



SunRise University

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SUNRISE UNIVERSITY

RAJASTHAN

DETAILED SYLLABUS

DOTT

(DIPLOMA IN OPERATION THEATER TECHNOLOGY)

FIRST SEMESTER

PAPER CODE	PAPER NAME	INTERNAL	EXTERNAL	TOTAL
DOTT101	General Anatomy	40	60	100
DOTT102	Physiology	40	60	100
DOTT103	Patho & Micro	40	60	100
DOTT104	Business Communication	40	60	100
PRACTICAL				
DOTT105	Practical	60	40	100
Total		420	480	900

SECOND SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DOTT201	Basic Science (PCB)	40	60	100
DOTT202	Introduction to Operation Theatre	40	60	100
DOTT203	Pharmacology	40	60	100
DOTT204	Environment Science	40	60	100
PRACTICAL				
DOTT205	Practical	60	40	100
Total		420	480	900

THIRD SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DOTT301	Surgical Procedures Advanced	40	60	100
DOTT302	General Surgical Principles	40	60	100
DOTT303	Surgical Instrument & Monitoring	40	60	100
DOTT304	Principles of Management	40	60	100
PRACTICAL				
DOTT305	Practical	60	40	100
Total		380	420	800

FOURTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DOTT401	Sterilization and Disinfection	40	60	100
DOTT402	Anesthesia Administration & Care	40	60	100
DOTT403	Pre and post Op Patient Care	40	60	100
PRACTICAL				
DOTT407	Practical	60	40	100
Total		380	420	800

1ST SEMESTER

GENERAL ANATOMY (DOTT-101)

Anatomy – Gross Anatomy of the following :

1. Human body & Anatomical terms & cell structure.
2. Musculo – skeleton systems, skull, vertebral column, pelvic bones, extremities, rib cage.
3. Respiratory systems – Nose, larynx, trachea, lungs and thoracic cavity.
4. Cardio-vascular system – Heart, major arteries & veins, renal & portal system.
5. Alimentary system – mouth, pharynx, oesophagus, stomach, small intestine & large intestine, spleen, liver, gall bladder, pancreas.
6. Brain, spinal chord, menigeal coverings.
7. Sensory organs – Skin, eyes, ears, tongue, nose.
8. Urinary system – kidney, ureter, urinary bladder-urethra
9. Reproductive system – male & female.

PHYSIOLOGY (DOTT-102)

Physiology – Gross physiology of the following system:

1. G.I.T. system
2. Urinary system – kidney, formation of urine and role in electrolyte balance.
3. Muscular system – structure & function of cardiac muscles, skeletal muscle, involuntary muscles.
4. Cardio Vascular system – cardiac output, circulatory system, BP.

5. **Respiratory system – Pulmonary system, exchange of gases, airway resistance.**
6. **Central nervous system – conduction of nerve impulse, peripheral and automatic nervous system.**
7. **Endocrine glands – broad idea about metabolic processes, fluid and electrolyte balance, Pituitary, thyroid, parathyroid and adrenal gland.**
8. **Maternal and neonatal physiology.**
9. **Organs of special senses – skin, ear, eye, tongue & nose.**
10. **Pressure loss due to abrupt change in bore of tube, Principle of flow meters and its types Bernoulli Principle & its application.**

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PATHO & MICRO (DOTT-103)

PATHOLOGY

1. Hb—synthesis & degradation. Abnormal haemoglobin, Oxygen carrying.
2. IV fluids.
3. Bloodgroups & blood transfusions, B.T., C.T.
4. Co-agulation & bleeding disorders, blood transfusion reactions
5. Sample collection, labeling & sending it to lab.
6. W.B.C., TLC and DLC, ESR and PCV

MICROBIOLOGY

1. Introduction
2. Different types of infections, pathological bacteria, viruses, actino- mycosis & fungi
Nosocomical infections.
3. Universal precautions for AIDS, HBV etc.
4. Infection in Operation Theatre. HAI
5. Waste disposal.
6. Sample collection, labeling and sending it to lab.
7. Types of disinfections & sterilization
8. Antigen and antibody reaction.

