Lincoln University

Sci 10 – Physical Science

COURSE SYLLABUS
Fall, 2019

Instructor: Len Filane, Ph.D.

Lecture Schedule: Wd: 9.40 – 12.25 pm
Credits: 3 units / 45 lecture hours
Level: Introductory (I)
Office Hours: Wd, 3.15-5.15 pm, teacher's lounge, main bldg., 4th fl.

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Textbooks: COLLEGE PHYSICS by Frederick J. Bueche and Eugene Hetch.
Schaum's Outline Series – McGraw Hill, 11th edition (2011)

ISBN-10: 0071754873, ISBN-13 :978-0071754873

Last Revision: Aug. 12, 2019

DISCLAIMER

This syllabus may be changed or updated according to the instructor's discretion.

CATALOG DESCRIPTION

The study of matter and energy, principles and practical applications in

Physics, Chemistry, Mechanics, Electronics, Geosciences and Astronomy.

COURSE LEARNING OUTCOMES[1]

A). Students demonstrate their ability to explain simple natural phenomena around us using the language of Physics.

B). Students demonstrate their ability to solve exercises and simple problems in General Physics using physical symbols and formulas, and with the help of the basic mathematical concepts.

C). Students demonstrate their understanding of the physical concepts learned in class.

[1] Detailed description of learning outcomes and information about the assessment procedure are available at the Center for Teaching and Learning website (ctl.lincolnuca.edu).

INSTRUCTIONAL METHOD

Fifteen (15) Lectures covering all the topics listed in the Course Description.
Weekly three (3) hours Lecture. Each lecture includes general discussion. Exercises will usually follow.
Assignments require students to actively use resources of the library. Detailed guide to the resources of the library, as well as the description of Lincoln University approach to information literacy, are available at the Center for Teaching and Learning website (ctl.lincolnuca.edu).

LECTURE CONTENT AND SCHEDULE

Lecture 1: Review of the basic mathematics required for General Physics. Basic Algebra, Calculus, Geometry, Trigonometry, Vector Analysis, Statistics, common functions such as Exp. and Log. All these are found in the Appendix of the Textbook.

Lectures 2-3: Newton's Laws, Velocity, Acceleration, Impulse, Momentum, Work, Energy, Power.

QUIZZ 1

Lectures 4-5: Density, Specific Gravity, Elasticity, Stress, Strain, Young's Modulus, Bulk Modulus, Shear Modulus. Average Pressure, Standard Atmospheric Pressure, Hydrostatic Pressure, Pascal's Principle, Archimedes' Principle, Fluid Flow, Equation of Continuity, Viscosity, Poiseuille's Laws, Bernoulli's Equation, Torricelli's Theorem, Raynolds' Number.

Lecture 6: Waves. Frequency, Period, Velocity, Wavelength, Reflection, Refraction, Absorption.

QUIZZ 2

Lecture 7: Light, Electromagnetic Waves, Visible Light, Infrared, Ultraviolet, Diffraction, Lenses, Prisms, Spectrum, Lasers and Applications.

Lecture 8-9: Sound, Transverse and Longitudinal Motion, medium of propagation, Velocity, Audible Sound, Infrasound and Ultrasound, Harmonics, Reflection, Refraction, Absorption, Attenuation. Application of Ultrasound in Medicine: Continuous Waves and Pulsed Waves, Ultrasound for Diagnostic Imaging, 2D-Imaging, Doppler Principle, Spectral Doppler, Color Doppler.

MID-TERM Exam

Lecture 10-11: Electricity and Magnetism, Coulomb's Law, Electric Fields, Potential Difference, Current, Resistance, Electrical Work, Electrical Power, Resistors in Series, Resistors

in Parallel, Kirchhoff's Laws, Magnetic Fields, Electro-Magnetic Forces, Electric Generators, Electric Motors.

QUIZZ 3

Lecture 12-13: Relativity, Quantum Physics, Hydrogen Atom, Atomic Structure, Nuclear Structure, Nuclei, Radioactivity, Applied Atomic Physics, Applied Nuclear Physics. Semi-conductors, Sub-Micron Technology, Nano Technology.

