfection checklist

➢ Infection Control Audits / Checklists (Practice or Observation)

- Hand hygiene audit
- OT infection control checklist
- Linen handling and sterilization logs
- Pre- and post-operative aseptic preparation list

OPERATION THEATRE TECHNIQUES

Theory

1. Introduction to Operation Theatre Techniques

- Definition and importance
- Duties and responsibilities of OT Technician
- Surgical team members and their roles
- Zones of OT and movement control
- Ethical behavior and communication in OT

2. Operation Theatre Setup & Environment

- OT design and zoning (protective, clean, sterile, disposal)
- Lighting, ventilation, and temperature control
- OT table and lighting – types and uses
- Suction apparatus and emergency power backup
- Noise and pollution control in OT

3. Surgical Instruments

- Classification: cutting, grasping, clamping, retracting, suturing instruments
- Identification and usage of common surgical instruments
- Instrument handling, cleaning, drying, and storing
- Checking instruments before and after surgery
- Care of delicate and electrical instruments (laparoscopic, cautery tools)

4. Patient Preparation and Positioning

- Pre-operative preparation: shaving, skin prep, ID check, fasting confirmation
- Different surgical positions: supine, prone, lithotomy, lateral, Trendelenburg, Fowler's

- Pressure point protection and safety straps
- Draping techniques for different surgeries
- Transfer and shifting of patient to/from OT

5. Asepsis and Sterile Techniques

- Principles of asepsis
- Surgical handwashing
- Gowning and gloving (open and closed methods)
- Creating and maintaining a sterile field
- Handling sterile and non-sterile items

6. Operation Theatre Procedures

- Setting up surgical trolley
- Instrument and sponge count (pre-op and post-op)
- Assisting the surgeon and scrub nurse during procedure
- Use of electrocautery and suction machine
- OT discipline and protocol during surgery

7. Anesthesia Equipment Support

- Types of anesthesia: general, local, regional (brief overview)
- Identification of anesthesia machine components
- Checking oxygen cylinder, flow meter, masks, and airways
- Monitoring vitals during anesthesia (support role)
- Assisting anesthetist during intubation/extubation

8. Sterilization and Disinfection

- Methods: autoclave, hot air oven, chemical disinfection
- OT fumigation and fogging procedure
- Instrument sterilization: packaging, labeling, and tracking
- Maintenance of sterility in OT environment

9. Infection Control in OT

- Standard precautions and PPE use
- Biomedical waste management in OT
- Handling spills and contamination
- OT cleaning schedules (daily, weekly, terminal cleaning)
- OT records and documentation related to infection control

10. Post-operative OT Procedures

- Clearing and disinfection of OT after surgery

- Disposal of surgical waste and soiled linen
- Post-operative instrument care and packaging
- Preparation for next surgery (turnover management)
- Documentation: sponge/instrument count sheet, case log

11. Emergency OT Procedures

- Crash cart layout and essential drugs/equipment
- OT technician role during code blue/emergency
- Handling unplanned/emergency surgeries
- Rapid OT turnaround and cleaning under pressure

Practical

➢ Orientation to OT Setup

- Visit and observation of different OT zones (sterile, clean, protective, disposal)
- Identification and use of OT furniture: OT table, OT lights, suction, cautery, etc.
- Understanding OT schedule board, communication system, and surgical safety checklist

➢ Hand Hygiene and Personal Preparation

- Demonstration and return demo of:
  - Medical and surgical handwashing techniques
  - Donning and doffing of gloves and gown
  - Mask and cap wearing techniques
- Scrubbing area protocols

➢ Aseptic Techniques & Sterile Field Maintenance

- Creating and maintaining a sterile field
- Draping techniques for different surgical areas
- Handling and passing of sterile instruments and supplies
- Sterile trolley setup: major and minor procedures
- Checking and maintaining sterility indicators

➢ Identification and Handling of Surgical Instruments

- Identification and naming of:
  - Cutting instruments
  - Grasping and holding instruments
  - Clamping and occluding instruments
  - Retractors and suction instruments
- Care, cleaning, drying, and storage of instruments
- Sharpening and checking sharpness (where applicable)

➢ Surgical Positioning of Patients

- Practice positioning mannequins or dummies in:
  - Supine, prone, lithotomy, lateral, Trendelenburg, Fowler's
- Proper use of safety straps and padding of pressure points
- Transfer of patient to and from OT table (with team)

➢ Preparation of Surgical Trolley

- Setting up major and minor surgical trays
- Pre-op verification of instrument count and sterilization
- Laying out instruments based on specialty (ENT, Ortho, Gynae, etc.)

➢ Sponge, Instrument, and Needle Counts

- Practice maintaining pre-operative and post-operative counts
- Documenting on count sheet/logbook
- Handling missing item protocol

➢ Assisting in Surgery (Role Play / Observation)

- Practicing role of circulating nurse and scrub nurse (as technician)
- Passing instruments using correct techniques
- Handling of suction and electrocautery machine
- Monitoring surgical environment for sterility breaches

➢ Disinfection and Cleaning of OT

- Cleaning protocols for: OT lights, tables, walls, floor, and equipment
- Fumigation and fogging procedure demonstration
- Handling biohazard spills and safe cleanup
- Segregation and disposal of biomedical waste

➢ Sterilization Techniques

- Autoclave operation (loading/unloading and parameters)
- Packing and labeling instruments for sterilization
- Use of chemical disinfectants (glutaraldehyde, hypochlorite)
- Use of indicators: biological and chemical

➢ Emergency Response in OT

- Setting up and checking crash cart
- Practice emergency drills (Code blue scenario – dummy based)
- Assisting in CPR and BLS (Basic Life Support)

EMERGENCY CARE & CPR

Theory

1. Introduction to Emergency Care

- Definition and scope of emergency care
- Role of OT technician in emergencies
- Principles of triage and emergency response
- Medico-legal aspects in emergency care

2. Basic Human Physiology in Emergencies

- Vital signs: normal values and interpretation
- Respiratory and cardiovascular system overview
- Hypoxia, shock, and respiratory failure
- Glasgow Coma Scale (GCS) and its application

3. Primary and Secondary Assessment

- Scene safety and situation analysis
- Airway, Breathing, Circulation (ABC) protocol
- Rapid head-to-toe secondary assessment
- SAMPLE history and AVPU scale

4. Basic Life Support (BLS)

- Principles of BLS – Adult, Child, and Infant
- Chain of survival and early response
- Chest compressions and rescue breaths
- CPR techniques – one-rescuer and two-rescuer
- BLS algorithms and updates (based on AHA/IRC)

5. Cardiopulmonary Resuscitation (CPR)

- Definition and types of CPR
- CPR indications and contraindications
- CPR procedure step-by-step
- High-quality CPR parameters (rate, depth, recoil, ventilation)
- Complications and post-CPR care

6. Use of Automated External Defibrillator (AED)

- Working principle of AED
- Indications and contraindications
- Steps to operate AED in adult and pediatric cases
- Safety measures while using AED

7. Airway Management

- Anatomy of the airway
- Airway obstruction causes and relief (Heimlich maneuver)
- Airway opening techniques: head tilt–chin lift, jaw thrust
- Use of oropharyngeal (OPA) and nasopharyngeal airway (NPA)
- Suctioning techniques and precautions
- Bag-valve-mask (BVM) ventilation technique

8. Medical Emergencies

- Recognition and basic management of:
  - Myocardial infarction (heart attack)
  - Seizures and epilepsy
  - Stroke and TIA
  - Diabetic emergencies (hypo/hyperglycemia)
  - Asthma and anaphylaxis
  - Poisoning and drug overdose

