



EKLAVYA
UNIVERSITY

ज्ञानं प्राप्तये सक्षयं संदानम्

Established by Mahatma Prasad Singh, Vishwanathpur, Shikharajpur, Sonbhadra District, U.P. 2012

School of Nursing and Paramedical Sciences

DIPLOMA IN RADIOTHERAPY SCHEME OF EXAMINATION 1st Year

S.No.	Subject code	SUBJECT	MAX. MARKS	MIN. PASSING MARKS
1	DRATE20Y101	Anatomy & Physiology	100	50
2	DRATE20Y102	Basic principles of Radiotherapy, Radiation Hazards & Protection	100	50
3	DRATE20Y103	Patient Care & Hospital Management	100	50
4	DRATE20Y104	Recent Advances	100	50
TOTAL MAX. MARKS			400	

N.B.- There shall be Institutional /College level theory examination as per university notification, marks to be send to University for internal assessment purposes of university examination.



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ज्ञानं प्राप्तये लक्ष्यं संघाम्नाम्

Established by Mahatma Prasad, NRI, Mumbai on 21/01/2001. Recognized by the Government of Maharashtra, 2002.

School of Nursing and Paramedical Sciences

DIPLOMA IN RADIO THERAPY SCHEME OF EXAMINATION 2nd Year

S.No	Subject code	Subject	Theory	Internal Assessment	Practical	Total
1.	DRATE20Y201	Anatomy & Physiology	100	100	100	300
2.	DRATE20Y202	Basic principles of Radiotherapy, Radiation Hazards & Protection	100	100	100	300
3.	DRATE20Y203	Patient Care & Hospital Management	100	100	100	300
4.	DRATE20Y204	Recent Advances	100	100	100	300
		Total	400	400	400	1200

N.B.- 1. First year institutional /college level theory examination's awarded marks would be consider as Internal assessment marks and candidate have to get min. 50% marks in university theory examination in addition to Internal assessment marks i.e. 100 marks collectively for passing the examination.

2. University Practical examination of 100 max. marks is inclusive of viva and candidate should get separate 50% marks i.e. 50 marks to get pass.



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School Of Nursing & Paramedical Science

ज्ञान प्राप्तये लक्ष्य संस्थानम्

Estd. by Madhya Pradesh Niji Vishwavidyalaya (Sthapna Avam Sanchalana) Adhyadesh, 2020

Department of Paramedical Science

Syllabus

For

Diploma in Radiotherapy



EKLAVYA
UNIVERSITY

School Of Nursing & Paramedical Science

ज्ञान प्राप्तये लक्ष्य संधानम्

Estd. by Madhya Pradesh Niji Vishwavidyalaya (Isthapna Avam Sanchalana) Adhyadesh, 2020

DETAILED CURRICULUM

EKLAVYA UNIVERSITY, DAMOH DIPLOMA IN RADIOTHERAPY SCHEME OF EXAMINATION 1st Year

S.No.	Subject code	SUBJECT	MAX. MARKS	MIN. PASSING MARKS
1	DRATE20Y101	Anatomy & Physiology	100	50
2	DRATE20Y102	Basic principles of Radiotherapy, Radiation Hazards & Protection	100	50
3	DRATE20Y103	Patient Care & Hospital Management	100	50
4	DRATE20Y104	Recent Advances	100	50
TOTAL MAX. MARKS			400	

N.B.- There shall be Institutional /College level theory examination as per university notification, marks to be send to University for internal assessment purposes of university examination.

EKLAVYA UNIVERSITY, DAMOH
DIPLOMA IN RADIOTHERAPY
SCHEME OF EXAMINATION 2nd Year

S.No	Subject code	Subject	Theory	Internal Assessment	Practical	Total
1.	DRATE20Y201 DRATE20Y202	Anatomy & Physiology Practical- Anatomy & Physiology	100	100	100	300
2.	DRATE20Y203 DRATE20Y204	Basic principles of Radiotherapy, Radiation Hazards & Protection Practical	100	100	100	300
3.	DRATE20Y205 DRATE20Y206	Patient Care & Hospital Management Practical	100	100	100	300
4.	DRATE20Y207 DRATE20Y208	Recent Advances Practical- Recent Advances	100	100	100	300
Total			400	400	400	1200

N.B.- 1. First year institutional /college level theory examination's awarded marks would be consider as Internal assessment marks and candidate have to get min. 50% marks in university theory examination in addition to Internal assessment marks i.e. 100 marks collectively for passing the examination.

