

**SINGHANIA UNIVERSITY
(RAJASTHAN)**

DETAILED SYLLABUS

Degree Program

(BRIT)

BACHELOR IN RADIO IMAGING TECHNOLOGY

BRIT : (BACHELOR IN RADIO IMAGING TECHNOLOGY)**DURATION : 3 YEAR****TOTAL CERTIFICATE MARKS : 1800****FIRST YEAR**

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
ANATOMY	BRIT—110	100	100	200
PHYSIOLOGY	BRIT —120	100	100	200
PATHOLOGY	BRIT —130	100	100	200
GENERATION AND PROPERTIES OF X-RAY	BRIT —140	100	100	200
RADIATION HAZARDS & PROTECTION	BRIT —150	100	100	200
GENERAL RADIOGRAPHY	BRIT –160	100	100	200
COMPUTER SKILLS	BRIT –170	100	100	200
COMMUNICATION SKILL	BRIT -180	100	100	200
TOTAL				1800

Note:

Theory Paper: 30% Continuous Internal Assessment and 70 % University examinations.

Practical Paper: 30% Continuous Internal Assessment and 70 % University examinations.

SECOND YEAR

COURSE TITLE	PAPER CODE	THEORY	PRACTICAL	TOTAL
ANATOMY	BRIT-210	100	100	200
PHYSIOLOGY	BRIT -220	100	100	200
GENRAL RADIOGRAPHY	BRIT -230	100	100	200
ULTRASOUND	BRIT -240	100	100	200
CT-SCAN	BRIT -250	100	100	200
MRI	BRIT -260	100	100	200
ORGANIZATIONAL BEHAVIOUR	BRIT -270	100	100	200
PERSONALITY DEVELOPMENT	BRIT -280	100	100	200
			TOTAL	1600

Note:

Theory Paper: 30% Continuous Internal Assessment and 70 % University examinations.

Practical Paper: 30% Continuous Internal Assessment and 70 % University examinations.

THIRD YEAR

COURSE TITLE	PAPER CODE	THEORY	PRACTICAL	TOTAL
DOPPLER & ECHO CARDIOGRAPHY	BRIT-310	100	100	200
CT-SCAN	BRIT -320	100	100	200
MRI	BRIT -330	100	100	200
NUCLEAR MEDICINE & PET SCAN	BRIT -340	100	100	200
INTERVENTION IN DIAGNOSTIC RADIOLOGY	BRIT -350	100	100	200
ANASTHESIA IN DIAGNOSTIC RADIOLOGY	BRIT -360	100	100	200
PROJECT REPORT	BRIT -370	100	100	200
HUMAN RESOURCE	BRIT -380	100	100	200
PERSONALITY DEVELOPMENT	BRIT -390	100	100	200
TOTAL				1800

Note:

Theory Paper: 30% Continuous Internal Assessment and 70 % University examinations.

Practical Paper: 30% Continuous Internal Assessment and 70 % University examinations.

BRIT – 110

ANATOMY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS – THEORY

1) Introduction of Bones of the Human Body of :

- Upper Limb : clavicle, scapula, humerus, radius, ulna, carpus, metacarpus & phalanges
- Lower Limb : hipbone, femur, tibia, fibula, tarsus, metatarsus & phalanges
- Skull : name the bone of skull and sutures between them
- Thorax : ribs and their articulations
- Vertebral Column : Cervical, thoracic, lumber, sacral and coccyx vertebrae

2) Surface Markings of the Body :

- Nine regions of the abdomen
- Four quadrants of the Hip

3) Introduction of different Vital Organs :

A) Respiratory Organs :

- Nasopharynx
- Oropharynx
- Larynx
- Trachea
- Bronchi
- Lungs (and their lobular segments)
- Thoracic cavity
- Pleura and Pleural cavity

B) Circulatory Organs :

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

C) Digestive Organs :

- Tongue
- Teeth
- Oral cavity
- Pharynx
- Oesophagus
- Stomach
- Small intestine
- Large intestine

D) Joint and functions

PRACTICAL :

Labeled Diagrams of different organs and bones Viva

BRIT – 120

PHYSIOLOGY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Cell :
 - Definition
 - Structure and functions the cytoplasmic Organelles
 - Reproduction : Miosis, Mitosis

2. The important physic-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
 - Reproduction System
 - Endocrine System
 - Lymphatic System
 - Practical
 - Viva and diagrams of different Vital Organs

Practical :

Viva and diagrams of different Vital Organs

Viva

BRIT – 130

PATHOLOGY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

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

- Definition
- Immunity : Definition and Classification
- Antigen
- Antibodies – Immunoglobulin
- Antigen and antibody reaction
- Structure and function of immune system
- Immune response
- Hypersensitivity

3.) Principal & Procedure of Serological Tests.

