Syllabus – High School Biology 1 & 2 (2026-27)

Part 1 - Instructor Contact Info

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Part 2 - General Course Info

Course Description:

Discovery Institute Academy's high school biology course is a two-semester, virtual, lab-based standard high school biology course that integrates intelligent design concepts where applicable. This course will address the concepts of a traditional high school biology course, preparing students for a future high school AP biology course or college/university general biology course. **This course is best suited for homeschooling students as Discovery Institute Academy is not a credit-granting institution and does not offer courses for academic credit. As such, it is the parent/guardian rather than the instructor that is considered the final authority on student learning.**

Students will learn through a variety of mediums including readings, handouts, videos, virtual labs/simulations, wet labs/activities, projects, tests, quizzes, assignments, etc. First semester, students will learn about the process of science, biochemistry, cell theory, cellular energetics, cell cycle, and genetics. In the second semester, students will learn about DNA, diversity of life, human anatomy, and ecology. At various points, students will develop the skills of scientific inquiry through posing questions, formulating hypotheses, designing and/or conducting experiments, collecting and analyzing data, drawing conclusions, and communicating their findings. See the "Course Outline" section at the end of the syllabus for a unit-by-unit list of course concepts/topics.

3 different learning platforms (1st table) + 3 different tiers (2nd table—also shows platform access by tier):

DiscoveryU (DU)	Platform for reviewing content including select Discovery Institute media embedded in course.
Labster (L)	Platform for completing virtual Labster simulations.
Canvas (C)	Platform for submitting assignments, viewing scores/feedback, and checking grades. *Tiers 2 and 3 below will complete all assessments outside of Canvas on their own.*

This course offers 3 different tiers that vary in their degree of teacher support and platform access. Choose the tier that best meets your needs.	**DU**	**L**	**C**
Tier 1—Online Course + Live Teacher: A full online course led by a qualified science teacher. Includes pre-recorded video lectures, graded assignments, virtual and hands-on labs, weekly interactive Zoom sessions **(Tues. @ 10:00 am – 11:00 am PST)** with the teacher and other students, and a weekly, optional Zoom drop-in session for extra help **(Thurs. @ 10:00 am – 11:00 am PST) - questions must be submitted by prior day.**	**YES**	**YES**	**YES**
Tier 2—Online Course + Drop-In Session: A self-directed online course to be completed at the student's own pace. Includes pre-recorded video lectures, non-graded assignments, virtual and hands-on labs, and a weekly, optional Zoom drop-in session with a teacher for questions on **Thurs. @ 10:00 am – 11:00 am PST - questions must be submitted by prior day.**	**YES**	**YES**	***NO***
Tier 3—Online Course Only: A self-directed online course to be completed at the student's own pace. Includes pre-recorded video lectures, non-graded assignments, and virtual and hands-on labs. No Zoom drop-in session.	**YES**	**YES**	***NO***

Prerequisite(s): None

Please Note: Although there are no listed prerequisites, students are expected to be able to read and write at a ninth-grade level and perform basic calculations.

Suggested Grade Level for Student: 10th grade

Please Note: Grade level is not a requirement. Please email me regarding questions and exceptions.

Course Length:

~34 academic weeks for full-year course (~17 weeks semester 1 and ~17 weeks semester 2)

Suggested Study/Work Time:

As strictly an estimation, students can expect to spend at least one hour a day on reading, lab work, and other assignments. This may look different during assessment weeks based on student needs and pacing. Because of the rigor of this course, some assignments may need to be revisited and lectures rewatched regularly.

Materials and Other Requirements:

Textbook:
Title: OpenStax *Concepts of Biology* Textbook
Authors: Samantha Fowler, Rebecca Roush, James Wise
Publishing info: © 1999-2025, Rice University. Creative Commons Attribution 4.0 International License.
Access: This is an online textbook accessible at https://openstax.org/books/concepts-biology and it is embedded in the DiscoveryU portal. It is most easily accessed online but if a printed version is preferred, one can be ordered or downloaded at the same site.

Technical Requirements (* = items *only* for Tier 1 and Tier 2 students joining live sessions and/or drop-in sessions)
All students will need to have consistent access to the following reliable/working items:

- High-speed internet/Wi-Fi
- Modern desktop/laptop computer with up-to-date OS, web browser (Chrome/Firefox), and software programs
- Printer with printer paper and ink
- * Headphones with microphone
- * Webcam (to show your smiling face during live Zoom sessions – this is an expectation for all students)

Lab Materials:
Labs are voluntary (see comments further below). All materials can be purchased at a local grocery store and alternative materials are recommended to make use of what the student has at home. A list of materials will be sent to parents before the start of the semester and reminders will be included in the weekly report.

