

Biology 2025-26

Course Syllabus

Faculty Member: Prof. Joe Arthur

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Location: Class 169

Red Class Meets Monday to Friday 2:25 to 3:15

Orange Class Meets Tuesday & Thursday 7:45 to 9:15 & Friday 8:30 to 9:15

Credit: 1.0

The date this Syllabus was last updated: August 2025

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Date this Syllabus was last updated: August, 2025

NOTE: This syllabus is subject to change throughout the year.

A. Course Description

Biology endeavors to challenge students to explore the living world around them. Students in this course will aspire to understand the principles of Biology through relevant and contemporary assignments and laboratory exercises. Through practical experience and rigorous instruction, students will master the content provided in all five units of the course. From cellular biology to ecology, they will take a look at all major aspects of the field of Biology and build their scientific knowledge. This course is integral in the experience and education of a high school student and will prepare them for further analytical instruction. This course is structured to be academically challenging, asking students to think critically and apply their understanding in various contexts. This course will rely heavily on kinesthetic, visual and verbal learning styles in order to appeal to all learners and to create a fluid learning environment capable of adapting

and growing, much like that of the life we will study. **Note - At The Founders Academy, this is a Lab Science course.**

B. Course Objectives

Upon completion of this course, students will be able to:

- Demonstrate an understanding of the scientific method and apply it during investigations
- Identify and describe the chemical structure of organic molecules found in all living organisms
- Identify and describe the major parts of the cell
- Distinguish between photosynthesis and respiration
- Describe the relationship between mitosis and meiosis
- Explain the main structural features of DNA and its role in inheritance
- Identify changes in DNA structure and their influence on an individual's genetic makeup
- Demonstrate an understanding of evolution as the effect of changes in gene frequency in a population of individuals over time
- Identify and describe the effect of natural selection as it influences the prevalence of genes in a population
- Identify and describe the functions of major vertebrate organs and organ systems
- Explain the relationship between organisms and their environment in terms of populations, communities, and ecosystems
- Identify and describe some major features of the New Hampshire ecological environment

C. How this Class Supports Founders' Mission and Themes

Biology is a rigorous course designed to deepen student knowledge and understanding of major content areas in the biological sciences. Even more importantly, students are challenged to become responsible and independent with their studies. There will be numerous group projects where students will need to demonstrate leadership and communication skills. Working together in a group requires patience, communication, responsibility, and dedication to get the project completed. These skills, practiced day-by-day, will bring them successfully forward along any path they choose for the future. The Code of Conduct will be strictly adhered to in all activities in class, and its importance in the field of science as well as in group activities will be reflected upon throughout the year.

Mission Statement:

The Founders Academy is a public charter school encompassing grades 6-12 that is free and open to all New Hampshire students. The academy develops citizens and leaders, who understand and apply the lessons of the past, demonstrate exceptional character, participate knowledgeably in community activities, and lead by example. The Academy recognizes the importance of balance in the development of each person and respects each student's individual journey.

Principled leadership and good citizenship are fostered by means of a curriculum of classical studies that includes analyzing the lives of great men and women of history, mining the rich classical ideals of the Western tradition, and tracing the evolution of the precious and costly idea of liberty.

The Vision:

The Founders Academy prepares wise, principled leaders by offering a classical education and providing a wide array of opportunities to lead.

Leadership Code of Conduct:

The students at The Founders Academy created and adopted the following "Leadership Code of Conduct" in January, 2015:

1. Be responsible
2. Be respectful
3. Be honest
4. Be lawful

5. Be determined
6. Be polite
7. Be open-minded
8. Be courageous
9. Be confident
10. Be helpful

Prof. Joe Arthur's Class Rules:

- 1) Your behavior should promote a positive and safe learning environment.
- 2) Your behavior must not interfere with your education.
- 3) Your behavior must not interfere with my teaching.
- 4) Your behavior must not interfere with your classmate's education.
- 5) All work that is to be collected is to be placed in the appropriate color folder and placed in "**The Box**". Only work that is collected from the box will be graded.