- CRP, Brucella, Agglutination, ASO, WIDAL
- Cold agglutination, VDRL, TPHA

1. Human blood group antigens and antibodies

2. ABO Blood group systems

- Sub. – group
- Source of antigens and types of antibodies

3. Rh Blood group System

- Types of Antigen
- Mode of Inheritance
- Types of Antibodies

4. Erythroblastosis foetalis

5. Growth disorders and Neoplasia

- Neoplasia
- Tumours
- Histopathology of diseases

BRIT – 140

GENERATION AND PROPERTIES OF X-RAY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS :

INTRODUCTION :

- Properties and Production of X-Ray
- Electric system, components and Control in X-Ray.
- Basic X-Ray circuits transformers laws and types used in X-Ray machine. The rectification of high tension, control of kilo voltage, filament circuits ad tube current
- Exposure switches and relays timers and its radiographic application
- X-RAY tubes fixed and rotating anodes and faults in X-Ray tubes
- Image intensifier/Fluoroscopic equipment, dental radiographic equipments.
- High tension cable and circuits.
- Serial Radiography
- Tomography
- Iteration of X-ray and Scatter Radiation
- Care and maintenance of X-ray equipment and image intensifier and quality assurance.

Clinical Lab :

- X-ray tubes general features and mobile equipments
- To study effects of KV and MAS

BRIT—150 Radiation Hazards & Protection

Maximum Time : 3 hrs.

Total Marks : 200

University Assessment – 70%

Internal Assessment –30%

Minimum Pass Marks – 40%

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 law scattered radiation radio activity, curie, half life, decay factor
2. Doses, film Badge, Pocket dosimeter and TLD.
3. Maximum permissible Dose
4. Principle and Method of Protection
5. Ten days rule, personal protection and shielding, Leakage Limits.
6. Radiation Risk Biological effects of Radiation
7. Protective Barrier Design.
8. Transport of Radiation materials
9. Radiation Emergencies.

PRACTICAL

- Dark Room Procedure
- Equipments
- Developing technique
- Fixing technique

BRIT – 160

General Radiography

Maximum Time : 3 hrs

Total marks :200

University Assessment -70%

Internal Assessment – 30%

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-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 & Pelvis (20 Hrs)

- i. Theater Procedure for Hip Pinning & Reduction
- ii. Pelvis
- iii. Sacro Iliac Joint

iv. Pelvis Bone

v. Acetabulum

(d) Skull, Cranium, facial bones. temporal Bone, temporal mandibular joints, mandible,

Para nasal Sinuses.

(e) Vertebral Column

- Cervical Spine
- Thoracic spine
- Lumbar spine
- Sacrum
- Coccyx

(f) Chest

1. lung fields and heart,
2. diaphragm,
3. Sternum

(g) Abdomen

1. Gastro - intestinal tract, urinary tract

(h) Skeletal Survey,
Photography

1. Developer, fixer, Rinser components.
2. Automatic film processor.
3. Manual technique of developing the film.
4. Films and Screens.
5. Safe light test.

BRIT – 170

BASIC COMPUTER SKILLS

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS :

Fundamentals of Computers

Introduction :

Classification of computer & generation, Basic architecture of computer and its building blocks, input devices, Computer memories.

Number System :

Binary, Octal, Decimal, Hexadecimal representation of characters : ASCII and EBDIC codes, Binary arithmetic and logic circuit.

Classification of Computer language :

Machine, Assembly and High level language, Brief idea of operating system, Assembler, Compiler and interpreter.

Fundamentals of Computer Programming :

Problem solving through computer algorithms and flow chart level of programming.

Operating System :

Introduction to O.S., Types of operating system, Multiprogramming, Timesharing, Batch, Real time and UNIX

Internet :

Introduction to Internet, Components, Services and working on internet, introduction to protocols, tools.

BRIT – 180

COMMUNICATION SKILL

**Maximum Time : 3 hrs
Total marks :200**

**University Assessment -70%
Internal Assessment – 30%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

Unit 1: –

Introducing communication, importance & nature of business communication

Unit 2 :-

Process of business communication, objectives, media of business communication

Unit 3 :-

Types of communication, barriers in communications, principles of communication, essentials of goods communication

Unit 4 :-

Business report writing, written & oral presentation of reports, preparation of office orders, memo, circulars.

BRIT—210

ANATOMY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Reproductive Organs :
 - Male and Female gonads : Testes, Prostate, Epididymis, Ovary, Fallopian Tubes, uterus, Vagina etc.
 - Introduction of male Genital organs
 - Introduction of female Genital organs
2. Liver and Spleen Pancrease: Gall Bladder
 - Introduction
 - Anatomical Position
3. Excretory Organs
 - Introduction of Kidney
 - Cortex and medulla of the Kidney
 - Ureter
 - Urinary Ladder
 - Urethra (male and female)
4. Muscles
 - Introduction
 - Origin and Insertion of muscles
 - Function

PRACTICAL :

Labeled diagrams of different organs and bones

Viva.

