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## Science Class Descriptions 2022-2023

### **Anatomy and Physiology with lab**

Teacher: Stephanie Magargee

Level: 3, 4, 5

Credit: 1

Meets: Full year, once weekly (see grid)

**Labs will be held once a month on Tuesday**

Lab fees: \$45, payable directly to Mrs. Magargee on by the first day of lab

**Fee is for dissection materials.**

Prerequisites: Biology, Level 3 or higher

Text:

- *Exploring Creation with Advanced Biology: The Human Body (2<sup>nd</sup> edition)*, Shannon and Yunis
- *Kaplan Anatomy Coloring Book (7<sup>th</sup> or 8<sup>th</sup> edition)*

Additional required materials: 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: cow's eye, cow's heart, and a fetal pig

### **Biology**

Teacher: Christine Metzger

Levels: Levels 3, 4 and 5

Credit: 1

Copy fee \$20.00

Lab fee \$45.00

Required books: Text: *Exploring Creation with Biology*, 2nd edition by Jay Wile, Please also purchase the *Exploring Creation with Biology*, 2nd edition Solutions Manual.

Honors and advanced students will need to purchase the Alpha Omega Lifepac on Anatomy and Physiology Lifepac book 6<sup>th</sup> of 10<sup>th</sup> grade biology. <https://www.christianbook.com/lifepac-science-grade-10-anatomy-physiology/9780867177961/pd/177969>

Additional Materials Needed: All students will also need a microscope. Apologia has the recommended microscope on their website, [www.apologia.com](http://www.apologia.com) although anything similar will be fine.

Time Expectation: Approximately 5 hours/week, but varies greatly depending on student.

Teaching Format: Lecture with labs.

Description: This is a rigorous high school biology course for those students who are interested in going into a field that will require them to take biology in college. The course will cover an introduction to biology, kingdoms Monera, Protista, and Fungi, the chemistry of life, the cell, cellular reproduction, ecosystems, Invertebrates, Phyla, Arthropoda, Chordata, Plantae and birds,

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reptiles and mammals. Students will need to correct their own homework prior to submitting it, but they should not correct the tests.

For the Level 5 option: There are extra labs, extra readings and short assignments which are described in the syllabus, extra test and quiz questions for honor students from time to time. Each honor student needs to do a project which can vary from a paper to a CPR/ First Aid class or even doing Science Olympiad.

**The first class is a week earlier than most Mt. Sophia classes.** Parents should attend first hour of this class. Students should have large binder (3-5 inches) with 10 dividers for this first class. The Friday after the last class before Christmas break and the Friday after the last day of class are generally optional extra class days for midterm and final review. Since homework is due in the first class, please contact me if you register late so that I can send you the homework assignment before classes begin.

This class is only offered on alternate years so please plan accordingly.

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 and helpers get a significant reduction in fees. My number is 302-376-5148 or 302-893-2320 if you have any questions.

### **Conceptual Chemistry with labs, Level 2**

Teacher: Stephanie Magargee (class/lecture), with Barb Varnell for labs

Level: 2

Credit: 1

Meets: Full year, once weekly (see grid) with **monthly labs on Tuesday mornings 9-12** - Sept 20, Oct 18, Nov 8, Dec 6, Jan 17, Feb 7, March 14, April 18 (note: there is the possibility of a field trip – more details will be available at the start of the school year).

Lab fee: \$30, **payable directly to Mrs. Varnell**

Prerequisite: none

Text: Introduction to Chemistry 3rd edition by Bauer, Birk and Marks  
ISBN 978-0-07-340267-3

Homework time expectation: 3 hours weekly

Teaching format: 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, Level 3 (To be taken in conjunction with the above Conceptual Chemistry course)**

Teacher: Bobbie Brickner

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](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

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Description: This class *is to be taken in conjunction* with Mrs. Magargee'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.

### **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 the following **Wednesdays** (time to be determined with student input) – Sept 7, Sept 28, Oct 26, Nov 30, Jan 25, March 22, April 5, and May 10 (note: there is the possibility of a field trip – more details will be available at the start of the school year).

