Physics 30S Course Syllabus

Crocus Plains Regional Secondary School

Instructor: Joshua Baker
Course: Physics 30S (Grade 11 Physics)
Semester: Fall 2026

Welcome to Physics 30S

Physics is the study of how the universe works. Throughout this course, you will investigate waves, sound, light, motion, forces, and fields through laboratory investigations, inquiry activities, demonstrations, problem solving, and scientific discussion. Rather than simply memorizing formulas, you will learn how to think like a physicist by asking questions, gathering evidence, analyzing data, and constructing explanations based on scientific principles.

This course emphasizes scientific inquiry, critical thinking, experimentation, and evidence-based reasoning. Students will regularly engage in laboratory investigations using PASCO equipment and modern scientific tools to explore real-world applications of physics.

Course Goals

By the end of this course, students will be able to:

- Explain physical phenomena using scientific principles.
- Analyze and solve quantitative physics problems.
- Design and conduct investigations.
- Collect, analyze, and evaluate experimental data.
- Communicate scientific ideas effectively.
- Evaluate evidence and draw reasoned conclusions.
- Apply physics concepts to everyday situations and modern technologies.

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Course Topics

Unit 1: Waves and Sound

Topics include:

- Wave properties
- Frequency and period
- Wave speed
- Reflection and transmission
- Interference and superposition
- Standing waves
- Refraction
- Diffraction
- Sound properties
- Resonance and harmonics
- Applications of acoustic technology

Major investigations include:

- Wave Lab
- Reflection and Transmission Lab
- Snell's Law Investigation
- Interference Investigation
- Speed of Sound Lab

Unit 2: Nature of Light

Topics include:

- Historical models of light
- Wave and particle models
- Reflection
- Refraction
- Snell's Law
- Diffraction
- Interference
- Modern applications of optics and light technologies

Major investigations include:

- Reflection and Refraction of Light Lab
- Single and Double Slit Investigation

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Unit 3: Mechanics

Topics include:

- Vectors
- Velocity
- Acceleration
- Motion graphs
- Kinematics equations
- Forces
- Free-body diagrams
- Newton's Laws of Motion
- Friction
- Dynamics

Major investigations include:

- Kinematics Lab
- Newton's Second Law Lab
- Dynamics Lab

Unit 4: Fields

Topics include:

- Gravitational fields
- Electric fields
- Electric forces
- Magnetic fields
- Electromagnetism
- Electromagnetic devices and applications

Major investigation:

- Fields Investigation

Learning Approach

Students should expect to participate in:

- Laboratory investigations
- Collaborative problem solving
- Scientific discussions
- Data analysis
- Inquiry projects
- Research activities
- Reflection and self-assessment

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Assessment and Evaluation

Final grades will be determined using the following categories:

Category	Weight
Laboratory Investigations & Inquiry	30%
Portfolios, Projects & Research	35%
Conferences, Reflections & Scientific Communication	15%
Unit Tests & Quizzes	10%
Final Exam or Final Project	10%
Total	**100%**

Major Assessments

Laboratory Investigations

Students will complete a variety of laboratory activities that assess:

- Experimental design
- Data collection
- Data analysis
- Scientific reasoning
- Scientific communication

Examples include:

- Wave Lab
- Snell's Law Lab
- Interference Investigation
- Speed of Sound Lab
- Kinematics Lab
- Dynamics Lab

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Portfolios and Projects

Students will maintain a learning portfolio throughout the semester that may include:

- Problem-solving samples
- Lab reflections
- Unit summaries
- Assessment corrections
- Self-assessments
- Learning reflections

Students will also complete research and inquiry projects related to physics applications and technologies.

Tests

Unit assessments will be completed for:

- Waves and Sound
- Nature of Light
- Mechanics
- Fields

Tests are designed to assess conceptual understanding, reasoning, problem solving, and application of learning.

Final Demonstration of Learning

Students will complete:

- A comprehensive final examination and/or
- A culminating inquiry project demonstrating physics understanding and scientific investigation skills

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Materials Required

Students should bring:

- Binder or notebook
- Writing utensils
- Scientific calculator
- Charged school laptop
- Lab materials as requested

Microsoft 365 and school technology resources will be used regularly throughout the course.

Expectations for Success

Students are expected to:

- Attend class regularly.
- Participate actively in investigations and discussions.
- Complete assignments on time.
- Work safely and responsibly in laboratory settings.
- Respect classmates, equipment, and learning opportunities.
- Ask questions and seek help when needed.

Success in physics comes through practice, persistence, and a willingness to learn from mistakes.

Homework

Homework will generally be purposeful and limited.

Typical expectations include:

- 30 to 60 minutes when assigned
- Practice of concepts taught in class
- Completion of investigations or portfolio work
- Preparation for assessments

Homework is intended to reinforce learning rather than simply occupy time.

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Academic Integrity

Scientific inquiry depends on honesty and integrity. Students are expected to:

- Submit their own work.
- Properly acknowledge sources.
- Accurately record and report data.
- Contribute fairly to group activities.

Academic dishonesty may result in reassessment opportunities and other consequences consistent with school policy.

A Final Message

Physics is about understanding the world through evidence, investigation, and critical thinking. This course will challenge you to think deeply, ask meaningful questions, and approach problems scientifically. Mistakes are an important part of learning, and curiosity is one of the most valuable tools a scientist can possess.

Welcome to Physics 30S. Let's explore how the universe works.