2. University Practical examination of 100 max. marks is inclusive of viva and candidate should get separate 50% marks i.e. 50 marks to get pass.





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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	1st Year
Subject	Anatomy & Physiology
Time	75 Hrs.

Course code	Anatomy & Physiology	
DRATE20Y101	Nil	Syllabus version
Pre-requisite		
Course Objectives:		
<ol style="list-style-type: none"> 1. To acquire knowledge on basic anatomy of bones and joints. 2. To acquire knowledge on basic functions and movements of joints, anatomy of organs. 3. To acquire knowledge basic physiological function of the body. 4. To acquire knowledge on physiological activities and structure of organs. 5. To acquire knowledge basic anatomical and physiological terms . 		
Course Outcome:		
<ol style="list-style-type: none"> 1. Student will be able to understand anatomical features of various diseased tissues and cells 2. Student will incorporate the knowledge of anatomy with histotechnology. 3. Student will be able to understand the use of histotechnique in the study of anatomical features of diseased tissue. 4. Student will have a comparative knowledge of disease free and diseased tissue. 5. Student will learn incorporation of Histo-techniques with anatomical features of tissue for identification of various diseases. 		
Student Learning Outcomes (SLO):		
<ol style="list-style-type: none"> 1. Student will be able to understand location of the major organs, types of cells, composition and development, cell function and tissue differentiation. 2. Student will be able to understand anatomy, physiology and pathology of body system 3. Student will be able to understand nature and function of common terms related to diseases and conditions of the system 4. Student will be able to understand reproductive system and functions of alimentary system 5. Nerve system and common terms used in this system. 		
Unit – 1		15
<p>The study of anatomy physiology and pathology is essential because it will help in understanding the basic structure of the organs, their functions and changes due to various diseases affecting the organs of the human body. Gross radiological surface anatomy of human body. The human skeleton bones and joints, formation of bones, growth of skeleton, centers of ossification, types of bones, types of joints, thoracic contents and general location of organs and vessels, abdominal viscera and location of the major organs, types of cells, composition and development, cell function and tissue differentiation.</p>		
Unit – 2		15
<p>Anatomy, physiology and pathology of body system – Genes reproductive organs, embryological development. The nature and appearance of bacteria. Common benign tumors, malignant tumors. Dissemination of malignancy, primary and secondary spread. Composition and type of nerve tissue, muscular tissue and types. Abnormalities in tissues, ulceration, sepsis asepsis and anti Heart and blood. Vessels, structure of heart and function. Major vessels of the circulatory systems : blood circulation, purification, common terms used for diseases and conditions of this system.</p>		
Unit – 3		15
<p>Respiratory system and nasal passages and nasal sinuses, pharynz, nature and function of common terms related to diseases and conditions of the system, lymphatic system, lymphoid tissue The</p>		

tonsils, reticulo endothelial system, liver and spleen. Bone marrow, life cycle of red and white of the blood, alimentary system, functions of mouth and teeth.

Unit – 4

15

Salivary gland, pharynx and oesophagus, stomach, small intestine, large intestine (colon), liver and biliary And pancreas, functions of alimentary system, digestion and absorption of food, metabolism, urinary tract Ureters and bladder urethra, Urinary secretion, Reproductive system male genitalia, female genitalia, glands, menstruations, pregnancy and lactation.

Unit – 5

15

Nerve system and common terms used in this system, main subdivisions organs of sense, structure and functions of eye, ear, surface landmarks and topograph in relation to organs of the body for radiography....., inflammation, pyrexia, uler, bacteria and the specific granulomatous, disorders, endocrine, nutrition.

Practical

1. Study with charts and models of all organ systems mentioned in syllabus
2. Microscopic slide examination of elementary human tissue, cells
3. Recording of body temperature, pulse, heart rate, blood pressure and ECG.

Mode: Flipped Class Room, Case Discussion, Lectures.

Suggested Reading:

1. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill
2. Chaurasia -A Text book of Anatomy T.S. Ranganathan - A text book of Human Anatomy
3. Fattana, Human anatomy, (Description and applied), Saunder's & C P Prism Publishers, Bangalore - 1991
4. ESTER . M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia Textbook of Radiotherapy, Radiation Physics, Therapy and Oncology. 6th Edition. C.K. Bomford. Churchill Livingstone.
5. Anatomy and Physiology in Health and Illness, Anne Waugh, Allison Grant, Illustrations by Graeme Chambers.