Lab Fee: TBD (approximately \$35), **payable directly to Mrs. Varnell**

Prerequisites: Strong mastery of Chemistry I concepts

Text: *Chemistry, 3<sup>rd</sup> edition*, Julia Burdge, ISBN: 978-0073402734

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

[Burdge/dp/0073402737/ref=sr\\_1\\_1?keywords=ISBN+9780073402734&qid=1579715464&sr=8-1](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=](https://www.amazon.com/gp/product/B010WFF9HQ/ref=oh_aui_search_detailpage?ie=UTF8&psc=)

(you should be able to find both of these used)

Description: This course will be using the same textbook used for the University of Delaware's Chemistry 101 and 102 courses (This two semester sequence is required by a variety of majors in the following Colleges: Agriculture and Natural Resources, Health Sciences, and Human Services, Education and Public Policy. It is also a natural science elective for a significant number of arts, humanities, and social science majors.) A second year of chemistry can make your application to colleges for majors such as nursing, chemical engineering, pre-med or pre-vet, occupational or physical therapy (or any major which requires you to take a chemistry course) more attractive to colleges and scholarship committees. 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 or sophomore year) While this will be a rigorous chemistry course, one of its aims is to explore the wonders and fun of chemistry. Dates of labs are to be determined, but they will be on Wednesdays. **Please note:** This course is only offered every other year, so please make your school plans accordingly.

### **Forensic Science with lab**

Teachers: Bobbie Brickner

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. Brickner

Prerequisites: Successful completion of chemistry and biology (any level)

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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, familiar cases, drug analysis, fingerprinting, DNA, blood spatter, document analysis, fiber analysis, tire & footprint analysis, forensic archaeology

### **Physical Science w/lab**

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 am (Levels 4 & 5 expect to stay until noon for 9 of the 13 labs) Dates TBD**

Lab fees: \$55 Payable directly to Mrs. Hunter

Text: (for **ALL Levels**)

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

Teacher: Kathy Martin

Level: 3, 4, or 5

Credit: 1

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Meets: Full year, once weekly for two class periods in a row (see grid). Two additional classes will also be held outside of the regular school year on Monday, Jan. 2, and Friday, May 12.

Prerequisites: Algebra I, Algebra II, Geometry

Lab/materials fee: \$25 **PAYABLE DIRECTLY TO MRS. MARTIN**

Text: *Exploring Creation with Physics 2<sup>nd</sup> 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) or purchase online

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. A physics course can make your application to colleges for majors such as engineering, any science (or any major which requires you to take a physics course) more attractive to colleges and scholarship committees. Students who anticipate majoring in science or engineering in college should take this course. Students typically take this course in their junior or senior year.

**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. The extra class for fall semester will be on Monday, January 2. The extra class for spring semester will be on Friday, May 12. 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.

### **Science Exploration with lab**

Teacher: Claire Ritter

Level: 3

Credit: 1

Meets: Full year, Mondays (see grid)

Lab Fee: \$40

Text: *Quarter 1: **Ecology** – No textbook required. I will assemble packets of information for students that will serve as their textbook for this quarter.*

*Quarter 2: **Marine Science** - No textbook required. I will assemble packets of information for students that will serve as their textbook for this quarter.*

*Quarter 3: **Genetics and Heredity** - No textbook required. I will assemble packets of information for students that will serve as their textbook for this quarter*

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*Quarter 4: Nutrition and Food Science – (No, this is not a health class) No textbook required. I will assemble packets of information for students that will serve as their textbook for this quarter..*

Homework time expectation: 2-3 hours weekly

Teaching format: lecture, labs (in class), group activities, homework, tests/assessments.

Description: This full year science class will explore a different science topic each quarter (there are 4 quarters in a school year so we will cover 4 different science topics). Topics include: Ecology, Marine Science, Genetics and Heredity, and Nutritional/Food Science. Our weekly class will include lecture, hands-on labs, group activities, homework both in written and creative form, and tests/assessments. I am a very hands-on teacher so class time will be interactive. I will expect student participation as we explore these four different science topics over the course of the year. Our class time is two “blocks” on the schedule (see grid) to account for both lecture AND labs weekly.