9. Trauma and Injury Emergencies

- Types of injuries: blunt, penetrating, burns, fractures
- Basic wound care and bleeding control
- Head and spinal trauma – precautions and stabilization
- Fracture immobilization methods
- Soft tissue injury managemen

10. Shock and Its Management

- Types of shock: hypovolemic, cardiogenic, septic, anaphylactic
- Signs and symptoms of shock
- Immediate emergency interventions
- Fluid resuscitation principles

11. Crash Cart and Emergency Equipment

- Components of crash cart
- Emergency drugs: names, indications, doses (basic knowledge)
- Oxygen therapy equipment: cylinder, mask, nasal cannula

- Defibrillator, suction machine, ambu bag – working principles

12. Infection Control in Emergencies

- Universal precautions during resuscitation
- Use of PPE (gloves, mask, gown, eye shield)
- Biomedical waste disposal during emergencies
- Decontamination of CPR equipment

13. Disaster Management (Basic Concepts)

- Types of disasters (natural, man-made, hospital-based)
- Triage tagging and mass casualty management
- Fire safety and evacuation procedures
- Role of OT technician in disaster settings

Practical

➢ Basic Life Support (BLS) – Adult, Child, and Infant

- Chain of survival – practical understanding
- Scene safety and patient assessment (conscious vs. unconscious)
- Checking response, airway, breathing, and pulse
- Demonstration and practice on mannequins for:
    - Chest compressions (rate, depth, hand placement)
    - Rescue breaths using pocket mask
    - Mouth-to-mouth resuscitation
    - One-rescuer and two-rescuer CPR techniques
- Practice using CPR feedback manikins (if available)

➢ Use of Automated External Defibrillator (AED)

- Identification and demonstration of AED device
- Proper placement of AED pads
- Safe operation and following AED voice prompts
- Simulation of shockable and non-shockable rhythms
- Practicing AED use during CPR cycles

➢ Airway Management Techniques

- Head tilt–chin lift and jaw thrust maneuvers
- Use of oral airway (Oropharyngeal airway - OPA)
- Use of nasal airway (Nasopharyngeal airway - NPA)
- Bag-valve-mask (BVM) ventilation
- Oxygen cylinder setup and face mask administration

➢ Initial Emergency Assessment

- Primary survey: Airway, Breathing, Circulation (ABC)
- Secondary survey: Head-to-toe assessment
- Checking vitals: pulse, respiratory rate, temperature, BP
- Glasgow Coma Scale (GCS) scoring practice
- Management of shock and unconscious patients

➢ Management of Common Medical Emergencies

- Simulation/role play for:
  - Chest pain (suspected MI)
  - Asthma attack
  - Seizures
  - Hypoglycemia
  - Stroke (FAST assessment)

➢ Trauma & Bleeding Control

- Application of direct pressure and pressure bandage
- Elevation and tourniquet techniques (simulation)
- Control of nosebleed (epistaxis) and minor cuts
- Simulation of fracture splinting (upper/lower limb)

➢ Emergency Response and Crash Cart

- Layout and labeling of crash cart trays
- Checking crash cart inventory
- Practice of emergency drug identification and preparation
- Arranging emergency equipment: ambu bag, laryngoscope, suction machine

➢ Triage & Patient Transport

- Triage tagging (Red, Yellow, Green, Black)
- Use of stretchers, spine boards, and wheelchairs
- Logroll technique and cervical collar application
- Safe lifting and transfer of patients

➢ Wound Dressing and Bandaging

- Cleaning and dressing of minor wounds
- Practice of sterile and pressure dressing
- Application of roller bandage, triangular bandage, and sling
- Care of surgical wound (under supervision)

➢ Fire & Disaster Drill Participation

- Fire extinguisher use demonstration (PASS technique)
- Evacuation drill participation
- Basic fire safety and disaster preparedness (role-play based)

PREPARATION OF SURGERY & ITS PRINICIPLES

Theory

1. Introduction to Surgery

- Definition and scope of surgery
- History and evolution of surgical practices
- Classification of surgeries:
  - Elective, emergency, minor, major, diagnostic, therapeutic
- Role and responsibilities of OT technicians in surgical preparation

2. Preoperative Patient Preparation

- Psychological preparation and counseling
- Informed consent and documentation
- Fasting and pre-anesthetic check-up (PAC)
- Skin preparation (shaving, antiseptic application)
- Bowel preparation and bladder care
- Allergy checks and identification bands
- Positioning of patient – general principles

3. Principles of Asepsis and Antisepsis

- Definition and importance of asepsis
- Types of asepsis: medical and surgical
- Antiseptic agents used in OT (betadine, spirit, etc.)
- Methods of sterilization (moist heat, dry heat, chemical, gas)
- Disinfection procedures for surfaces and instruments

4. Sterilization Techniques and Equipment

- Sterilizers: autoclave, hot air oven, ethylene oxide (ETO), plasma sterilizer
- Packaging, labeling, and handling of sterile supplies
- Quality control in sterilization (Bowie-Dick test, chemical indicators, biological indicators)
- Storage and transport of sterile items

5. Surgical Hand Scrubbing

- Indications and steps of hand scrubbing

- Types of hand hygiene: routine, surgical, and antiseptic hand rub
- Gowning and gloving techniques (open and closed method)
- Principles of donning and doffing PPE

6. Operating Room Environment & Discipline

- Zoning in the OT: protective, clean, sterile, disposal
- Temperature, humidity, and air exchange standards
- Cleanroom behavior and traffic control
- Surgical team roles: surgeon, anesthetist, scrub nurse, circulating nurse, technician

7. Surgical Instruments and Their Preparation

- Types of instruments: cutting, grasping, clamping, retracting, suturing
- Cleaning and inspection of instruments
- Wrapping, sterilizing, and arranging on instrument trays
- Safe handling, passing, and care of instruments

8. Surgical Draping and Trolley Setup

- Types of drapes and draping techniques
- Principles of sterile field maintenance
- Preparing instrument trolley, linen trolley, and medicine trolley
- Sponge, swab, and sharps counting procedures

9. Positioning of Patient for Surgery

- Common surgical positions: supine, prone, lithotomy, Trendelenburg, lateral
- Positioning aids and padding
- Risks and complications related to positioning
- Pressure points and their protection

10. Incision and Suturing Techniques (Basic Concepts)

- Types of surgical incisions
- Basic principles of incision and hemostasis
- Types of sutures: absorbable/non-absorbable
- Suture materials and needles
- Techniques of suturing and wound closure (overview)

11. Intraoperative Care and Support

- Maintaining sterile field
- Monitoring patient during surgery
- Handling of surgical specimens
- Assisting in counts and documentation

- Handling of emergency situations

12. Postoperative Room Preparation

- Transfer of patient to recovery room
- Cleaning and disinfection of OT post-surgery
- Handling biomedical waste and linen disposal
- Decontamination of instruments and surfaces

13. Legal & Ethical Principles in Surgery

- Consent and confidentiality
- Patient rights and documentation ethics
- Role boundaries and professional behavior

Practical

➢ Preoperative Patient Preparation

- Demonstration of patient identity verification
- Preparation of consent forms and verification
- Practice of patient shifting techniques to OT
- Shaving and skin preparation of operative site
- Administration of enema or bladder care (simulated)
- Preoperative fasting protocols and checklist review

➢ Surgical Hand Washing Techniques

- Steps of **surgical hand scrub** (demonstration and repetition)
- Use of antiseptic solutions and brushes
- Practice of **gowning and gloving** (open and closed methods)
- Hand rub procedure with alcohol-based sanitizers

➢ Sterilization and Disinfection Procedures

- Cleaning, packing, and autoclaving of surgical instruments
- Operation of autoclave (loading, timing, temperature)
- Use of **chemical disinfectants** (glutaraldehyde, cidex, betadine)
- Bowie-Dick test and indicator checks for sterilization efficacy
- Handling and storage of sterile packs and trays

➢ Instrument Handling and Trolley Setup

- Identification and correct use of basic surgical instruments
- Practice of preparing **instrument trolley** and **drape packs**
- Arranging major/minor surgical sets (e.g., dressing, suture, laparotomy)

- Checking instrument function (scissors sharpness, forceps alignment, etc.)

