

COURSE TITLE: ELECTROTHROTHERAPY & CLINICAL PRACTICE

		MARKS	
STUDY HOURS:	60+160	THEORY	120
PAPER:	01	PRACTICAL:	30
Term :	4th	TIME :	03HRS

COURSE CONTENTS STUDY HOURS
(Theory +Practical)

A. ELECTRO MECHANIC AND ELECTROTHERAPY	12+30
A1. Low frequency current for treatment.	
A1.1 Introduction to low frequency current	
A1.2 Faradic and Sinusoidal currents.	
A1.3 Interrupted direct current	
A1.4 Diadanimic current.	
A1.5 Electro diagnosis	
A1.6 Inferential Therapy	
A1.7 T.E.N.S.	
A2. High frequency current for Treatment	
A2.1 High frequency current production.	
A2.2 SWD	
A2.3 MWD	
A2.4 Ultra sonic	
A2.5 IRR	
A2.6 Ultra Violet rays.	
A3 Electro Checks / Electrical shocks.	
A4 Physical effects of heat and temperature. Transmission of heat. Wavelength and frequency.	
A5 Infrared rays and its sources.	
A6 Ultraviolet ray and its sources. Choice of lamp for treatment.	
A8 Currents from cell and Main's supply, Ohm's Law: Electrical Units. Resistance in series and parallel. Chemical effects of currents.	
B. ELECTROTHERAPY	6+20
(Application of Electro mechanics to Electro medical work)	
B1. GALVANIC CURRENT	
B1.1 Technique and application of Galvanic current.	
B1.2 Its effects and Uses.	
B1.3 Indications, contra indication, dangers and precautions.	
B2 FARADIC CURRENT.	6+15
B2.1 Technique and application of Faradic current.	
B2.2 Its effect, uses, dangers, indications and contra-indications.	
B3 SHORT WAVE DIATHERMY.	6+20
B3.1 Heating of Tissues	

- B3.2 Physiological effects of SWD
- B3.3 Therapeutic effects of SWD
- B3.4 Dangers and Precaution of SWD
- B3.5 Indication and Contra Indication of SWD
- B3.6 Applying of SWD method
 - B3.6.1 Condenser field Method.
 - i) Cross fire ii) Through & through
 - ii) Co Planar. iii) Mono Planar.
 - Electrode use
 - i) Disk Method ii) Pads Method

B3.6.2 Cable Method:

B4 MICRO WAVE DIATHERMY. 6+20

- B4.1 Introduction.
- B4.2 Physiological effects of MWD
- B4.3 Therapeutic effects of MWD
- B4.4 Dangers and Precaution of MWD
- B4.6 Indication and Contra Indication of MWD

B5 INFRA RED RAYS 6+15

- B5.0 Introduction.
- B5.1 Physiological effects of Infrared rays.
- B5.2 Therapeutic effects of Infrared rays.
- B5.3 Indication and contra indication
- B5.4 Dangers and precautions.

B6 ULTRASONIC: 6+20

- B6.1 Introduction.
- B6.2 Physiological effects.
- B6.3 Therapeutic effects.
- B6.4 Technique of application
- B6.5 Indication and contra indication.
- B6.7 Dangers and precaution.

C. PRACTICALS OF ELECTROTHERAPY 6+8

C1 LOW FREQUENCY CURRENTS

Electrical stimulation

- C1.1 Types of current used – low or high
- C1.2 Identification of main parts. Electrodes,
- C1.3 Connections etc.

C1.4 Low frequency currents- types like Faradic, TENS etc 2+6

- C1.4.1 Indications for use like Bell's palsy.
- C1.4.2 Methods of use.
- C1.4.3 Safety precautions for self and for patients.

- C1.4.4 Study of electrodes and their application.
- C1.4.5 Study of methods to avoid electric shock.
- C1.4.6 Study of the situations in which burns may occur.
- C1.4.7 Study of different faults in the system and their effects.

C2. HIGH FREQUENCY CURRENTS

4+6

- C2.1 Study of short wave Diathermy and types of currents used.
- C2.2 Study of production of heat by high frequency currents.
- C2.3 Study of movement produced by low frequency currents.
- C2.4 Introduction to different parts of the machine available in the Department.
- C2.5 Studying pads, & cable
- C2.6 Study of physiological effect of short wave diathermy
- C2.7 Study of therapeutic effects of SWD/MWD.
- C2.8 Study of indications for use of SWD/MWD.
- C2.9 Study of methods for avoiding burns and contraindications
- C2.10 Study of applications of SWD/MWD on soft tissues such as eyes.

Recommended books

Fundamental of Physiotherapy by Jaypee New Dehli

Text Book of electro therapy by Jag Mohan Singh by jypee New Dehli

Tiday's Physiotherapy by Stuart portor latest edition by Elsevier, India.

The principle of exercise by Dna Gardiner M.D

Reference Books.

