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DETAILED SYLLABUS

FOR

DISTANCE EDUCATION

Under Graduate Degree program

DIPLOMA IN RADIO IMAGING TECHNOLOGY

(DRIT)

(SEMESTER SYSTEM)

COURSE TITLE : DIPLOMA IN RADIO IMAGING TECHNOLOGY
DURATION : TWO YEARS
MODE : SEMESTER SYSTEM

FIRST SEMESTER

Course Title	Paper Code	Marks				
		Theory		Practical		Total
		Internal	External	Internal	External	
PRINCIPAL OF ANATOMY	DRIT/S-110	40	60	40	60	200
FUNDAMENTALS OF PHYSIOLOGY	DRIT/S-120	40	60	40	60	200
INTRODUCTION TO PATHAOLOGY	DRIT/S-130	40	60	NA	NA	100
FUNDAMENTALS OF COMPUTERS	DRIT/S-140	40	60	NA	NA	100

SECOND SEMESTER

Course Title	Paper Code	Marks				
		Theory		Practical		Total
		Internal	External	Internal	External	
PHYSICS	DRIT/S-210	40	60	NA	NA	100
GENERATION & PROPERTIES OF X-RAY	DRIT/S-220	40	60	NA	NA	100
PATHOLOGY	DRIT/S-230	40	60	40	60	200
BASIC COMPUTER	DRIT/S-240	40	60	NA	NA	100

THIRD SEMESTER

Course Title	Paper Code	Marks				
		Theory		Practical		Total
		Internal	External	Internal	External	
STUDY OF ANATOMY	DRIT/S-310	40	60	40	60	200
PHYSIOLOGY	DRIT/S-230	40	60	40	60	200
GENERAL RADIOGRAPHY	DRIT/S-230	40	60	40	60	200
EFFECTIVE COMPUTER SKILL	DRIT/S-230	40	60	NA	NA	100

FOURTH SEMESTER

Course Title	Paper Code	Marks				
		Theory		Practical		Total
		Internal	External	Internal	External	
INTRODUCTION TO ULTRASOUND	DRIT/S-410	40	60	40	60	200
BASICS OF CT SCAN	DRIT/S-420	40	60	40	60	200

BASICS OF MRI	DRIT/S-430	**40**	**60**	**40**	**60**	200
ADVANCE COMPUTER SKILL	DRIT/S-440	**40**	**60**	**NA**	**NA**	100

NOTE:
Theory Paper :40% Continuous Internal Assessment and 60% University examination.
Practical Paper : 40% Continuous Internal Assessment and 60% University examination

FIRST SEMESTER

i) PRINCIPAL OF ANATOMY **Paper Code: DRIT/S-110**

COURSE CONTENTS :

1**) Introduction of Bones of the Human Body of :**
Upper Limb , clavicle, scapula, humerus, radius, ulna, carpus, metacarpus and phalanges Lower Limb: hipbone, femur, tibia, fibula, tasus, metatarusu and phalanges Skull : nante the bones of skull and sutures between them Thorax : ribs and their articulations Vertebral Column : cervical, thoracic, lumber, sacral and cocasial vertebrae

2) Surface Land Marks of the Human Body

- Anterior land marks
- Posterior land marks
- Regions of Abdomen
- Quadrants of Hip

3) Introduction of different Vital Organs :

A) Respiratory Organs

- Nasopharynx
- Oropharynx
- Larynx
- Trachea
- Bronchi
- Lungs and their lobular segments
- Thoracic cavity
- Pleurae

B) Circulatory Organs

- Anatomical position of the Heart
- Pericardium
- Chambers of the heart
- Valves of the heart
- Great vessels of the heart

C) Digestive Organs :

- Tongue
- Teeth
- Oral cavity
- Pharynx
- Oesophagus
- Stocmach
- Small intestine

- Large intestine

PRACTICAL :

Labeled Diagrams of different organs and bones
Viva

ii) FUNDAMENTALS OF PHYSIOLOGY **Paper Code: DRIT/S-120**

COURSE CONTENTS :

1) Cell

- Definition
- Structure and functions the Cytoplasmic Organelles
- Reproduction Meosis, Mitosis

2) The important physico-chemical laws applied to physiology

- Diffusion
- Osmosis
- Bonding
- Filtration
- Dialysis
- Surface Tension
- Adsorption
- Colloid

3) Fundamentals of different Organ Systems

- Cardiovascular System
- Respiratory system
- Digestive system
- Excretory system
- Reproductive system
- Endocrine system
- Lymphatic system

PRACTICAL :

Diagram of different Vital Organs
Viva

iii) INTRODUCTION TO PATHAOLOGY **Paper Code: DRIT/S-130**

COURSE CONTENTS :