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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	1st Year
Subject	Basic principles of Radiotherapy, Radiation Hazards & Protection.
Time	75 Hrs.

Course code	Basic principles of Radiotherapy, Radiation Hazards & Protection	
DRATE20Y102	Nil	Syllabus version
Pre-requisite		
Course Objectives:		
<ol style="list-style-type: none"> 1. To prompt introspection and motivate students towards self-appraisal, goal-setting and problem solving. 2. Familiarize students with negotiation techniques and importance of right attitude for better coordination and team building. 3. Guide students to better drafting in creative and critical compositions. 4. Help students review policies of global importance affecting corporate interactions. 		
Course Outcome:		
<ol style="list-style-type: none"> 1. Students will be able to connect science and technology with society. 2. Students will learn to prepare for Group Discussions and thus, be able to perform well in discussions, debates and interviews. 3. Examine and analyze the complex nature and seriousness of the patient's condition or extent of injuries to assess the need for advanced emergency medical care, and perform complex medical care based on assessment findings of the patient's condition and/or situation. 4. Demonstrate an increased depth and breadth of patient care in the prehospital setting by applying principles from evidence-based research in emergency medicine. 		
Student Learning Outcomes (SLO):		
<ol style="list-style-type: none"> 1. Students will be able to demonstrate their ability to perform an appropriate primary/initial assessment of the ill or injured patient in the prehospital setting. 2. Students will be able to demonstrate their ability to perform an appropriate secondary/focused history and physical exam of the trauma patient in the pre-hospital setting. 3. Students will be able to perform an appropriate secondary/focused history and physical exam for patients with medical complaints or signs and symptoms in the pre-hospital setting. 4. Students will be able to formulate an appropriate treatment plan to include administration of IV fluids and/or pharmacological medications for the trauma patient in the prehospital setting. 		
Unit – 1		15
Every electric current is accompanied by magnetic effects & electro magnetism is the branch of physics that deals with the relationship between electricity & magnetism. X-ray belongs to a group of radiation called electromagnetic radiation. It is the transport of energy through space as a combination of electric and magnetic field. Any accelerating charge not bound to an atom will emit electromagnetic radiation.		
Unit – 2		15
Basic electricity and magnetism and radiation physics: Units of measurements, force , work, energy, heat and energy, various methods of transmission of heat.		
Unit – 3		15
Magnetism, classification of magnets, properties of magnets, magnetic field and line of forces and their measurement, electro magnetism. Electricity, electrostatic conductor and insulators, elementary electron theory, units of electric charges potential, condensers and capacity of condensers.		
Unit – 4		15

Current, electricity, Ohm's law, various units of current, voltage and rectifiers, heating effect of current, units of power and power consumption, principle and working of moving coil and moving iron types of meters. Electro magnetic induction, transformers, their losses, rating, induction motors. Direct and alternating current, impedance, capacitance, thermionic emission, characteristic curves of diode and triode valves, semi conductors.

Unit – 5

15

Knowledge of cathode, anode, rectifier, solid state rectifier, self rectified circuits, imbalance of single valve rectifications, half wave and full rectifications, transformer and HT Cables, HT Cable calibration and measurement units of HT, measurement of output of x-ray tube. Apparatus for radiography, radiotherapy and imaging and its routine maintenance, mains supply basic x-ray circuit control, stabilizing, equipment motors, various exposure timers control of scattered radiations fluoroscopy, mobile equipment, photofluorography, mammographic equipment.

Practical

1. Measurements of output from cobalt therapy machine.
2. Measurements of depth dose and calculation of depth dose.
3. Brachytherapy planning for manual after loading Cs-137 system.
4. Ir-192 implant dose calculation
5. Treatment planning of
 - (a) single direct field
 - (b) two opposite field
6. Treatment planning of
 - (a) 3 fields
 - (b) cross fire technique.
7. Treatment planning with computer.

Mode: Flipped Class Room, Case Discussion, Lectures.

Suggested Reading:

1. General radiography principles and practice, 1st edition, christop
2. Radiology fundamental, springer
3. Hand book of radiology berry 1992.
4. Text book of radiology hariqbal singh 2016.





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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2YEAR DIPLOMA COURSE

Year	1 ST Year
Subject	Patient Care & Hospital Management
Time	75 Hrs.