Per Discovery Institute Academy, labs are voluntary:

While this course offers both virtual labs and labs (i.e., those labs and activities requiring physical materials), the virtual labs are not designed to substitute for the labs and may cover entirely different topics/concepts. Labs are optional because they (1) may require the purchase/collection of additional materials and require time that may not be readily available to the student and (2) may also pose safety concerns as students conduct labs at home that may involve handling harmful chemicals (i.e., toxic, corrosive, or flammable) or have the potential for accidents. Labs will not be weighted, but students will benefit from participating as the labs will allow them to apply the concepts they are learning.

While I will do everything I can to ensure labs are safe for students, the labs are voluntary, and parents/guardians and students assume all risk if they do them. It is up to the parent/guardian whether they accept this risk/danger and whether they feel comfortable with their student conducting labs at home. Parents/guardians are not obligated to have their students conduct any of the labs in this course. For parents/guardians of Tier 1 students, at any point before or during the course, simply email me and I can place “EX” or “Excused” in the gradebook for any lab(s) you wish for your student to opt out of. I cannot advise/approve the identification of substitute lab materials for safety reasons.

As part of the registration process, all students and their parent/guardian (whether they choose to opt in or out of labs) will be expected to review and agree to a safety guideline form. The goal? Safe students having fun!

Instructor Professional Discretion:

The instructor reserves the right to make adjustments to the course structure, content, pacing, and expectations, or materials as needed. Parents/guardians and students will be notified via email of any significant changes made after the course has started.

Part 3 – Tier 1 ONLY information

Role of Parents / Guardians:

Again, this course is best suited for homeschooling students as Discovery Institute Academy is not a credit-granting institution and does not offer courses for academic credit. As such, it is the parent/guardian rather than the instructor that is considered the final authority on student learning. Practically, this means that while the instructor is responsible for all course instruction, assessment, grading, feedback, and formulating of an overall student letter grade at the end of the course, it is the parent/guardian that is considered the final authority on their student's overall learning and can assign an overall "grade" for their student as they see appropriate. The parent/guardian can access the Canvas gradebook for their student through their Canvas parent/guardian observer account to see their student's scores and instructor feedback. Parents/guardians are welcome to use the instructor's final overall grade in that gradebook to inform their own final evaluation of their student's learning.

For more information on how the instructor will assess student learning, please see the next section.

Assessment Categories, Weights, and Purpose:

Weekly Reading Quizzes – 20% weight
5–10-point quizzes to check for understanding of assigned textbook readings.
Weekly Activity – 20% weight
"Minds-on" activities for the application of biology and intelligent design content.
Formative Assessments – 0% weight
Labs, practice tests, and mind maps will be graded for feedback but not included in the overall grade.
Summative Assessments – 50% weight
Tests and final projects designed to assess understanding and application of unit content.
Participation – 10% weight
Attendance and participation in weekly discussions.

Revision Policy:

Formative Assessments
• Practice tests are self-grading and can be retaken as often as desired. Correct answers will be given after the first attempt. • Labs will only be assessed for general feedback and because they do not contribute to the overall score resubmissions will not be accepted.
Reading Quizzes
• Because reading quizzes are open-book, resubmissions will not be permitted.
Weekly Activities
• Weekly activities may be resubmitted once. Students should review any provided feedback before making changes and resubmitting
Test Corrections

• Students may submit test corrections following the protocols outlined below.
  ○ For every point lost, students may earn up to half credit back by writing an explanation for why the correct answer is correct.
  ○ The answer should cite content from the textbook, lecture notes, supplemental reading, or videos.

Late Work Policy:

Students will be most successful if they are working on pace within the course because they will come prepared to participate in weekly class sessions, be able to tackle new concepts/skills that build upon prior concepts/skills and avoid the stress that comes from procrastination. To account for unexpected late work, assessment weeks are given to help students catch up. All late work for the unit must be completed before taking the test as completing late or missing work will help students prepare for the test. Work will not be accepted after the student completes the test.

