

Through the Microscope (SCOP)

Required Text: Complete Book of the Microscope – Kirsteen Rodgers

Supplementary Text: The Microscope Book – Shar Levine & Leslie Johnstone

Day	Date	Objectives	Activities
1	Monday	<ul style="list-style-type: none"> • Group Introductions • Safety • Organizing Notebooks • Scientific Method • Introduction to Magnification • Mystery Slides 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • Name tags • “mystery pictures” • Course Syllabus <p>10:25 – 11:30</p> <ul style="list-style-type: none"> • Safety Rules and Contract • Safety cartoon • Keeping a Lab notebook • Investigating Lenses <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Microscope Pre-Assessment • Introduction of the Scientific Research Assignment. <p>1:40 -2:30</p> <ul style="list-style-type: none"> • Magnifying with water • Journal Writing – Learning Log • Homework: (KW) L
2	Tuesday	<ul style="list-style-type: none"> • Learn the parts of a microscope • Become familiar with focusing a microscope • General use and handling of a microscope • Make a wet mount • Understand how to calculate magnification • Learn about the history of the microscope and contributors 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • W/up : Instruments used for Scientific Observations • Discuss (KW)L • “Using a Microscope” pgs. 10 -11 • Microscope video/optional Microscope PPt. <p>10:25 – 11:30</p> <ul style="list-style-type: none"> • Look at the letter “e” • Investigating color comics <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Early microscopes pgs. 80 -84 • Mystery slide # 1 Introduction - observations and predictions <p>1:40 -2:30</p> <ul style="list-style-type: none"> • Microscope part/function worksheet • Journal writing - Learning log • Homework: Reading about microscopes

Day	Date	Objectives	Activities
3	Wednesday	<ul style="list-style-type: none"> • Explore and learn about the applications of optics • Make a permanent mount • Understand depth of field 	9:00 – 10:15 <ul style="list-style-type: none"> • Work with partners to compile and organize information for projects (Computer Lab) 10:30 – 11:30 <ul style="list-style-type: none"> • W/up: Steps for using a microscope • Investigating paper: form and function (12-13) 12:30 – 1:30 <ul style="list-style-type: none"> • Looking at threads (sew long 25-26) • Mystery slide # 2 observations and predictions 1:40 2:30 <ul style="list-style-type: none"> • Microscope matching cards with partners) • Journal writing – Learning log • Homework: Items from home
4	Thursday	<ul style="list-style-type: none"> • Making wet mounts • Determine what a cell is 	9:00 – 10:15 <ul style="list-style-type: none"> • w/up – share items from home with classmates • Observe items from home under the microscope- observations and comments on microscope data sheet 10:30 – 11:30 <ul style="list-style-type: none"> • Microscope Quiz • Cells – video (23 mins) 12:30 – 1:30 <ul style="list-style-type: none"> • Comparing living and dead cells –(onion and cork cells) 1:40 – 2:30 <ul style="list-style-type: none"> • Looking at plants (pgs.40 – 41) • Mystery slide # 3 observation and prediction • <i>Prepare celery for tomorrow's lab</i> • Journal writing - Learning log Homework: microscope matching
5	Friday	<ul style="list-style-type: none"> • Determine the parts and function of a plant cell 	9:00 – 10:15 <ul style="list-style-type: none"> • Label and color plant cell diagram • Plant cell organelle identification/matching 10:30 – 11:30 <ul style="list-style-type: none"> • Looking at Elodea Lab 12:30 – 1:30 <ul style="list-style-type: none"> • Plant Food pgs. 42- 43 • Looking at celery transport system Lab 1:40 -2:30 <ul style="list-style-type: none"> • Discuss progress of projects • Mystery slide # 4 observation and prediction • Journal Writing – Learning log

Day	Date	Objectives	Activities
6	Monday	<ul style="list-style-type: none"> • Determine the parts and function of an animal cell • Determine the differences between plant and animal cells. • Understanding the functions of Staining 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • Label and color animal cell diagram • Cell parts matching activity • Inside a body cell pgs. 28 - 29 <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Body cells pgs. 26 - 27 • Looking at cheek cells <p>12:30 - 1:30</p> <ul style="list-style-type: none"> • Discuss cell model project (3D) - types of materials to use • Observe prepared slides <p>1:40 -2:30</p> <ul style="list-style-type: none"> • Work on projects – books from library • Mystery slide # 5 observation and prediction • Journal writing – Learning log <p>Homework: cell organelles</p>
7	Tuesday	<ul style="list-style-type: none"> • Characteristics of protists 	<p>9:00 - 10:15</p> <ul style="list-style-type: none"> • Review plant and animal cells • Discuss characteristics of protests • Protists –video (23 mins) • Water Plants pgs. 46 -47 <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Field-Trip to school grounds pond to collect water samples • Aquatic Protists Lab <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Continue Aquatic Protists Lab • Compare water samples <p>1:40 – 2:30</p> <ul style="list-style-type: none"> • Observe prepared slides of protists and other simple water life forms • Mystery slide # 6, observation and prediction • Journal Writing - Learning Log