2. Anesthesia Techniques

- Aims and objectives
- Types of Anesthesia & Analgesics (routes im, iv, skin patches, suppositories etc.
- General anesthesia
- Local blocks
- Regional, spinal, epidural and nerve blocks

3. Drugs used in Anesthesia

- Inducing agents
- Muscles relaxants & reversal
- Inhalational anesthesia
- Sedatives, hypnotics, analgesics
- Anticholinergic
- Antihypertensive

- Antiemetic
- Drugs used in obstetrics
- Anticholinergic
- Antihypertensive
- Antiemetic
- Drugs used in Obstetrics
- Anticholinesterase drugs
- Antiallergic drugs
- Antiallergic drugs
- Steroids
- Drugs used in cardiac arrest, shock
- Miscellaneous drugs
- Drugs used in local blocks, spinal & epidural

4. Gases

- Oxygen, Nitrous Oxide, Carbon dioxide, Cyclopropane, Nitrogen
- Cylinders – handling and care. Types and size of cylinders
- Central gas pipe line.

5. Boyle's apparatus

- Face mask, vaporizers etc.
- Supply of compressed gases, Liquid oxygen storage and supply system, Methods of reducing these gases to workable pressure, structure of reducing valve.
- Methods of vaporizing volatile anesthesia agents, Maintenance & safety precautions.
- Types of circuits – open, semiclosed & closed circuits.
- Non rebreathing valve, T-piece, To & FRO system
- Type of valve used in different circuits.
- Resuscitators (Ambu bag, silicon bag etc.)

6. Intubating Equipments

- Laryngoscopes, Endotracheal tubes, tube connections, Magill forceps, bite block equipment for difficult intubation, stylet, boggie, Mc Coy laryngoscope, LMA, fibre Optic bronchoscope, air ways, pharyngeal airways, combi tube, crico-thyroidotomy Selection, cleaning & sterilization.

7. Monitoring Equipment

- Stethoscope, B.P. apparatus, oesophageal stethoscope, Pulse Oximeter, Multimonitor, ECG and capnometer, gas monitor, temperature

8. Instruments used in Anesthesia

- Anesthesia Ventilator, infusion pump suction catheters, canulae, spinal & epidural needles.

9. IV Fluids

- Preparation of L.V. drip, types of fluid, precautions, allergic reaction, Blood transfusion.

10. Setting of Anesthesia trolley for different types of anesthesia

- Setting trolley for CRP Training in basic life support, advance life support.

11. Suction machine, diathermy machine, Defibrillator, Baby resuscitation trolley, trolley for difficult intubation.

12. Anesthesia in different surgeries

- G.I., Genitourinary, ENT, eye, neuro, plastic, obstetric & gynae, paed neonates. Cardio-pulmonary, ortho etc.

13. Technical terms used in Anesthesia.

14. Anesthesia in special problematic surgical/diagnostic procedures.

15. Blood warming, preservation, checking.

16. Pain path ways, techniques and relief, various nerve blocks and agents.

17. Recent advances.

BUSINESS COMMUNICATION (DOTT-104)

Communication-Defining communication, Process of communication, Communication Model, Objectives of communication, Principles of communication, Importance of Business communication, Importance Feedback.

Channels of communication, Types of communication, Dimensions of communication, Barriers to communication Verbal, Non-Verbal, Formal, Informal communication.

Fundamental of Business writing, Format of Business, Types of Business letter, Inquiry letter, complaint letter Persuasive letter, Proposal, Report Writing

Employment Messages Writing Resume, Application letter, Writing the opening paragraph, Writing the closing paragraph, summarizing.