➢ Surgical Draping Techniques

- Demonstration of different types of surgical drapes
- Proper folding and unfolding of drapes
- Draping patient in sterile manner for various procedures
- Draping of equipment/trolley for sterile procedures

➢ Patient Positioning for Surgery

- Positioning mannequins/dummies in:
  - Supine, Prone, Lithotomy, Trendelenburg, Lateral, Fowler's
- Padding pressure points and securing patient
- Use of positioning accessories (leg holders, arm boards, straps)

➢ Operating Room Protocols

- Cleaning and disinfection of OT before and after surgery
- Checking room humidity, temperature, and lighting
- Demonstrating traffic control and movement zones
- Conducting sponge, instrument, and needle counts

➢ Assisting in Intraoperative Procedures (Simulated)

- Handling instruments and passing techniques
- Practice of maintaining sterile field
- Mock procedure: gowning, gloving, assisting with incision and suturing (on dummies)
- Collecting and labeling surgical specimens correctly

➢ Postoperative Room Turnover

- Demonstration of OT cleaning protocols after surgery
- Biomedical waste segregation and disposal
- Decontamination of used instruments
- Preparation of OT for next surgery

➢ Emergency & Crash Cart Familiarization

- Checklist of crash cart items
- Locating emergency drugs and equipment
- Demonstration of emergency protocols in OT settings

SEMESTER – III

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DOTT301	PHARMACOLOGY	45 Min	1 Hrs.	50	50
DOTT302	STERILIZATION TECHNIQUES	45 Min	1 Hrs.	50	50
DOT303	BIOMEDICAL WASTE MANAGEMENT	45 Min	1 Hrs.	50	50
DOTT304	PRE & POST OPERATIVE PATIENT CARE	45 Min	1 Hrs.	50	50

PHARMACOLOGY

Theory

1. Introduction to Pharmacology

- Definition and scope of pharmacology
- Classification of drugs
- Sources of drugs: natural, synthetic, semi-synthetic, biological
- Dosage forms: tablets, injections, syrups, ointments, etc.
- Routes of drug administration: oral, IV, IM, SC, topical, rectal

2. Principles of Drug Action

- Pharmacokinetics:
  - Absorption
  - Distribution
  - Metabolism
  - Excretion
- Pharmacodynamics:
  - Drug-receptor interaction
  - Dose-response relationship
- Therapeutic index and half-life of drugs

3. Factors Modifying Drug Action

- Age, sex, weight
- Route and time of administration
- Genetic and pathological conditions
- Drug interactions (synergism, antagonism)

4. Adverse Drug Reactions (ADR)

- Types of adverse effects
- Drug allergies and anaphylaxis
- Toxic effects and overdose
- Drug dependence and tolerance
- Reporting of ADRs (pharmacovigilance basics)

5. Classification and Uses of Important Drug Groups

- **Analgesics & Antipyretics**
  - Paracetamol, NSAIDs, opioids
- **Anesthetics**
  - Local: lignocaine, bupivacaine
  - General: propofol, halothane, sevoflurane
- **Antibiotics & Antiseptics**
  - Penicillin, cephalosporins, metronidazole, ciprofloxacin
  - Povidone iodine, spirit, chlorhexidine
- **Cardiovascular Drugs**
  - Antihypertensives, vasopressors, antiarrhythmics
- **Respiratory Drugs**
  - Bronchodilators, antihistamines, mucolytics
- **Gastrointestinal Drugs**
  - Antacids, antiemetics, laxatives, antidiarrheals
- **Endocrine Drugs**
  - Insulin, oral hypoglycemics, corticosteroids
- **Anticoagulants and Hemostatics**
  - Heparin, warfarin, tranexamic acid
- **Emergency Drugs in OT**
  - Adrenaline, atropine, dopamine, sodium bicarbonate

6. Drug Storage and Handling

- Drug storage guidelines (temperature, light, humidity)
- Labeling and expiry date monitoring
- Narcotic drug handling and register maintenance
- Stock management and drug inventory in OT

7. Calculation of Dosages

- Metric system and units
- Dosage calculations (adult and pediatric)
- IV flow rate calculation
- Dilution techniques

8. Injection Techniques and Safety

- Aseptic precautions during injections
- IM, IV, SC injection techniques
- Safe disposal of needles and sharps
- Injection-related complications

9. Drug Regulations and Legal Aspects

- Schedule H and Schedule X drugs
- Narcotic Drugs and Psychotropic Substances (NDPS) Act (basics)
- Drug prescription and record-keeping ethics

Practical

➢ Drug Identification and Classification

- Identification of commonly used **OT drugs** (injectables, tablets, solutions)
- Reading and interpreting drug **labels, brand/generic names**
- Sorting drugs based on their **class (antibiotic, analgesic, anesthetic, etc.)**
- Understanding **schedules** of drugs (Schedule H, X, etc.)

➢ Drug Storage and Handling

- Demonstration of correct **drug storage** techniques:
  - Temperature-controlled storage
  - Light-sensitive drugs
- Handling **emergency and narcotic drugs**
- Checking **expiry dates**, batch numbers, and drug logs
- Drug inventory management in **Operation Theatre pharmacy**

➢ Routes of Drug Administration (Simulated)

- Practice on dummies/mannequins:
  - **Oral** administration techniques
  - **Intramuscular (IM)** injection technique
  - **Intravenous (IV)** cannulation and drug administration
  - **Subcutaneous (SC)** injection
  - **Topical, inhalational, rectal** drug use demonstration

➢ Dosage Calculation Practice

- Adult and pediatric **dosage calculation**
- **Dilution of injectable drugs** (e.g., antibiotics, adrenaline)
- **Infusion and IV flow rate** calculation using drip sets
- Preparation of **IV fluids** with additives (e.g., dextrose with potassium chloride)

➢ Preparation and Labeling of Drugs

- Drawing up medication in syringes with aseptic precautions
- Reconstitution of **powdered drugs** (e.g., ceftriaxone, streptomycin)
- Labeling of **drug vials and syringes** correctly
- Preparing and labeling **multi-dose vials** and **infusion bottles**

➢ Operation Theatre Drug Trolley Setup

- Arranging pre-operative, intra-operative, and post-operative drugs
- Maintaining **emergency/crash cart** drugs checklist
- Weekly check of **expiry dates and stock levels**
- Mock setup of **drug trolley for major and minor surgeries**

➢ Emergency Drugs Familiarization

- Identification and use of:
  - **Adrenaline, Atropine, Dopamine, Sodium bicarbonate**
  - **Lignocaine, Hydrocortisone, Diazepam**
  - **Oxygen and inhalational agents**
- Practice of **loading syringes and labeling** emergency drugs

➢ Adverse Drug Reaction & First-Aid Response (Simulated)

- Recognizing and reporting **adverse drug reactions (ADR)**
- Simulated management of:
  - **Anaphylactic shock**
  - **Drug overdose scenarios**
- First aid measures with **OT emergency kits**

