

MICROBIOLOGY CURRICULUM
.5 Credit

Chap	Content	GSE' s	Indicators	Activities/Strategies	Performance assessment
M-1	Introduction <ul style="list-style-type: none"> · Microbes in Our Lives · Microorganism Classes · Microbes and Disease · Microbes in industry · Microbes in Ecology · Types of microorganisms · History of microbiology Intro to the microscope nomenclature 	LS1 PS1	The student will: <ul style="list-style-type: none"> · Identify magnification power of microscopes · Identify six classification groups of microorganisms · Identify pathogenicity of microorganisms · Explain historical progression of microbiology · Understand scientific contributions of microbiologists · Compare and contrast pasteurization and fermentation · Describe the Germ theory of disease · Explain the immunity via vaccination 	<ul style="list-style-type: none"> · Microscope lab · Internet research on microorganisms · Hay Infusion Lab · Peppercorn Infusion Lab · Protozoa · Pond Water 	1. Homework worksheets: <ul style="list-style-type: none"> A.. Microscope use, Structure, Components Magnification B. Microbiology History C. Microscope Use Infusions: Hay Peppercorn D. Protozoa, Pond water 2. Tests/Quizzes <ul style="list-style-type: none"> Teacher generated Book generated Lab Report
M-2	Chemical Principles <ul style="list-style-type: none"> · Atomic structure · Subatomic particles · Chemical bonds · Inorganic compounds · Organic compounds · Macromolecules <ul style="list-style-type: none"> Carbohydrates Lipids Proteins Nucleic Acids · ATP 	PS1	The student will: <ul style="list-style-type: none"> · Describe the structure of an atom · Compare ionic and covalent bonds · Describe properties of acids and bases · Identify 4 major classes of macromolecules · Compare elements and compounds · Compare biological membranes of eukaryotes and prokaryotes for identification purposes 	<ul style="list-style-type: none"> · Acid base lab · Indicator lab · Macromolecule Lab 	1. Homework worksheets: <ul style="list-style-type: none"> 2. Lab reports – written Acid base lab Macromolecule Lab 3. Test/Quizzes Teacher generated Quiz Book generated Vocabulary

	Content	GSE's	Indicators	Activities/Strategies	Performance assessment
M-3 ,4	Observing Microorganisms <ul style="list-style-type: none"> · prokaryote/eukaryotic · Staining · Gram + or Gram - · The Gram stain · Differential staining · Agar plate prep · The incubator · Differential agar · Incubation and microbial colony separation · Bacterial growth curves lag log death phases 	LS1 PS1 LS2 LS3	The student will: <ul style="list-style-type: none"> · Identify microorganisms · Perform differential staining <ul style="list-style-type: none"> Gram Stain Negative Stain Lugols Stain Phase contrast staining Methylene blue stain Malachite green satin · Identify prokaryotic cells and eukaryotic cells · Prepare various differential sterile agar plates, plate bacteria and incubate for growth and identification · Separate bacterial colonies based on size, shape and color. · Transfer bacteria to a slide and heat fix, stain and identify morphology · The incubator: temp, growth time · Exponential bacterial growth curve 	<ul style="list-style-type: none"> · TASK bacterial growth curve · Gram stain lab · Agar prep lab · Plating bacteria lab · Differential Stain lab · Heat fix bacteria lab · Staining bacteria lab · Eukaryotic vs prokaryotic lab · Oil immersion to reduce refraction under high power TASK BACTERIA IN THE "SCHOOL"	1. Homework worksheets: A,B & C A.. Microscope Focusing on bacteria B. Agar prep Plating bacteria C. Staining bacteria Differential Staining Gram Stain Heat fixing D. Bacterial Morphology Eukaryotic vs Prokaryotic 2. Tests/Quizzes Teacher generated Book generated Lab Report TASK: Bacterial growth curve using Logger Pro – Energy flow TASK: Bacterial cultures around the school.
M-1 0, 11	Eukaryotes, Fungi Algae and Helminthes (parasites) <ul style="list-style-type: none"> · Culturing and identifying Fungi Algae and Helminthes 	LS1 LS3 LS4 PS1	The student will: <ul style="list-style-type: none"> · Identify the difference between prokaryotes (bacteria) and eukaryotes. · Look at cells and compare and contrast similarities and differences · Discuss what parasitism is and how it has affected the world · Identify parasites and describe their lifecycles · Identify and recognize the differences structurally of fungi algae and bacteria · Transmission of disease 	<ul style="list-style-type: none"> · Labs · Worksheets · Test & Quiz · analysis and interpretation of data 	1. Homework worksheets: 2. Lab reports – written Cells lab Mold lab Observing algae lab Roundworm lab Yeast Lab - budding 3. Test/Quizzes Teacher generated Quiz Book generated Vocabulary

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