Updated 6/5/20

Science Class Descriptions 2020-2021

Anatomy and Physiology

Teacher: Lori Hickman
Level: 3, 4, 5
Credit: 1
Meets: Full year, once weekly (see grid)
Labs will be held once a month on Wednesdays, 8:30-11:00 (Dates TBD)
Lab fees: $45**, payable directly to Mrs. Hickman on by the first day of lab**
Fee includes dissection materials and prepared slides.
Prerequisites: Biology, Level 3 or higher
Text:

- *Exploring Creation with Advanced Biology: The Human Body (2nd edition)*, Shannon and Yunis
- *Solutions and Tests for Exploring Creation with Advanced Biology: The Human Body (2nd edition)*, Shannon and Yunis
- Kaplan *Anatomy Coloring Book (6th edition)*

Additional required materials: Microscope (Note: 2 students may share a microscope. Let me know if you are having trouble locating a microscope.)
Homework time expectation: 4-8 hours weekly, varies by student
Teaching format: Lecture, videos, hands-on activities, homework, weekly quizzes, tests, monthly labs.
Description: This class covers 15 of the 16 modules in the text: Biology Review, Histology, Integumentary and Skeletal Systems, Skeletal System Histology and Movement, Muscle Histology and Physiology, Skeletal Muscle System, Nervous System- Central and Peripheral, Endocrine System, Circulatory System, Lymphatic System, Digestive System, Respiratory System, and Urinary/Excretory System.

Lab dissections include: sheep's brain, cow's eye, cow's heart, and a fetal pig

Biology, Level 3

Teacher: Christine Metzing, (302) 376-5148 or (302) 893-2320
Level: 3 & 5 (honors level)
Credit:1
Meets: Full year, once weekly, **from 8:30-10:40 a.m.** (see grid) **Please see special note in Description section**
Lab/Copy fees: $45 for lab & $20 copy fee, **payable directly to Mrs. Metzing**
Text: *Exploring Creation with Biology, 2nd edition*, Jay Wile
Exploring Creation with Biology Solutions Manual, 2nd edition, Jay Wile
Level 5 only: *Lifepac Science Grade 10 Unit 6: Human Anatomy & Physiology*

https://www.christianbook.com/lifepac-science-grade-10-anatomy-physiology/9780867177961/pd/177969?event=Homeschool|1001330
Additional required materials: Microscope (mechanical stage is helpful but not required)
Large binder (3-5 inches) with 10 dividers (need for 1st class)
Microscope suggestion: https://www.amazon.com/Biological-Monocular-Microscope-40X-1000X-All-Metal/dp/B07G93MM6Y/ref=lp_393246011_1_1_sspa/137-4904617-2365758?s=industrial&ie=UTF8&qid=1579466254&sr=1-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEzRDRaTkJGMTQwWFUmZW5jcnlwdGVkSWQ9QTAxNjY3NjgyV09JMFhDTFZKSlZGJmVuY3J5cHRlZEFkSWQ9QTAxMDUwMDYzRzJUUTFSOVZZQkM5JndpZGdldE5hbWU9c3BfYXRmX2Jyb3dzZSZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPXRydWU=
Homework time expectation: 5 hours weekly, but varies greatly depending on student
Teaching format: Lecture with labs
Description: College prep and honors options are available. Each student is required to have his own text, solutions manual, and microscope. Students need to correct their own homework prior to submitting it, but they *should not* correct the tests.

Note: First class is held a week earlier than most Mt. Sophia classes. It occurs the morning of new student orientation at Mt. Sophia from 9:00 a.m.- 12:20 p.m. Parents should attend first hour of this class. **Homework will be due the first class. Please contact me if you can't make this class. If you register late, please contact me so that I can send you the homework assignment.**

The Friday after the last class before Christmas break and the Friday after the last day of class are generally optional class days for midterm and final review.

For those doing Level 5, the Lifepac assignments will be done throughout the year. Level 5 also requires extra labs, extra reading (provided in the outline), extra test and quiz questions from time to time, and one extra test. Each Level 5 student must do a project (examples: a paper, CPR/first aid class, or participation in Science Olympiad)

If there are financial concerns, please call me and we can try to work something out. I am interested in lab helpers for the class. Helpers get a significant reduction in fees.