➢ Safe Disposal of Drugs and Sharps

- Demonstration of:
  - Proper disposal of **expired drugs**
  - **Needle and syringe disposal** using safety boxes
  - Segregation of **pharmaceutical biomedical waste**

➢ Record-Keeping and Documentation

- Maintaining:
  - **Drug administration charts**
  - **Controlled drug registers**
  - **Daily usage logs for OT drugs**
  - **Incident report forms** for ADRs

STERILIZATION TECHNIQUES

Theory

1. Introduction to Sterilization

- Definition and importance of sterilization
- Difference between **sterilization**, **disinfection**, and **antisepsis**
- Role of sterilization in **infection control** in OT
- Types of microbial contamination

2. Principles of Sterilization

- Basic microbiological principles
- Physical and chemical agents of sterilization
- Factors affecting sterilization (time, temperature, humidity, load)
- Sterilization indicators (chemical & biological)

3. Methods of Sterilization

A. Physical Methods

- **Moist Heat Sterilization**
  - Autoclaving: principle, procedure, uses, and precautions
  - Pasteurization (low-temperature sterilization)
- **Dry Heat Sterilization**
  - Hot air oven: uses, limitations
- **Radiation Sterilization**
  - Ultraviolet (UV) rays
  - Gamma radiation (for industrial use)
- **Filtration**
  - Membrane and HEPA filters: principle and application

B. Chemical Methods

- Common chemical sterilants (formaldehyde, glutaraldehyde, ethylene oxide gas)
- Disinfectants used in OT (phenols, chlorine compounds, hydrogen peroxide)
- Surface and instrument disinfection procedures

4. Sterilization Equipment

- **Autoclave**: parts, function, cycle, temperature & pressure settings
- **Hot air oven**: parts, temperature control, loading process
- **ETO Sterilizer**: working principle, handling precautions
- **Plasma sterilizers** and **chemical foggers**
- Routine OT sterilization schedule

5. Sterilization of Surgical Instruments

- Classification of instruments (critical, semi-critical, non-critical)
- Cleaning, decontamination, drying, packing
- Wrapping materials and tray preparation
- Indicators (chemical strips, biological spores)

6. Sterilization of OT Linen, Drapes & Gowns

- Linen handling before and after use
- Pre-wash, drying, folding, and packing
- Sterilization cycle and storage guidelines

7. OT Room and Equipment Disinfection

- OT fumigation and fogging protocols
- Floor, wall, and surface cleaning standards
- Disinfection of anesthesia machines and suction units

8. Monitoring and Quality Control

- Sterilization logs and documentation
- Autoclave validation (Bowie-Dick test, spore test)
- Troubleshooting sterilization failures
- Biomedical waste segregation and disposal

9. Infection Control Guidelines

- WHO and NABH guidelines for sterilization
- Role of OT technician in infection control
- Hand hygiene and personal protective equipment (PPE)
- Maintaining sterility chain

Practical

➢ Identification of Sterilization Equipment

- Identify and demonstrate:
  - **Autoclave machine**
  - **Hot air oven**
  - **ETO (Ethylene Oxide) sterilizer**
  - **Plasma sterilizer**
  - **UV cabinet**
  - **Fumigation machine**
  - **Chemical indicator strips and biological spore vials**

➢ Autoclave Operation (Moist Heat Sterilization)

- Demonstrate:
  - **Loading and unloading** of instruments in autoclave
  - **Wrapping and packing** of items using sterile indicators
  - Setting correct **temperature (121°C), pressure (15 psi)** and time (15–30 min)
  - Reading **chemical indicators** and interpreting results
  - Daily autoclave testing: **Bowie-Dick test**, spore test
  - Recording sterilization logbook entrie

➢ Dry Heat Sterilization (Hot Air Oven)

- Operation of hot air oven
- Temperature setting (160–180°C) and time (1–2 hours)
- Loading of glassware, syringes, metal instruments
- Reading sterilization indicator tapes
- Post-sterilization cooling and storage

➢ Chemical Sterilization Techniques

- Preparation and handling of:
  - **Glutaraldehyde (Cidex) 2% solution**
  - **Formalin, phenol, hydrogen peroxide**
- Submerging instruments and devices for required durations
- PPE use during chemical sterilization
- Disposal of used chemical solutions
- Documentation of chemical sterilization logs

➢ ETO (Ethylene Oxide) Sterilization *(Observation/Demonstration-based)*

- Cycle phases: pre-conditioning, sterilization, aeration
- Safety precautions
- Reading ETO indicators
- Proper ventilation and monitoring post-process
- Recording in ETO logs

➢ Disinfection of Operation Theatre Area

- Cleaning and disinfection of:
  - OT tables, lights, trolleys, suction machines
  - Floors, walls, doors, air vents
- Fumigation process:
  - Chemicals used (formalin + $KMnO_4$ or fogging solutions)
  - Duration and sealing of OT
  - Clearance after exposure period
- Preparation of disinfectant solutions (sodium hypochlorite, Bacillocid, etc.)

➢ Sterilization of Linen, Drapes, and Gowns

- Washing, drying, folding techniques
- Packaging and labeling before sterilization
- Use of **linen wraps, drums, and indicators**
- Storage and shelf-life after sterilization

➢ Surgical Instrument Processing

- Pre-cleaning: rinsing, brushing, ultrasonic cleaning
- Disinfection or sterilization based on criticality
- Use of enzymatic detergents
- Instrument inspection before packing
- Tray assembly and labeling

➢ Sterility Testing & Quality Assurance

- Using **chemical indicators** (Class I, II, IV)
- **Biological indicators**: spore testing (Bacillus stearothermophilus)
- Interpreting test results
- Record maintenance: sterility logs, equipment checklists

➢ Biomedical Waste Management (Linked to Sterilization)

- Segregation of contaminated vs. sterilized items
- Safe disposal of sterilization wraps, indicator strips, expired disinfectants
- Handling of biohazardous waste after cleaning or sterilization

BIOMEDICAL WASTE MANAGEMENT

Theory

1. Introduction to Biomedical Waste

- Definition and meaning of biomedical waste (BMW)
- Classification and sources of biomedical waste
- Categories of BMW generated in:
  - Operation theatre
  - Laboratories
  - Wards and ICUs
  - OPDs and diagnostic centres
- Need and importance of proper waste disposal

2. Types of Biomedical Waste

- Human anatomical waste
- Animal waste
- Microbiology & biotechnology waste
- Sharps (needles, blades, scalpels)
- Discarded medicines and cytotoxic drugs
- Soiled waste (dressings, cotton, bandages)
- Liquid waste (blood, body fluids, chemicals)
- Incineration ash, chemical waste

3. Segregation of Waste

- Color-coded segregation system (as per BMW Rules)
  - **Yellow bag** – human waste, soiled waste
  - **Red bag** – contaminated plastic waste
  - **White container** – sharps
  - **Blue container** – broken glass, metallic implants
- Proper labeling and container use
- Time and place of segregation

4. Collection and Storage

- Guidelines for BMW collection
- Safe handling and transportation
- Use of trolleys, bins, covers, PPE
- Temporary storage rules – time limits
- Use of barcoding system in waste tracking

5. Treatment and Disposal Methods

- Autoclaving
- Microwaving
- Incineration
- Deep burial
- Shredding and chemical disinfection
- Liquid waste neutralization

6. Transportation and Disposal

- On-site vs. off-site treatment
- Role of **Common Biomedical Waste Treatment Facility (CBWTF)**
- Guidelines for vehicle transport (covered, leak-proof, labeled)
- Record keeping and daily logs

7. Personal Protective Measures

- Use of gloves, mask, apron, boots
- Hand hygiene practices
- Needle-stick injury management
- Post-exposure prophylaxis (PEP)

