

# NIMS UNIVERSITY, JAIPUR



## SYLLABUS

**DIPLOMA IN OPERATION THEATRE  
TECHNOLOGY (D.O.T.)**

**DIPLOMA IN OPERATION THEATRE TECHNOLOGY****EXAMINATION SCHEME****SEMESTER – I**

S.No.	Subject Title	Distribution of Marks			
		Theory	Practical	Viva	
1	Basics of Human Anatomy and Physiology	100	-		
2	Elementary Pathology and Microbiology	100	50		
3	Basic Obstetrics and Gynecology	100	-		
4	Soft Skills & Quality System Management	-	50		
	<b>TOTAL</b>	<b>300</b>	<b>100</b>		

**TEACHING AND EXAMINATION SCHEME****SEMESTER – II**

S.No.	Subject Title	Theory	Practical
		1	Basic of Surgery
2	Surgical Equipment and Machinery	100	50
3	Basics of Anesthesia Equipments and Drugs	100	50
	<b>TOTAL</b>	<b>300</b>	<b>150</b>

## TEACHING AND EXAMINATION SCHEME

### SEMESTER – III & IV

S.No.	Subject Title	Distribution of Marks				
		Theory	Practical	Viva	Internal Assessment	Sessional Work
1	Project on Hospital Training	-	-	50	100	-
2	Seminar on Project	-	-	50	-	
	<b>TOTAL</b>	-	-	<b>150</b>	<b>100</b>	-

36 Hours per week training in Hospital for 32 weeks.

Theory and Practical Periods of 60 minutes each.

Minimum pass marks: 40%

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – I

### BASICS OF HUMAN ANATOMY AND PHYSIOLOGY

#### RATIONALE:

Being a basic need of this Course, the subject of Human Anatomy & Physiology has been introduced at very introductory level. A depth knowledge is not required to the Operation Theatre Technician, but he/she must have an informative knowledge regarding the human anatomy, organs & systems and brief idea about their functioning.

**OBJECTIVE:** Students should be able to:

1. Identify various parts of human body.
2. Have brief knowledge of their functioning.

#### SYLLABUS:

Unit	Contents
1	Introduction to Anatomy: Structure of Cell and elementary tissues of body
2	Skeletal System: Bones, Types of Bones, Major Important Bones
3	Muscular System: Structure & types of muscle in human body, Bones of lower and upper extremities, Pelvic girdle, Thoracic cage, Joints
4	Introduction to Circulatory System: Structure of Heart, Names and position and main blood vessels Blood: Cells, normal count & functions, Circulation of blood, function of heart and blood vessels, pulse, blood pressure, blood volume, Steps of coagulation, Blood group, Rh, importance
5	Introduction to Lymphatic System: Circulation of lymph, Lymph Vessels, Lymph Nodes and lymphoid organs, Their Structure & Functions
6	Introduction to Digestive Systems: Parts of gastrointestinal tract and associated glands, Digestion of food in mouth, stomach & small intestines, Absorption of food, function of liver, gall bladder & Pancreas
7	Introduction to Respiratory System: Parts of Respiratory System, Function of lungs, disorders like Anoxia, Dyspnoea, Cyanosis, Artificial respiration
8	Introduction to Urinary System: Parts of Urinary System, function of kidney and urinary bladder
9	Introduction to Reproductive System: Anatomy of Male & Female Reproductive organs, Functions of Ovary & Testis
10	Anatomical introduction to Skin & Sense Organs: Eye, Ear, Nose
11	Introduction to Nervous System: Parts of brain, Spinal Cord, Peripheral Nerves, functions of CNS and Anatomic Nervous Systems, Cerebrospinal fluid – formation, composition and function
12	Name of endocrine glands and hormones secreted by them – major actions

#### Practical:

Minimum 10 assignments (with labeled Sketches) on above topics.

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – I

### ELEMENTARY PATHOLOGY AND MICROBIOLOGY

#### RATIONALE:

It is very much essential for Operation Theatre Technician to have introductory knowledge of various types of injuries, inflammations and hematopoetic & lymphoid system. Technician must know in brief the microbiology which is essential for knowing the methods of sterilization of various operation tools & equipment and its importance.