Chemistry Year 2 with labs, Level 5
Teacher: Barb Varnell
Level: 5
Credit: 1
Meets: Full year, once weekly (see grid) **with** once a month 3-hour labs on **Wednesday afternoons** (dates TBD)
Lab Fee: $30, **payable directly to Mrs. Varnell**
Prerequisites: Strong mastery of Chemistry I concepts
Text: *Chemistry, 3rd edition*, Julia Burdge, ISBN: 978-0073402734

https://www.amazon.com/Chemistry-Julia-Burdge/dp/0073402737/ref=sr_1_1?keywords=ISBN+9780073402734&qid=1579715464&sr=8-1

Student Solutions Manual

https://www.amazon.com/gp/product/B010WFF9HQ/ref=oh_aui_search_detailpage?ie=UTF8&psc=

(you should be able to find these used)

Description: This course will be using the same textbook used for the University of Delaware's Chemistry 101 and 102 courses. According to the University of Delaware's website, "Prospective majors in nursing must have completed at least one year of both biology and chemistry, and are strongly urged to take two years of chemistry." In addition, chemistry is required for many college majors and having a second high school chemistry course can help prepare you for the rigors of a college chemistry course (especially if you haven't had chemistry since your freshman year) In addition it can make a prospective STEM major's transcript look more attractive. While this will be a rigorous high school course, the aim is to explore the wonders and fun of chemistry. Dates of labs are to be determined, but they will be on Wednesday afternoons. **Please note:** This course is only offered every other year, so please make your school plans accordingly.

Conceptual Chemistry with labs, Level 2

Teacher: Kay Hampson (class/lecture), Lori Hickman (labs)
Level: 2
Credit: 1
Meets: Full year, once weekly (see grid) with **monthly labs on Wednesday mornings (dates TBD)**
Lab fee: $30, **payable directly to Mrs. Hickman**
Prerequisite: none
Text: *Chemistry* by Kathleen A. Packard, Donald Jacobs, & Robert Marshall, published by Pearson AGS Globe ISBN: 0-7854-4045-3
Additional required materials: Subscription to American Chemical Society- Chemistry for life magazine (Must subscribe **no later than September 1st**)
Homework time expectation: 3 hours weekly
Teaching format: Illustrating, lectures, discussion, projects, videos
Description: Topics covered include chemistry & measurement, states and make-up of matter, compounds, formulas & names, types of chemical reactions, atomic theory, periodic table, bonding, reactions, acids & bases. This level 2 class has very little math so that those who are not math savvy can still accomplish a high school chemistry credit.

Chemistry I, Level 3 (To be taken in conjunction with Conceptual Chemistry)

Teacher: Marilyn Groop
Level: 3
Meets: Full year, weekly (see grid)
Prerequisites: Solid knowledge of Algebra I
Text: *Chemistry*, Greg Curran, ISBN: 978-1-60163-163-3

https://www.amazon.com/Homework-Helpers-Chemistry-Greg-Curran/dp/1601631634/ref=sr_1_1?keywords=chemistry%2C+greg+curran&qid=1579723322&sr=8-1
Homework time expectation: 1-2 hours weekly, varies with student
Teaching format: Lecture, homework, tests
Description: This class *is to be taken in conjunction* with Mrs. Hampson's level 2 chemistry class (Conceptual Chemistry). This will then enable a student to increase from a level 2 chemistry class to a level 3 (College prep) chemistry course. Students should be very comfortable with the algebra I concepts of rearranging equations to solve for an unknown and scientific notation. Students will need to be able to use a standard scientific calculator (model does not matter). A pretest will be given to students during the summer (to be taken in the MSA office) to make sure they are ready for the math or if they need a review before starting this course.

Forensic Science with lab, Level 3
Teachers: Kay & Dean Hampson
Level: 3
Credit: 1
Meets: Full year, once weekly (see grid) **with Monthly labs on Tuesdays (dates & times TBD)**
Lab fees: TBD, **payable directly** to Mrs. Hampson
Prerequisites: Successful completion of chemistry and biology (any level)
Text: *Forensic Science for High School* by Barbara Deslich & John Funkhouser
ISBN-13: 978-0-7575-1825-6
Additional required materials/fees: Students will need access to a computer in order to complete reading or video assignments
Description: Overview of forensic science includes history of forensics, applicable laws and government restrictions, drug analysis, fingerprinting, DNA, blood splatter, document analysis, fiber analysis, tire & footprint analysis.

Motion, Magnets and More with lab
Teacher: Kathy Martin
Level: 2
Credit: 1
Meets: Full year, Monday & Thursday (see grid)
Prerequisites: Algebra I, Geometry
Lab/materials fee: $20 PAYABLE DIRECTLY TO MRS. MARTIN
Text:

- *Conceptual Physics: the High School Physics Program 3rd edition*, Paul Hewitt, 1997 copyright. ISBN: 978-02001466973 Be sure to get this particular edition. Contact Mt. Sophia for information regarding used copies to buy. (Please ask for the email to be forwarded to Mrs. Martin)
- *Conceptual Physics: the High School Physics Program Reading and Study Workbook*, ISBN: 978-0-13-364739-6 (Has a white cover with a close-up picture of teens on a roller coaster)