Policy: As outlined in the Student Handbook, students are to follow Section 3.0

D. Texts and Class Supplies

-Chromebook

- 1) *Texts for the course will be supplied by the teacher*
- 2) Periodic Table of Elements <https://ptable.com/#Properties>
- 3) Various simulations found at <https://phet.colorado.edu/en/activities>
- 4) *Two [2] bound composition notebooks are required one for lab and classwork investigations, the second for Motivational Monday, Friday Four, and the significance of 18*
- 5) *Two [2] Folders (Each class will have a set color folder AB- Orange, J Red)*

E. Grading Scheme, Homework, Mid-Term and Final Assessments

Lab Participation	15%
Lab Write Ups	35%
Quizzes	15%
Test	10%
Projects	25%

"The academic year is divided into four quarters. The school will email end of quarter report cards only to 'primary contacts' and students on @tfanh.org email addresses." See Student Handbook, section 2.2.

For classes not eligible for high school credit, mid-term and final assessment grades will be factored into quarters 2 and 4 and graded according to the testing standards set by individual faculty.

Quarter 1 – 25%

Quarter 2 – 25%

Quarter 3 – 25%

Quarter 4 – 25%

Full Year Grade – 100%

For classes that are eligible for high school credit, mid-term and final exam grades are factored into final grades as follows:

For Full Year Courses:	For One Semester Courses:
Quarter 1 – 20%	
Quarter 2 – 20%	Quarter 1 or 3 – 40%

Mid-Term – 10%	Quarter 2 or 4 – 40%
Quarter 3 – 20%	<u>Final Assessment – 20%</u>
Quarter 4 – 20%	Final Grade – 100%
<u>Final Assessment – 10%</u>	
Full Year Grade – 100%	

The Grade Scale used at Founders is as follows:

A+ - 98-100% A+ = 4.33

A – 94-97% A = 4.0

A- - 90-93% A- =
3.67

B+ - 87-89% B+ = 3.33

B – 84-86% B = 3.03

B- - 80-83% B- = 2.67

C+ - 77-79% C+ = 2.33

C – 74-76% C = 2.0

C- - 70-73% C- = 1.67

D+ - 67-69% D+ =
1.33

D – 64-66% D = 1.0

D- - 60-63% D- =
0.67

F – 59% and
below F = 0

See The Founders Academy Student Handbook, section 2.2 for more information

F. Mastery

Definition of Mastery at The Founders Academy

Mastery is the acquisition of a deep level of knowledge through meeting content specific benchmarks. Students develop a thorough understanding of the subject matter by consistently applying their skills and demonstrating strong command of the material.

Why “mastery?”

Mastery ensures that the goal of a rigorous curriculum and high expectations are maintained at The Founders Academy. We do not simply require that students “pass” a course, but that they “master” the content of each course. Additionally, the process allows students whose mastery is in question at the end of a quarter or course to continue to work towards mastering the content, and to demonstrate their mastery for the purpose of moving forward to the next level of instruction in a particular subject area.

What is the “process?”

1. The process includes benchmarks for assessment. This includes an assessment of mastery at the end of each quarter; students who earn grades of a B- or above are considered masters of the content automatically. Mastery must be demonstrated in all courses in order to pass the course or to receive high school credit. The only exceptions to this policy are in middle school art, band, or chorus courses.
2. Students who earn cumulative grades of C- to C+ may still demonstrate mastery by completing additional work, at the teacher's discretion. The additional work must be completed within a specified window of time.
3. The process includes both teacher and student reflection. Quarterly benchmarks allow students, parents, and teachers to address any deficiencies in progress as the school year progresses. All should work to monitor student progress towards final course mastery through the school year.
4. Supplementary instruction is pivotal in this process. Students who do not demonstrate mastery with a semester or course grade of a B- or above may have the opportunity to demonstrate mastery at the end of the course by completing supplemental instruction, provided by the teacher.

Course Mastery:

At the end of a semester-long or full-year course, students who earn a grade of a B- or above will be considered masters of the content and automatically be promoted to the next level within that course's subject area (if there is one).

Students who earn a grade of C- through C+ will only pass the course/receive high school credit, and be allowed to proceed to the next level (if applicable), by completing additional work at the teacher's discretion to demonstrate mastery. The only exceptions to this policy are middle school art, band, and chorus courses.

For semester-long courses that are completed at the end of Semester 1, attempts for Mastery must be completed within 2 weeks of issuance of quarter 2 report cards. For courses that are completed at the end of the school year, mastery work must be completed within two weeks of the issuance of end of year report cards.

If a student demonstrates course mastery through completing supplementary work, their cumulative grade does not change.

Forms of demonstrating mastery may include:

Projects, Oral Exams, Written Exams, Exam Re-takes, Khan Academy, After School Tutoring, and other assignments deemed appropriate by teachers.