**OBJECTIVE:** Students should be able to:

1. Realize type of injury.
2. Know the various types of sterilization.
3. Have basic concept of transfusion.

#### SYLLABUS:

#### Section – I: Introductory Pathology

Unit	Contents
1	Cell injury and adaptation: Atrophy, hypertrophy, metaplasia, hyperplasia, classification of tumors, premalignant lesion
2	Types of inflammation & system manifestations of inflammation
3	Disorders of vascular flow & shock (Brief Introduction): Oedema, hyperemia or congestion, thrombosis, embolism, Infarction shock, Ischemia, Over hydration, Dehydration
4	The Response to infection: Categories of infectious agents, host barriers to infection, how disease is caused, inflammatory response to infectious agents
5	Haematopoetic and Lymphoid System: Haemorrhage, various type of Anaemia, leucopenia, leucocytosis, bleeding disorders coagulation mechanism

#### Section – II: Introductory Microbiology

Unit	Contents
6	Introduction to Microbiology: Discovery of micro organisms, Classification and general characteristics of micro organisms, Structure of the Bacterial Cell
7	Principles of Microbial Control: Sterilization, importance of sterilization in OT techniques various methods – physical UV radiation, alcohols and heavy metals, Autoclave structure functioning control and indicators
8	Introductory Immunology: Antigen-antibody reaction anaphylaxis hypersensitivity
9	Introductory knowledge of Virology: Important disease caused by different viruses & their mode of infection
10	Basic concepts of Transfusion Medicine – Blood Groups, Antigen, Antibody, Transfusion reactions.

**(Minimum 20 Experiments on following topics)**

#### Practical:

- Fumigation of Operating Room
- Sterilization & disinfection of surgical instruments and autoclaving
- Sterilization by autoclave method, Types of autoclave

- Sterilization by Hot air oven
- Disinfection by formalin
- Dispatching of Patho-sample, Blood sample & Post operating Specimen
- Ultraviolet disinfection
- Antiseptic solutions – savlon, dettol, Betadine, spirit, carbolic acid etc.

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – I

### BASIC OBSTETRICS AND GYNAECOLOGY

#### RATIONALE:

To work as an Operation Theatre Technician, the introductory knowledge of Obstetrics & Gynaecology is essential, hence this subject is introduced to give a brief on introductory knowledge, which helps the technician to take some precautionary measures to keep required operation tools ready accordingly in advance.

**OBJECTIVE:** Students should be able to:

1. Understand the type of delivery and disorders.
2. Keep the instruments and tools required ready well in advance.

#### SYLLABUS:

Unit	Contents
1	Pregnancy
2	Normal delivery, forceps delivery, twin pregnancy
3	Episiotomy, caesarian delivery
4	Birth control methods and contraception
5	Medical termination of pregnancy
6	Anatomy of female sex organs
7	Gynaecological examination and diagnosis
8	Diseases of vulva, diseases of vagina, STD in female
9	Disorders of menstruation
10	Prolapsed uterus, Fibromyomas of uterus, endometriosis, various ovarian tumors
11	Gynae examination instruments, speculum & dilators
12	Instruments of common gynecological and obstetrics procedures or surgery

**(Minimum 20 Experiments on following topics)**

#### Practical:

- Identification of instruments and their specific use in the surgery
- Surgical assistance in the Obstetrics & Gynaecological operations
- Instrument for normal delivery & caesarian section, MTP, Hysterectomy, preparation of trolley



# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – I

### SOFT SKILLS & QUALITY SYSTEM MANAGEMENT

#### RATIONALE:

In every field of knowledge, the skill of communication is very much essential at every step; as well as for further development the understanding and awareness of Quality System Management is also important. Thus, it is a basic need of the Curriculum to introduce this subject.