8. Regulatory and Legal Aspects

- **Biomedical Waste Management Rules (2016, amended 2018 & 2019)**
- CPCB (Central Pollution Control Board) guidelines
- Role of hospital infection control committee
- Penalties for non-compliance

9. Role of OT Technician in Waste Management

- Identifying waste types in OT
- Segregating and disposing waste immediately after surgery
- Sterilizing reusable instruments
- Coordinating with housekeeping and waste handlers
- Reporting any mishandling or exposure

10. Environmental and Health Hazards

- Health risks to patients, staff, public
- Air, water, soil pollution due to improper disposal
- Occupational exposure: infections (HIV, Hepatitis B & C, TB)
- Need for public health awareness and training

Practical

➢ Identification and Categorization of Biomedical Waste

- Hands-on identification of different biomedical waste types:
  - Soiled waste, sharps, pharmaceutical waste, plastics, etc.
- Differentiating **infectious** vs **non-infectious** waste
- Demonstrating understanding of waste generated in:
  - Operation theatre
  - Dressing room
  - Minor OT
  - ICU and ward settings

➢ Waste Segregation and Color Coding

- Practical demonstration of **waste segregation** at source
- Use of **color-coded bins/containers**:

  - **Yellow** – Human anatomical & soiled waste
  - **Red** – Contaminated recyclable waste (IV sets, catheters)
  - **White (translucent)** – Sharps container (needles, blades)
  - **Blue** – Broken glassware and metallic implants
- Use of **labels and biohazard symbols**
- Daily waste segregation checklist preparation

➢ Handling and Disposal of Sharps

- Safe collection and disposal of:
  - Needles, scalpels, glass syringes
- Use of **needle destroyer and hub cutter**
- Use of **puncture-proof white containers**
- Immediate disposal after use

➢ Collection, Storage & Transportation of BMW

- Internal transport of waste using:
  - Closed leak-proof trolleys
  - Bins with lids
- Observation/demonstration of:
  - Temporary storage procedures (max 48 hrs)
  - Labelling and weighing of waste
- Use of **barcoding and tracking** where applicable

➢ Treatment of Biomedical Waste (Observation-based)

- **Autoclave process** demonstration for waste disinfection
- **Chemical disinfection** using hypochlorite solution
- **Microwave** or **incineration process** (field visit or video demo)
- Shredding of plastics post-treatment

➢ Personal Protective Measures

- Wearing and removing PPE correctly:
  - Gloves, mask, apron, face shield, boots
- Hand washing technique after waste handling
- Disinfection of gloves and boots
- Reporting and first aid for accidental exposure

➢ Preparation of Disinfectant Solutions

- Preparation of:
  - **1% sodium hypochlorite**
  - **0.5% chlorine solution**
- Correct dilution, handling, and application on surfaces

- Labeling of chemical disinfectants

➢ Waste Handling in Operation Theatre

- Post-surgical waste handling (e.g., blood-soaked gauze, tubing)
- Separating reusable instruments for sterilization
- Coordinating with waste collection personnel
- End-of-day waste audit/checklist preparation

➢ Documentation & Reporting

- Maintaining **waste tracking logs**
- **Incident reporting** for needle-stick injuries or waste spillage
- Sample format filling:
  - Daily waste generation sheet
  - Treatment and disposal records

➢ Awareness & Communication

- Educating staff and attendants on proper segregation
- Displaying **color coding charts** and signage in OT
- Participating in **mock drills** or **infection control training**
- Demonstrating safe behavior during collection and transportation

PRE & POST OPERATIVE PATIENT CARE

Theory

1. Introduction to Perioperative Care

- Definition and scope of:
  - Preoperative care
  - Intraoperative care
  - Postoperative care
- Role and responsibilities of the OT technician
- Communication with surgical team and patient

2. Preoperative Patient Preparation

- General and specific patient preparation
- Informed consent – meaning and importance
- Pre-anesthetic assessment and checklist
- Skin preparation (shaving, cleaning, antisepsis)
- Bowel preparation

- Fasting (NPO) protocols and duration
- Removal of jewelry, dentures, contact lenses
- Preoperative medications – types and timings
- Psychological support and patient counseling

3. Transportation of Patient to Operation Theatre

- Method of shifting patients safely
- Use of wheelchairs, stretchers, trolleys
- Positioning of patient on OT table
- Preventing pressure sores and falls
- Vital sign monitoring during transport

4. Patient Positioning for Surgery

- Principles of patient positioning
- Different surgical positions:
  - Supine, Prone, Lithotomy, Trendelenburg, Lateral
- Positioning aids (pillows, straps, rolls)
- Precautions for patients with fractures, obesity, or disabilities

5. Intraoperative Patient Monitoring (Overview)

- Role of technician in assisting anesthetist
- Monitoring vital signs (BP, pulse, SPO_2, temperature)
- Recognizing signs of patient distress
- Handling patient under general, local or spinal anesthesia

6. Immediate Postoperative Care (PACU)

- Receiving patient in **Post Anesthesia Care Unit (PACU)**
- Airway management (oxygen, suction)
- Vital sign monitoring
- Positioning for recovery
- Pain management and sedation monitoring
- Checking surgical dressings, drains, IV lines

7. Observation for Complications

- Early signs of:
  - Hemorrhage
  - Shock
  - Infection
  - Respiratory distress
  - Nausea and vomiting
- Reporting to nurse/doctor immediately

- Role of OT technician in emergency support

8. Discharge from PACU

- Criteria for shifting to ward/ICU
- Documentation of patient condition
- Handover process to ward nurse
- Post-op instructions (diet, medication, movement)

9. Psychological Support

- Dealing with anxious or confused patients
- Communicating calmly and effectively
- Addressing fear, stress, and doubts pre/post surgery

10. Infection Prevention Measures

- Aseptic techniques before and after surgery
- Disinfection of patient's skin, equipment
- Use of PPE and hand hygiene
- Waste disposal related to patient care

11. Ethical and Legal Aspects

- Patient privacy and dignity
- Maintaining confidentiality
- Legal documentation of consent and care

Practical

➢ Preoperative Patient Preparation

- Demonstration of:
  - Obtaining and verifying informed consent
  - Removal of jewelry, prosthetics, dentures, nail polish
  - Assisting in **shaving** and **skin antisepsis**
  - Checking fasting (NPO) status
  - Administration of preoperative medications
  - Recording baseline vital signs (BP, pulse, temp, SPO_2)
  - Preparing patient physically and emotionally for surgery

➢ Patient Identification and Documentation

- Verifying patient identity using ID bands and case sheets
- Completing pre-op checklist
- Labeling and documentation for surgery

- Maintaining patient file accuracy

➢ Transportation of Patient to OT

- Practice safe transfer using:
  - Stretcher
  - Wheelchair
  - Trolley
- Demonstrating side rail usage, patient safety protocols
- Giving handover to OT team or anesthetist

➢ Patient Positioning on OT Table

- Assisting in positioning patient for various surgeries:
  - Supine, Prone, Lithotomy, Trendelenburg, Lateral
- Using support tools (pillows, foam pads, straps)
- Ensuring:
  - No pressure points
  - Proper alignment
  - Privacy and safety

➢ Intraoperative Monitoring (Basic Observation Role)

- Observing and assisting in:
  - Monitoring vital signs under anesthesia
  - Supporting anesthetist with suction, oxygen, and monitoring
- Understanding basic equipment: ECG, pulse oximeter, BP monitor

➢ Immediate Postoperative Care (PACU)

