

INSTITUTE OF ADVANCED STUDIES IN
EDUCATION (DEEMED UNIVERSITY)
GANDHI VIDYA MANDIR
SARDARSHAHR

DETAILED SYLLABUS

FOR

DISTANCE EDUCATION

**CERTIFICATE IN RADIO IMAGING TECHNOLOGY
(CRIT)**

(SEMESTER SYSTEM)

FIRST SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
ANATOMY	CRIT-110 CRIT-110/P	50	50	100
PHYSIOLOGY	CRIT120 CRIT-120/P	50	50	100
PATHALOGY	CRIT-130	100	00	100
COMPUTER SKILL	CRIT-140	100	00	100
TOTAL				400

SECOND SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
PHYSICS	CRIT-210	100	00	100
GENERATION AND PROPERTIES OF X-RAY	CRIT-220	100	00	100
RADIATION HAZARD & PROTECTION	CRIT-230 CRIT-230/P	50	50	100
GENERAL RADIOGRAPHY	CRIT-240	100	00	100
TOTAL				400

NOTE :

**Theory Paper :30% Continuous Internal Assessment and 70% University examination.
Practical Paper : 30% Continuous Internal Assessment and 70% University examination**

Continuous Internal assessment:

- 1) Two or three tests out of which two Internal Assessment will be considered for Assessment** **60% of Continuous**
- 2) Seminars/Assignment/Quizzes Internal Assessment** **30% of Continuous**
- 3) Attendance class participation and behavior Internal Assessment** **10% of Continuous**

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

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, tarsus, metatarsus and phalanges Skull : name the bones of skull and sutures between them

Thorax : ribs and their articulations

Vertebral Column : cervical, thoracic, lumbar, sacral and coccygeal 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
- Stomach
- Small intestine
- Large intestine

PRACTICAL :

Labeled Diagrams of different organs and bones
Viva

CRIT – 120

PHYSIOLOGY

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

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
- 2) 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

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

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 haemodynamic derangement :

- Derangement of body fluids and electrolytes
- Haemodynamic disorders due to deranged blood volume
- Haemodynamic disorders of obstructive nature
- Ischaemia and infarction

5. Growth disorders and Neoplasia

- Neoplasia
- Tumours
- Histopathology of diseases

6. Pathology of Biliary tract and excretory system

CRIT – 140 BASIC COMPUTER SKILL

Maximum Time : 3 Hrs.

University Examination : 70 Marks

Total Marks : 100

Continuous Internal Assessment: 30 Marks

Minimum Pass Marks: 40%

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C and D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Input and Output units: Their functional characteristics, main memory, cache memory read only memory, overview of storage devices – floppy disk, hard disk, compact disk, tape.

Computer Networks and Communication: Network types, Network topologies, Network communication devices, Physical communication media, TCP/IP.

Internet and its Applications: E-mail, Telnet, FTP, WWW, Internet chatting

SECTION B

Word Wide Web (www) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols.

Web Publishing - Concepts, Domain name Registration, Space on Host Server for Web site, HTML, Design tools, HTML editors, and Image editors, Issues in Web site creations & Maintenance

SECTION C

Html - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Color controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags, Use of Frames and Forms in web pages. Overview of MS FrontPage, Macromedia Dream weaver, and other popular HTML editors, designing web sites using MS FrontPage (using at least FrontPage 2000)

Reference:-

1. D.H.Sanders, "Computers Today", McGraw Hill, 1988.
2. T.N. Trainer, "Computers" (4th Edition) McGraw Hill, 1994.
3. P.T. Joseph, S.J., "E-Commerce An Indian Perspective (Second Edition)", Prentice Hall of India

SECOND SEMESTER

CRIT – 210

PHYSICS

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Physics

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

2. Electromagnetic Induction (Self & mutual)

- AC and DC generator
- Rectification
- Transformers
- Capacitance/capacitance

3. Properties of X-Ray

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

CRIT-220 GENERATION AND PROPERTIES OF X-RAY

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

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 and tube current
- Exposure switches and timers and its radiographic application

- X-Ray tubes fixed and rotating anodes and faults in X-Ray tubes
- Imageintensifier/fluoroscopic equipment, dentalradiographic equipments

Clinical Lab:

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

CRIT – 230 RADIATION HAZARDS & PROTECTION

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Introdeuction of various Hazards
 - Ioniation chamber,m GM and Scintillation Counter
 - Measuring radiation dose
 - Absorption co-efficient, grid, cones and filter
 - Inverse square law 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

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

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-clavicular 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 iliac Joint
 - iv) Pelvis Bone
 - v) Acetabulum