1. Pathology –

- Introduction
- State of Cell
- Inflammation
- Metabolism of cell and disorders
- Cause of disease
- Diseased state
- Degeneration

2. Immunity & Hypersensitivity

- Introduction
- Infection
- Healing
- Electrolyte movements
- Pathogenesis of disease

3. Blood supply to organs and disease due to non supply of blood

4. Fluid and homodynamic derangement :

- Derangement of body fluids and electrolytes
- Homodynamic disorders due to deranged blood volume
- Homodynamic disorders of obstructive nature
- Ischemia and infraction

5. Growth disorders and Heoplasia

- Neoplasia
- Tumouts
- Histopathology of diseases

6.Pathology of Biliary tract and excretory system

iv) FUNDAMENTALS OF COMPUTERS **Paper Code: DRIT/S-140**

COURSE CONTENTS:

SECTION A

1. Grammar
A brief review of easy form of tenses. Conversion of direct narration into indirect form of narration and vice versa (only simple sentences). Punctuation.

SECTION B

2. Corresponding : (Official, Business And Personal)
One Letter from each category (Official, Business and Personal) may be set in the examination paper and the students be asked towrite one of them.

SECTION C

Written Communication
report, notices, agenda notes, business correspondence preparation of summery & prices.

Communication Techniques
Importance of communication one way and two way communication Essentials of good communication Methods of communication, oral, written and non-verbal Barriers to communication Techniques of overcoming barriers Concept of effective communication

SECOND SEMESTER

i) PHYSICS **Paper Code: DRIT/S-210**

COURSE CONTENTS :

1. Physics

- Introduction
- Measurements
- Basic Units
- Derived Units
- Structure of atom

2. Electromagnetic Induction (Self & mutual)

- AC and DC generator
- Rectification
- Transformers
- Capacity/.capacitance

3. Properties of X-Ray

- Themoionic / photoelectric emissions
- Conductor and conductance
- Light intensity
- HT Cable
- Radio activity

ii) GENERATION AND PROPERTIES OF X-RAY **Paper Code: DRIT/S-220**

COURSE CONTENTS:

INTRODUCTION:

- Properties and Production of X-Ray
- Electric system, Components and Control in X-Ray circuit
- Basic X-Ray circuits transformers laws and types used in X-ray machine. The rectification of high tension, control of kilo voltage, filament circuit ad tube current
- Exposure switches and timers and its radiographic application
- X-Ray tubes fixed and rotating anodes and faults in X-Ray tubes
- Imageintesifier/fluoroscopic equipment, dentalradiographic equipments

Clinical Lab:

- X-ray tubes general features and mobile equipments.
- Care and maintenance of X-ray equipment and image intensifier
- To study effects of KV and MAS

iii) PATHOLOGY **Paper Code: DRIT/S-230**

COURSE CONTENTS :

1. Introduction of various Hazards

- Ionization chamber GM and Scintillation Counter
- Measuring radiation dose
- Absorption co-efficient, grid, cones and filter
- Inverse square low scattered radiation radio activity, curie, half life, decay factor

2. Doses, film Bodge, Pocket Ionization chamber
Maximum permissible Dose

3. Principle and Method of Protection

PRATICAL

- Dark Room Procedure
- Equipments
- Developing Technique
- Fixing Technique

iv)General Radiography **Paper Code: DRIT/S-240**

COURSE CONTENTS :

1. Patents and role of General Radiographer

2. Regional Radiography :

a) Upper Limb – (30 Hours)

I) Fingers
II) Hand, Carpal Tunnel
III) Wrist Joint
IV) Fore arm
V) Elbow Joint
VI) Head of Radius and Ulna
VII) Humerus
VIII) Shoulder Joint
IX) Acromio-calvicular joint
X) Scapula
XI) Sterno-clavicular joint

b) Lower Limb – (20 Hours)

I) Toes
II) Foot
III) Calcaneum
IV) Intercondylar Notch
V) Ankle Joint
VI) Tibia and Fibula
VII) Patella
VIII) Knee Joint

IX) Femur

c) Hip and Pelvis (20 Hours)

I) Theatre procedure for Hip Pinning and Reduction
II) Pelvis
III) Sacro lilac Joint
IV) Pelvis Bone
V) Acetabulum

THIRD SEMESTER

i) STUDY OF ANATOMY **Paper Code: DRIT/S-310**

COURSE CONTENTS:

1. Reproductive Organ:

- Male and female cCongds: Testes, Epidiymis, Ovary, Fallopian Tubes, Uterus, Vagina etc.
- Introduction of male Genital Organs
- Introduction of female Genital Organs