Necessary Steps to Success of the Mastery Process:

- Teachers must explain Mastery to their students clearly and frequently during the school year. It should be emphasized even more than the numeric value of the grade the student earns, as only mastery is used to determine if students progress to the next level in a subject area.
- Students must understand that a letter grade of a B- or higher at the end of the course determines whether mastery is automatically recognized.
- At the end of the course, only students who have earned a grade of C- through C+ may complete additional work to demonstrate mastery.
- Students are highly encouraged to initiate the request to do extra work to demonstrate mastery by emailing their teachers once they have received their report cards. Student initiation demonstrates student responsibility and commitment to their academic success.
- By the deadlines mentioned above, teachers will determine if mastery has been achieved through the supplemental work completed by the student.

The letter grade "I" (Incomplete) may be assigned to a student who has been absent due to extenuating circumstances and has not had enough time to complete the necessary work in that marking period. Students are responsible for making up all incomplete work within two weeks of the end of the marking period. If the work is not completed, the grade may be calculated with zero credit given for the missing assignments. Written requests for extensions may be submitted by parents/guardians stating the reason for the request (for example, severe illness). Approval of extensions is not automatic. The letter grade "NG" (No Grade) may be assigned to a student who has not completed enough of the course to receive a grade.

See The Founders Academy Student Handbook, section 2.1.

G. Attendance and Make-Up Work

Late Work

20% of the points will be deducted from an assignment when the due date and time passes. For every school day that it is late. If beyond 1 day, an additional 5% will be deducted each day. Work that is still not turned in after 5 school days/a full school week (weekend days not counted) can receive a maximum of 60% if submitted after that point.

If a student is absent from class on the day an assignment is due, he or she is given an extension to get their work in, but the student must contact Mr. Mihaly to discuss accommodations and deadlines for submitting missing work.

A grade of zero will be put into the grading portal to note assignments that are missing. This serves as a reminder to students, parents, and the teacher that the assignment needs to be passed in. Once the student submits the work (before the one week deadline) the zero will be removed and the credit will be given.

Retake Policy

Retakes of exams will be allowed only under extenuating circumstances. Retakes will be determined on a case by case basis by collaboration between teacher, student, and parents/guardians.

When a student is absent (either excused or unexcused) it is the responsibility of the student to make up all work missed, including in-class assignments. The teacher will decide on the appropriate amount of time for make-up work. Work which was assigned prior to the absence

and due on the day of the absence must be passed in upon the student's return to class. Missed assignments and class work should be obtained from Google Classroom or Alma, or if further clarification is needed, the teachers.

Students absent on the day of a quiz or test must make arrangements with the teacher on the day of return for make-up. Students may not be given tests or quizzes in advance of an absence without prior permission.

The Founders Academy regulations in relationship to attendance, absenteeism and truancy are based on the following New Hampshire statutes and administrative rules, as well as additional rules as needed:

Legal References Related to Attendance:

RSA 189:34, Appointment

RSA 189:35-a, Truancy Defined

RSA 193:1, Duty of Parent; Compulsory Attendance by Pupil

RSA 193:7 Penalty

RSA 193:8, Notice Requirements

RSA 193:16 Bylaws as to Nonattendance

NH Code of Administrative Rules, Section Ed 306.04 (a)(1), Attendance and Absenteeism

NH Code of Administrative Rules, Section Ed 306.04 (c), Policy Relative to Attendance and Absenteeism”

See The Founders Academy Student Handbook, section 3.2.

H. Scope & Sequence

There will be a total of five [5] product, one per quarter.

Additional there will be the: A scientist Like me, project, due on August 22, 2025.

This is a highly hands on course and there will be approximately a lab once a week (Normally on Thursday)

Before we begin - The founding fathers of science, philosophy and Classical education

Details for the: A scientist like me, project

The Scientific Methods- How to write up a lab report

Unit 1 - Introduction to Life Science, Homeostasis, and Biochemistry

Unit 2 – Cells

Unit 3 - Cell Transport

Unit 4 – DNA

Unit 5 - Cell Division

Unit 6 - Genetics

Unit 7 - Biotechnology

Unit 8 - Cellular Respiration

Unit 9 - Photosynthesis

Unit 10 - Ecology

Unit 11 - Evolution

Unit 12 - Population Genetics

Unit 13 - Classification

I. References and Videos

Any videos will be posted on Google Classroom 24-48 hours and/or send parents and guardians an email with information about the video before showing it to students.