**OBJECTIVE:** Students should be able to:

1. Communicate effectively.
2. Develop own personality.
3. Understand significance of Quality System Management.

#### SYLLABUS:

Unit	Contents
1	Essentials of Grammar: Parts of Speech, Punctuation, Vocabulary Building, Phonetics
2	Office Management: Types of Correspondence, Receipt and Despatch of Mail, Filing Systems, classification of Mail, Role & Function of Correspondence, MIS, Managing Computer
3	Letter & Resume Writing: Types of Letters – Formal/Informal, Importance and Function, Drafting the Applications, Elements of Structure, Preparing the Resume, Do's & Don'ts of Resume, Helpful Hints
4	Presentation Skills: Importance of Presentation Skills, Capturing Data, Voice & Picture Integration, Guidelines to make Presentation Interesting, Body Language, Voice Modulation, Audience Awareness, Presentation Plan, Visual Aids, forms of Layout, Styles of Presentation
5	Interview Preparation: Types of Interview, Preparing for the Interviews, Attending the Interview, Interview Process, Employers Expectations, General Etiquette, Dressing Sense, Posture & Gesture
6	Group Discussion & Presentation: Definition, Process, Guidelines, Helpful Expressions, Evaluation

#### Note:

1. Every student shall be given 15 minutes of presentation time & 15 minutes of discussion on his/her presentation.  
The student will be evaluated on the basis of:
  - His/her presentation Style
  - Feedback of Faculty & Students
  - General Etiquette
2. Proficiency in letter drafting (Formal & Informal)
3. Preparing Resume
4. Group discussion on technical & related topic
5. Group discussion on general topic

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – II

### BASIC OF SURGERY

#### RATIONALE:

Being an Operation Theatre Technician, basics of surgery must be known and therefore this subject is introduced to have basic concepts of surgery. It gives a basic knowledge of tumors, benign, ulcers etc. It also gives an idea of types of fractures, head injuries and their management. So that, a technician can understand the role and use of instruments & tools used for minor and major operations.

**OBJECTIVE:** Students should be able to:

1. Understand the basic principle of surgery.
2. Know the role of various instruments and their use in minor & major surgeries.

#### SYLLABUS:

Unit	Contents
1	Introduction of surgery and basic principles of surgery
2	Tumors, benign and malignant, cyst, ulcers, sinuses, fistula, differential diagnosis of cyst and tumor
3	<b>Fractures and Dislocation:</b> Classification of fracture, management, fixation, reduction, immobilization, principles of closed reduction, artificial prosthesis
4	<b>Comparative and Surgical Anatomy:</b> Investigation of breast, benign disease, carcinoma of breasts, treatment of carcinoma of breast, mastectomy
5	<b>Head Injury:</b> Common manifestation, management of patient, surgical interventions
6	Cleft lip & palate, acute appendicitis, urethral strictures
7	<b>Different Surgical Instrument:</b> Instruments used in major surgical operation including Biliary, Tract Surgery, Anorectal Surgery, Urological Surgery, Orthopedic Surgery Instruments, Obstetrics and Gynaecological surgery instruments, Plastic Surgery Instruments

#### Practical:

Demonstrating the use of every medical equipment as per theory syllabus.

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – II

### SURGICAL EQUIPMENT AND MACHINERY

#### RATIONALE:

This subject is very much essential for Operation Theatre Technician to have knowledge of various types of equipment and machinery required to carry out any operation successfully. It also give an important knowledge about the specific instrument and preparation of surgery. Even, this subject also gives the information about the care, washing sterilization & maintenance of surgical instruments. The Term-Work of this subject must comprise of various aspects of surgery as mentioned therein the curriculum, because it will give an exact idea of the work which the technician is supposed to do as well as expected by the concerned surgeon.

**OBJECTIVE:** Students should be able to:

1. Understand the role of every tool & instrument used for minor as well as major surgery.
2. Take care of all required surgical tools & instruments and also to carry out effective washing, sterilization and proper maintenance of the same.