Grading Scale:

A = 90% - 100%
B = < 90% - 80%
C = < 80% - 70%
D = < 70% - 60%
F = < 60%

Instructor Weekly Schedule:

Day	Time	Description
Mon & Wed	8:00 am – 12:00 pm PST	Email communication, grading, lesson prep
Tues	**10:00 am – 11:00 am PST**	**Facilitating live Zoom class session**
	11:00 pm – 2:00 pm PST	Email communication, grading, lesson prep
Thurs	**10:00 am – 11:00 am PST**	***Optional Zoom drop-in***
	11:00 pm – 2:00 pm PST	Email communication, grading, lesson prep
Frid/Sat/Sun/Holidays	Not available	

Suggested Instructor Turnaround Time:

Responding to Emails	1 school day
Grading Submitted Work	3 school days **This estimated time can be lengthened for certain grading-intensive assignments/labs/projects or during busy seasons such as the semester end.*

Instructor Weekly Email:

This email will include information about course topics, assessments, deadlines, and other announcements.

Progress Reports:

The instructor will email parents/guardians and students with individual progress reports at roughly the halfway point of each semester course and at the end of each semester course with a final overall grade.

Instructor Teaching Approach:

- Be knowledgeable in their subject area and always willing to learn more.
- Be enthusiastic about what they are teaching!
- Be approachable, patient, compassionate, and encouraging with students.
- Welcome questions and new ideas!
- Facilitate critical thinking.
- View learning as a process that takes practice, invites revisions, and leads to growth. As such, provide detailed feedback to help students assess their understanding and make revisions as needed.
- Value parent/guardian input related to their specific student's growth and success.

Course Outline

1st Semester

Unit 1: Introduction to Biology

Week 1 – Intro to Biology
Week 2 – Chemistry of Life
Week 3 – Biological Molecules
ID Standards

- Explain what methodological naturalism is and why it poses a threat to scientific investigation.
- Explain at least three characteristics that make Earth fit for life and how those characteristics support the theory of intelligent design.
- Explain the theory of abiogenesis and the evidence for and against the theory.

Unit 2: Cells

Week 5 – Cell Structure & Function
Week 6 – Cell Membranes
Week 7 – Metabolism & Enzymes
ID Standards

- Explain and give an example of irreducible complexity.
- Explain the challenges to the theory of proto-cells given the complexity of the cell membrane.
- Identify features of enzymes that would prevent them from being a product of chemical evolution

Unit 3: Cellular Energetics

Week 9 – Cellular Respiration
Week 10 – Fermentation
Week 11 – Photosynthesis
ID Standards

- Give three reasons why it is unlikely that the process of cellular respiration evolved.
- Identify issues with the argument that metabolism evolved independently from life.
- Explain how various features of Earth make it especially suitable for photosynthesis.

Unit 4: Cell Division & Genetics

Week 13 – The Cell Cycle
Week 14 – Sexual Reproduction & Meiosis
Week 15 – Inheritance
ID Standards

- Explain how various features of Earth make it especially suitable for photosynthesis.
- Explain the challenges that sexual reproduction poses to evolutionary biology.
- Explain some of the restrictions to evolution by random mutation using the example of drug resistance in the Malaria parasite.

2nd Semester

Unit 5: DNA

Week 19 – DNA Structure & Function
Week 20 – Transcription & Translation
Week 21 – Bioengineering
ID Standards

- Discuss the limits of the RNA world hypothesis.
- Explain how junk DNA might not be junk after all.
- Argue for or against the use of biotechnology in medicine or agriculture.

Unit 6: Evolution

Week 23 – Evolution
Week 24 – Diversity of Life
ID Standards

- Explain the merits and limits of Darwinian evolution.
- Explain the complexity of phylogenetic trees and alternative explanations for common descent.

Unit 7: Animal Structure & Function

Week 27 – Body Systems (Part 1)
Week 28 – Body Systems (Part 2)
Week 29 – The Immune System
Week 30 – The Reproductive System
ID Standards

- Name and describe the elements of the human digestive system that are evidence of intelligent design.
- Describe the unique features of the nervous system that do not fit with an evolutionary explanation.
- Explain how the complexity of the immune system could not have come about by natural selection.
- Describe one example of an irreducibly complex system from either sexual reproduction or embryonic development.

Unit 8: Ecology

Week 32 – Population Ecology
Week 33 – Ecosystems & the Biosphere
Week 34 – Conservation & Biodiversity
ID Standards

- Describe one example of an irreducibly complex system from either sexual reproduction or embryonic development.
- Revisit the ideas about Earth's suitability for life. Explain how the cycling of matter and the abundance of resources on Earth show evidence of design.
- Describe the delicate balance between human technology and environmental responsibility.