QUIZZ 4

Lecture 13-14: Review all the Principles and Laws learned in Class. Some important applications of Physics in the Industry, Communication, Navigation, Medicine, Agriculture, Fishery, Weather Forecast, Astronomy.

Lecture 15: Present status of Physics and its limitations. Future domain of Physics.

ACADEMIC HONESTY & INTEGRITY HONOR CODE

The faculty, administration, and staff reinforce academic honesty and principles of academic honor. Independent learning is vital to the requirements of honesty and integrity in the performance of academic assignments, both in the classroom and outside. Students should avoid academic dishonesty in all of its forms, including plagiarism, cheating, and other forms of academic misconduct. The University reserves the right to determine what constitutes a violation of academic honesty and integrity.

ASSESSMENT

FOUR CLASS QUIZZES
HOMEWORK
CLASS DISCUSSIONS
MIDTERM EXAM
FINAL EXAM

CALCULATION OF FINAL GRADES:

Homework: 5%
Quizzes : 20%
Midterm Exam: 25%
Final Exam : 35%
Class Participation: 15%

GRADING SCALE: (Should follow Department and/or College Template)

Grade	A	B	C	D	F
GPA Points	4.0	3.0	2.0	1.0	0
%	90-100	80-89	70-79	60-69	less than 60

Re-taking or making up of the quizzes and exams will not be offered.

CLASS WORK (class participation):

Your goal should be to demonstrate the grasp of the concepts, ability to solve problems and critical thinking skills in analyzing them. You should strive to ask relevant questions, volunteer relevant answers, as well as volunteer to solve problems on the board, and actively participate in class discussions.

If you were tardy or missed a class you did not participate in class work. It may be reflected in your grade for class work.

Class-time is for learning only. Please, refrain from discussing any issue that is not directly related to the process of learning and concept understanding.

Issues related to grades for tests or teaching methodology should be raised only outside of class time.

Class work is graded on the scale of 0-10.

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HOMEWORK

Written HW is graded on the scale 0-10. Since its impossible for me to exactly predict the rate of covering the material, I will give homework every class, as we move forward. I will collect homework on selected days only. Bring your current homework to every class. Your homework must be stapled, be neat and legible. Avoid submitting "dog ears"! If you write chaotically I would not be able to follow your work, hence I will not be able to grade it. HW that does not meet the above outlined requirements will be rejected and awarded zero points.

Show your work in detail. If you do not show all the work required to complete the homework problems, I will reduce your homework credit. Just showing the answer will not be accepted for any credit.

All homework is to be done by the enrolled student and must be your own work. Any attempt to copy or re-use homework or share the same work between the students will result in zero credit.

No late homework will be accepted. I will not accept any HW after my announcement of the end of the collection process. If you know that you will be absent in class, please email your scanned homework to me prior to the beginning of the current class. If you have a question or an issue regarding your HW, then the best way to resolve it is after class hours.

Do not copy the solutions from the instructor's solution manual or online. If you do it, you will be guilty of plagiarism which is a violation of student conduct code, and may result in you being disciplined, suspended from class or expelled from the school.

UNIVERSITY ATTENDANCE POLICY:

Lincoln University uses the class method of teaching, which assumes that each student has something to contribute and something to gain by attending class. It further assumes that there is much more instruction absorbed in the classroom than can be tested on examinations. Therefore, students are expected to attend all regularly scheduled class meetings and should exhibit good faith in this regard.

INSTRUCTOR's ATTENDANCE POLICY:

Attendance is mandatory. I frown on tardiness. If you are frequently late to class, please review your schedule and make the necessary adjustments. Late arrivals are disruptive to class, they adversely affect the performance of all, myself including.

If you are late to a quiz or exam you will not be allowed to take it.

UNIVERSITY ACADEMIC INTEGRITY STATEMENT:

Students are responsible for proper conduct and integrity in all of their scholastic work. They must follow a professor's instructions when completing tests, homework, and laboratory reports, and must ask for clarification if the instructions are