BRIT —220

PHYSIOLOGY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Blood
 - Introduction
 - Composition
 - Function
2. Formation of different type of Blood Cells
 - Erythrocytes
 - Leucocytes
 - Thrombocytes
3. Mechanism of Blood Clotting
4. Cerebrospinal Fluid:
 - Composition
 - Formation
 - Function
5. Special Senses
 - Hearing
 - Taste
 - Smell
 - Touch
 - Sight

PRACTICAL:

Diagram of Corpuscles

Viva

BRIT —230

GENERAL RADIOGRAPHY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Special procedure and related contrast Media
 - Contrast media
 - Emergency in Radiology Department
 - Excretory System
- a) IVP
- b) RGU
- c) MCU
 - 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
2. Guideline for design and location of X-Ray Room.
3. Dark Room designing
 - Outline structure of Dark Room
 - Material used
 - Miscellaneous
4. High K.V. Technique
5. Soft tissue Radiography
6. Air gap technique
7. Forensic Radiography
8. Foreign bodies Radiography

PRACTICAL :

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

2. Positioning and treatment of various cancer patients by using
 - a) Prescribed filters and wedges
 - b) Protecting various organs

BRIT -240 MAMMOGRAPHY AND ULTRASOUND IMAGING

Maximum Time : 3 hrs. University Assessment – 70%
Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

- Mammography: Dedicated mammographic unit and its special features, Mammographic positioning and technical considerations, film screen mammography, digital mammography.
- Ultrasound
- Principle of Ultra Sound
- Types of Ultra Sound
- Equipments description
- Indication and Clinical Application The physics of ultrasound imaging
- The physics of transducers
- The physics of Doppler
- Ultrasound tissue characterization
- The potential for three dimensional ultrasound
- Artifacts in ultrasound
- Comparison of ultrasound equipment
- Computerization of data
- Image recording
- Safety of ultrasound
- Medical sonography : reproductive effects and risks
- Transvaginal ultrasonography
- Transvaginal Doppler duplex system
- Transvaginal color Doppler imaging
- The obstetric ultrasound examination
- Method of gynecologic ultrasound examination
- Assessment of normal fetal growth
- Fetal behavior states
- Fetal breathing movements
- Fetal activity
- Twins and twinning
- Fetal tumors
- Placenta and umbilical cord

- Role of ultrasound in the delivery suite
- Vaginal ultrasonography of the pregnant cervix
- Screening for ovarian cancer

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

BRIT —250

CT SCAN

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

C.T. Scan

- Basic principle of CT scan**
- Equipment's description**
- Conventional CT**
- Indications and Contra Indications**

Computed Tomography

- Scanning principle**
- Image reconstruction**
- Image display and documentation**
- Scanning parameters**

Spiral CT

- Scanning principle**
- Image reconstruction**
- Scanning parameters**
- Image review ,display and documentation**

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

BRIT —260

MRI

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

MRI

- **Basic Principle**
- **Equipment's description**
- **Principles of magnetic resonance imaging**
- **Instrumentation**
- **Physical and physiological basis of magnetic relaxation**
- **Image contrast and noise**
- **Use of the inversion recovery pulse sequence**
- **Rapid scan techniques**
- **Fast spin-echo and echo-planar imaging**
- **Fast and water signal separation methods**
- **Spectroscopy**
- **Artifacts**
- **Flow phenomena**
- **Contrast agents**
- **Interventional magnetic resonance imaging**
- **Bioeffects and safety**

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

BRIT —270

ORGANIZATIONAL BEHAVIOUR

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS

UNIT 1 :

Meaning, Concepts, Challenges & O.B. Model individual difference & Learning Theories.
Job Satisfaction and Commitment, Personality and Behavior emotional intelligence.

UNIT 2 :

Perception and Attribution, Behavioral decision making, participating decision making,
Theories of Motivation

UNIT 3 :

Goal Setting, Benefits, Group Structure, Group decision making, Effective Team, Managing
Team, Processes and Issues, Theories and issues.

UNIT 4 :

Basis of Power, Conflict Process, Organizational Design, Nature & Dynamics, Managing
Change, Work Stress

Reference :

1. Udai Pareek, Understanding Organisational /Behaviour, Oxford
2. Mishra : Organizational Behaviour Bikas
3. Luthans, Fred : Organizational Behaviour
4. Mirza Saiyadain : Organizational Behaviour, TH
5. Chandan : Organizational Behaviour, Vikas
6. Helga Drummond : Organizational Behaviour, Oxford
7. Senge, Peter : The Learning Organization
8. Harriss & Martman : Organizational Behaviour, Jaico.

BRIT—280

PERSONALITY DEVELOPMENT

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Unit-I

Practical grammar basic fundamental of grammar and usage, how to improve command over spoken and written English with stress o Noun, Verb Tense and Adjective. Sentence errors, Punctuation, Vocabulary building to encourage the individual to communicate effective and diplomatically, common errors in business writing.

Unit-II

Introduction to Business Communication: Basic forms of communication, Process of communication, Principles of effective Business Communication, 7 Cs.

Media of Communication: Types of communication: Barriers of communication (Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds. Layout of letter writing. Types of letter writing: Persuasive letters, Request letters, Sales letters, Complaints and Adjustments.

Departmental Communication: Meaning, Need and types: Interview letters, Promotion Letters, resignation letters, news letters, Circulars, Agenda, Notice, Office memorandums, Office orders, Press release.

Unit-IV

Aids to correct Business writing, Practical Grammar (basic Fundamentals), Sentence errors-Punctuation, Vocabulary building.

