

Central Christian College of Kansas

Title: Fundamentals of Biology

Code: NS-BI 120

Credits: 3

Prerequisites: No

Description: An introduction to the principles and concepts of the biological sciences. Coverage includes principles of science and cell biology, the energy production pathways of cells, a quick overview of the different aspects of living organisms plus an overview of the different body systems. This course is intended for non-science majors although it may also serve as a foundational course for biology majors.

At the end of the course, you will be able to:

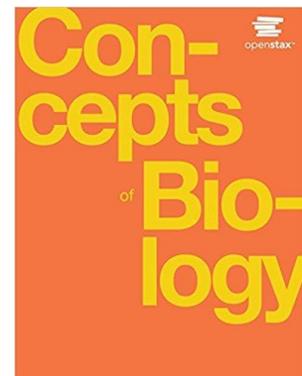
- List the properties of life.
- Identify the level of organization of life.
- Understand the scientific method.
- List the organelles of a cell.
- Describe the function of the organelles found in a cell.
- Explain the makeup of a typical cell.
- Identify the way the cell obtains energy.
- Distinguish between aerobic and anaerobic respiration.
- Identify the steps of the cell cycle.
- Describe the basic structure of a typical prokaryote.
- Understand the principle of homeostasis.
- Explain how the body regulates itself.
- Identify the main body parts and describe their functions.

Textbook:

- Fowler, S., Roush, R., Wise, J. (2013). *Concepts of Biology* (1st ed.). OpenStax.

You can download the book for free on Amazon. [Concepts of Biology](#) From here, you have many options on how to download your book.

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Topic	Readings	Assignments
<ul style="list-style-type: none"> • Introduction to Biology 	<p>Concepts of Biology</p> <ul style="list-style-type: none"> • Chapter 1 • Chapter 2 pages 17-29 & pages 31-50 	<ul style="list-style-type: none"> • Pre-test • Plagiarism Certificate • Discuss 1.1: Household pH • Apply 1.1: Scientific Experiment • Apply 1.2: pH Scale • Art Connection 1.1 • Art Connection 1.2 • Week 1 Evaluation
Topic	Readings	Assignments
<ul style="list-style-type: none"> • Cells - How They Are Made up and How They Function 	<p>Concepts of Biology</p> <ul style="list-style-type: none"> • Chapter 3 pages 59-70 & pages 70-84 	<ul style="list-style-type: none"> • Discuss 2.1: Same Components • Discuss 2.2: Osmosis • Apply 2.1: Organelles • Art Connection 2.1 • Week 2 Evaluation
Topic	Readings	Assignments
<ul style="list-style-type: none"> • Energy Production in the Cells 	<p>Concepts of Biology</p> <ul style="list-style-type: none"> • Chapter 4 • Chapter 5 	<ul style="list-style-type: none"> • Discuss 3.1: Enzyme • Apply 3.1: ATP • Apply 3.2: Amount of Energy • Art Connection 3.1 • Art Connection 3.2 • Week 3 Evaluation
Topic	Readings	Assignments
<ul style="list-style-type: none"> • Reproduction 	<p>Concepts of Biology</p> <ul style="list-style-type: none"> • Chapter 6 pages 135-143 and pages 145-149 • Chapter 7 pages 153-167 	<ul style="list-style-type: none"> • Discuss 4.1: Sexual Reproduction • Discuss 4.2: Characteristics • Apply 4.1: Cell Divisions • Apply 4.2: Meiosis and Mitosis

		<ul style="list-style-type: none"> • Art Connection 4.1 • Art Connection 4.2 • Week 4 Evaluation
Topic	Readings	Assignments
<ul style="list-style-type: none"> • Diversity of Microbes, Fungi, and Protists 	Concepts of Biology <ul style="list-style-type: none"> • Chapter 13 pages 292-302 & pages 305-318 	<ul style="list-style-type: none"> • Discuss 5.1: Fungi • Apply 5.1: Extremophiles • Apply 5.2: Prokaryotes • Art Connection 5.1 • Week 5 Evaluation
Topic	Readings	Assignments
<ul style="list-style-type: none"> • The Body's Systems 	Concepts of Biology <ul style="list-style-type: none"> • Chapter 16 	<ul style="list-style-type: none"> • Discuss 6.1: Homeostasis • Final Paper: Salt • Art Connection 6.1 • Week 6 Evaluation • Post-test

Assessments	Number	Points Each	Total
Discussion	8	25	200
Applies	9	50	450
Art Connection	9	15	135
Evaluations	6	Varies	170
Final Paper	1	100	100
Pre-Test Participation	1	5	5
Post-Test Participation	1	5	5
Total			1065

Students are expected to post in the discussion board a **minimum of three separate posts** on three separate post dates per discussion thread. The three posts for **each** thread must include:

1. One "initial" post in response to the instructor's question (or stated assignment) no later than Thursday of each course week.
2. Two "follow-up" posts in response to at least one classmate by Sunday of each course week.

The initial response to a discussion question should substantively demonstrate familiarity with the content of the question. The response should be 150-200 words in length. To ensure the discussion is a collective and focused exploration of the topic in the question, the discussion thread should remain focused on the question.

The timing of responses is important since other students are dependent on your postings in order to fully develop the discussion and to post "follow up" discussion entries. Responses should occur in the week the discussion question is posted for reply. Preparation for the response is encouraged to ensure a thoughtful and well-founded contribution to the discussion.

Each learner is expected to both respond initially (by Thursday each week) to the discussion question or assignment instruction posted by the instructor/facilitator each week and make at least two follow-up responses to other learners' postings in the discussion thread by the end of the week (Sunday at 11:59pm EST). The purpose is to ensure an informed and thoughtful dialogue focused on the topic.