Additional required materials: scientific calculator (cell phone not permitted to be used in class), graph paper, ruler with metric units, 2 colored pens or pencils, 14 sealable business-sized envelopes for tests, internet access
Homework time expectation: 4 hours weekly
Teaching format: Lecture, homework, tests, discussions, demonstrations, hands-on experiences, and lab.
Description: Ever wonder why the world works like it does? Why don't cars always make it around a curve? Do airbags really reduce injuries? Why are the colors in a rainbow always in the same order? Why do sirens sound higher when approaching you than when moving away from you? How do maglev trains work? Discover the answers to these and other real-life physical problems in class. This class involves lots of hands-on experiences and demonstrations to gain understanding. This course concentrates on understanding the basic ideas of physics without using a lot of math (but it does use a little math). Topics include motion, Newton's Laws, momentum, energy, waves, sound, light, electricity, and magnetism. This course is particularly suited to students who find math confusing but who would like a basic understanding of physics. This course IS NOT recommended for students who anticipate majoring in science or engineering in college; those students should take Physics Year 1.

Physical Science
Teacher: Tammy Hunter
Level: 2, 3, 4, or 5
Credit: 1
Meets: Full year, once weekly (see grid)
Labs (a total of 13) will be on Tuesdays from 8:30- 11:00 (Levels 4 & 5 expect to stay until noon) Dates TBD
Lab fees: $30 **Payable directly to Mrs. Hunter**
Text: (for **ALL Levels)**

- *Exploring Creation with Physical Science 2nd edition*, Jay Wile (ISBN: 9781932012774)
- *Solutions and Tests for Exploring Creation with Physical Science 2nd edition*, Jay Wile (ISBN: 9781932012781)

Additionally, **Level 5 is required to have**

- *The Weather Book*, Michael Oard (ISBN: 9780890512111)
- *The Weather Book Study Guide & Workbook*, Michael Oard (ISBN: 9781893345591)

(Note: Level 4 may choose to complete these books OR give an oral report)
Homework time expectation: 3-5 hours weekly (outside of class/lab)
Description: Physical Science is the study of the earth, the universe, and the laws of physics. The course focuses on the study of the air, atmosphere, water, hydrosphere, lithosphere, weather, motion, Newton's Laws, electricity, magnetism, sound, light, and astrophysics.

This class will include instruction on the textbook material, labs, and occasional instruction on other science topics. Class time will be used to lecture on and discuss the assigned textbook

reading. On lab day, 2.5 hours will be used to complete the labs included in the textbook. One of the main focuses of this course is to teach students how to write-up and document a lab report.

A syllabus will be provided with clearly laid-out, daily assignments to be done at home. Assignments consist of reading the textbook, answering textbook questions, preparing lab reports for lab days, and taking tests.

- **Level 2 students:** Tests are taken open book & open notes.
- **Level 4 students**: Students can choose between giving a 2-5 minute oral presentation **OR** completing *The Weather Book* and *The Weather Book Study Guide & Workbook.*
- **Level 5 students:** Required to give a 2-5 minute oral presentation **AND** complete *The Weather Book* and *The Weather Book Study Guide & Workbook.*

Physics, year 1 with lab, Level 3
Teacher: Kathy Martin
Level: 3, 4, or 5
Credit: 1
Meets: Full year, once weekly for two class periods in a row (see grid)
Prerequisites: Algebra I, Algebra II, Geometry
Lab/materials fee: $20 **PAYABLE DIRECTLY TO MRS. MARTIN**
Text: *Exploring Creation with Physics 2nd edition (textbook AND solution manual),* Jay Wile.
Multimedia CD and test booklet **ARE NOT** required
For used copies: Please contact Mrs. Martin via Mt. Sophia email (ask for the email to be forwarded to her)
Additional required materials: Scientific calculator capable of doing trigonometric functions and scientific notion (graphing calculator not needed); 2 colored pens or pencils; graph paper; ruler with metric units; protractor; compass; 16 sealable business-sized envelopes for tests; internet access
Homework time expectation: 4-7 hours per week
Teaching format: Lecture, homework, tests, discussion, demonstrations, hands-on experiences, and lab
Description: Why don't cars always make it around a curve? Do airbags really reduce injuries? Find out the answers to these and other real-life physical problems by learning physics. Topics include motion, Newton's Laws, energy, momentum, periodic motion, waves, sound, light, optics, electricity and magnetism. This course combines a mathematical approach with hands-on experiences and investigative labs. Applications to "real life" are highlighted. Students who anticipate majoring in science or engineering in college should take this course. Students may take it in either junior or senior year. This course meets the physics requirement at the University of Delaware for prospective majors in biology, chemistry, physics and engineering.
NOTE: We will meet for 1 extra class EACH semester, making a total of 2 extra classes

in addition to the usual Mount Sophia schedule. Dates are: December 14th and May 17th. If vacation plans interfere with the extra classes, the work can be made up. Also, if college visits interfere with any class, the work can be made up.