Course Description

Principles of Biology contains an introduction to all major areas of general biology. The relevance and contribution of this discipline to business, health care, policy creation, and other sciences is highlighted in this course.

Course Textbook


Course Learning Outcomes

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

1. Evaluate concepts and theories of basic biological sciences, including the scientific method, cellular processes, heredity, and biodiversity.
2. Generate logical interpretations and conclusions based on various representations of scientific data.
3. Examine the basic properties of living organisms, to include the categorization of life.
4. Explain various chemical processes within living organisms.
5. Analyze the fundamental structure and function of the cell.
6. Compare and contrast the phases of mitosis and meiosis.
7. Predict genotypes based on patterns of heredity and pedigree information.
8. Examine macromolecules to include synthesis, structure, and function.
9. Relate biological concepts to current real-world issues and technology.

Academic Integrity

Honesty and integrity are taken very seriously at Waldorf University. All students should be familiar with the Waldorf University Academic Integrity Policy (found in the current Student Handbook) and the consequences that will result from breaches of this policy.

Credits

Upon completion of this course, the students will earn three (3) hours of college credit.

Course Structure

1. **Study Guide**: Each unit contains a Study Guide that provides students with the learning outcomes, unit lesson, required reading assignments, and supplemental resources.
2. **Learning Outcomes**: Each unit contains Learning Outcomes that specify the measurable skills and knowledge students should gain upon completion of the unit.
3. **Unit Lesson**: Each unit contains a Unit Lesson, which discusses lesson material.
4. **Reading Assignments**: Each unit contains Reading Assignments from one or more chapters from the textbook and/or outside resources.
5. **Suggested Reading**: Suggested Readings are listed in Units I-VII. Students are encouraged to read the resources listed if the opportunity arises, but they will not be tested on their knowledge of the Suggested Readings.
6. **Learning Activities (Non-Graded):** These non-graded Learning Activities are provided to aid students in their course of study.

7. **Discussion Boards:** Discussion Boards are part of all Waldorf term courses. More information and specifications can be found in the Student Resources link listed in the Course Menu bar.

8. **Unit Assessments:** This course contains six Unit Assessments, one to be completed at the end of Units I, II, III, V, and VI. Assessments are composed of multiple-choice questions, written-response questions, matching questions, ordering questions, and hot spot questions.

9. **Unit Assignments:** Students are required to submit for grading Unit Assignments in Units I, III, IV, V, VII, and VIII. Specific information and instructions regarding these assignments are provided below. Grading rubrics are included with each assignment. Specific information about accessing these rubrics is provided below.

10. **Final Exam:** Students are to complete a Final Exam in Unit VIII. All Final Exams are proctored—see below for additional information. You are permitted four (4) hours to complete this exam in the presence of your approved proctor. This is an open-book exam. Only course textbooks and a calculator, if necessary, are allowed when taking proctored exams. The Final Exam is composed of multiple choice questions and written response questions.

11. **Ask the Professor:** This communication forum provides you with an opportunity to ask your professor general or course content related questions.

12. **Student Break Room:** This communication forum allows for casual conversation with your classmates.

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**Unit Assignments**

**Unit I Web Assignment**

**Virtual Experiment**

As you learned in Chapter 1, problems and questions can be answered by applying the scientific method. This assignment will allow you to gain some experience in using the steps of the scientific method to conduct a controlled experiment. You will also gain experience recording data and constructing graphs.

Click [here](#) to download the experiment worksheet. Follow the instructions in the worksheet, save your file as a .doc, docx, or .rtf file using your last name and student number as the file name. Upload the completed assignment when you are finished for grading.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit III Annotated Bibliography**

Pick a type of cancer to research. Find articles that answer questions concerning your chosen type of cancer. This assignment will help you to organize the sources you will use in the Unit V Research Paper. An annotated bibliography consists of two parts: the reference citation in APA format, followed by the summary for that reference.

- Your sources should address the following topics, which will be included in the Unit V Research Paper:
  - Define cancer.
  - Describe the type of cancer you selected.
  - Describe the diagnosis: symptoms, diagnosis, staging, and prognosis.
  - Discuss treatment options, including medicines/alternative treatments.
  - Discuss causes/risk factors.
  - Include the incidence rate or statistics.
  - Explain the resources you would use if you or someone you knew had this type of cancer.
  - Discuss what you can do to help the fight against cancer.
  - Include any other interesting facts.