#### SYLLABUS:

Unit	Contents
1	Storing Sterilization and disinfections in O.T.
2	General Surgical Principles and Instruments: The surgical patient, operation room technique
3	Instrument used for preparing Surgicals: Cheatles forceps, rampely's sponge holding forcep, mayo's towel clip, esmach's bandage, Simple tourniquet, Pneumatic tourniquet Incision making method and instruments: Bard parker knife handle, major abdominal incision, artery forceps and their types, instruments used in homeostasis, Kocher's forceps, electric cautery Retractors: Single hook retractors, Czerny's retractor's nerve hook retractors, Morris retractors, deaver's retractors
4	Care, washing, sterilization and maintenance of: Endoscopic Instruments, Orthopedic Power instruments, Advanced OT tables & their attachment
5	Types, setting & Uses of: Image intensifier, Portable X-ray Machine, Cautery Machine, suction machine, pulse oxymeter, cardiac monitor
6	Wound Management: Scissors and its types, sucking material and techniques, disinfectants and irritants, dressing procedures, different types of bandages, surgical needle & needle holders, various types of suture material

#### Practical:

1. Identification & Demonstration of working of the equipment
2. Fumigation
3. Cleaning and disinfection of articles
  - Packing articles for sterilization
  - Sterilization of equipments
4. Care, Sterilisation & lubrication of: Orthopedic Power instrument
5. Setting up table for various surgeries
6. Scrubbing, gloving & gowning
7. Handling of image intensifier & portable X-ray Machine, Cautery Machine: Types, Settings & uses

8. Position for orthopedic patients and other surgeries
9. Advanced O.T. Tables & their attachment as well as their maintenance
10. Assisting with Anaesthesiologist
11. Observing and monitoring the patient in recovery room
12. Terminal disinfection

**(Repeat above experiments in the subsequent practicals with different cases/situations.)**

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – II

### BASICS OF ANAESTHESIA EQUIPMENTS AND DRUGS

#### RATIONALE:

The introduction of this subject of 'Basics of Anaesthetic Equipment & Drugs' is essential for the operation theatre technician, as the technician must be aware of such anaesthetic equipment as well as the drugs prescribed by the concerned Physician and/or Surgeon for the patient immediately or after operation.

**OBJECTIVE:** Students should be able to:

1. Identify as well as to understand the use of the anaesthetic equipment used for/during surgery.
2. To understand the various types & use of sedative, hypnotic, pre-anaesthetic and other groups of drugs.

#### SYLLABUS:

Unit	Contents
1	Boyle's Machine & its functioning
2	Boyle's Vaporizer
3	Magill's breathing circuit, Bains breathing circuit, pediatrics anaesthesia circuit
4	Gas cylinder and flow meters
5	Carbon dioxide absorption container
6	Suction apparatus – foot operated, electrically operated
7	Ambubag laryngoscope hand tracheal tubes
8	Catheters, face masks, venti mask drugs
9	General Principles: Pharmacological classification of drugs, Route of drug administration, precautions in administration, principles of drug toxicity, prevention and treatment of poisoning adverse drug reaction
10	Sedatives & Hypnotics: Barbiturates morphine and others
11	Important groups of drugs, NS and other IV fluids, ibuprofen, aspirin, antimicrobial agents antiallergic drugs, antidiuretics
12	Pre-anesthetic medication
13	Local Anesthetic agents
14	Spinal Anesthetic agents
15	General Anesthetic agents

#### Practical:

Identification & demonstration of the working of equipments & as per theory syllabus Demonstrating the use of medical equipment as per theory syllabus.

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – III & IV

### PROJECT ON HOSPITAL TRAINING

#### **RATIONALE:**

The main aim of the hospital training is to expose the students to hospital environment so that many faceted development of the students can be achieved under various skills of domains such as Personal, Social, Professionals & life long learning. The students will be benefited a lot by this exposure to various Operation – surgical units – the actual operational use their specific requirements & use as well as maintenance procedures followed for various operations in the respective Operation Theatres of hospital, where all sorts of patients are operated. This hospital training experience will add values in their attitudes such as value for health, work commitment, hard working, honesty, problem solving, punctually, loyalty and independent study.

#### **IMPLEMENTATION STRATEGY:**

The students are placed in general hospitals for one year duration. During the tenure of the hospital training, the students are expected to gain actual working experience and try to make themselves familiar with the Operation Theatre activities and environment and hence they are to be on rotation to various types of surgical operation theatre such as

1. General Surgery
2. General Medicine
3. Orthopedic Surgery
4. Obstetrics and Gynaecology
5. Optional Ophthalmic / ENT / Endoscopy / Neurosurgery / Plastic Surgery / Burn unit

The students have to keep day to day record of their actual work done during hospital training and same is to be compiled along with the information about the same.