Day	Date	Objectives	Activities
8	Wednesday	<ul style="list-style-type: none"> • To extract deoxyribonucleic acid from plant cells • To make animal and plant cell models 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • W/up share materials used to make models • Make plant and animal cell models (3D) <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Complete models • Presentation of models <p>12: 30 -1:30</p> <ul style="list-style-type: none"> • “Inside a Nucleus” pgs. 30 – 31 • Extract DNA from strawberries/kiwi or bananas <p>1:40 - 2:30</p> <ul style="list-style-type: none"> • Prepare wet mount of DNA, observe under microscope • QUIZ • Mystery slide # 7 observation and prediction • Journal writing - Learning log
9	Thursday	<ul style="list-style-type: none"> • Become familiar with the characteristics and function of bacteria 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • Bacteria pgs. 32 -33 • “Active cultures”(yeast, yogurt, sauerkraut). • Set up microfossils Lab –(pgs. 66 – 67) <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Yeast, yogurt, sauerkraut Lab <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Bacteria – video (23 mins) <p>1:40 – 2:30</p> <ul style="list-style-type: none"> • “Microbiology Agar plates/gelatin bouillon plates Lab (part 1) • Mystery slide # 8 observation and prediction • Journal writing – Learning Log
10	Friday	<ul style="list-style-type: none"> • Explore Materials of interest 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • Campus field –trip to find articles of interest to make slides <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Document items and prepare slides • Whole group Slide-sharing <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Continue slide sharing <p>1:40 – 2:30</p> <ul style="list-style-type: none"> • Mystery slide # 9 observation and prediction • Journal writing – Learning Log

Day	Date	Objectives	Activities
11	Monday	<ul style="list-style-type: none"> To explore the Scanning Electron Microscope 	9:00 – 10:15 <ul style="list-style-type: none"> Review bacteria Look at Agar plates previously prepared record findings Complete microfossil Lab – pgs. 66 - 67 10:30 -11:30 <ul style="list-style-type: none"> Computer lab – Scanning Electron Microscope (SEM) Slideshow and animation. 12:30 -1:30 <ul style="list-style-type: none"> Making things Look Bigger pgs. 8 - 9 Discuss SEM Work on projects 1:40 – 2:30 <ul style="list-style-type: none"> Continue working on projects Mystery slide # 10 Journal Writing – Learning Log
12	Tuesday	<ul style="list-style-type: none"> To examine evidence left at the scene of a crime through the microscope 	9:00 – 10:15 <ul style="list-style-type: none"> “Solving Crimes” pg. 20 Making fingerprints using a inkpad, Categorizing fingerprints Observing fingerprints under the microscope 10:30 – 11:30 <ul style="list-style-type: none"> “ On your Head” pg.22 Observing Hair under the microscope 12:30 – 1:30 <ul style="list-style-type: none"> Observing fabric fibres under the microscope “Odds and Ends” pgs. 16 – 17 1:40 – 2:30 <ul style="list-style-type: none"> Mystery slide #11 Journal Writing – Learning Log
13	Wednesday	<ul style="list-style-type: none"> Exploring crystals and their characteristics 	9:00 – 10:15 <ul style="list-style-type: none"> Discussion of characteristics of atoms, molecules, and minerals. Characteristics of crystals. Pgs 68 - 68 Groups prepare saturated solutions of table salt, Epsom salts, sugar, copper sulfate, potassium iodide, brown sugar. 10:30 – 11:30 <ul style="list-style-type: none"> Students observe crystals formed 12:30 – 1:30 <ul style="list-style-type: none"> crystal worksheet 1:40 – 2:30 <ul style="list-style-type: none"> work on projects Final Mystery slide Journal Writing - Learning Log

Day	Date	Objectives	Activities
14	Thursday	<ul style="list-style-type: none"> • Examine various insects and their diversity • Determine the size of objects under the microscope 	<p>9:00 -10:15</p> <ul style="list-style-type: none"> • Outside nature walk to gather insects. <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Insect watching pgs. 53 - 53 • Look at insects in bug jar, and under microscope <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Continue observing insects • Measuring the size of insect parts <p>1:40 -2:30</p> <ul style="list-style-type: none"> • Complete projects • Journal writing – Learning Log
15	Friday	<ul style="list-style-type: none"> • Reflections – Students, Teachers, TAs 	<p>9:00 – 10:15</p> <ul style="list-style-type: none"> • Mystery Slide answers • Complete KWL • Discuss KWL <p>10:30 – 11:30</p> <ul style="list-style-type: none"> • Post assessment <p>12:30 – 1:30</p> <ul style="list-style-type: none"> • Presentation of final projects <p>1:40 – 2:30</p> <ul style="list-style-type: none"> • Review notebooks • Evaluations • Closing Activities