Course code	Patient Care & Hospital Management.	
DRATE20Y103		
Pre-requisite	Nil	Syllabus version
Course Objectives:		
<ol style="list-style-type: none"> 1. To counsel the patient about proper hygiene of eye. 2. To educate about prophylactic measures to prevent various diseases. 3. To educate the patient about the need of proper treatment of various occ diseases. 4. To educate the patient about different methods applied to prevent blindness. 5. To know about concept of preventive blindness. 		
Course Outcome:		
<ol style="list-style-type: none"> 1. To understand and maintain sterile technique in hospital . 2. To acquire knowledge about contrast media its use and management. 3. To develop skill knowledge to handle the emergency cases in department and patients movements. 4. To acquire knowledge about the administration of contrast , O2 and Biopsy procedures. 5. To develop skill knowledge on recording vital signs assessments. 6. To develop skill knowledge on patient transfer and infection safety and personnel protection 		
Student Learning Outcomes (SLO):		
<ol style="list-style-type: none"> 1. To provide all levels of health care services. 2. To provide coordinated team approach to therapeutic and rehabilitative health care services. 3. To provide advance training sufficient for patient health management. 4. To provide educational opportunities within healthcare system for employees. 5. To provide coordinated liaison with health and welfare agencies. 		
Unit – 1		15
Radiography unquestionable begins and ends in the dark room. Where the necessary handling and processing of X-ray film can be carried out safely and efficiently, without the hazard of producing film fog by accidental exposure to light or X-ray.		
Unit – 2		15
Dark Room procedure : Photographic process – light image, image produced by radiation, light sensitive materials, latent image. Film material : The structure of X-ray films, resolving power graininess of film, sensitivity of film, speed of film, contrast of film and types of film. Sensitivity : Characteristic curve and its usefulness. X-ray film storage : Storage of unexposed films.		
Unit – 3		15
Screens : Construction of intensifying screens, choice of fluorescent material, intensifying factor detail sharpness, speed, screen contact, care of intensifying screens and types of screens. Cassettes : Cassettes design and care of cassettes, mounting of intensifying screens in the cassettes.		

Unit – 4	15
<p>Film processing : Constituents of the processing solution and replenisher. Factors affecting the developer, type of developer and fixer, factor affecting the use of the fixer, factors affecting the use of the fixer, silver recovery method. Film Rinsing washing and drying : Intermediate rinse, washing and drying of films. Film processing equipment : Manual and automatic processing. Dark room design : Layout and material used.</p>	
Unit – 5	15
<p>The radiographic image: The sharpness, contrast detail definition, viewing conditions. Administration: Trimming, identification of film legends, relevant papers of the patients, records filling, report distribution. Dark room process : Light proof with colour, ventilation and temperature, maintenance, technical and processing films faults, fog static pressure and static.</p>	
Practical	
<ol style="list-style-type: none"> 1. Familiarization of radiation survey meters and their functional performance checks 2. Radiological protection survey of radiotherapy , stimulators and CT Stimulators Installations 3. QA on x-ray, stimulator and radiotherapy equipments 4. Procedures for calibration of measuring and monitoring instruments 5. Radiation protection survey in and around radiotherapy premises. 	
# Mode: Flipped Class Room, Case Discussion, Lectures.	
Suggested Reading:	
<ol style="list-style-type: none"> 1. Torres, patient care in radiology , ruth ertlic 2. Patient care in international radiology, conni reifsynder. 3. Health care reform in radiology Jorge elias, Richacd semelka. 4. Patient care in radiology, 9th edition, ruth ann ehrlich, dawncokes. 	

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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	1st Year
Subject	Recent Advances
Time	75 Hrs.