Initial Response (Standard Posting Requirements)

0 Points	1-2 Points	3-4 Points	5 Points
No initial response posted.	Initial response is superficial (less than 100 words), and/or posted after Thursday at 11:59 p.m. EST.	A substantive initial response is posted prior to Thursday at 11:59 p.m. EST that contains 100-149 words.	A substantive initial response is posted prior to Thursday at 11:59 p.m. EST that includes at least 1 reference to course material or another reliable source (150 words or more).

Initial Response (Quality of Content)

0 Points	1-2 Points	3-4 Points	5 Points
Response is irrelevant to the question and does not add to the intent of the discussion.	Response addresses the question, but lacks depth or goes off topic.	Response addresses the question, though greater reflection or development of thought would be helpful.	Response addresses the question, is reflective, and represents a substantive contribution to the discussion.

Follow-Up Posts

0 Points	1-2 Points	3-4 Points	5 Points
No follow-up posts made.	Follow-up posts do not provide sufficient analysis or synthesis of the discussion.	Follow-up posts demonstrate an appreciation for the input of others and add to the discussion.	Follow-up posts elaborate on the comments of others and add to the discussion with further analysis and synthesis.

Mechanics

0 Points	1-2 Points	3-4 Points	5 Points
Posts lack any organization and/or contain multiple errors in spelling or mechanics.	Posts are somewhat organized, but interrupted by significant errors in	Posts could benefit by a bit more organization and attention to mechanical details.	Posts are clear and formatted in a way that is easy to read, free from spelling and mechanical errors.

0 Points

1-2 Points

3-4 Points

5 Points

spelling and mechanics.

Frequency of Participation

0 Points

1-2 Points

3-4 Points

5 Points

No participation in discussion.

All posts made on the same day.

Posts made on 2 different days.

Posts made on 3 (or more) different days.

Apply

There are **nine** application assignments in this course. These are designed so you apply the knowledge and skills you learn during the week.

Introduction

Absent

Needs Improvement

Proficient

There is no introduction to the paper. *(0 points)*

There is an introduction, but it does not introduce the topic, its importance, and/or alert readers to the structure of the discussion of your ideas. *(1-6 points)*

There is an introduction that introduces the topic, its importance, and it alerts readers to the structure of the discussion of your ideas. *(7 points)*

Body (Use of Course Terms and Concepts)

Absent

Needs Improvement

Proficient

No course terms and concepts were used. *(0 points)*

Some of the course terms and concepts were used inappropriately or key terms and concepts were missing from the discussion. *(1-19 points)*

All of the relevant course terms and concepts were present and used appropriately in the discussion. *(20 points)*

Conclusion

Absent

Needs Improvement

Proficient

There is no conclusion to the paper. *(0 points)*

There is a conclusion, but it does not synthesize the main ideas of the paper, and/or provides implications for research and/or practice. *(1-7 points)*

There is a conclusion that synthesizes the main ideas of the paper, and/or provides implications for research and/or practice. *(8 points)*

Writing Mechanics (e.g. Spelling, Grammar, etc.)

Absent

Needs Improvement

Proficient

The paper had severe problems with spelling, grammar, etc. errors. *(0 points)*

The paper had some spelling, grammar, etc. errors. *(1-4 points)*

The paper had very minimal spelling, grammar, etc. errors. *(5 points)*

Format (e.g., length, font size, margins, in-text citations and reference list in APA style)

Absent

Needs Improvement

Proficient

The paper did not meet the minimum format requirements. *(0 points)*

The paper met some of the format requirements. *(1-9 points)*

The paper met all format requirements. *(10 points)*

Evaluations

There are **six** evaluations in this course: covering the knowledge and skills discussed during the week. Each evaluation has **differing amount of** questions at **2** points each.

- Week 1: 36 questions
- Week 2: 15 questions
- Week 3: 4 questions
- Week 4: 10 questions
- Week 5: 10 questions
- Week 6: 10 questions

Final Paper

The final paper will be worth double the amount of points of normal Apply assignments. Make sure to plan more time when completing the final paper.

Criteria	Ratings		
	Absent	Needs Improvement	Proficient
Introduction	There is no introduction to the paper. (0 points)	There is an introduction, but it does not introduce the topic, its importance, and/or alert readers to the structure of the discussion of your ideas. (1-14 points)	There is an introduction that introduces the topic, its importance, and it alerts readers to the structure of the discussion of your ideas. (15 points)
Body (Use of Course Terms and Concepts)	No course terms and concepts were used. (0 points)	Some of the course terms and concepts were used inappropriately or key terms and concepts were missing from the discussion. (1-49 points)	All of the relevant course terms and concepts were present and used appropriately in the discussion. (50 points)
Conclusion	There is no conclusion to the paper. (0 points)	There is a conclusion, but it does not synthesize the main ideas of the paper, and/or provides implications for research and/or practice. (1-14 points)	There is a conclusion that synthesizes the main ideas of the paper, and/or provides implications for research and/or practice. (15 points)
Writing Mechanics (e.g. Spelling, Grammar, etc.)	The paper had 10 or more spelling, grammar, etc. errors. (0 points)	The paper had 5-10 spelling, grammar, etc. errors. (1-9 points)	The paper had very minimal spelling, grammar, etc. errors. (10 points)
Format (e.g., length, font size, margins, in-text citations and	The paper did not meet the minimum format requirements and/or no APA citation. (0 points)	The paper met some of the format requirements. (1-9 points)	The paper met all format requirements and APA requirement. (10 points)

Criteria reference list in APA style)	Ratings		
	Absent	Needs Improvement	Proficient