The project report is to be assessed by external and internal examiners equally for total of 100 marks.

#### **Detailed guidelines for a period of one year (Third & Fourth Semester)**

1. List of mandatory jobs to be performed by every student during the project on hospital training.
2. Guideline for preparing project report.
3. Seminar delivery duration & period.

The students are placed in general hospitals for one year duration i.e. for 34 weeks of actual job work training to gain real experience, and are kept in rotation to various types of surgical operation theatre such as:

1. General Surgery
2. Endoscopies
3. Orthopedic
4. Gynaecological
5. Ophthalmic

# DIPLOMA IN OPERATION THEATRE TECHNICIAN

## SEMESTER – III & IV

### SEMINAR ON PROJECT

**RATIONALE:**

This subject of delivery the seminar on the hospital training experiences is intended to equip the students with the necessary basic skills of communications as well as to develop their ability to express the subject knowledge which they have acquired during the entire tenure of two semesters of classroom teaching and one semester of hospital training. This also helps to build the confidence amongst the students, which certainly help them in future to make their excellent career as self developer and entrepreneur as well as to encash job opportunities.

**IMPLEMENTATION STRATEGY:**

The students are required to delivery seminar on the topic of their experiences in Operation Theatre i.e. actual work done by them in that respective O.T. department during their tenure of hospital training of 4 months duration.

The duration or time allotted for students for delivering a seminar is 10 minutes only and in this stipulated time period he/she has to present his/her Operation Theatre experiences about the actual work done by him/her in respective departments during hospital training.

OR

Seminar on any recent development related to medical field.

## Appendix-I

## LIST OF REFERENCE BOOKS:

Authors	Title	Year of Publication	Place of Publication & Publisher
Rob Charles & Smith Rodney	Rob & Smith's Operative Surgery – Part I	1989	Butterworths, Indian Edition – K.M. Varghese Co.
Rob Charles & Smith Rodney	Rob & Smith's Operative Surgery – Part II	1989	Butterworths, Indian Edition – K.M. Varghese Co.
Brigden, Raymond J.	Operating Theatre Technique	1980 (4 <sup>th</sup> Ed.)	Edinburgh, Churchill Livingstone
Buxton Hopkins, D.A.	Anaesthesia, Recovery and Intensive Care	1975 (2 <sup>nd</sup> Ed.)	English University Press, Hodder & Stoughton
Anderson R.J. and Schrier R.W.	Clinical Use of Drugs in Patients with Kidney and liver disease	1981	W.B. Saunders Co.
Ostlere, Gordon & Bryce-Smith, Roger	Anaesthetics for Medical Students	1975 (7 <sup>th</sup> Ed.)	Edinburgh, Churchill Livingstone
P.B. Godkar & D.P. Godkar	Textbook of Medical Laboratory Technology	2003 (2 <sup>nd</sup> Ed.)	Bhalani Publishing House
Guyton A.C. & Hall J.E.	Textbook of Medical Physiology	2000 (10 <sup>th</sup> Ed.)	W.B. Saunders, Philadelphia
Fortunato N.H.	Berry & Kohn's Operating Room Techniques	2000	Mosby Inc. St. Louis
Meeker M.H. & Rothrock J.C.	Alexander's Care of patient in surgery	1999 (11 <sup>th</sup> Ed.)	Mosby Inc. St. Louis
Suzanne C, Smeltzer & Brenda Bare	Medical Surgical Nursing	2004 (10 <sup>th</sup> Ed.)	Lippincott Williams & Wilkins
Rose B.D.	Pathophysiology of renal diseases	1981	McGraw Hill Inc.
Schrier R.W.	Renal and electrolyte disorders (edition 2)	1980	Little Brown & Co.
Alspach JG	Core Curriculum for Critical Care Nursing (4 <sup>th</sup> Edition)	1991	WB Saunders
Bates BA	A Guide to Physical Examination and History Taking (6 <sup>th</sup> Edition)	1995	JB Lippincott