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Course code	Recent Advances	Syllabus version
DRATE20Y104	Nil	
Pre-requisite		
Course Objectives:		
<ol style="list-style-type: none"> 1. To develop and carry out management plane to relate diagnostic radiology procedures. 2. To understand appropriate diagnostic radiology study . 3. To understand diagnostic radiology in recent advances. 4. To understand magnetic radiation. 		
Course Outcome:		
<ol style="list-style-type: none"> 1. Student will have a wide knowledge and chemistry of ionic and nonionic contrast media. 2. Student will acquire knowledge about the physics behind MRI and CT image formation. 3. Student will develop skill techniques on CT scan & PET and NM technology. 		
Student Learning Outcomes (SLO):		
<ol style="list-style-type: none"> 1. student will acquire knowledge on perfusion technique on pediatric cardio surgery 2. student will have knowledge on all minimally invasive surgery 3. student will have concept on minimally recent advanced in perfusion technology 4. student will acquire knowledge on the various disease of the various cardiac disease 5. student will acquire practical knowledge on the emergency situation during the on going and to assist the surgeon team. 		
Unit – 1		15
Every electric current is accompanied by magnetic effects & electro magnetism is the branch of physics that deals with the relationship between electricity & magnetism. X-ray belongs to a group of radiation called electromagnetic radiation. It is the transport of energy through space as a combination of electric and magnetic field. Any accelerating charge not bound to an atom will emit electromagnetic radiation.		
Unit – 2		15
Basic electricity and magnetism and radiation physics : Units of measurements, force , work, energy, heat and energy, various methods of transmission of heat. Magnetism, classification of magnets, properties of magnets, magnetic field and line of forces and their measurement, electro magnetism.		
Unit – 3		15
Electricity, electrostatic conductor and insulators, elementary electron theory, units of electric charges potential, condensers and capacity of condensers. Current, electricity, Om's law, various units of current, voltage and rectifiers, heating effect of current, units of point and power consumption, principal and working of moving coil and moving iron types of meters.		
Unit – 4		15
Electro magnetic induction, transformers, their losses, rating, induction motors. Direct and alternating current, impedance, capacitance, thermoionic emission, characteristic curves of diode and triode valves, semi conductors. Knowledge of cathode, anode, rectifier, solid state rectifier, self rectified circuits, imbalance of single valve rectifications, half wave and full rectifications, transformer and HT Cables, HT Cable calibration and measurement units of HT, measurement of out put of x-ray tube.		

Unit – 5	15
Apparatus for radiography, radiotherapy and imaging and its routine maintenance, mains supply basic x- ray circuit control, stabilizing, equipment motors, various exposure timers control of scattered radiations fluoroscopy , mobile equipment, photofluorography, mammographic equipment.	
Practical	
1. Survey project report on recent advances	
# Mode: Flipped Class Room, Case Discussion, Lectures.	
Suggested Reading:	
<ol style="list-style-type: none"> 1. Concise Text book of basic radiology by Dr.Bhushan N Lakhkar 1980. 2. Core Radiology by Jacob Mandell 1998. 3. Text book of radiology sachin khanduary 1991. 4. Text book radiology berry, prithvi 1987. 	





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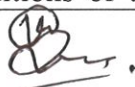
Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	2 nd Year
Subject	Anatomy & Physiology
Time	75 Hrs.

Course code	Anatomy & Physiology	
DRATE20Y201	Nil	Syllabus version
Pre-requisite		
Course Objectives:		
6. To acquire knowledge on basic anatomy of bones and joints. 7. To acquire knowledge on basic functions and movements of joints, anatomy of organs. 8. To acquire knowledge basic physiological function of the body. 9. To acquire knowledge on physiological activities and structure of organs. 10. To acquire knowledge basic anatomical and physiological terms .		
Course Outcome:		
6. Student will be able to understand anatomical features of various diseased tissues and cells 7. Student will incorporate the knowledge of anatomy with histotechnology. 8. Student will be able to understand the use of histotechnique in the study of anatomical features of diseased tissue. 9. Student will have a comparative knowledge of disease free and diseased tissue. 10. Student will learn incorporation of Histo-techniques with anatomical features of tissue for identification of various diseases.		
Student Learning Outcomes (SLO):		
6. Student will be able to understand location of the major organs, types of cells, composition and development, cell function and tissue differentiation. 7. Student will be able to understand anatomy, physiology and pathology of body system 8. Student will be able to understand nature and function of common terms related to diseases and conditions of the system 9. Student will be able to understand reproductive system and functions of alimentary system 10. Nerve system and common terms used in this system.		
Unit – 1		15
The study of anatomy physiology and pathology is essential because it will help in understanding the basic structure of the organs, their functions and changes due to various diseases affecting the organs of the human body. Gross radiological surface anatomy of human body. The human skeleton bones and joints, formation of bones, growth of skeleton, centers of ossification, types of bones, types of joints, thoracic contents and general location of organs and vessels, abdominal viscera and location of the major organs, types of cells, composition and development, cell function and tissue differentiation.		
Unit – 2		15
Anatomy, physiology and pathology of body system – Genes reproductive organs, embryological development. The nature and appearance of bacteria. Common benign tumors, malignant tumors. Dissemination of malignancy, primary and secondary spread. Composition and type of nerve tissue, muscular tissue and types. Abnormalities in tissues, ulceration, sepsis a sepsis and anti Heart and blood. Vessels, structure of heart and function. Major vessels of the circulatory systems : blood circulation, purification, common terms used for diseases and conditions of this system.		
Unit – 3		15
Respiratory system and nasal passages and nasal sinuses, pharynx, nature and function of common terms related to diseases and conditions of the system, lymphatic system, lymphoid tissue The		



tonsils, reticulo endothelial system, liver and spleen. Bone marrow, life cycle of red and white of the blood, alimentary system, functions of mouth and teeth.

