

Course Description

Department: Medical Rehabilitation Sciences

1439-1440 H Academic Year – Semester-II

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Course name	Electrotherapy-1
Course number	PTH-213
Credit Hours (teaching units)	2 Credit Hours (1 Hour Lecturer + 2 Hour Lab per week)
College	College of Applied Medical Sciences
Targeted Students	2 nd Year(Level-3)
Pre-requisite	PHYS-102
Name of Coordinator	Dinesh

Course Description

Methods of the Course Instructions

1. Theoretical Classes (lectures)
2. Practical Classes

Course

Objectives

(A) General Objectives

Understand the link between the theoretical aspects of physics and the practical components of electrotherapy. Demonstrate knowledge of the basic functions and effects of electro physical agents used in Physical Therapy. Identify, describe and explain indications, contra-indications and precautions for intervention utilization physical agents and electrotherapeutic modalities.

Select and apply the appropriate modality and modify application of modality according to the patient's problem.

(B) Specific

Objectives;

1. List the Commonly used modalities in Electrotherapy
2. Mention the types of IRR, Indications and Contraindications
3. List the Sources of UVR and therapeutic uses
4. List the physiological effects and electrodes used in SWD and MWD
5. Mention the Thermal effects of ultrasound and its production
6. List the Cellular and Tissue response to LASER application
7. Outline the physiological effects of moist pack
8. Outline the physiological effects of cold pack

9. Outline the physiological effects of paraffin wax bath
10. Mention the temperature range used in cold and hot whirlpool

Course Learning Outcomes:

By the end of this course the student should be able to:

1. Identify, describe and explain indications, contra-indications and precautions for intervention utilization physical agents and electrotherapeutic modalities.
2. Select and apply the appropriate modality and modify application of modality according to the patient's problem.
3. Demonstrate specific treatment parameters, application techniques and treatment outcome for IRR
4. Demonstrate specific treatment parameters, application techniques and treatment outcome for UVR
5. Demonstrate specific treatment parameters, application techniques and treatment outcome for SWD and MWD
6. Demonstrate specific treatment parameters, application techniques and treatment outcome for Ultrasound
7. Demonstrate specific treatment parameters, application techniques and treatment outcome for Laser
8. Demonstrate specific treatment parameters, application techniques and treatment outcome for moist pack and cold pack
9. Demonstrate specific treatment parameters, application techniques and treatment outcome for paraffin Wax Bath
10. Demonstrate specific treatment parameters, application techniques and treatment outcome for whirlpool therapy

Main Textbook

1. Claytons Electrotherapy, Elizabeth & Palastanga, Nigel Forster, 9th edition, 1985 W.B. Saunders Company

Mark Distribution

Assessment Tasks for Students During the course

#	Assessment task*	Week Due	Proportion of Total Assessment
1	1 CA Theory	4	12
2	1CA Practical	5	10
3	2CA Theory	10	13
4	3CA Practical	11	10
5	Discussions	Every Week	5

#	Assessment task*	Week Due	Proportion of Total Assessment
6	Final Practical	15	25
7	Final Theory	16	25
	Total		100

Distribution of Course Lectures and Practical Classes

Topics to be covered

List of Topics	Contact Hours
1 Thermal effects of heat & temperature. Heat transfer, Physiological effects of heat and cold Departmental/ Clinic orientation.	1Hour
2 Introduction to Electromagnetic spectrum	1Hour
3 Infra-red Radiation (IRR): Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects of IR. Duration & frequency of treatment, Indication & Contraindication of IRR.	1Hour
4 Ultra-violet Radiation (UVR): Define UVR, Types of UVR and UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp	1Hour
5 Short Wave Diathermy (SWD): Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD. Physiological & Therapeutic effects of SWD. Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Indications & Contraindications, Dangers, Dosage parameters of SWD. Micro Wave Diathermy (MWD): Define Microwave, Wave length & Frequency, Production of MW, Physiological & Therapeutic effects of MWD. Applicators, Dosage Parameters, Indications & Contraindications, Dangers of MWD.	1Hour
6 Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Thermal effects, Non-thermal effects. US Fields: Near field, Far field, Half value distance. Phonophoresis: Define Phonophoresis, Methods of application. Dosage parameters: Continuous & Pulsed mode, Intensity, Coupling Media, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound.	1Hour

	Commonly used drugs in Phonophoresis and its uses.	
7	1st Continuous Assessment Theory Exam	1Hour
8	LASER: Define LASER. Types of LASER, Principles of Production, Production of LASER by various methods. Physiological & Therapeutic effects of LASER. Methods of application of LASER, Dosage of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power dens.	1Hour
9	Moist Heat Therapy: Hydro collator packs, Physiological Effects and Therapeutic uses of Moist Heat Pack. Methods of applications, Indications & Contraindications and Dangers of Moist Heat.	1Hour
10	Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics uses. Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosages.	1Hour
11	2nd Continuous Assessment Theory Exam	1Hour
12	Paraffin Wax Bath Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Physiological & Therapeutic effects of (PWB). Methods of application of Wax Bath, Indications & Contraindication, Dangers of Wax Bath Therapy.	1Hour
13	Whirl Pool Bath: Construction, Physiological Effects and Therapeutic uses of Whirl Pool Bath. Method of Application, Indications, Contraindications and Dangers of Whirl Pool Bath. Contrast Bath: Physiological Effects and Therapeutic uses of Contrast bath. Methods of applications, Indications & Contraindications and Dangers of Contrast Bath.	1Hour
14	Fluidotherapy: Construction, Physiological Effects and Therapeutic uses of fluidotherapy. Method of application, Indications, Contraindications and Dangers of fluidotherapy.	1Hour
15	Revision	1Hour
Practical topics		2Hour
Introduction to Electrotherapy Modalities		2Hour
Demonstration of Practical Performa for Electrotherapy		2Hour
Demonstration and Practical Application of Infra-Red Radiation(IRR)		2Hour
Demonstration and Practical Application of Ultra-Violet Radiation(UVR)		2Hour
Demonstration and Practical Application of Short Wave Diathermy(SWD) and Micro wave Diathermy(MWD)		2Hour
Demonstration and Practical Application of Ultrasound		2Hour
1st Continuous Assessment Lab Exam		2Hour
Demonstration and Practical Application of LASER		2Hour
Demonstration and Practical Application of Moist Heat Therapy		2Hour
Demonstration and Practical Application of Cryotherapy		2Hour
2nd Continuous Assessment Lab Exam		2Hour

Demonstration and Practical Application of Paraffin wax bath	2Hour
Demonstration and Practical Application of Whirl pool and Contrast Bath	2Hour
Demonstration and Practical Application of Fluidotherapy	2Hour
Revision	2Hour