Business Etiquettes

Business manners. Body language gestures, Etiquette of the written word, Etiquette of the telephone, Handling business meetings.

Role play on selected topics with case analysis and real life experiences

Text Books:

- 1.Wren & Martin; English grammar and composition, 2003.
- 2.Sinha, K. K.; Business Communication, Galgotia Publishers, 2003.
- 3.Robinson, David; Business Etiquette, Kogan Page.
- 4.Rogets Thesaurus.

Reference Books:

- 1.Hand Book of Practical Comunication Skills-Chrissie Wrought,published by Jaico Publishing House.
2. Ray, Reuben; Communication today – Understanding Creative Skills, Himalaya Publishing House, 2001

BRIT—310

DOPPLER & ECHO CARDIO GRAPHY

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

History of Doppler & Echo Cardiography

1. Equipments and description
2. Color Doppler Flow Imaging
3. Indication
4. Preparation and Technique
5. Clinical Application
6. Artifacts of Doppler
7. Coupling agents and components.

PRACTICAL

Application of various procedures in well equipped Hospital and Diagnostic Centers

BRIT—320

CT SCAN

Maximum Time : 3 hrs.

Total Marks : 200

Minimum Pass Marks – 40%

University Assessment – 70%

Internal Assessment –30%

COURSE CONTENTS :

1. Advancement in CT
2. Spiral CT
3. Preparation of Patient
4. Contrast Media
5. Indication and Contraindication
6. Technical Aspects of various procedures in CT

2 Computed Tomography

Scanning principle

Image reconstruction

Image display and documentation

Scanning parameters

3 Sprial CT

Scanning principle

Image reconstruction

Scanning parameters

Image review ,display and documentation

Multislice CT

Scanning principle

Detector types

System performance

Image reconstruction

Scanning parameters

Workflow, image review, display and documentation

Cardiac multislice CT

Prospective ECG Triggering

Retrospective ECG Gating

CT Fluoroscopy

Principle and Image Reconstruction

Technique

Radiation Safety

PRACTICAL

Application of various procedures in well equipped Hospital and Diagnostic Centers

BRIT—330

MRI

Maximum Time : 3 hrs.

Total Marks : 200

Minimum Pass Marks – 40%

University Assessment – 70%

Internal Assessment –30%

COURSE CONTENTS :

Preparation of Patients

Contrast Media

Indication and Contraindication

Clinical Application

Procedure

MR Angiography

- **Principles of magnetic resonance imaging**
- **Instrumentation**
- **Physical and physiological basis of magnetic relaxation**
- **Image contrast and noise**
- **Use of the inversion recovery pulse sequence**
- **Rapid scan techniques**
- **Fast spin-echo and echo-planar imaging**
- **Fast and water signal separation methods**
- **Spectroscopy**
- **Artifacts**
- **Flow phenomena**
- **Contrast agents**
- **Interventional magnetic resonance imaging**
- **Bioeffects and safety**

- **MRI Breasts, liver, Adrenal gland, kidney, Urinary bladder, Knee, Shoulder, Brain, Slaviery gland, Spine, Neck, CE Angiography, perfusion, Dynamic MRI, Spectroscopy, MRCP, Function MRI etc.**

PRACTICAL

Application of various procedures in well equipped Hospital and Diagnostic Centers

BRIT—340

NUCLEAR MEDICINE & PET SCAN

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Nuclear Medicines, PET scan and Mammography

- A. Definition
- B. Characteristic of Radio Nuclide
- C. Commonly used Radio Nuceids
- D. Description of Equipments
- E. Indications
- F. Preparation and technique

- 2. Digital Radiography
- 3. Computer Radiography
- 4. PACS

BRIT—350

INTERVENTIONAL RADIOLOGY

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Interventional Radiology

- A. Definition
- B. Indication
- C. Clinical Application
- D. Name of different type of Procedures and description
 - 1. MRI Angiography
 - 2. C.T. Angiography
 - 3. Breast Biopsy MRI Guided.
 - 4. Breast Biopsy USG Guided.
 - 5. Nerve Blocks.
 - 6. Radiofrequency Ablation
 - 7. Stereotactic Brain Biopsy.

BRIT—360

ANAESTHESIA IN DIAGNOSTIC RADIOLOGY

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Facilities regarding general Anesthesiar in the X-ray Deptt.
2. Anaesthetic Problems associated with specific technique
 - A. Vascular Studies
 - B. Carotid Angiography
 - C. Venography
 - D. CT and NMR
3. Basic Patient care and safety in Radiographic imaging
 - i. Care of Pts Belongings
 - ii. Body mechanics
 - iii. Moving and transferring Technique
 - iv. Skin Care
 - v. Departmental Safety
4. Infection control and institutional Safety
5. Professional issues in Radiologic technology
 - i. Legal issue
 - ii. Medical Records and Documentation
 - iii. Professional ethics
6. Patient care during special Procedures.
 - i. Angiography
 - ii. Myelography
 - iii. Computerd Tomography
 - iv. MRI

- v. Urological Procedure
- vi. Ultrasound
- vii. PET-CT Scan
- viii. Mammography or X-ray.