2. Liver and Spleen:

- Introduction
- Anatomical Position
- Gall Bladder

3. Excretory Organs

- Introduction of Kidney
- Ureter
- Urinary ladder
- Urethra (male and female**)**

4. Muscles

- Introduction
- Origin and insertion of muscles
- Functuion

PRACTICAL:
Labeled diagram of different organs and bones Viva**.**

ii) DIFFERENT ASPECTS OF PHYSIOLOGY **Paper Code: DRIT/S-320**

COURSE CONTENTS :

1. Blood

- Introduction
- Composition
- Function

2. Formation of different type of Blood Cells

- Erythrocytes
- Leucocytes
- Thormbocytes

3. Mechanism of Blood Clotting

4. Cerebrospinal Fluid :

- Composition
- Formation
- Function

5. Specials Senses

- Hearing
- Taste
- Smell
- Touch
- Sight

PRACTICAL :

Diagram of Corpuscles Viva

iii) RADIOGRAPHY **Paper Code: DRIT/S-330**

COURSE CONTENTS :

1. Special procedure and related Contrast Media

- Contrast Media
- Emergency in Radiology Department
- Excretory System

a) IVP
b) RGU
c) MCUG

- Oral Cholecystography
- Percutaneous Transepatic Cholangiography
- G. I. Tract

a) Braium Swallow
b) Barium Meal Series
c) Barium Meal Follow Through
d) Barium Enema

- Hystero Salpingography
- Angiography
- Tomography

2. Guideline for design and location of X-ray equipments

3. Dark Room designing

- Outline structure of Dark Room
- Material used
- Miscellaneous

PRACTICAL :

1. Radiography in various positions for all the special radiological procedures, using contrast media as per syllabus.

2. Positioning and treatment of various cacer patients by using a) Prescribed filtersand wedges
b) Protecting various organs

iv) EFFECTIVE COMMUNICATION SKILL-I **Paper Code: DRIT/S-340**

COURSE CONTENTS:

SECTION A

1. Grammar
A brief review of easy form of tenses. Conversion of direct narration into indirect form of narration and vice versa (only simple sentences). Punctuation.

SECTION B
2. Corresponding : (Official, Business And Personal)
One Letter from each category (Official, Business and Personal) may be set in the examination paper and the students be asked to write one of them.

SECTION C

Written Communication
report, notices, agenda notes, business correspondence preparation of summery & prices.

Communication Techniques
Importance of communication
One way and two way communication
Essentials of good communication
Methods of communication, oral, written and non-verbal
Barriers to communication
Techniques of overcoming barriers
Concept of effective communication

FOURTH SEMESTER

i) INTRODUCTION TO ULTRASOUND **Paper Code: DRIT/S-410**

COURSE CONTENTS :

1. Ultra Sound

- Principle of Ultra Sound
- Types of Ultra Sound
- Equipments description
- Indication and Clinical Application

PRACTICAL
Applications of various procedures in well equipped Hospi9tals and Diagnostics C

ii) BASIC OF CT SCAN **Paper Code: DRIT/S-420**

COURSE CONTENTS :

2. C. T. Scan
Basic principle of CT scan
Equipment 's description
Conventional CT
Indications and Contra Indications

PRACTICAL
Applications of various procedures in well equipped Hospitals and Diagnostics Centers

iii) BASIC OF MRI **Paper Code: DRIT/S-430**

COURSE CONTENTS :

MRI

- Basic Principle
- Equipment's description

PRACTICAL
Applications of various procedures in well equipped Hospitals and Diagnostics Centers

iv) ADVANCE COMPUTER SKILL – A **Paper Code: DRIT/S-440**

SECTION A
Internet - Evolution, Protocols, Interface Concepts, Internet Vs Intranet, Growth of Internet, ISP. Connectivity- Dial-up, Leased line, VSAT etc., URLs, Domain names, Portals. E-MAIL - Concepts, POP and WEB Based E-mail ,merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free Email services.

SECTION B

E-Commerce- An introductions, Concepts, Advantages and disadvantages, Technology in E-Commerce, Internet & E-business, Applications, Feasibility & various constraints. E-transition, challenges for Indian corporate.

SECTION C

Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based, Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems. Internet Protocols- Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation, Massage Board.

Reference:

1. A. Manor, “Internet and Web Design Made Easier”, Pray Publications.
2. V.K.Jain, “level Module - M 1.2 - Internet & web page designing” BPB Publications.
3. P.T. Joseph, S.J., “E-Commerce An Indian Perspective (Second Edition)”, Prentice Hall of India
4. Alexis Leon and Mathews Leon, “Internet for Everyone”, Vikas Publishing House Pvt. Ltd., New Delhi.
5. “Internet for Dummies’, Pustak Mahal, New Delhi.