- Receiving patient post-surgery
- Monitoring:
  - Consciousness level
  - Respiratory effort
  - Pulse, BP, temperature, and oxygen saturation
- Assisting in:
  - Airway maintenance
  - Oxygen therapy setup
  - Checking and supporting surgical site, dressings, drains
  - Maintaining patient in recovery position

➢ Observation and Reporting of Postoperative Complications

- Identifying and reporting:
  - Bleeding
  - Vomiting

  - Signs of shock
  - Pain
  - Breathing difficulty
- Supporting emergency management under supervision

➢ Patient Comfort Measures

- Adjusting bed and patient position post-surgery
- Providing blanket, backrest, or pillows
- Assisting with oral hygiene or sponge bath if needed
- Ensuring a calm and quiet environment

➢ Infection Control and Hygiene Practices

- Performing hand hygiene before and after care
- Use of gloves, masks, gowns while handling surgical patients
- Cleaning and disinfecting patient area and reusable aids
- Handling of linens and biomedical waste

➢ Communication and Psychological Support

- Demonstrating communication with:
  - Conscious and semi-conscious patients
  - Anxious or confused individuals
- Explaining post-op instructions in simple language
- Using calm tone and non-verbal support

SEMESTER – IV

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DOTT401	HAND HYGIENE & PREVENTION OF CROSS INFECTION	45 Min	1 Hrs.	50	50
DOTT402	ASSISTING IN MAJOR & MINOR SURGERY	45 Min	1 Hrs.	50	50
DOTT403	ANAESTHESIA TECHNIQUES & DRUGS	45 Min	1 Hrs.	50	50
DOTT04	OBSTETRICS & GYNECOLOGY	45 Min	1 Hrs.	50	50

HAND HYGIENE & PREVENTION OF CROSS INFECTION

Theory

1. Hand Hygiene Techniques

- **Demonstration of WHO's 7-step handwashing technique** using soap and water
- **Demonstration of hand rub technique** using alcohol-based hand sanitizer
- **Indications for hand hygiene**:
  - Before and after patient contact
  - After contact with body fluids
  - Before aseptic procedures
  - After removing gloves

2. Surgical Hand Scrubbing

- Step-by-step demonstration of surgical scrub using antiseptic solution
- Use of scrub brush or sponge
- Timing (5–10 mins) and correct sequence
- Drying hands with sterile towel
- Proper gowning and gloving after surgical scrub

3. Use of Personal Protective Equipment (PPE)

- Donning and doffing of:
  - Sterile gloves
  - Gown
  - Mask
  - Cap
  - Eye shield or face shield
- Safe disposal of used PPE
- Avoiding contamination while removing PPE

4. Aseptic Techniques

- Creating and maintaining a sterile field
- Handling sterile instruments and materials
- Avoiding breaches in sterility during procedures
- Identifying contamination risks in the OT

5. Cleaning & Disinfection of OT Surfaces

- Cleaning protocols for:
  - OT table
  - Anesthesia trolley
  - Floor and walls

- Using disinfectants like:
  - Sodium hypochlorite
  - Glutaraldehyde
  - Isopropyl alcohol
- Cleaning frequency: pre-op, intra-op, post-op

6. Management of Spillages

- Cleaning of blood and body fluid spills
- Proper dilution and use of disinfectants
- Use of PPE while managing spills
- Waste disposal of contaminated mops, gauze, etc.

7. Biomedical Waste Segregation

- Practical identification and use of color-coded bins:
  - Yellow, Red, Blue, Black
- Disposal of:
  - Soiled dressings
  - Sharps
  - Plastic waste
  - Human tissue
- Needle stick injury protocol (basic steps and reporting)

8. OT Room Entry & Exit Protocol

- Hand hygiene before entering
- Changing into OT attire
- Shoe covers and caps
- Entry/exit flow to minimize contamination
- Entry restrictions (traffic control)

9. Monitoring and Reporting Cross-Infection

- Observation of possible infection sources
- Reporting infection signs in patients (e.g., wound discharge)
- Understanding isolation precautions
- Supporting sterile procedures under supervision

10. Environmental Hygiene

- Ventilation awareness (HEPA filters, laminar flow)
- Cleaning of reusable equipment (lenses, scopes)
- Routine surface culture sampling (if applicable in clinical setting)

Practical

➢ Basic Hand Hygiene Practices

- Practical demonstration of:
  - WHO's **7 steps of handwashing** with soap and water
  - Use of **alcohol-based hand rub**
- Timing and duration for each method
- Indications:
  - Before & after patient contact
  - After glove removal
  - Before sterile procedures
  - After exposure to bodily fluids

➢ Surgical Hand Scrub Technique

- Step-by-step practice of surgical scrub:
  - Use of antiseptic (e.g., chlorhexidine, povidone-iodine)
  - Duration (minimum 5 minutes)
  - Cleaning under nails and arms up to elbows
  - Use of sterile towel for drying
- Gowning and gloving after scrub

➢ Use of Personal Protective Equipment (PPE)

- Donning and doffing:
  - Surgical gloves (sterile & non-sterile)
  - Gowns, masks, caps, shoe covers
  - Face shields or goggles
- Sequence of PPE removal to prevent contamination
- Hands-on practice under supervision

➢ Aseptic Techniques

- Maintenance of a **sterile field** during procedures
- Handling of **sterile instruments**
- Prevention of contamination (do's & don'ts)
- Identification of breaks in sterility and corrective actions

➢ Cleaning & Disinfection of OT Areas

- Cleaning protocols for:
  - OT tables, trolleys, monitors
  - Walls, doors, floors
- Disinfectants: sodium hypochlorite, isopropyl alcohol, glutaraldehyde
- Surface contact time and safe handling of chemicals

➢ Biomedical Waste Segregation

- Practical training in:
  - **Color-coded bin system**
  - Disposal of contaminated items (gauze, gloves, sharps)
- Labelling and sealing waste containers
- Sharp injury management basics

➢ Cross-Infection Risk Management

- Observation of infection control breaches
- Role-play in identifying and reporting:
  - Infected wounds
  - Discharges
  - Fever spikes in post-op patients
- Isolation precautions (standard, contact, droplet, airborne)

➢ Decontamination of Reusable Instruments

- Cleaning using enzymatic agents
- Rinsing, drying, and preparing instruments for sterilization
- Checking for visible contamination and tagging

➢ Environmental Control in OT

- Routine air quality monitoring (if applicable)
- Use of **HEPA filters, laminar airflow** (observational demo)
- Control of OT foot traffic

➢ Documentation & Reporting

- Recording infection control checklists
- Maintaining hand hygiene compliance logs
- Reporting incidents (needle stick injuries, spills)

ASSISTING IN MAJOR & MINOR SURGERY

Theory

1. Preparation Before Surgery

- Verification of:
  - **Patient identity and consent**
  - **Surgical checklist** (WHO standard)
- Arranging:
  - **Surgical instruments & sets** as per procedure

  - **Sterile drapes, gowns, gloves, suction, cautery**
- OT preparation: lighting, suction, anesthesia machine check

2. Sterile Gowning and Gloving

- Proper technique for:
  - Wearing sterile gown and gloves
  - Assisting the surgical team in gowning and gloving
  - Maintaining sterility throughout the procedure

3. Setting Up Sterile Field

- Opening and organizing:
  - Instrument sets
  - Drapes, gauze, sutures, catheters, and other materials
- Maintaining asepsis and identifying contamination

4. Scrub Nurse Role in Minor & Major Surgeries

- Passing instruments using correct technique (neutral zone, palm-to-palm)
- Anticipating surgeon needs during procedure
- Counting of sponges, needles, and instruments (before & after surgery)
- Managing sutures, cautery, suction, and hemostatic agents