Barriers to Effective Communication and ways to overcome them, Listening: Importance of Listening, Types of Listening , Barriers to Listening and overcoming them, Listening situations, Developing Listening Skills

2ND SEMESTER

BASIC SCIENCES (PCB) (DOTT-201)

Applied Physics + Chemistry + Basic Computer

Applied Physics:- Energy, Potential Energy, Kinetic Energy, Mechanical efficiency

- i. Basic principles of mechanics like Concept of Force, pressure, mass weight, and properties of solid, liquids & gases.
- ii. Basic principles of Electricity as applied in the field of Operation Theatre, ICU, CSSD.
- iii. Concept of static electricity, concept of charge, potential current, power, resistance.
- iv. Basic principles of heat, concept of temperature, its measurement, ways of dispersion of heat.
- v. Effect of heat, rise or fall in temperature, its effect on human bodies, methods of prevention of heat loss, rise or fall in temperature, its effect on human bodies, methods of prevention of heat loss, Thermometry, thermistor, thermo-couple.
- vi. Concept of Volume, specific gravity, density, concentration of solutes.
- vii. Gas law & their practical implication in the field.
- viii. Compressed gases & filling ratio, Principles of pressure regulators, flow of gases, fluids viscosity, law of laminar, flow rate, Turbulent flow, critical Reynolds's number, Resistance to Laminar & Turbulent flow.
- ix. Pressure loss due to abrupt change in bore of tube. Principle of flow meters and its types.

Applied Chemistry:-

Organic chemistry: Nomenclature of compounds containing, Halogens, Alcohols, and Phenols, Ethane, Propane, ether, aldehydes and ketones, carboxylic acid, cyanides, Isocyanides, Nitrogen compounds and amines. Homogenous and Heterogeneous aminoacids, peptides proteins and enzymes, carbohydrates and their metabolism.

Computer Science:-

Introduction to programming

- Representation of information- Basic logic, design and memory, devices and data communication.
- Computer oriented numerical and statistical methods—arithmetic, interactive method, solution of simultaneous linear equation, interpolation, approximation, numerical differentiations and integration, statistics methods, for casting tech., relevant in BD, information extraction,

INTRODUCTION TO OPERATION THEATRE (DOTT-202)

Principles of sterilization of O.T. – fumigation, carbolization, zonal practices, Anesthesia machine

- **Anesthesia drugs**
- **Intubating equipment**
- **I.V. infusion – preparation of drip, allergic reactions**
- **Suction machine**
- **Understanding sterile techniques, gowning & wearing of gloves**
- **Different types of anesthesia**
- **Taking pulse, B.P., monitoring equipment, making positions for surgeries and anesthesia**
- **Airway management**
- **Injections**
- **O₂ therapy**
- **Table and positions, bandaging plasters**
- **Pre op & post op management of patient**
- **Technique of operating autoclaves**
- **Instrument & linen preparation**
- **Record keeping**

O.T. Equipments

- **Maintenance of special surgical equipment**
- **Types of scopes eg. Bronchoscope, fibre optic scope, laryngoscope, cystoscope.**
- **Microscope – Care & maintenance**
- **Techniques of handling of laser based equipment.**
- **Ventilation of O.T., Air conditioning & control of pollution**
- **Defibrillator—mechanisms, care & maintenance, uses, safety & Precautions**

PHARMACOLOGY (DOTT-203)

1. Introduction of Pharmacology
2. General principal of Pharmacology
3. Pharmacokinetics
4. Pharmacodynamics
5. Pharmacology of the Autonomics nervous system
6. Pharmacology of adrenergic drugs
7. Pharmacology of cholinergic drugs
8. Pharmacological management of congestive heart failure
9. Pharmacology of antiseizure agents
10. Serotonin pharmacology
11. Pulmonary pharmacology asthma

ENVIRONMENT SCIENCE (DOTT-204)

Unit 1: History of Earth (5 lectures) Formation of the Earth: formation and composition of core, mantle, crust, atmosphere and hydrosphere; chemical composition of Earth; geological time scale and major changes on the Earth's surface.

Unit 2: Earth system processes. Movement of lithosphere plates; mantle convection and plate tectonics, major plates and hotspots, plate boundaries; sea floor spread; earthquakes; volcanic activities; orogeny; isostasy; gravitational and magnetic fields of the earth; origin of the main geomagnetic field; continental drift, Pangaea and presentday continents, paleontological evidences of plate tectonics. Land surface processes: fluvial and glacial processes, rivers and geomorphology; types of glaciers, glacier dynamics, erosional and depositional processes and glaciated landscapes; coastal processes.