- Create an annotated bibliography following the structure given in the example:
  - Click [here](#) for the annotated bibliography example.
  - Find four to six current sources (published within the last five years).
  - Note that the reference citations should be organized in alphabetical order.
Summaries should not include opinions; rather, summaries should contain a short synopsis of the article, and no direct quotes should be present. End your summary with one or two sentences on why that source was selected and how it is of value to your research topic. Each summary should be at least 50 words in length.

- You must use at least two articles from any of the Waldorf Online Library databases to create your annotated bibliography. The remaining sources may include the textbook and credible websites other than Wikipedia.

You will NOT be writing the actual research paper in this unit. You will just be creating and submitting an annotated bibliography.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit IV Lab Assignment**

Late Nite Labs provides students with an authentic science lab experience through virtual simulation. This course utilizes Late Nite Labs for this unit’s lab assignment. Please be sure to locate and become familiar with the link titled “Late Nite Labs” found at the top of the Course Content area of the navigation bar in your course. This link will take you to the information you need to access Late Nite Labs.

**Cellular Respiration Lab**

This cellular respiration lab will introduce you to various chemical processes within living organisms. On page 126 in the textbook, you learned about the three stages of cellular respiration. In this lab assignment, you will learn about both aerobic respiration and anaerobic respiration. You will conduct a virtual laboratory experiment in which you will examine the fermentation of different sugars by yeast. Make sure you read and follow all instructions step by step. Even though this is a computerized lab, you can do it incorrectly. Make sure you read the background information carefully before starting the lab. You will record your data and analyze your data. Analyzing the data will require you to perform mathematical computations based on the formulas in the background section of the lab. You will record all of your data and answer the questions on the Lab Report once you are finished.

Before you begin your lab, be sure to click here to download the associated Lab Report. This lab report is what you fill out as you progress through your Late Nite Lab. Upon completion of the lab and lab report, navigate back to your unit in Blackboard to submit the lab report as a file upload to be graded.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit V Research Report**

Recall from the unit lesson, the chances of developing cancer are fairly high, and cancer is very much a current real world issue. Almost everyone has been affected by cancer in some way or knows someone who has been. This research report will have you explore the type of cancer you selected in Unit III.

Your research report should accomplish the following:

- Introduce the paper’s purpose, including background information on what cancer is and a summary of the main points.
- Describe the type of cancer you selected.
- Describe the diagnosis: symptoms, diagnosis, staging, and prognosis.
- Discuss treatment options, including medicines/alternative treatments.
- Discuss causes/risk factors.
- Include the incidence rate or statistics.
- Explain the resources you would use if you or someone you knew had this type of cancer.
- Discuss what you can do to help the fight against cancer.
- Include any other interesting facts.

Your research report should be at least three full pages in length and include an introduction, a body, and a conclusion. You are required to cite at least two peer-reviewed sources and two additional sources of your own choosing, for a minimum of four sources. You are encouraged to use the references from the Unit III annotated bibliography assignment, but it is not a requirement.
Be sure to include a separate title page and reference page. Title and reference pages do not count towards the minimum page requirement. An abstract is not required.

All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations following APA style guidelines.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit VII Lab Assignment**

**Electrophoresis (DNA) Lab**

Late Nite Labs provides students with an authentic science lab experience through virtual simulation. This course utilizes Late Nite Labs for this unit’s lab assignment. Please be sure to locate and become familiar with the link titled “Late Nite Labs” found at the top of the Course Content area of the navigation bar in your course. This link will take you to the information you need to access Late Nite Labs.

This DNA lab will introduce you to the practical application of DNA testing. In Chapter 13 of the textbook, we learned about the double helix and components of DNA. In this lab, you will conduct a paternity test to identify the biological father of a child using DNA.

Make sure you read and follow all instructions step by step. Even though this is a computerized lab, you can do it incorrectly. Make sure you read the background information carefully before starting the lab. You will record your data and analyze your data. You will record all of your data and answer the questions on the Lab Report once you are finished.

Before you begin your lab, be sure to click here to download the associated Lab Report. This lab report is what you fill out as you progress through your Late Nite Lab. Upon completion of the lab and lab report, navigate back to your unit in Blackboard to submit the lab report as a file upload to be graded.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit VIII Lab Assignment**

**Basic Microscopy Lab**

In this unit, we discussed four aspects of biotechnology. None of these modern day advances would have been possible without the invention of the microscope, which enabled us to view cells. In this lab, you will gain experience in basic microscopy. You will use a virtual microscope to examine the various cell types and cell structures that you previously learned about in Unit III.