Unit – 4

15

Salivary gland, pharynx and oesophagus, stomach, small intestine, large intestine (colon), liver and biliary And pancreas, functions of alimentary system, digestion and absorption of food, metabolism, urinary tract Ureters and bladder urethra, Urinary secretion, Reproductive system male genitalia, female genitalia, glands, menstruations, pregnancy and lactation.

Unit – 5

15

Nerve system and common terms used in this system, main subdivisions organs of sense, structure and functions of eye, ear, surface landmarks and topograph in relation to organs of the body for radiography....., inflammation, pyrexia, ulcer, bacteria and the specific granulomatous, disorders, endocrine, nutrition.

Practical

DRATE20Y202

4. Study with charts and models of all organ systems mentioned in syllabus
5. Microscopic slide examination of elementary human tissue, cells
6. Recording of body temperature, pulse, heart rate, blood pressure and ECG.

Mode: Flipped Class Room, Case Discussion, Lectures.

Suggested Reading:

6. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill
7. Chaurasia -A Text book of Anatomy T.S. Ranganathan - A text book of Human Anatomy
8. Fattana, Human anatomy, (Description and applied), Saunder's & C P Prism Publishers, Bangalore - 1991
9. ESTER . M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia Textbook of Radiotherapy, Radiation Physics, Therapy and Oncology. 6th Edition. C.K. Bomford. Churchill Livingstone.
10. Anatomy and Physiology in Health and Illness, Anne Waugh, Allison Grant, Illustrations by Graeme Chambers.





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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	2 nd Year
Subject	Basic principles of Radiotherapy, Radiation Hazards & Protection.
Time	75 Hrs.

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Course code	Basic principles of Radiotherapy, Radiation Hazards & Protection	
DRATE20Y203	Nil	Syllabus version
Pre-requisite		
Course Objectives:		
5. To prompt introspection and motivate students towards self-appraisal, goal-setting and problem solving. 6. Familiarize students with negotiation techniques and importance of right attitude for better coordination and team building. 7. Guide students to better drafting in creative and critical compositions. 8. Help students review policies of global importance affecting corporate interactions.		
Course Outcome:		
5. Students will be able to connect science and technology with society. 6. Students will learn to prepare for Group Discussions and thus, be able to perform well in discussions, debates and interviews. 7. Examine and analyze the complex nature and seriousness of the patient's condition or extent of injuries to assess the need for advanced emergency medical care, and perform complex medical care based on assessment findings of the patient's condition and/or situation. 8. Demonstrate an increased depth and breadth of patient care in the prehospital setting by applying principles from evidence-based research in emergency medicine.		
Student Learning Outcomes (SLO):		
5. Students will be able to demonstrate their ability to perform an appropriate primary/initial assessment of the ill or injured patient in the prehospital setting. 6. Students will be able to demonstrate their ability to perform an appropriate secondary/focused history and physical exam of the trauma patient in the pre-hospital setting. 7. Students will be able to perform an appropriate secondary/focused history and physical exam for patients with medical complaints or signs and symptoms in the pre-hospital setting. 8. Students will be able to formulate an appropriate treatment plan to include administration of IV fluids and/or pharmacological medications for the trauma patient in the prehospital setting.		
Unit – 1		15
Every electric current is accompanied by magnetic effects & electro magnetism is the branch of physics that deals with the relationship between electricity & magnetism. X-ray belongs to a group of radiation called electromagnetic radiation. It is the transport of energy through space as a combination of electric and magnetic field. Any accelerating charge not bound to an atom will emit electromagnetic radiation.		
Unit – 2		15
Basic electricity and magnetism and radiation physics: Units of measurements, force , work, energy, heat and energy, various methods of transmission of heat.		
Unit – 3		15
Magnetism, classification of magnets, properties of magnets, magnetic field and line of forces and their measurement, electro magnetism. Electricity, electrostatic conductor and insulators, elementary electron theory, units of electric charges potential, condensers and capacity of condensers.		
Unit – 4		15

Current, electricity, Ohm's law, various units of current, voltage and rectifiers, heating effect of current, units of power and power consumption, principle and working of moving coil and moving iron types of meters. Electro magnetic induction, transformers, their losses, rating, induction motors. Direct and alternating current, impedance, capacitance, thermionic emission, characteristic curves of diode and triode valves, semi conductors.