BRIT—370

PROJECT REPORT

Maximum Time : 3 hrs.

Total Marks : 200

Minimum Pass Marks – 40%

University Assessment – 70%

Internal Assessment –30%

COURSE CONTENTS :

BRIT—380

HUMAN RESOURCE

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Unit 1 :

HRM : Introduction, Definition, Objectives, Scope and Significance, Human Resource

Planning, Career Planning and Succession Planning.

Unit 2 :

Recruitment – Methods and Techniques, Selection Process, Induction, Transfer, Promotion &

Separations. Manpower Training and Development, Performance Appraisal.

Unit 3 :

Employee Welfare and Benefits, Industrial Relations and Trade Unions, Dispute Resolution

and Grievances Management.

Suggested Reading :

- 1. C. B. Mamoria : Personal Management**
- 2. K. Aswathappa : Human Resource and Personal Management**

**SINGHANIA UNIVERSITY
(RAJASTHAN)**

DETAILED SYLLABUS

**Certificate Program
(CRIT)**

CERTIFICATE IN RADIO IMAGING TECHNOLOGY

(YEARLY PROGRAMME)

COURSE TITLE : CRIT (CERTIFICATE IN RADIO IMAGING TECHNOLOGY)

DURATION : 1 YEAR

TOTAL CERTIFICATE MARKS : 1800

FIRST YEAR

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
ANATOMY	CRIT—110	100	100	200
PHYSIOLOGY	CRIT —120	100	100	200
PATHOLOGY	CRIT —130	100	100	200
GENERATION AND PROPERTIES OF X-RAY	CRIT —140	100	100	200
RADIATION HAZARDS & PROTECTION	CRIT —150	100	100	200
GENERAL RADIOGRAPHY	CRIT –160	100	100	200
COMPUTER SKILLS	CRIT –170	100	100	200
COMMUNICATION SKILL	CRIT-180	100	100	200

TOTAL 1800

Note:

Theory Paper: 30% Continuous Internal Assessment and 70 % University examinations.

Practical Paper: 30% Continuous Internal Assessment and 70 % University examinations.

CRIT – 110

ANATOMY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS – THEORY

1) Introduction of Bones of the Human Body of :

- Upper Limb : clavicle, scapula, humerus, radius, ulna, carpus, metacarpus & phalanges
- Lower Limb : hipbone, femur, tibia, fibula, tarsus, metatarsus & phalanges
- Skull : name the bone of skull and sutures between them
- Thorax : ribs and their articulations
- Vertebral Column : Cervical, thoracic, lumber, sacral and coccyx vertebrae

2) Surface Markings of the Body :

- Nine regions of the abdomen
- Four quadrants of the Hip

3) Introduction of different Vital Organs :

A) Respiratory Organs :

- Nasopharynx
- Oropharynx
- Larynx
- Trachea
- Bronchi
- Lungs (and their lobular segments)
- Thoracic cavity
- Pleura and Pleural cavity

B) Circulatory Organs :

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

C) Digestive Organs :

- Tongue
- Teeth
- Oral cavity
- Pharynx
- Oesophagus
- Stomach
- Small intestine
- Large intestine

D) Joints and functions

PRACTICAL :

Labeled Diagrams of different organs and bones Viva

CRIT – 120

PHYSIOLOGY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Cell :
 - Definition
 - Structure and functions the cytoplasmic Organelles
 - Reproduction : Miosis, Mitosis

2. The important physic-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
 - Reproduction System
 - Endocrine System
 - Lymphatic System
 - Practical
 - Viva and diagrams of different Vital Organs

Practical :

Viva and diagrams of different Vital Organs

Viva

BRIT – 130

PATHOLOGY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

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

- Definition
- Immunity : Definition and Classification
- Antigen
- Antibodies – Immunoglobulin
- Antigen and antibody reaction
- Structure and function of immune system
- Immune response
- Hypersensitivity

3.) Principal & Procedure of Serological Tests.

- CRP, Brucella, Agglutination, ASO, WIDAL
- Cold agglutination, VDRL, TPHA

1. Human blood group antigens and antibodies

2. ABO Blood group systems

- Sub. – group
- Source of antigens and types of antibodies

3. Rh Blood group System

- Types of Antigen
- Mode of Inheritance
- Types of Antibodies

4. Erythroblastosis foetalis

5. Growth disorders and Neoplasia

- Neoplasia
- Tumours
- Histopathology of diseases

CRIT – 140

GENERATION AND PROPERTIES OF X-RAY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

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 relays and timers and its radiographic application
- X-RAY tubes fixed and rotating anodes and faults in X-Ray tubes
- Image intensifier /Fluoroscopic equipment, dental radiographic equipments.
- Care and maintenance of X-ray equipment and image intensifier

Clinical Lab :

- X-ray tubes general features and mobile equipments
- To study effects of KV and MAS

CRIT – 150

Radiation Hazards & Protection

**Maximum Time : 3 hrs
Total marks :200**

**University Assessment -70%
Internal Assessment – 30%**

Minimum Pass Mark – 40%

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 law scattered radiation radio activity, curie, half life, decay factor
2. Doses, film Badge, Pocket dosimeter and TLD.
3. Maximum permissible Dose
4. Principle and Method of Protection
5. Ten days rule, personal protection and shielding, Leakage Limits.
6. Radiation Risk Biological effects of Radiation
7. Protective Barrier Design.
8. Transport of Radiation materials
9. Radiation Emergencies.