Unit 3: Rocks, weathering and minerals (15 lectures) Minerals and important rock forming minerals; rock cycle: lithification and metamorphism; Three rock laws; rock structure, igneous, sedimentary and metamorphic rocks; weathering: physical, biogeochemical processes; erosion: physical processes of erosion, factors affecting erosion; agents of erosion: rivers and streams, glacial and aeolian transportation and deposition of sediments by running water, wind and glaciers.

Unit 4: Earth atmosphere (6 lectures) Atmosphere: evolution of earth's atmosphere, composition of atmosphere, physical and optical properties, circulation; interfaces: atmosphere-ocean interface, atmosphere-land interface, ocean-land interface.

THIRD SEMETER

GENERAL SURGICAL PRINCIPLES (DOTT-301)

1. Prepare in Advance

- Use a pre-surgical checklist to ensure that necessary supplies (instruments, drugs, syringes, clipper, scrub, suture, heating pads, etc.) are available and preparatory steps completed before beginning surgery.
- *Arrange to have help available during the surgery.* While it is not impossible to perform surgical procedures alone, it is extremely difficult to do them well. A 'non-sterile' assistant should be used whenever possible.
- The surgeon should have a thorough understanding of the surgical procedure and practice on inanimate models and/or cadaver animals before using live animals whenever possible.

2. Use Aseptic Technique

- Aseptic technique encompasses all procedures designed to prevent the introduction of microbial contamination into the surgical wound. Failure to use correct aseptic technique may result in post-operative *wound infections, animal suffering and invalid research data.* Aseptic technique includes:
 - The use of sterile instruments
 - Appropriate surgical preparation of the patient
 - The use of sterile gloves and appropriate attire
 - Appropriate location for conducting the surgery
 - Maintenance of sterility throughout the surgical procedure

3. Handle Tissues Gently

- Handle living tissue as gently as possible during surgery. Rough handling or crushing of tissues will lead to *swelling, inflammation and post-operative pain and discomfort* for the animal.
- Develop your surgical technique by practicing on inanimate models and/or cadaver animals before proceeding to live animals.

4. Use Appropriate Anesthetic and Monitoring

- General anesthesia is *required* during surgery. Anesthesia must be deep enough that the animal cannot feel pain yet not so deep that breathing and heart function are compromised. Respiration, cardiac function and anesthetic depth must be regularly monitored while the animal is anesthetized. Exactly how this is done will depend on the species of animal and type of surgical procedure.

5. Post-Operative Care

- Post-operatively, animals must be kept warm and *monitored closely* to ensure they recover from general anesthesia.
- Appropriate *analgesic medications* must be administered as needed.
- For 7 to 14 days after surgery, *daily observation and evaluation* is necessary to ensure there are no surgical complications (such as infection, bleeding, or poor wound healing) or unnecessary pain and distress.
- Complete surgical and post-operative *records are required*.

6. Unexpected Complications

Unexpected complications sometimes occur in association with surgery or postoperative recovery. A veterinarian must be consulted if there are complications that affect the welfare of the animal. Such complications may include infection, wound dehiscence, excessive weight loss, or higher than expected incidence of post-operative deaths. A veterinarian is available 24 hours a day by calling the Animal Resource Program Office at: 865-1495 (This phone number is posted in the animal facilities). If calling after hours, a recorded message will provide contact information.

7. Post-Operative Care

- Post-operatively, animals must be kept warm and *monitored closely* to ensure they recover from general anesthesia.
- Appropriate *analgesic medications* must be administered as needed.
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8. Unexpected Complications

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SURGICAL INSTRUMENTS AND MONITORING (DOTT-302)

1. Common general surgical instruments;
2. Gynaecology and obstetrics instruments
3. Orthopaedic instruments
4. Ophthalmology instruments
5. E.N.T instruments
6. Urological instruments
7. Laparoscopic instruments
8. Monitoring- introduction and basic monitoring
9. Monitoring of cardio vascular system- pulse rate, blood pressure, ECG, CVP, ABG.
10. Monitoring of respiratory system- PFT, oxygen saturation, minute volume, ETCO₂.
11. Temperature monitoring.
12. Blood loss monitoring.
13. Urine output.