Unit – 5

15

Knowledge of cathode, anode, rectifier, solid state rectifier, self rectified circuits, imbalance of single valve rectifications, half wave and full rectifications, transformer and HT Cables, HT Cable calibration and measurement units of HT, measurement of output of x-ray tube. Apparatus for radiography, radiotherapy and imaging and its routine maintenance, mains supply basic x-ray circuit control, stabilizing, equipment motors, various exposure timers control of scattered radiations fluoroscopy, mobile equipment, photofluorography, mammographic equipment.

Practical

DRATE20Y204

8. Measurements of output from cobalt therapy machine.
9. Measurements of depth dose and calculation of depth dose.
10. Brachytherapy planning for manual after loading Cs-137 system.
11. Ir-192 implant dose calculation
12. Treatment planning of
 - (a) single direct field
 - (b) two opposite field
13. Treatment planning of
 - (a) 3 fields
 - (b) cross fire technique.
14. Treatment planning with computer.

Mode: Flipped Class Room, Case Discussion, Lectures.

Suggested Reading:

5. General radiography principles and practice, 1st edition, christop
6. Radiology fundamental, springer
7. Hand book of radiology berry 1992.
8. Text book of radiology hariqbal singh 2016.





EKLAVYA
UNIVERSITY

School Of Nursing & Paramedical Science

ज्ञान प्राप्तये लक्ष्यं स्थानम्

Estd. by Madhya Pradesh Niji Vishwavidyalaya (Sthapna Avam Sanchalana) Adhyadesh. 2020

Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2YEAR DIPLOMA COURSE

Year	2 nd Year
Subject	Patient Care & Hospital Management
Time	75 Hrs.

Course code	Patient Care & Hospital Management.	
DRATE20Y205		
Pre-requisite	Nil	Syllabus version
Course Objectives:		
<p>6. To counsel the patient about proper hygiene of eye.</p> <p>7. To educate about prophylactic measures to prevent various diseases.</p> <p>8. To educate the patient about the need of proper treatment of various occ diseases.</p> <p>9. To educate the patient about different methods applied to prevent blindness.</p> <p>10. To know about concept of preventive blindness.</p>		
Course Outcome:		
<p>7. To understand and maintain sterile technique in hospital .</p> <p>8. To acquire knowledge about contrast media its use and management.</p> <p>9. To develop skill knowledge to handle the emergency cases in department and patients movements.</p> <p>10. To acquire knowledge about the administration of contrast , 02 and Biopsy procedures.</p> <p>11. To develop skill knowledge on recording vital signs assessments.</p> <p>12. To develop skill knowledge on patient transfer and infection safety and personnel protection</p>		
Student Learning Outcomes (SLO):		
<p>6. To provide all levels of health care services.</p> <p>7. To provide coordinated team approach to therapeutic and rehabilitative health care services.</p> <p>8. To provide advance training sufficient for patient health management.</p> <p>9. To provide educational opportunities within healthcare system for employees.</p> <p>10. To provide coordinated liaison with health and welfare agencies.</p>		
Unit – 1		15
Radiography unquestionable begins and ends in the dark room. Where the necessary handling and processing of X-ray film can be carried out safely and efficiently, without the hazard of producing film fog by accidental exposure to light or X-ray.		
Unit – 2		15
Dark Room procedure : Photographic process – light image, image produced by radiation, light sensitive materials, latent image. Film material : The structure of X-ray films, resolving power graininess of film, sensitivity of film, speed of film, contrast of film and types of film. Sensitivity : Characteristic curve and its usefulness. X-ray film storage : Storage of unexposed films.		
Unit – 3		15
Screens : Construction of intensifying screens, choice of fluorescent material, intensifying factor detail sharpness, speed, screen contact, care of intensifying screens and types of screens. Cassettes : Cassettes design and care of cassettes, mounting of intensifying screens in the cassettes.		