PRACTICAL :

- Dark Room Procedure
- Equipments

- Developing Technique
- Fixing Technique

CRIT – 160

General Radiography

**Maximum Time : 3 hrs
Total marks :200**

**University Assessment -70%
Internal Assessment – 30%**

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& Pelvis (20 Hrs)

- i. Theater Procedure for Hip Pinning & Reduction
- ii. Pelvis
- iii. Sacro Lilac Joint
- iv. Pelvis Bone
- v. Acetabulum

CRIT – 170

BASIC COMPUTER SKILLS

**Maximum Time : 3 hrs
Total marks :200**

**University Assessment -70%
Internal Assessment – 30%**

Minimum Pass Mark – 40%

COURSE CONTENTS:

Fundamentals of Computers

Introduction :

Classification of computer & generation, Basic architecture of computer and its building blocks, input devices, Computer memories.

Number System :

Binary, Octal, Decimal, Hexadecimal representation of characters : ASCII and EBDIC codes, Binary arithmetic and logic circuit.

Classification of Computer language :

Machine, Assembly and High level language, Brief idea of operating system, Assembler, Compiler and interpreter.

Fundamentals of Computer Programming :

Problem solving through computer algorithms and flow chart level of programming.

Operating System :

Introduction to O.S., Types of operating system, Multiprogramming, Timesharing, Batch, Real time and UNIX

Internet :

Introduction to Internet, Components, Services and working on internet, introduction to protocols, tools.

CRIT – 180

COMMUNICATION SKILL

**Maximum Time : 3 hrs
Total marks :200**

**University Assessment -70%
Internal Assessment – 30%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

Unit 1: –

Introducing communication, importance & nature of business communication

Unit 2 :–

Process of business communication, objectives, media of business communication

Unit 3 :–

Types of communication, barriers in communications, principles of communication, essentials of goods communication

Unit 4 :–

Business report writing, written & oral presentation of reports, preparation of office orders, memo, circulars.

SINGHANIA UNIVERSITY

RAJASTHAN

DETAILED SYLLABUS

(DRIT)

RADIO IMAGING TECHNOLOGY

(YEARLY PROGRAMM)

**COURSE TITLE : DIPLOMA IN
(RADIO IMAGING TECHNOLOGY)**

DURATION : 2 YEARS

TOTAL MARKS : 1600

FIRST YEAR : MARKS

COURSE TITLE	PAPER CODE	THEORY	PRACTICAL	TOTAL
ANATOMY	DRIT-110	100	100	200
PHYSIOLOGY	DRIT-120	100	100	200
PATHOLOGY	DRIT-130	100	100	200
GENERATION AND PROPERTIES	DRIT-140	100	100	200
RADIATION HAZARDS & PROTECTION	DRIT-150	100	100	200
GENERAL RADIOGRAPHY	DRIT-160	100	100	200
COMPUTER SKILL	DRIT-170	100	100	200
COMMUNICATION SKILL	DRIT -180	100	100	200
TOTAL				1600

Note :

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

SECOND YEAR

COURSE TITLE	PAPER CODE	THEORY	PRACTICAL	TOTAL
ANATOMY	DRIT-210	100	100	200
PHYSIOLOGY	DRIT-220	100	100	200
GENERAL RADIOGRAPHY	DRIT-230	100	100	200
ULTRASOUND	DRIT-240	100	100	200
CT-SCAN	DRIT-250	100	100	200
MRI	DRIT-260	100	100	200
ORGANIZATIONAL BEHAVIOUR	DRIT-270	100	100	200
PERSONALITY DEVELOPMENT	DRIT-280	100	100	200

TOTAL 1600

Note :

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

DRIT—110

ANATOMY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 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 of the bones of skull and sutures between them
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
 - Chamber 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

D. Joints and functions

PRACTICAL :

Labeled Diagrams of different organs and bones

Viva

DRIT—120

PHYSIOLOGY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Cell
 - Definition
 - Structure and functions the Cytoplasmic Organelles
 - Reproduction Meosis, Mitosis
2. The important physic-chemical laws applied to physiology
 - Diffusion
 - Osmosis
 - Bonding
 - Filtration
 - Dialysis
 - Surface Tension
 - Adsorption
 - Colloid
3. Fundamentals of different Organs Systems
 - Cardiovascular System
 - Respiratory system
 - Digestive system
 - Excretory system
 - Reproductive system
 - Endocrine system
 - Lymphatic system

PRACTICAL :

Diagram of different Vital Organs

Viva

DRIT – 130

PATHOLOGY

Maximum Time : 3 hrs

University Assessment -70%

Total marks :200

Internal Assessment – 30%

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

- Definition
- Immunity : Definition and Classification
- Antigen
- Antibodies – Immunoglobulin
- Antigen and antibody reaction
- Structure and function of immune system
- Immune response
- Hypersensitivity

3.) Principal & Procedure of Serological Tests.