5. Circulating Nurse Role

- Assisting with:
  - Patient positioning and safety
  - Skin prep and draping
  - Adjusting equipment (light, monitors)
- Handling non-sterile supplies
- Coordinating with anesthesia team

6. Handling Surgical Specimens

- Receiving specimens in sterile containers
- Labelling and documenting properly
- Transferring to pathology/lab safely

7. Assisting in Minor Procedures (e.g., incision & drainage, suturing, cyst removal)

- Setting up minor procedure trays
- Supporting wound care
- Application of dressing under aseptic precautions

8. Instrument Care During and After Surgery

- Immediate post-use decontamination
- Safe transfer of used instruments
- Preparation for cleaning, disinfection, or sterilization

9. Post-Operative Procedure

- Assisting in:
  - **Safe patient transfer** to recovery room
  - Monitoring patient vitals under guidance
  - Dressing application & documentation
- Cleaning and disinfection of OT
- Disposal of biomedical waste

10. Emergency Support

- Preparing crash cart
- Basic CPR & resuscitation support (under supervision)
- Assisting during complications like bleeding, hypotension, cardiac arrest

11. Documentation & Reporting

- Surgical count record
- Operation note assistance
- Recording and reporting of adverse events or instrument breakage

Practical

➢ Pre-Operative Preparation

- Patient verification (name, ID, consent)
- Surgical checklist verification (e.g., site, side, fasting status)
- Pre-op skin preparation and hair removal (if required)
- Assist in patient positioning and transport to OT
- Psychological preparation and communication (under supervision)

➢ Sterile Techniques & Surgical Setup

- Hand scrub procedure (as per WHO/AORN standards)
- Gowning and gloving (self and assisting surgeon)
- Arrangement of sterile field and instruments
- Draping patient while maintaining aseptic technique
- Final verification before incision

➢ Instrument Handling & Passing

- Identification of common surgical instruments
- Instrument passing techniques (palm-to-palm, neutral zone)
- Handling electrocautery, suction, and retractors
- Use of hemostatic tools and materials (sponges, clamps)

➢ Scrub Nurse Duties

- Counting sponges, needles, and instruments (pre- and post-procedure)
- Assisting surgeon during incision, retraction, suturing
- Monitoring sterile field and reporting breaks in sterility
- Keeping instruments clean and organized during surgery

➢ Circulating Nurse Duties

- Transport of sterile packs, additional items
- Adjusting OT lights, temperature, and equipment
- Preparing and labeling surgical specimens
- Communicating with external teams (lab, radiology)
- Documentation assistance

➢ Minor Surgery Assistance

- Tray setup for procedures like:
  - Incision and drainage
  - Suturing of minor wounds
  - Dressing change
  - Cyst/lipoma excision
- Local anesthesia support
- Aseptic dressing application

➢ Post-Operative Duties

- Sponge, needle, instrument count
- Wound dressing under supervision
- Removing soiled linens and cleaning OT table
- Decontaminating and sending instruments for sterilization
- Assisting in patient transfer to recovery room
- Recording procedure details in OT register

➢ Emergency Management Support

- Ready setup for emergency procedures (e.g., laparotomy, cesarean)
- Assisting during sudden complications (e.g., hemorrhage, shock)
- Familiarity with crash cart and resuscitation equipment

- Basic CPR assistance (under supervision)

➢ Handling Surgical Specimens

- Labeling and securing samples (e.g., tissue biopsy, fluid)
- Formalin fixation (if needed)
- Communication with pathology department

➢ Waste Disposal & Infection Control

- Segregation of waste (biohazard, sharps)
- Handling contaminated materials and linens
- Ensuring disinfection of OT post-surgery
- Compliance with infection control protocols

ANAESTHESIA TECHNIQUES & DRUGS

Theory

1. Introduction to Anaesthesia

- Definition and purpose of anaesthesia
- History and evolution of anaesthesia
- Role of OT technician in anaesthesia support
- Classification: local, regional, general anaesthesia

2. Anatomy & Physiology Related to Anaesthesia

- Basic nervous system (CNS and PNS) overview
- Respiratory system: airways, lungs
- Cardiovascular system: heart and blood vessels
- Importance of organ perfusion and oxygenation

3. Pre-Anaesthetic Preparation

- Pre-anaesthetic assessment and checklist
- Informed consent and fasting guidelines
- Pre-medication: sedatives, antiemetics, anticholinergics
- Role of the technician in preparation

4. Types & Techniques of Anaesthesia

A. Local Anaesthesia

- Surface, infiltration, field block
- Common local anaesthetic agents (e.g., lignocaine)

- Advantages, limitations, and complications

B. Regional Anaesthesia

- Nerve block (brachial plexus, femoral nerve)
- Spinal anaesthesia
- Epidural anaesthesia
- Indications, techniques, monitoring, and complications

C. General Anaesthesia

- Stages of GA
- Induction, maintenance, emergence
- Airway management: oral airway, laryngeal mask, endotracheal tube
- Inhalational vs. intravenous anaesthesia

5. Anaesthetic Equipment & Supplies

- Boyle's apparatus
- Laryngoscope, oxygen cylinder, flowmeter, vaporizer
- Face masks, airway adjuncts (OPA/NPA)
- Endotracheal tubes, suction machines
- Anaesthetic trolley preparation

6. Anaesthetic Drugs

A. Induction Agents

- Thiopentone sodium
- Propofol
- Ketamine

B. Inhalational Agents

- Nitrous oxide
- Halothane
- Sevoflurane, Isoflurane

C. Muscle Relaxants

- Depolarizing: Succinylcholine
- Non-depolarizing: Vecuronium, Atracurium

D. Analgesics & Sedatives

- Morphine, Fentanyl
- Midazolam, Diazepam

E. Emergency Drugs

- Atropine
- Adrenaline
- Dopamine, Ephedrine
- Antihistamines

7. Monitoring During Anaesthesia

- Monitoring pulse, BP, ECG, oxygen saturation
- Capnography and temperature monitoring
- Depth of anaesthesia
- Documentation

8. Post-Anaesthesia Recovery

- Reversal of anaesthesia
- Extubation techniques
- Monitoring in PACU (Post Anaesthesia Care Unit)
- Complications: nausea, airway obstruction, hypotension
- Role of OT technician in recovery care

9. Complications of Anaesthesia

- Hypoxia
- Hypotension
- Aspiration
- Malignant hyperthermia
- Anaphylaxis
- Emergency response protocols

10. Legal & Ethical Aspects

- Consent before anaesthesia
- Recording drug usage
- Reporting complications
- Medico-legal importance of anaesthetic records

Practical

➢ Pre-Anaesthetic Preparation

- Prepare pre-anaesthesia checklists (PAC)
- Assist in patient identification and consent verification
- Fasting status confirmation
- Skin sensitivity test for local anaesthetic (if advised)

- Pre-medication assistance (sedatives, antacids, anticholinergics)

➢ Anaesthesia Equipment Setup

- Assembling and checking Boyle's apparatus
- Checking oxygen cylinder, pressure gauge, flow meter
- Setup of vaporizer, oxygen and nitrous oxide flow systems
- Laryngoscope inspection and bulb test
- Suction machine testing and tubing setup

➢ Airway Management Techniques

- Correct use of:
  - Face masks
  - Oral and nasal airways (OPA/NPA)
  - Laryngeal mask airway (LMA)
  - Endotracheal intubation assistance
- Assisting in extubation and suctioning
- Positioning patient for airway access