Unit – 4	15
<p>Film processing : Constituents of the processing solution and replenisher. Factors affecting the developer, type of developer and fixer, factor affecting the use of the fixer, factors affecting the use of the fixer, silver recovery method. Film Rinsing washing and drying : Intermediate rinse, washing and drying of films. Film processing equipment : Manual and automatic processing. Dark room design : Layout and material used.</p>	
Unit – 5	15
<p>The radiographic image: The sharpness, contrast detail definition, viewing conditions. Administration: Trimming, identification of film legends, relevant papers of the patients, records filling, report distribution. Dark room process : Light proof with colour, ventilation and temperature, maintenance, technical and processing films faults, fog static pressure and static.</p>	
DRATE20Y206	
Practical	
<ol style="list-style-type: none"> 6. Familiarization of radiation survey meters and their functional performance checks 7. Radiological protection survey of radiotherapy , stimulators and CT Stimulators Installations 8. QA on x-ray, stimulator and radiotherapy equipments 9. Procedures for calibration of measuring and monitoring instruments 10. Radiation protection survey in and around radiotherapy premises. 	
# Mode: Flipped Class Room, Case Discussion, Lectures.	
Suggested Reading:	
<ol style="list-style-type: none"> 5. Torres, patient care in radiology , ruth ertlic 6. Patient care in international radiology, conni reifsynder. 7. Health care reform in radiology Jorge elias, Richacd semelka. 8. Patient care in radiology, 9th edition, ruth ann ehrlich, dawncokes. 	





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Department of Paramedical Science

SYLLABUS

Diploma in Radiotherapy 2 YEAR DIPLOMA COURSE

Year	2 nd Year
Subject	Recent Advances
Time	75 Hrs.

Course code	Recent Advances	
DRATE20Y207	Nil	Syllabus version
Pre-requisite		
Course Objectives:		
5. To develop and carry out management plane to relate diagnostic radiology procedures. 6. To understand appropriate diagnostic radiology study . 7. To understand diagnostic radiology in recent advances. 8. To understand magnetic radiation.		
Course Outcome:		
4. Student will have a wide knowledge and chemistry of ionic and nonionic contrast media. 5. Student will acquire knowledge about the physics behind MRI and CT image formation. 6. Student will develop skill techniques on CT scan & PET and NM technology.		
Student Learning Outcomes (SLO):		
6. student will acquire knowledge on perfusion technique on pediatric cardio surgery 7. student will have knowledge on all minimally invasive surgery 8. student will have concept on minimally recent advanced in perfusion technology 9. student will acquire knowledge on the various disease of the various cardiac disease 10. student will acquire practical knowledge on the emergency situation during the on going and to assist the surgeon team.		
Unit – 1		15
Every electric current is accompanied by magnetic effects & electro magnetism is the branch of physics that deals with the relationship between electricity & magnetism. X-ray belongs to a group of radiation called electromagnetic radiation. It is the transport of energy through space as a combination of electric and magnetic field. Any accelerating charge not bound to an atom will emit electromagnetic radiation.		
Unit – 2		15
Basic electricity and magnetism and radiation physics : Units of measurements, force , work, energy, heat and energy, various methods of transmission of heat. Magnetism, classification of magnets, properties of magnets, magnetic field and line of forces and their measurement, electro magnetism.		
Unit – 3		15
Electricity, electrostatic conductor and insulators, elementary electron theory, units of electric charges potential, condensers and capacity of condensers. Current, electricity, Ohm's law, various units of current, voltage and rectifiers, heating effect of current, units of power and power consumption, principal and working of moving coil and moving iron types of meters.		
Unit – 4		15
Electro magnetic induction, transformers, their losses, rating, induction motors. Direct and alternating current, impedance, capacitance, thermoionic emission, characteristic curves of diode and triode valves, semi conductors. Knowledge of cathode, anode, rectifier, solid state rectifier, self rectified circuits, imbalance of single valve rectifications, half wave and full rectifications, transformer and HT Cables, HT Cable calibration and measurement units of HT, measurement of out put of x-ray tube.		

Unit – 5	15
Apparatus for radiography, radiotherapy and imaging and its routine maintenance, mains supply basic x- ray circuit control, stabilizing, equipment motors, various exposure timers control of scattered radiations fluoroscopy , mobile equipment, photofluorography, mammographic equipment.	
Practical	DRATE20Y208
2. Survey project report on recent advances	
# Mode: Flipped Class Room, Case Discussion, Lectures.	
Suggested Reading:	
5. Concise Text book of basic radiology by Dr.Bhushan N Lakhkar 1980.	
6. Core Radiology by Jacob Mandell 1998.	
7. Text book of radiology sachin khanduary 1991.	
8. Text book radiology berry, prithvi 1987.	

