Integrated Science: Physics & Engineering Design

2016 - 2017

Instructor Name: Jud Landis
Email: landis@4j.lane.edu
Phone: 541-790-6712
Office Location: S7
Office Hours: Mon, Tues, Thurs, Fri: 7:45 – 8:25 AM

Course Description

Integrated Science: Physics & Engineering Design is a 12-week course required of all freshmen students at Sheldon High School. The class is designed to enhance students' science literacy and to provide a foundation upon which subsequent 10th, 11th and 12th grade Science courses can build. It is aligned to the Next Generation Science Standards as adopted by the Oregon Department of Education.
Subject Area: Science
Subject: Physical Science
Room Number: S7
Grade Level: 9
Credits: 0.5 (1 trimester). In addition to this course, 9th grade students must complete1 trimester of Integrated Science: Matter & Transformations to complete their freshman Science requirement. The two courses may be taken in any sequence.

Attendance

- This is a hands-on class with frequent lab and project work; therefore, it's extremely important that you attend class every day. Frequent absences will make it difficult for you to be successful in this course.
- If you've been absent, you're responsible for seeing me within 2 class days upon your return to arrange for make-up work. If you fail to do so, it may be impossible to make up the missed work.

Getting Assistance

General Assistance

- For make-up work and assistance, my office hours are Monday, Tuesday, Thursday and Friday: 7:45 – 8:25 AM in room S7.

Course Blog

- Visit the course blog for a daily log of class activities, assignments, due dates, and announcements. Handouts from class are available for download.
- The website is linked on the SHS home page, http://www.shs.lane.edu/ under "Academics > Class Pages > Science Dept > Landis." Click on the "Class Blog" link below my name/photo.
- Or, go directly to: http://blogs.4j.lane.edu/landis/

Grades Online

- Class grades can be viewed at the StudentVue or ParentVue links on the Sheldon High School home page. You will need your 4j username and password. I update grades approximately every 7 – 10 days during the term.

Prerequisites and Outcomes

Prerequisite Skills and Knowledge

- Ability to read and understand the textbook and laboratory instructions
- Ability to be an active learner during class time

Course Outcomes

- Mastery of Next Generation Science Standards in Physical Science
- Students will continue to develop Academic Skills: writing, utilizing steps of scientific method, communication conventions of scientists, drawing conclusions from empirical evidence, nature of scientific understanding, laboratory skills
- Students will continue to develop Key Cognitive Strategies: intellectual openness, inquisitiveness, analysis, reasoning>argumentation>proof, interpretation, precision and accuracy, problem solving

Subsequent Courses

Sheldon High School:

3.0 Science credits required for graduation

Required:

Biology A and B

Elective:

Chemistry (C or better in Algebra required)

Physics (A or B in Geometry required)

Grading Policies

Students will be graded on their performance level toward the academic course standards only.

Grading Scale

- 90 - 100% = A; 80 - 89% = B; 70 - 79% = C; 60 - 69% = D; less than 60% = F

Grading Explanation

- Your grade in this class is based on the following weighted categories: Lab Reports (25%), Classwork & Projects (20%), Tests & Quizzes (47%), Final Exam (8%).
- In addition to the above categories, “Homework Completion” will be recorded and displayed in StudentVue and ParentVue. The assignments in this category are intended to be opportunities for students to practice with concepts and skills; therefore, this category will not count toward the calculated overall class grade.

Plagiarism Statement

- In accordance with consistent academic standards recognized throughout the educational and professional community, Sheldon High School considers any form of academic dishonesty unacceptable. Cheating, Plagiarism (intentionally or unwittingly presenting someone else's work as your own), and Collusion (allowing your work to be copied or assisting others with academic dishonesty), are serious offenses and will not be tolerated at Sheldon. Consequences for such behavior will result in any or all of the following: score of a zero, parent conference, disciplinary referral to the Administration. It is strongly advised that students avoid academic fraud at all times to prepare for higher-learning and work environments where fraud of any kind will result in severe consequences.

Late Assignments

- All late work is due one week before the end of the trimester.

Other

- I will make appropriate accommodations for special needs students (such as those with Individual Education Plans and 504 plans).

Classroom Conduct

Study Skills

- Students should expect to spend time outside of the class meeting time to complete lab reports, assigned reading in the course textbook, homework assignments, and to prepare for tests and quizzes.
- While you will not need to work outside of class time every day, you should expect to do so approximately 2-3 times per week.

Classroom Conduct

- This science course offers the opportunity to explore knowledge through a very hands-on and open approach. As a result, occasionally students experience difficulties demonstrating the skills of an independent learner. You should understand that I regard the classroom/laboratory as a learning environment for Science, and that the needs of fellow students need to be respected. I expect students to display respect for all people and materials in the classroom, and students can expect respect from me in return. Students who display poor judgment or control will face removal from the classroom. Examples include: horseplay, abuse of materials or equipment, insubordination, excessive socializing.
- Periodically you may be required to work independently on projects for this class. You'll be required to stay in an authorized area and check in with the supervisors at these areas.
- Music players and headphones must be off and out of sight during class time.
- Cell phones may be used as calculators and for Internet access during certain times specified by the teacher. They may not be used during tests for any reason. If students cannot resist the urge to become distracted by texting and other non-academic uses of their cell phones, they will lose the privilege of access to their phones during class time.

Course Outline

- Measurement
    - SI system of units
    - Scientific notation
    - Significant figures
    - Graphing
- Describing motion
    - Speed & velocity
    - Acceleration
- Force
    - Weight & mass
    - Friction
- Laws of Motion
    - Inertia
    - Force, mass & acceleration
    - Action & reaction
- Energy
    - Mechanical energy – kinetic and potential
    - Work & power
- Waves
    - Harmonic motion
    - Sound