➢ Spinal & Epidural Anaesthesia Preparation

- Sterile trolley setup for regional anaesthesia
- Preparing and handling spinal/epidural needles
- Positioning of patient for spinal/epidural
- Handling of local anaesthetic drugs under supervision
- Observing and recording vitals during the procedure

➢ General Anaesthesia Assistance

- Preparation of IV line and fluids
- Drawing and labeling of induction drugs (Thiopentone, Propofol, etc.)
- Monitoring vital signs during induction
- Supporting ventilation using Ambu bag or machine
- Documentation of induction and maintenance times

➢ Anaesthesia Drug Handling

- Identification and dosage labeling of:
  - Local anaesthetics (e.g., Lignocaine)
  - Induction agents (Propofol, Ketamine)
  - Muscle relaxants (Succinylcholine, Vecuronium)
  - Emergency drugs (Atropine, Adrenaline)
- Safe handling and discarding of used syringes/needles
- Maintaining drug record sheet

➢ Monitoring During Anaesthesia

- Placement and monitoring using:
  - Pulse oximeter
  - ECG leads
  - Non-invasive BP monitor
  - Capnograph (if available)
- Observing changes in vitals and reporting to anaesthetist
- Assisting in documentation of anaesthetic records

➢ Emergency Situations Handling

- Ready setup of crash cart with:
  - Defibrillator
  - Emergency drugs
  - Airway supplies
- Assist in emergency airway management
- Assist during CPR and post-anesthesia resuscitation
- Report and document adverse reactions or complications

➢ Post-Anaesthesia Care Unit (PACU) Support

- Monitoring patients post-extubation
- Assessing airway patency, SpO_2, BP, consciousness level
- Documentation in recovery chart
- Supporting patient positioning and comfort measures
- Assisting in discharge from PACU as per protocols

➢ Aseptic Techniques & Waste Management

- Maintain sterility while assisting regional techniques
- Safe disposal of anaesthetic waste and sharps
- Cleaning and disinfection of equipment
- Re-stocking anaesthesia trolley

OBSTETRICS & GYNECOLOGY

Theory

1. Introduction to Obstetrics & Gynaecology

- Definition and scope of obstetrics & gynaecology
- Importance in operation theatre practices
- Role of OT technician in OBG procedures

2. Female Reproductive Anatomy & Physiology

- External & internal genital organs
- Structure and function of uterus, ovaries, fallopian tubes
- Hormonal regulation: estrogen, progesterone
- Menstrual cycle: phases and hormonal control

3. Pregnancy & Childbirth

- Signs and symptoms of pregnancy
- Antenatal care and monitoring
- Stages of labour
- Normal delivery process
- Role of OT technician in labor ward and cesarean section

4. Common Obstetric Surgical Procedures

- Cesarean section (C-section)
- Dilatation & Curettage (D&C)
- Medical Termination of Pregnancy (MTP)
- Ectopic pregnancy management
- Episiotomy and repair

5. Gynaecological Conditions & Surgeries

- Fibroids, ovarian cysts, endometriosis
- Hysterectomy: abdominal and vaginal
- Tubectomy & laparoscopic sterilization
- Prolapse uterus
- Diagnostic laparoscopy and hysteroscopy

6. Pre-Operative & Post-Operative Care

- Pre-operative preparation of OBG patients
- Positioning during surgeries (lithotomy, supine)
- Monitoring vitals, IV lines, and catheters
- Post-op recovery and patient support
- Infection control in obstetrics theatre

7. Anaesthesia in OBG Surgeries

- Commonly used anaesthesia: spinal, general
- Pre-anaesthetic assessment
- Role of OT technician in assisting anaesthesia

8. Instruments & Sutures in OBG

- Instruments for C-section, D&C, hysterectomy, etc.
- Suturing materials used in obstetric and gynaec surgeries
- Sterilization techniques of instruments

9. Emergencies in OBG

- Postpartum hemorrhage (PPH)
- Eclampsia and pre-eclampsia
- Uterine rupture
- Retained placenta
- Emergency C-section preparation

10. Legal & Ethical Aspects

- Legal issues in MTP
- Consent and documentation in obstetric surgeries
- Respect for privacy and confidentiality
- Female patient handling protocols

Practical

➢ Pre-Operative Preparation

- Preparation of obstetric patient for surgery (e.g., C-section)
- Shaving and cleaning of the perineal area
- Pre-operative medication administration (as per prescription)
- Verification of patient identity, consent, and fasting status
- Antiseptic painting and draping of surgical site

➢ Assisting in Obstetric Procedures

- Setting up OT for:
  - **Normal Vaginal Delivery (NVD)**
  - **Cesarean Section (C-section)**
  - **Episiotomy & Repair**
- Handling sterile instruments during delivery
- Assisting during umbilical cord clamping and placenta delivery
- Monitoring vitals and assisting anaesthetist during C-section

➢ Assisting in Gynaecological Procedures

- Preparing surgical trolley for:
  - **Dilatation & Curettage (D&C)**
  - **Medical Termination of Pregnancy (MTP)**

  - **Abdominal & Vaginal Hysterectomy**
  - **Laparoscopic sterilization**
- Assisting in patient positioning (e.g., lithotomy)
- Use of retractor, uterine sound, dilators, curettes
- Passing instruments under supervision to the surgeon

➢ Instrument Handling & Identification

- Identification and handling of:
  - Uterine sound, Sims speculum, Cusco's speculum
  - Tenaculum, vulsellum, sponge holding forceps
  - Doyen's retractor, bladder retractor
  - Uterine curette, dilators, artery forceps
- Cleaning, drying, and packing for sterilization

➢ Sterilization & Infection Control

- Disinfection and autoclaving of OBG instruments
- Use of appropriate PPE during delivery and surgery
- Safe disposal of biological waste including placenta
- Preparation of delivery packs and sterile linen
- Hand hygiene and perineal hygiene practices

➢ Assisting in Anaesthesia for OBG Cases

- Preparing spinal tray and positioning patient
- Monitoring vitals during spinal/general anaesthesia
- Ensuring suction machine, Ambu bag, and oxygen setup
- Assisting during intubation or regional block

➢ Post-Operative Care Assistance

- Transfer and monitoring of mother post-surgery
- Recording pulse, BP, bleeding, and consciousness level
- Ensuring uterine contraction and checking lochia
- Assisting in newborn care (cleaning, Apgar scoring)
- Helping in breastfeeding initiation if required

➢ Emergency Preparedness

- Readying OT for emergency C-section or PPH management
- Keeping blood transfusion setup ready
- Crash cart & emergency drug tray check
- Assisting during manual removal of placenta or uterine packing

➢ Documentation & Reporting

- Filling OT notes and surgical checklist
- Documentation of instruments used and surgical counts
- Maintaining delivery and surgical registers

➢ Communication & Ethical Practice

- Assisting with patient modesty and comfort
- Effective communication with surgical team
- Maintaining confidentiality during sensitive procedures
- Emotional support to anxious obstetric patients

LIST OF HOLIDAYS

TOTAL DAY IN 1 YEAR	365/366
SUNDAY	52 DAYS
SUMMER VACATION	10 DAYS
WINTER VACATION	10 DAYS
GAZETTED HOLIDAYS	23 DAYS
OTHER HOLIDAYS	20 DAYS
TOTAL HOLIDAYS	115 DAYS
TOTAL WORKING DAYS	365-115=250

TOTAL HOURS

THEORY CLASS PER DAY	3 HOURS
PRACTICAL CLASS PER DAY	4 HOURS
TOTAL HOURS PER DAY	7 HOURS
TOTAL HOURS IN 1 YEAR	250*7=1750
TOTAL HOURS IN 6 MONTHS	875 HOURS

Chairman

Paramedical Education & Training Council