

# Southwest Christian Physics 2015-2016

---

I. **Southwest Christian's mission statement:** To challenge students to grow in knowing, loving, and serving God and others.

II. **Course Description:**

This course introduces students to the basic concepts of force, movement, mechanics, and energy. It lays the foundation for further study about electricity, magnetism, optics, and the atom. Students will grow in their understanding and appreciation of the orderliness of creation by this course's many links between mathematics and physics concepts.

III. **Carrie Top**

**School: (507) 442-4471**

**carrietop@swmch.org**

IV. **Instructional/Assessment Philosophy:**

I have always been amazed at the complexity and the integration of mathematics within itself and our everyday lives. In understanding physics, I am even more amazed at the integration of both math and physics and how it is seen throughout our world. God truly has designed this world in such a way that we get to learn to unfold some of the details. I am excited to be able to share that joy with you and be able to help you learn and be successful throughout the year. In order to fully understand the complexity that math and science offer, students will be asked to problem-solve, prove, and work through difficult problems and labs on a regular basis.

God is the Creator and Sustainer of all things- living and nonliving. The many disciplines of Science are but a small testament to our Creator and His work. At Southwest, science is taught from a Christian perspective while at the same time exposing students to other world views of scientific thinking. Students will recognize, wrestle with, and articulate the proper role of science in a fallen world, as well as develop an understanding of the shortcomings of science.

V. **Course Standards/Goals**

**Skills and Knowledge:** Southwest Minnesota Christian's Science Curriculum is based on a Reformed Biblical perspective. All of creation is under His command. Thus, we can more fully learn about God through the study of science. Below are Southwest's Science Standards:

Unifying Concepts and Processes: Students will learn that God created all physical and living things.

- \*Recognize systems, order, and organization as designed by God
- \*Use and critique evidence, models, and explanations
- \*Compare and contrast change, consistency, and measurements
- \*Evaluate changes in equilibrium/non-equilibrium
- \*Recognize form and function

Science as Inquiry: Students will design experiments, make observations and contribute to existing knowledge in science.

Science and Technology: Students will examine science as human cultural activity through which either God may be glorified and human life enhanced, or life as God intended, may be distorted.

Physical Science: Students will be encouraged to find joy and delight in exploring and coming to understand God's world.

\*Analyze motion and forces

\*Understand conservation of energy and changes in order

\*Examine correlations of energy and matter

**Value**: Students will grow in their appreciation of the wisdom, power, and love of God as they come to understand the evidence for His design in the universe. Students will recognize the significant ways in which a scientific worldview is based upon mathematical principles.

## VI. Course Texts, Readings, and Materials

Zitzewitz, , Elliott, Haase, Harper, and Herzog. *Physics: Principles and Problems*. Columbus, OH: McGraw-Hill Companies, Inc., 2009. Print.

GOOGLE CLASSROOM ACCESS CODE: **6jyp26u**

## VII. Assessment: Assessment will be based on homework, tests, quizzes, and projects throughout the year.

**Daily work**: Students will have daily homework based on completion. Each section will score 1-3 points. Students will be required to show work and complete all assigned problems to earn 3 points. Late work will be accepted with a point deduction for each day it is late, but will be required to complete each assignment.

**Homework quizzes**: Students will be able to check their answers throughout the chapter and will be given a homework check at the end of the chapter. This will consist of 10 problems from the homework assigned that chapter. Because students are allowed to check their answers, work will be required. Each question is worth 3 points. This will be added to the homework grade for the quarter.

**Projects**: Projects will be part of the curriculum throughout the year in various forms. Some projects will be individual whereas others will be group. When working in a group, you will be asked to do a self-reflection and a group-reflection that will factor into your grade.

**Trebuchet**: Students will work in a group and also with other classes at Southwest to build and operate a trebuchet for the Pumpkin Festival. Students will be asked to help in the calculations, design, building, and launching process.

**Rube Goldberg**: Students will be in groups of 4-5 to compete at the Rube Goldberg competition in the spring. Students are required to help in the planning, design, building, and competition. It may require many out of classroom hours to complete the project in time.

**Lab Reports:** Lab reports will be handed in at the conclusion of a lab and will include more than just data and information from the lab. There will be critical thinking and analysis that will carry a majority of the weight of the grade.

**Tests and Quizzes:** Tests will be taken at the end of each chapter. Quizzes will be periodically taken throughout each chapter.

**It is my belief that learning can occur through mistakes and so retakes will be offered on tests and quizzes. In order to retake the assessment students must correct the mistakes on the given test/quiz, complete two extra problems from each section, and meet with me to go over concepts and schedule a retake within a week that the assessment was handed back.**

**VIII. Policy:**

All assignments are designed to show whether students have met the standards for the course. Any unit test, quiz, project, lab report, or homework check assessed as “poor quality” will be expected to be REDONE for higher credit.

**Be Respectful, Ready, Responsible, and Positive.**

*Respect* God, others, and yourself.

Be *ready* to learn. Ask questions.

Students will be in their seat ready for the day by the time the bell rings.

Set expectations for yourself.

Be *responsible* for your actions in and outside the classroom.

Have a *positive* outlook and encourage your classmates.

Computers (or any device) will be put away or closed when not necessary for the class. Many days, students will be asked to complete a bell ringer on the computer. As soon as the bell ringer is completed, computers must go back in their case. During a time where the student is finished with the assigned task for the class, permission must be granted to use for other classes or reading material (such as a Nook). Failure to follow may result in the computer taken just as the school phone policy.

**IX. Distribution of Grading Components**

<b>Quarter Grade:</b>	<b>Semester Grade:</b>
Homework = 20%	Quarter 1 = 42.5%
Lab Reports = 30%	Quarter 2 = 42.55%
Tests/Projects/Quizzes = 50%	Semester Test = 15%

**X. Grading Scale**

<b>A</b>	<b>100-95</b>	<b>C</b>	<b>79-77</b>
<b>A-</b>	<b>94-92</b>	<b>C-</b>	<b>76-74</b>
<b>B+</b>	<b>91-89</b>	<b>D+</b>	<b>73-71</b>
<b>B</b>	<b>88-86</b>	<b>D</b>	<b>70-68</b>
<b>B-</b>	<b>85-83</b>	<b>D-</b>	<b>67-65</b>
<b>C+</b>	<b>82-80</b>	<b>F</b>	<b>64 or below</b>

**XI. Course Schedule/Topics Covered (tentative):**

**Introduction to Physics**

**Representing Motion**

**Accelerated Motion**

**Forces in One and Two Dimensions**

**Motion in Two Dimensions**

**Gravitation**

**Rotational Motion**

**Momentum and Its Conservation**

**Energy, Work, and Simple Machines**

**Energy and Its Conservation**

**Thermal Energy**

**States of Matter**

**Vibrations and Waves**

**Sound**

**Fundamentals of Light**

**Introduction to Electricity**