

SNC 2D Optics Unit Overview

Day	Topic	Before Class	In Class	Assessment
1	Unit Overview		Accessing Website Expectations Demo: Spectroscopes Gas Discharge Tubes Polarization Filters, LCD's	
2	Properties of Light	Videos: 2.112 Light and Colour and 2.112 The Electromagnetic Spectrum Slides: PP 2.11 Properties of Light Notes: Handout 2.11 Properties of Light Student Notes doc. Text: pages 463-468 pg 469 questions 1,2,3,4, 6,7,9 copy the diagram of the electromagnetic spectrum on page 465 into your notes	Activities: 2.112 Seeing Invisible Light Lab 2.112 What is White Light Made of Lab Phet Colour Theory http://phet.colorado.edu/en/simulation/colour-vision - use the lab handout 2.1 PhET Colour Theory to guide you through this activity	
3	Types of Light	Slides: 2.1131 Types of Light.pdf Note Notes: Handout 2.1131 Types of Light. This is a handout with questions to answer from your textbook! Be sure you have it at home with you. Text: Section 11.2 pages 470-476 - Pg 476 Q's 2, 3, 4, 5, 6 explain why, 7, 8, 9, Eating candy (p. 475) Head out to the store to get some "Wint-O-Green Lifesavers" then find yourself a dark room!	Activities: 2.1131 Exploring Different Types of Light Sources How Will You Know You Are Ready: Can you explain how electrical energy is eventually converted into visible light in a fluorescent light bulb including all of the following terms (visible light, mercury, gas discharge, fluorescent coating, re-radiates, ultraviolet, absorbs, electrical energy)	Lab handout - Sources of Light
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4	Plane Mirror reflection	Video: 2.114 Ray Model of Light (3 min), 2.2 General Properties of Light (10 min) Slides: 2.21 Describing Reflection Lesson, 2.114 Ray Model .pdf, Note: Handout 2.21 Describing reflection note student TEXT - Sections 11.6, pages 484-486, 11.7 488-492 Pg 493 Q's 4, 5, 9, 11 Activities: Mirra. Finding the Object, rules and Target Practice 2.21 1D Reflection Mira Activity worksheet.doc 2.23 Plane Mirror Ray Diagram Prep Activity.doc 2.21 Conceptual Physics Worksheet pg 93-94 https://drive.google.com/file/d/0Bx61DkORzMlfncxZFdHd2JLNWc/edit?usp=sharing	Mira Target Activity. 2.21 1D Reflection Assessment
5	Describing Images in Plane Mirrors	Video: 2.2 Simple Rays Diagrams of a 2D Object Slides: PP 2.23 Plane Mirror Ray Diagrams 2.23 Plane Mirror Ray Diagrams Note: Handout 2.23 Plane Mirror Ray Diagrams notes.doc 2.23 Plane Mirror Ray Diagram Prep Activity.doc (this should have been done in class the day before!!) Text: 11.7 - Pg 493 Q 1, 2, 3, 6, 7 PP: 2.23 Reflection in a class sized mirror Demo: 2.23 Full Body Mirror Activity Handout.doc 2.23 Image Characteristics Notes.doc PP: 2.23 Bulls Eye Laws of Reflection - complete this activity to predict where light rays would travel after striking a mirror 2.23 Plane Mirror Practice Problems.doc	
6	Curved Mirrors	Video: Ray Diagrams for Concave Mirrors, 2.24 - Images in curved Mirrors – Nelson Slides: 2.24 Curved Mirror Reflection Lesson go to http://www.acs.psu.edu/drussell/Demos/RayTrace/Mirrors.html where you will be able to see how the rays change as objects move closer to the mirror Note: Handout "2.24 Curved Mirror Reflection Notes Student.pdf" curved mirror templates.doc Use the last template on each to sketch the "rule" rays found in your textbook Text: 11.9 pg 496-501 Pg 501 Q 3 Activities: 2.24 Reflections in the surface of a spoon 2.24 Concave Mirror Ray diagrams templates	
Day	Topic	Before class	Assessment
7	Optics Bench	Video: 2.241 - Finding the Focal Length, 2.241 Optics Bench Tutorial Activities: Nelson Science Perspectives Lab 11.10. Finding and describing an	