Make sure you read and follow all instructions step by step. Even though this is a computerized lab, you can do it incorrectly. Make sure you read the background information carefully before starting the lab. You will record your data and analyze your data. You will record all of your data and answer the questions on the Lab Report once you are finished.

Note: You will not be able to access your Portfolio snapshots until the lab is completed.

Before you begin your lab, be sure to click here to download the associated Lab Report. This lab report is what you fill out as you progress through your Late Nite Lab. Upon completion of the lab and lab report, navigate back to your unit in Blackboard to submit the lab report as a file upload to be graded.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.
Submitting Course Papers/Projects

Once you have completed your papers/projects, submit your completed papers/projects by uploading through the Assignment tab in each unit. Do not e-mail your paper directly to your professor. By using the Assignment tab, your record will automatically be updated to indicate you have submitted your papers/projects and the assignment will be provided to your professor for grading. Instructions for submitting your assignment can be found under the Assignment tab in each unit.

APA Guidelines

Waldorf University requires that students use APA style for papers and projects. Therefore, the APA rules for formatting, quoting, paraphrasing, citing, and listing of sources are to be followed. Students can find Waldorf’s Citation Guide in the myWaldorf Student Portal by clicking on the “Citation Guide” link under the “Resources” heading. This document includes examples and sample papers.

Grading Rubrics

This course utilizes analytic grading rubrics as tools for your professor in assigning grades for all learning activities. Each rubric serves as a guide that communicates the expectations of the learning activity and describes the criteria for each level of achievement. In addition, a rubric is a reference tool that lists evaluation criteria and can help you organize your efforts to meet the requirements of that learning activity. It is imperative for you to familiarize yourself with these rubrics because these are the primary tools your professor uses for assessing learning activities.

Rubric categories include: (1) Discussion Board, (2) Assessment (Written Response), and (3) Assignment. However, it is possible that not all of the listed rubric types will be used in a single course (e.g., some courses may not have Assessments).

The Discussion Board rubric can be found within Unit I’s Discussion Board submission instructions.

The Assessment (Written Response) rubric can be found embedded in a link within the directions for each Unit Assessment. However, these rubrics will only be used when written-response questions appear within the Assessment.

Each Assignment type (e.g., article critique, case study, research paper) will have its own rubric. The Assignment rubrics are built into Blackboard, allowing students to review them prior to beginning the Assignment and again once the Assignment has been scored. This rubric can be accessed via the Assignment link located within the unit where it is to be submitted. Students may also access the rubric through the course menu by selecting the “Grades” link.

Again, it is vitally important for you to become familiar with these rubrics because their application to your Discussion Boards, Assessments, and Assignments is the method by which your instructor assigns all grades.

Final Exam Guidelines

Proctored Final Exams are taken online. Final Exams are to be administered to students by an approved proctor on a date that is mutually convenient. The student is responsible for selecting a qualified proctor that must be approved by the College. To view a list of acceptable proctor qualifications, see the Proctor Agreement form. The Proctor Agreement form is located in the Online Forms, Courses page of the myWaldorf Student Portal.

To request your proctored final exam and/or review the complete Examination Proctor Policy and Proctor Agreement, submit the Request to take Final Exam Online (Online Exam) form. The Request to take Final Exam Online (Online Exam) form is located in the Online Forms, Courses page of the myWaldorf Student Portal.
Communication Forums

These are non-graded discussion forums that allow you to communicate with your professor and other students. Participation in these discussion forums is encouraged, but not required. You can access these forums with the buttons in the Course Menu. Instructions for subscribing/unsubscribing to these forums are provided below.

Click here for instructions on how to subscribe/unsubscribe and post to the Communication Forums.

Ask the Professor

This communication forum provides you with an opportunity to ask your professor general or course content questions. Questions may focus on Blackboard locations of online course components, textbook or course content elaboration, additional guidance on assessment requirements, or general advice from other students.

Questions that are specific in nature, such as inquiries regarding assessment/assignment grades or personal accommodation requests, are NOT to be posted on this forum. If you have questions, comments, or concerns of a non-public nature, please feel free to email your professor. Responses to your post will be addressed or emailed by the professor within 48 hours.

Before posting, please ensure that you have read all relevant course documentation, including the syllabus, assessment/assignment instructions, faculty feedback, and other important information.

Student Break Room

This communication forum allows for casual conversation with your classmates. Communication on this forum should always maintain a standard of appropriateness and respect for your fellow classmates. This forum should NOT be used to share assessment answers.

