

Dr. D. Y. Patil College of Nursing, Pimpri , Pune-18

First year P.B. B. Sc Nursing

Subject:Biophysics

Faculty: Mr. Shoumic Basu

UNIT	TOPIC	Number of lecture	Lecture Serial No
UNIT I INTRODUCTI ON	Introduction: Concepts of unit and measurements	1	1
	Fundamental and derived units - Unit length, weight, mass, time.	1	2
UNIT II MOTION	Vector and scalar motion, speed, velocity and acceleration	1	3
	- Newton's law of motion	1	4
UNIT III GRAVITY	Gravity: Specific gravity , centre of gravity, principles of gravity.	1	5
	- Effect of gravitational forces on human body.	1	6
	- Application of principles of gravity in nursing	1	7
UNIT IV FORCE WORK & ENERGIES	Force, work, Energy: Their units of measurement. - Type and transformation of energy, forces of the body, Static forces.	1	8
	- Principles of machines, friction and body mechanics.	1	9
	- Simple mechanics - lever and body mechanics, pulley and traction, incline Application of these principles in nursing.	1	10
UNIT V HEAT	Heat : Nature, measurement, transfer of heat - Effects of heat on matter	1	11

	<ul style="list-style-type: none"> - Relative humidity, specific heat - Temperature scales - Regulation of body temperature - Use of heat for sterilization 	1	12
	<ul style="list-style-type: none"> - Application of these principles in nursing 	1	13
UNIT VI LIGHT	Light: Laws of reflection <ul style="list-style-type: none"> - Focusing elements of the eye, defective vision and its correction, use of lenses 	1	14
	<ul style="list-style-type: none"> - Relationship between energy, frequency and wavelength of light - Biological effects of light 	1	15
	<ul style="list-style-type: none"> - Use of light in therapy - Application of these principles in nursing 	1	16
UNIT VII: PRESSURES	<ul style="list-style-type: none"> • Pressures: Atmospheric pressure, hydrostatic pressure, osmotic pressure • Measurements of pressures in the body 	1	17
	<ul style="list-style-type: none"> • Arterial and venous blood pressures • Ocular pressure • Intracranial pressure 	1	18
	<ul style="list-style-type: none"> • applications of these principles in nursing 	1	19
UNIT VIII SOUND	<ul style="list-style-type: none"> • Sound: Frequency, Velocity and Intensity • Vocalization and hearing 	1	20

	<ul style="list-style-type: none"> • Use of ultrasound. Noise pollution and its prevention • Application of these principles in nursing 	1	21
UNIT IX: ELECTRICITY	<ul style="list-style-type: none"> • Electricity and Electromagnetism: Name of Electricity, Voltage, Current, Resistance and their Units. • Flow of electricity in solids, electrolytes, gases and vacuum. 	1	22
	<ul style="list-style-type: none"> • Electricity and human body • ECG, EEG, EMG, ECT 	2	24
	<ul style="list-style-type: none"> • Pace makers and defibrillation • Magnetism and electricity • M.R.I. Scanning, CAT scan 	2	26
UNIT X: NUCLEAR PHYSICS	<ul style="list-style-type: none"> • Atomic Energy : Structure of Atom, Isotopes and Isobars • Radioactivity : Use of radioactive isotopes 	1	21
	<ul style="list-style-type: none"> • Radiation protection units and limits, instruments used for detection of Ionizing radiation. X-rays 	1	28
UNIT XI: ELECTRONICS	<ul style="list-style-type: none"> • Principles of Electronics: Common electronic equipment used in patient 	2	30

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REFERENCES:

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- Stearns, H.O.(1962): Fundamentals of physics and Applications; 2nd ed. New York, Macmillan Co.
- T.N.A.I. (1966): Physics and Chemistry; Laboratory Manual for Student Nurses; 3rd ed. New Delhi, T.N.A.I.
- Waters, M.(1958): Elementary physics for Nurses; 6th ed London, Faber and fabor.
- KIGOUR, O.F.G.(1978): An Introduction to the physical aspects of Nursing Sciences; 3rd ed. London, William Heinemann Medical Books Ltd.
- Nordmark, M.t and Rahweder, A.W.(1959): Science Principles in Nursing; Philadelphia, J.B. Lippincott.