		Text: Read 11.10. Will be completing the lab in class	image formed in curved mirrors.	
8,9	Convex Mirrors	Video: 2.242 Diverging Optics. Just watch from about the 5:30 mark Slides: PP 2.242 Convex Mirrors Lesson Note: Handout 2.242 Convex Mirrors Student Note.doc 2.24 Mirror Templates for rules in mirrors and practicing different object placements. Text: - 11.9 Pg 501 Q's 1, 2, 4	Activities: Finish Ray diagrams for Convex Mirrors Properties of Images in Curved Mirrors(SALT or LOST) Applications of Images in Curved Mirrors START optics Bench for Curved Mirrors Lab	Curved Mirrors Lab
10	Refraction of Light	Video: How does Refraction Occur(first 8 of 14 min), Refraction of light Diagrams(11 min) Slides: 2.31 Refraction and bending Light Lesson.pp Note: Handout 2.31 Refraction and Bending Light Notes.doc	Activities: 2.31a Refraction and bending light Lab worksheet.doc 2.31a Refraction and bending Light Lab.ppt	
11	Index of Refraction	Video: 2.33 Index of Refraction (2 minutes) Slides: 2.322 Snell's Law and Simplified Law Lesson.ppt 2.33 Finding index of refraction using speed of light lesson Note: Handout 2.322 Snell's Law and Simplified Law sample problem.ppt 2.33 Finding index of refraction using speed of light practise problems Text: 12-4 pg 524-525	Worksheet: 2.323 Index of Refraction 2.323 Index of refraction practice problems	
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12	Snell's Law	Video: 2.324 Snell's Law and Geometry Slides: Review Slides from 2.32 2.321Refraction Measuring to find Index Lesson.ppt Note: Handout Review notes from 2.32 2.321Refraction Measuring to find Index sample problem.ppt Text: Textbook Questions - 2.31 Phenomena related to Refraction pg 535-539	Activities: Lab 2.324 - How is light refracted in different Media?	
13 14	Critical Angle and Total Internal Reflection	Video: Refraction and total internal Reflection - 9 minutes Slides: 2.34 Critical angle and total internal reflection lesson.ppt Note: Handout 2.34 Critical angle and total internal reflection student notes.ppt Text: 12.5 pg 526 to 527	Activities: 2.34 refraction of Light & Critical Angle Activity.doc(in labs page) 2.34 Critical Angle Worksheet.doc (in worksheets page) Text: 12.5 pg 526 to 527 Q's pg 531 #1-3 Demo: - Fiber Optics and total internal reflection, Fish Tank TIR, glass Prism TIR = retro Reflector, Shoebox TIR??	
15	Lenses	Video: Ray Diagrams for Lenses - 8 minutes Brightstorm Ray Diagrams for Convex Lenses - 12 minutes Slides: 1st - 2.41 Lens Types and Parts Lesson.ppt 2nd - 2.43 Images in Lenses Lesson.ppt Note: Handout 2.41 Lens Types and Parts Student Notes.ppt 2.43 Images in Lenses Student Notes.ppt	Activities: Conceptual Physics Practice Pages page 103-104(in worksheets page) 2.43 Lens Ray Diagram Tutorial.ppt (if required to help with practice sheet) 2.43 Lens Ray Diagram Tutorial Practice-student note.doc These files are in the "Labs and Activities" web page 2.43 Lens Types Worksheet.doc – INC	

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16	Lens Optics Bench	Video: 2.42 Using Optics Bench - 6 min Text: 13.2 Locating Images in Lenses. Pre read the lab and make your observation table to prepare for collecting data.	Activities: Text - 13.2 Locating Images in Lenses	The lab and corres. questions from the textbook can be submitted upon completion and will be assessed using the evaluation sheet - 2.3 Lenses Optics Bench Eval.doc (in Labs webpage)
17	Thin Lens Equation	Video: 2.441 Lens Equation - 10 min Slides: 2.44 Lens Equation Lesson.ppt (first half up to end of example 2) Note: Handout 2.44 Lens Equation Note Student.doc (first half up to end of example 2) Text: 13.4 pages 562-564 q's pg 566 #1-4	Activities: 2.441 Thin Lens Equation Worksheet	
18	Mag. Equation	Video: Magnification Equation - Last 8 of 13 min video Slides: 2.44 Lens & Magnification Equation Lesson.ppt (second half up to end of example 4) Note Handout: 2.44 Lens & Magnification Equation Note Student.doc (second half up to end of example 4) Text: 13.4 pages 564- 566 q's pg 566 #5,6,7,8	Activities: 2.442 Magnification Equation Worksheet 2.44 Converging Lens Practice Problems (using both equations)	
19	Human Eye and Optical devices	Slides: 2.5 Human Eye and Optics Applications Lesson.ppt Note: Handout 2.5 Human Eye and Optics Applications Student Note.ppt Text: 13.6 pg 572-577 13.5 Lens Applications - pg 567-570	Activities: Watch eye Surgery Video Research an Optical Device	

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20	Optical Device Function	Research a particular device that you would like to explain.	Select an optical device (camera, telescope, periscope, fiber optic cable etc) or some occurrence of an optical phenomena (why the sun flattens out at sun set) and explain how this happens or how the device works. You may use ray diagrams, a physical model or even calculations to aid your explanation.	brief presentation and submission of (model, diagram or calculations) will be assessed for 10 marks comm. and 10 marks application. These will be bonus marks added directly to your existing marks
21	Eyeball Dissection	Review Parts of the Eye	Activity: Eyeball Dissection	
22	Test Review	Complete Test Review and Study Sheets	Question Period	
23	Test			