Tiday's message and remedial exercise be (J.O Wale) latest edition by 10 P Publishing LTD.
UK

Clinical Medicine by Davidson's principle and practice of medicine (edited by CRW
Adwardsetal)BY ELBS

COURSE TITLE: BIOMECHANICS & APPLIED PHYSICS AND CLINICAL PRACTICE

STUDY HOURS:	60+160	MARKS	
PAPER:	02	THEORY	120
TERM:	4th	PRACTICAL:	30
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COURSE CONTENTS

STUDY HOURS
(Theory +Practical)

A.	BIOMECHANICS RELATED TO PHYSIOTHERAPY	20+44
A1	Function Biomechanics i.e. gait , sit and stand etc.	
A2	Biomechanics of joints i.e. shoulder elbow rest, hip, knee and ankle	
A3	Biomechanics of muscle and nerve tissue	
A4	Positions	
	A4.1 Fundamental Position	
	A4.2 Derived Position	
	A4.3 Effects & Uses	
	A4.4 Kinesiological application of starting & derived position	
A5	Force	
	A5.1 Definition of force	
	A5.2 Moments of force	
	A5.3 Composition of forces	
	A5.4 Parallelogram of forces	
A6	Principles of stability	
	A6.1 Base support	
	A6.2 Center of gravity	
	A6.3 Line of gravity	
	A6.4 Reflexes & receptors	
	A6.5 Equilibrium & its types	
	A6.6 Factors on which stability is based	
A7	Levers	
	A7.1 Classification of lever	
	A7.2 Principles of lever	
	A7.3 Orders of lever	
A8	Gravity	
	A8.1 Effects of gravity	
	A8.2 Center and line of gravity	
	A8.3 Effect of center of gravity on	
	A8.4 Co-Ordination	
	A8.5 Balance of human body.	
A9	Joint Mobility	
	A9.1 Causes of joint stiffness	
	A9.2 Partial or complete stiffens	
	A9.3 Structural changes in joints	
	A9.4 Limitation of range of movements	
	A9.5 Methods of prevention of joint stiffness	

B. PHYSICS RELATED TO THE PHYSIOTHERAPY

- B1 Nature of electricity
- B2 Static electricity, Current electricity
- B3 Electromagnetism, Electromagnetic Induction
- B4 basic electronics, Bio-electronics
- B5 Therapeutic modalities, Currents for treatment
- B6 Fluid mechanics, Mechanical forces and biophysics
- B7 Electromagnetic radiations, Infra red radiations
- B8 Ultra-Violet radiations, Ultra sound, cold laser

C. PRACTICAL

10+36

- C1 To find the center of gravity of an irregular shape bodies.
- C2 To verify the principle of lever load x Load =Effort X effort area
- C3 To resolve the forces, of a weight rolling down on an inclined plane.
- C4 To resolve the different forces at different angle on a single joint and to find
- C5 To find the center of gravity of a lever area place on a fulcrum under specific loading.
- C6 To find the unknown reaction of a lever under a specific concentrated loading.
- C7 To resolve an inclined force making an angle θ with X-axis and to find the component forces of that inclined force by making use of trigonometric function

D. ELECTRO-MAGNETISM

18+50

- D1 Introduction to the course.
- D2 The structure of the atom.
- D3 Isotopes.
- D4 Ionization and excitation.
- D5 Electric charges.
- D6 Electric introduction electroscopes.
- D7 Electric charge an electrical potential.
- D8 Capacitance and capacitors.
- D9 Electric current_+ampere, volt, resistance.
- D10 Resistance and ohms law.
- D11 Circuit laws.
- D12 Energy and power.
- D13 The heating effect of electric current.
- D14 Sources of electrical energy.
- D15 Magnetism introduction.
- D16 The magnetic effect of electric current.
- D17 Applications of magnetic effect.
- D18 Electro-magnetic induction.
- D19 Mutual induction and self-induction.
- D20 Introduction of A.C.
- D21 Transformer-theory.
- D22 Transformer-practical aspects.
- D23 Introduction A.C. circuits.
- D24 Reactance, resonance, impedance.
- D25 Power factor-power in single-phase circuit.
- D26 Single phase three phase, comparison and contrast.

- D27 Electrical distribution system in Pakistan.
- D28 Different supply systems.
- D29 A.C. in three-phase system.
- D30 Introduction to electrical machines.
- D31 Generator-A.C. & D.C. Principle, working-main parts.
- D32 Motor-Principle, Main parts working.
- D33 Electrical measuring instruments and measurements.
- D34 Indicating instruments-types, Principle and working.
- D35 Thermionic emission and p. N. Junction
- D36 Diode structures and working.
- D37 Characteristic and diodes.
- D38 Triode-its working and characteristics.
- D39 Rectification.
- D40 Introduction to amplification.

E. PHYSIOTHERAPY INSTRUMENTS.

12+30

Physiotherapy equipments. Application of electrical technology in physiotherapy equipment. Control and operative component of the equipment like switches circuit breakers, replays and other details as follows:

- E1 Ultra Sonic Therapy Unit (Circuit Description, Dosage control, Constant and pulsed Operation).
- E2 Microwave Diathermy.
- E3 Short Wave Diathermy Machines.
- E4 Electric Stimulation.
- E5 TENS
- E6 Radiant Heat / IRR
- E7 Traction
- E8 Precautions to be used while using Physiotherapy Instruments.
- E9 Baths all types/Wax Both.
- E10 Exercise Machines- Types, Usage and brief introduction to circuits.

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