

RCSD Botany * Quick Reference Pacing Guide * 2024-2025

Botany is a ½ credit course

This document serves as a suggested sequence for one semester of instruction/assessment for all Botany standards. For a complete description of the course, standards, and detailed performance objectives, see the [MS College and Career Readiness Standards for Science](#)

<u>1st Nine Weeks of the Semester</u>	<u>Second Nine Weeks of the Semester</u>
<p><i>Classroom Expectations</i> <i>Lab Safety; Tools of Science</i> <i>Science and Engineering Practices</i></p> <p><u>Society's Reliance on Plants - Why Study Botany?</u> BOT.4 Students will explore the global value of plants and the interaction between humans and plants. <i>BOT.4.3 - Historical and modern medicinal uses of plants.</i> <i>BOT.4.4 - Industrial uses of plants.</i> <i>BOT.4.5 - Impacts (positive and negative) of plant biotechnology/GMOs on human society.</i> <i>BOT.4.1 - Plants used for bioremediation of an area due to processes such as fire, pollution, wars; develop and communicate a plan to remediate a habitat impacted by human interactions</i></p> <p><u>Plant Morphology, Cell Structure, and Function - What Makes Plants Unique?</u> BOT. 1 Students will investigate the morphology, anatomy, and physiology of plants. <i>BOT.1.1 - Model the basic morphology of plants; features that distinguish the plant kingdom from other kingdoms.</i> <i>BOT.1.2 - Plant cells and organelles</i> <i>BOT.1.3 - Structure and function of plant organs (roots, stems, leaves)</i> <i>BOT.1.4 - Symbiotic relationship of bacteria and fungi to enhance plant root function.</i></p> <p><u>Plant Reproduction - How Can We Use Our Knowledge of Plant Reproduction to Benefit Agriculture and Food Development?</u> BOT.3 Students will characterize the reproductive strategies of plants. <i>BOT.3.1 - Asexual reproduction and vegetative propagation; the importance in regards to human food production</i> <i>BOT.3.3 - Asexual reproduction, vegetative propagation, and sexual reproduction</i> <i>BOT.3.4 - Flower dissection to identify reproductive structures within a flower.</i> <i>BOT.3.5 - Similarities of plant reproductive structures from a variety of species</i> <i>BOT.3.6 - Differences and the importance of flower structure and shape (e.g. shape, color, size, orientation and why that matters to pollinators)</i> <i>BOT.3.7 - Laboratory investigation of differing fruit types.</i> <i>BOT.3.8 - Categorize fruits, vegetables, nuts, modified stems, or other plant parts. Compare the scientific definitions of these terms to those used by the general public/society and the USDA to categorize food.</i></p>	<p><u>Plant Evolution - How Did Plants Change Over Time To Become Better Suited for Life on Land?</u> BOT.2 Students will identify evolutionary modifications necessary for the terrestrial survival of plants. <i>BOT.2.1 - Characteristics of nonvascular algae (blue-green and green) and bryophytes; how those provide evidence of evolution within the plant kingdom</i> <i>BOT.2.2 - USDA plant database; identify, compare and contrast seedless, naked seed and enclosed-seed modifications for reproduction.</i> <i>BOT.2.3 - Characteristics of angiosperms and gymnosperms and explain how that led to their success as terrestrial plants.</i> <i>BOT.2.4 - The rapid amplification and success of angiosperms compared to other plants.</i></p> <p><u>Plant Adaptations to Varying Habitats - What Specific Adaptations Do Plants Have?</u> BOT.5 Students will explore adaptations that allow plants to survive in various habitats. <i>BOT.5.1 - How plants use adaptations for survival in these habitats, including extreme habitats.</i> <i>BOT.5.2 - Factors that impact biodiversity, such as temperature and precipitation</i> <i>BOT.1.5 - Calculate and compare surface area of leaves/roots of various plants; discuss how surface area serves as an adaptation for various plant types.</i> <i>BOT.5.3 - Model levels of succession within a habitat</i></p> <p><u>Local Plant Investigations - What Plants Are Unique to Mississippi? How Does Local Plant Diversity Impact The Health of Our Ecosystems?</u> BOT.6 Students will ask questions, plan, and conduct field investigations on local plant communities. <i>BOT.6.1 - Conduct transects/plot studies to determine species, biodiversity, or health of a plant community.</i> <i>BOT.6.2 - Compare and contrast genomes using plant genetic databases (e.g. BLAST or Plant GDB)</i> <i>BOT.6.3 - Design a process where plants can be used to improve a societal concern (e.g. irrigation, water conservation, urban shading, green space development, food deserts, or other local needs/issues)</i></p>