STERILISATION AND DISINFECTION (DOTT303)

12. Introduction to cssd
 13. Layout of cssd
 14. Maintenance of cssd
 15. Roles and responsibilities of OT technician in cssd
 16. Zones of cssd
 17. Aim of cssd
 18. Terminology related to sterilization
 19. Instrument cleaning process
- Sterilization and disinfection**
1. Methods of sterilization (physical and chemical)
 2. New methods of sterilization

PRINCIPLES OF MANAGEMENT (DOTT304)

Module – I Over view of Management

Definition – Management – Role of managers – Evolution of Management thought -Organization and the environmental factors – Trends and Challenges of Management in Global Scenario.

Module – II Planning

Nature and purpose of planning – Planning process – Types of plans – Objectives – Managing by objective (MBO) Strategies – Types of strategies – Policies – Decision Making – Types of decision – Decision Making Process – Rational Decision Making

Module – III Organizing

Nature and purpose of organizing – Organization structure – Formal and informal groups organization – Line and Staff authority – Departmentation – Span of control – Centralization and Decentralization – Delegation of authority – Staffing – Selection and Recruitment – Orientation – Career Development – Career stages – Training – Performance Appraisal.

Module – IV Directing

Creativity and Innovation – Motivation and Satisfaction – Motivation Theories -Leadership Styles – Leadership theories – Communication – Barriers to effective communication – Organization Culture – Elements and types of culture – Managing cultural diversity.

Module – V Controlling

Process of controlling – Types of control – Budgetary and non-budgetary, control techniques – Managing Productivity – Cost Control – Purchase Control – Maintenance Control – Quality Control – Planning operations.

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FOURTH SEMESTER
SURGICAL PROCEDURES-ADVANCE (DOTT-401)

1. Laparoscopic surgeries and instruments
2. Robotic surgeries and instruments
3. Endoscopic procedures and instruments
4. Bariatric Surgery
5. Cardio thoracic surgeries and instruments
6. Neuro surgeries and instruments
7. Plastic surgeries and instruments
8. Neonatal and paediatric surgeries and instrument

ANAESTHESIA ADMINISTRATION AND CARE (DOTT-402)

1. Introduction about anaesthesia
 2. History of anaesthesia
 3. Components of anaesthesia
 4. Choice of anaesthesia
 5. Types of anaesthesia
 6. General anaesthesia (technique of general anaesthesia)
 7. Local blocks
 8. Regional anaesthesia (nerve blocks, spinal block, epidural block)
 9. I.V regional block (bier's block)
 10. Medication used in anaesthesia
- Induction agents (I.V induction agents, inhalational agents)
11. Muscle relaxants
 12. Anti-cholinesterase drugs
 13. Gases used in o.t
 14. Local anaesthetics
 15. Anaesthesia workstation
 16. Anaesthesia equipment's (face masks, airways, E.T tubes, LMA'S, Magill forceps, Stylet, Bougie etc.)
 17. Piped medical gas and vacuum system.

PRE & POST OP PATIENT CARE (DOTT-403)

Introduction to medical surgical nursing-Evolution and trends of medical and Surgical nursing

- Review of Concepts of Health and illness Disease-concepts, causations,classification- International Classification Diseases (ICD -10 or later version),Acute illness chronic stages if illness
- Review of concepts of comprehensive nursing care in medical surgicalconditions based on nursing process
- Role of Nurse, patient and family in care of adult patient
- Role and responsibilities of a nurse in medical surgical settings:
 - Outpatient department.

- In-patient unit.
- Intensive care unit
- Home and Community setting
- Introduction to Medical Surgical asepsis
- Inflammation and Infection Immunity
- Wound healing
- Care of Surgical Patient
- Pre-operative
- Intra operative
- Post Operative

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