NAPARIMA COLLEGE

SCHEME OF WORK*

ACADEMIC YEAR: 2018/2019 TERM I

LEVEL: FORM 3N, 3A, 3P & 3S

WEEK	PERIOD	SPECIFIC OBJECTIVES	TEACHING STRATEGY	ASSESSMENT STRATEGY
		SCIENTIFIC MEASUREMENT AND SI SYSTEM		
	1	• Explain the importance of the International System of Units (SI) of units as a metric system of measurement. • Identify five (5) fundamental or base quantities and units. • Differentiate between a derived quantity and a derived unit.		
	2	• Define a dimensionless quantity. • Distinguish between scalar and vector quantity. List examples for each quantity. • Express measurements to appropriate number of decimal places and scientific notation • Identify number of significant figures for a given measurement		
	3	• Express multiples and submultiples of units using appropriate prefixes. • Conversion of multiples and submultiples to S.I. units e.g. cm^2 to m^2; mm^3 to m^3		
		LIGHT		
2	1	• Definitions of the terms ray and beam. • List the three (3) types of beams are: parallel, convergent and divergent. • Compare beams produced by common devices as - Torchlight - Laser light - Headlights - Magnifying glass.		
	2 & 3	• Demonstrate the principle that light travels in a straight line - Construct ray diagram to show shadow formation for point and extended sources light sources. Illustrate formation of umbra and penumbra (pg. 154 Figure 9.1.3) - Solar and lunar eclipses (pg. 155-156 Figure 9.2.2 & Figure 9.2.3) - Pinhole camera (pg. 153 Figure 9.1.2)		
3	1 & 2	• Construct a pinhole camera and discuss the impact of the size of pinhole and its distance from the screen on the appearance of the image.		
	3	• Definition of following terms: Incident ray, reflected ray, normal, angle of incidence and angle of reflection		

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WEEK	PERIOD	SPECIFIC OBJECTIVES	TEACHING STRATEGY	ASSESSMENT STRATEGY
3	3	• State the laws of reflection (pg. 158 Figure 9.1.3)		
4	1 & 2	• Perform experiment to show the angle of incidence and the angle of reflection are equal using parallax method. Students are to prepare laboratory report recognizing use of scientific format used to communicate information from scientific investigations.		
	3	• Differentiate between real and virtual images • Describe properties of an image formed in a plane mirror. • Draw a ray diagram to find the position of the image formed in a plane mirror		
5	1	**FORMATIVE ASSESSMENT #: COURSEWORK**		
	2	• Define 'refraction' • State the laws of reflection • Apply Snell's Law: $n_1 \sin\theta_1 = n_2 \sin\theta_2$		
	3	• Discuss observations of images in pond including apparent changes in depth of submerged object and apparent bending of partially submerged object. • Draw a ray diagram to illustrate real and apparent depth (pg. 169 Figure 9.8.1) • Apply $_a n_w = \frac{Real\ depth}{Apparant\ depth}$		
6	1 & 2	• Perform experiment to calculate the refractive index of a rectangular glass block (Non-graphical method). Students are to prepare laboratory report recognizing use of scientific format used to communicate information from scientific investigations.		
	3	• Explain 'critical angle' and 'total internal reflection' (pg. 165 Figure 9.7.1) • Relate critical angle to total internal reflection to occur within a medium		
7	1	• Apply $\theta_c = sin^{-1}\left(\frac{1}{n}\right)$		
	2 & 3	• Apply useful applications of total internal reflection: - Binoculars - Optical fibres used for telecommunication and medicine e.g. endoscope - Mirage - Right-angle prism periscope		

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SCHEME OF WORK*

ACADEMIC YEAR: 2018/2019 TERM 1

LEVEL: FORM 3N, 3A, 3P & 3S

WEEK	PERIOD	SPECIFIC OBJECTIVES	TEACHING STRATEGY	ASSESSMENT STRATEGY
8	1	• Define 'dispersion' of white light in a glass prism • Relate spectrum of colours to its speed and deviation of colour caused by refraction • Discuss formation of rainbows		
	2	• Discuss the following type of lenses: Converging and Diverging lens • List examples of application of each type of lens • Define the following terms - Principal axis - Principal focus - Focal length - Focal plane - Principal focus - Optical center		
	3	• illustrate the effect of converging and diverging lenses on a beam of parallel rays (pg. 179 Figure 10.1.3)		
9	1	**FORMATIVE ASSESSMENT #2: COURSEWORI**		
	2 & 3	• Apply ray diagrams to determine the position of an image for the following optical instruments using graphical method (pg. 182-183, Figure 10.1.3 & 10.3.2): - Magnifying glass - Spotlight - Microscope - Projector - Camera - Telescope • List properties of the image formed for each optical instrument • Apply Magnification: $\frac{Image\ height}{Object\ height} = \frac{Image\ distance}{Object\ distance}$		

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SCHEME OF WORK*

ACADEMIC YEAR: 2018/2019 TERM I

LEVEL: FORM 3N, 3A, 3P & 3S

WEEK	PERIOD	SPECIFIC OBJECTIVES	TEACHING STRATEGY	ASSESSMENT STRATEGY
10	1 & 2	• Illustrate the human eye • Explain the function for each structure of the human eye • Draw a ray diagram for the human eye • Explain 'accommodation' of the lens of the eye. • Discuss the following defects with suitable ray diagram and type of corrective lens used for each defect: - Myopia or short-sightedness - Hyperopia or long-sightedness - Cataract - Astigmatism		
	3	**REFLECTIVE WRITING**		

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