- CRP, Brucella, Agglutination, ASO, WIDAL
- Cold agglutination, VDRL, TPHA

1. Human blood group antigens and antibodies

2. ABO Blood group systems

- Sub. – group
- Source of antigens and types of antibodies

3. Rh Blood group System

- Types of Antigen
- Mode of Inheritance
- Types of Antibodies

4. Erythroblastosis foetalis

5. Growth disorders and Neoplasia

- Neoplasia
- Tumours
- Histopathology of diseases

DRIT—140 GENERATION AND PROPERTIES OF X-RAY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 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 relays timers and its radiographic application
- X-Ray tubes fixed and rotating anodes and faults in X-Ray tubes
- Image intensifier /fluoroscopic equipment, dental radiographic equipments
- Care and maintenance of X-Ray equipment and image intensifier

Clinical Lab :

- X-Ray tubes general features and mobile equipments.
- To study effects of KV and MAS

DRIT—150 Radiation Hazards & Protection

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

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 law scattered radiation radio activity, curie, half life, decay factor

2. Doses, film Badge, Pocket Ionization chamber

Maximum permissible Dose

3. Principle and Method of Protection

PRACTICAL

- Dark Room Procedure
- Equipments
- Developing technique
- Fixing technique

DRIT—160

General Radiography

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 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-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 iliac Joint
 - iv. Pelvis Bone
 - v. Acetabulum

DRIT—170

BASIC COMPUTER SKILL

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Fundamentals of Computers

Introduction :

Classification of computer & generation, Basic architecture of computer and its building blocks, input devices, Computer memories.

Number System :

Binary, Octal, Decimal, Hexadecimal representation of characters : ASCII and EBDIC codes, Binary arithmetic and logic circuit.

Classification of Computer language :

Machine, Assembly and High level language, Brief idea of operating system, Assembler, Compiler and interpreter.

Fundamentals of Computer Programming :

Problem solving through computer algorithms and flow chart level of programming.

Operating System :

Introduction to O.S., Types of operating system, Multiprogramming, Timesharing, Batch, Real time and UNIX

Internet :

Introduction to Internet, Components, Services and working on internet, introduction to protocols, tools.

DRIT—180

COMMUNICATION SKILL

Maximum Time : 3 hrs.
Total Marks : 200

University Assessment – 70%
Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Unit 1: –

Introducing communication, importance & nature of business communication

Unit 2 :-

Process of business communication, objectives, media of business communication

Unit 3 :-

Types of communication, barriers in communications, principles of communication, essentials of goods communication

Unit 4 :-

Business report writing, written & oral presentation of reports, preparation of office orders, memo, circulars.

DRIT—210

ANATOMY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

* Introduction of difference Vital Organs

1. Reproductive Organs (In Brief):
 - Male and Female gonads : Testes, Prostate, Epididymis, Ovary, Fallopian Tubes, uterus Vagina etc
 - Introduction of male Genital organs
 - Introduction of female Genital organs
2. Liver and Spleen : Gall Bladder
 - Introduction
 - Anatomical Position
3. Gall Bladder
 - Introduction & Anatomical Position
4. Excretory Organs
 - Introduction of Kidney
 - Cortex and medulla of the Kidney
 - Ureter
 - Urinary Ladder
 - Urethra (male and female)
 -

PRACTICAL :

Labeled diagrams of different organs and bones

Viva.

DRIT—220

PHYSIOLOGY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Introduction of various systems:

1. Blood
 - Introduction
 - Composition
 - Function
2. Formation of different type of Blood Cells
 - Erythrocytes
 - Leucocytes
 - Thrombocytes
3. Mechanism of Blood Clotting
4. Cerebrospinal Fluid:
 - Composition
 - Formation
 - Function
5. Special Senses (Introduction)
 - Hearing
 - Taste
 - Smell
 - Touch
 - Sight

PRACTICAL:

Diagram of Corpuscles

Viva

DRIT—230

GENERAL RADIOGRAPHY

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

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 position for all the special radiological procedures, using contrast media as per syllabus
2. Positioning and treatment of various cancer patients by using
 - a) Prescribed filters and wedges
 - b) Protecting various organs

DRIT-240 MAMMOGRAPHY AND ULTRASOUND IMAGING

Maximum Time : 3 hrs. University Assessment – 70%
Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1. Mammography: Dedicated mammographic unit and its special features, Mammographic positioning and technical considerations, film screen mammography, digital mammography.