Grading

Discussion Boards (8 @ 2%) = 16%
Unit Assessments (5 @ 8%) = 40%
Unit I Web Assignment = 5%
Unit III Annotated Bibliography = 5%
Unit V Research Report = 10%
Lab Assignments (3 @ 5%) = 15%
Final Exam = 9%
Total = 100%

Course Schedule/Checklist (PLEASE PRINT)

The following pages contain a printable Course Schedule to assist you through this course. By following this schedule, you will be assured that you will complete the course within the time allotted.
Course Schedule

By following this schedule, you will be assured that you will complete the course within the time allotted. Please keep this schedule for reference as you progress through your course.

<table>
<thead>
<tr>
<th>Unit I</th>
<th>Science as a Way of Learning</th>
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</table>
| Review: | □ Unit Study Guide  
□ Learning Activities (Non-Graded): See Study Guide |
| Read: | □ Chapter 1: Science as a Way of Learning: A Guide to the Natural World  
□ Additional Reading Assignment(s): See Study Guide  
□ Suggested Reading: See Study Guide |
| Discuss: | □ Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)  
□ Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time) |
| Submit: | □ Assessment by Tuesday, 11:59 p.m. (Central Time)  
□ Web Assignment by Tuesday, 11:59 p.m. (Central Time) |

Notes/Goals:

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<th>Unit II</th>
<th>Essential Parts: Atoms and Molecules</th>
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| Review: | □ Unit Study Guide  
□ Learning Activities (Non-Graded): See Study Guide |
| Read: | □ Chapter 2: Fundamental Building Blocks: Chemistry, Water and pH  
□ Chapter 3: Life’s Components: Biological Molecules  
□ Additional Reading Assignment(s): See Study Guide  
□ Suggested Reading: See Study Guide |
| Discuss: | □ Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)  
□ Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time) |
| Submit: | □ Assessment by Tuesday, 11:59 p.m. (Central Time)  
□ Proctor Approval Form |

Notes/Goals:
### Unit III: Essential Parts: Cells

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 4: Life’s Home: The Cell
- Chapter 5: Life’s Border: The Plasma Membrane
- Additional Reading Assignment(s): See Study Guide
- Suggested Reading: See Study Guide

**Discuss:**
- Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Assessment by Tuesday, 11:59 p.m. (Central Time)
- Annotated Bibliography by Tuesday, 11:59 p.m. (Central Time)

### Unit IV: Energy and Its Transformations

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 6: Life’s Mainspring: An Introduction to Energy
- Chapter 7: Vital Harvest: Deriving Energy from Food
- Chapter 8: The Green World’s Gift: Photosynthesis
- Additional Reading Assignment(s): See Study Guide
- Suggested Reading: See Study Guide

**Discuss:**
- Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Lab Assignment by Tuesday, 11:59 p.m. (Central Time)
## BIO 1030, Principles of Biology

### Course Schedule

**Unit V**

#### How Life Goes On: Genetics Part I

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<td>- Unit Study Guide</td>
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<tr>
<td>- Chapter 9: The Links in Life’s Chain: Genetics and Cell Division</td>
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<td>- Chapter 10: Preparing for Sexual Reproduction: Meiosis</td>
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<td>- Research Report by Tuesday, 11:59 p.m. (Central Time)</td>
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**Notes/Goals:**

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**Unit VI**

#### How Life Goes On: Genetics Part II

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<td>- Chapter 11: The First Geneticist: Mendel and His Discoveries</td>
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<td>- Chapter 12: Units of Heredity: Chromosomes and Inheritance</td>
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**Notes/Goals:**

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# Course Schedule

## Unit VII
### How Life Goes On: Genetics Part III

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 13: Passing on Life’s Information: DNA Structure and Replication
- Chapter 14: How Proteins Are Made: Genetic Transcription, Translation, and Regulation
- Additional Reading Assignment(s): See Study Guide
- Suggested Reading: See Study Guide

**Discuss:**
- Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Lab Assignment by Tuesday, 11:59 p.m. (Central Time)
- Request to take Final Exam

**Notes/Goals:**

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## Unit VIII
### Biotechnology

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 15: The Future Isn’t What It Used to Be: Biotechnology
- Additional Reading Assignment(s): See Study Guide

**Discuss:**
- Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- Discussion Board Comment: Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Lab Assignment by Tuesday, 11:59 p.m. (Central Time)
- Final Exam by Tuesday, 11:59 p.m. (Central Time)

**Notes/Goals:**