2. UltraSound
 - Principle of Ultra Sound
 - Types of Ultra Sound
 - Equipments description
 - Indication and Clinical Application
 - The physics of ultrasound imaging
 - The physics of transducers
 - The physics of Doppler
 - Ultrasound tissue characterization
 - The potential for three dimensional ultrasound
 - Artifacts in ultrasound
 - Comparison of ultrasound equipment
 - Computerization of data
 - Image recording
 - Safety of ultrasound
 - Medical sonography : reproductive effects and risks
 - Transvaginal ultrasonography
 - Transvaginal Doppler duplex system
 - Transvaginal color Doppler imaging
 - The obstetric ultrasound examination
 - Method of gynecologic ultrasound examination
 - Assessment of normal fetal growth
 - Fetal behavior states
 - Fetal breathing movements
 - Fetal activity
 - Twins and twinning

- Fetal tumors
- Placenta and umbilical cord
- Role of ultrasound in the delivery suite
- Vaginal ultrasonography of the pregnant cervix
- Screening for ovarian cancer
- Transducer
- Image Display
- Types of transducer
- Patient Preparation

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

DRIT—250

CT SCAN

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

1 C.T. Scan

Basic principle of CT scan

Equipment's description

Conventional CT

Indications and Contra Indications

2 Computed Tomography

Scanning principle

Image reconstruction

Image display and documentation

Scanning parameters

3 Sprial CT

Scanning principle

Image reconstruction

Scanning parameters

Image review ,display and documentation

Multislice CT

Scanning principle

Detector types

System performance

Image reconstruction

Scanning parameters

Workflow, image review, display and documentation

Radiation Safety

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

DRIT—260

MRI

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

MRI

- **History of MRI**
- **Magnetism**
- **Artefacts in MRI**
- **Patient preparation**
- **Contrast used in MRI**
- **Basic Principle**
- **Equipment's description Principles of magnetic resonance imaging**
- **Instrumentation**
- **Physical and physiological basis of magnetic relaxation**
- **Image contrast and noise**
- **Use of the inversion recovery pulse sequence**
- **Rapid scan techniques**
- **Fast spin-echo and echo-planar imaging**
- **Fast and water signal separation methods**
- **Spectroscopy**
- **Artifacts**
- **Flow phenomena**
- **Contrast agents**
- **Interventional magnetic resonance imaging**

- **Bioeffects and safety**
- **MRI Breasts,liver,Adrenal gland,kidney,Urinary bladder,Knee,Brain,Slaviery gland,Spine**
- **History of MRI**

PRACTICAL :

Applications of various procedures in well equipped Hospitals and Diagnostics Centers

DRIT—270

ORGANIZATIONAL BEHAVIOUR

Maximum Time : 3 hrs. University Assessment – 70%

Total Marks : 200 Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS :

Organisational Behaviour

UNIT 1 :

Meaning, Concepts, Challenges & O.B. Model individual difference & Learning Theories.

Job Satisfaction and Commitment, Personality and Behavior emotional intelligence.

UNIT 2 :

Perception and Attribution, Behavioral decision making, participating decision making,

Theories of Motivation

UNIT 3 :

Goal Setting, Benefits, Group Structure, Group decision making, Effective Team, Managing

Team, Processes and Issues, Theories and issues.

UNIT 4 :

Basis of Power, Conflict Process, Organizational Design, Nature & Dynamics, Managing

Change, Work Stress

Reference :

- 1. Udai Pareek, Understanding Organisational /Behaviour, Oxford**
- 2. Mishra : Organizational Behaviour Bikas**
- 3. Luthans, Fred : Organizational Behaviour**
- 4. Mirza Saiyadain : Organizational Behaviour, TH**

5. Chandan : Organizational Behaviour, Vikas
6. Helga Drummond : Organizational Behaviour, Oxford
7. Senge, Peter : The Learning Organization
8. Harriss & Martman : Organizational Behaviour, Jaico.

DRIT—280

PERSONALITY DEVELOPMENT

Maximum Time : 3 hrs.

University Assessment – 70%

Total Marks : 200

Internal Assessment –30%

Minimum Pass Marks – 40%

COURSE CONTENTS

Unit-I

Practical grammar basic fundamental of grammar and usage, how to improve command over spoken and written English with stress o Noun, Verb Tense and Adjective. Sentence errors, Punctuation, Vocabulary building to encourage the individual to communicate effective and diplomatically, common errors in business writing.

Unit-II

Introduction to Business Communication: Basic forms of communication, Process of communication, Principles of effective Business Communication, 7 Cs.
Media of Communication: Types of communication: Barriers of communication
(Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds. Layout of letter writing. Types of letter writing: Persuasive letters, Request letters, Sales letters, Complaints and Adjustments.

Departmental Communication: Meaning, Need and types: Interview letters, Promotion Letters, resignation letters, news letters, Circulars, Agenda, Notice, Office memorandums, Office orders, Press release.

Unit-IV

Aids to correct Business writing, Practical Grammar (basic Fundamentals), Sentence errors-Punctuation, Vocabulary building. eriences.

Text Books:

- 1.Wren & Mertin; English grammar and composition, 2003.**
- 2.Sinha, K. K.; Business Communication, Galgotia Publishers, 2003.**
- 3.Robinson, David; Business Etiquette, Kogan Page.**
- 4.Rogets Thesaurus.**

Reference Books:

- 1.Hand Book of Practical Comunication Skills-Chrissie Wrought,published by Jaico Publishing House.**
- 2. Ray, Reuben; Communication today – Understanding Creative Skills, Himalaya Publishing House, 2001**