

## **BIOL 1050 FA/FAB lectures-Introduction to Cell & Molecular Biology**

### **Instructors:**

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### **Course Description:**

An introduction to the chemical, cellular and molecular processes that enable organisms to be alive. The definition of life; the scientific method; the chemistry of life; the structure and functions of cells; photosynthesis and cellular respiration; cell division and sexual reproduction; the functions of nucleic acids and proteins; and biotechnology in agriculture and medicine. Lecture concepts are reinforced through hands-on exercises in laboratory sessions (see labs syllabus for details).

Please note that students who have previously taken Biology 1130 or Biology 1130 cannot take Biology 1050 for credit.

### **Time and place:**

5:30 to 7 pm on Tuesday and Thursday, ATAC 1003

### **Open textbook from OpenStax:**

<https://openstax.org/details/books/biology-2e>

### **Learning outcomes:**

- Recognize the properties common to all organisms
- Understand how the control of chemical reactions is critical for organisms
- Describe how the structure of cells allows them to regulate their metabolism
- Identify the biochemical pathways in cells that allow them to obtain energy
- Describe how plants use light energy to power life on Earth
- Describe how cells reproduce by dividing their genetic and cytoplasmic material
- Discuss how sexual reproduction is critical for evolution by natural selection

- Outline how cells selectively translate DNA sequences into proteins
- Describe the uses of biotechnology in agriculture and medicine

**Week by week schedule:**

Week of	Lecture	Openstax chapter	Theme
<b>Sept 6</b>	Course introduction/The study of life	Chapter 1	Introduction to Biology
<b>Sept 12</b>	The chemistry of life	Chapter 2&3	The chemical foundation of life and biological macromolecules
<b>Sept 19</b>	Cell structure and function	Chapter 4&5	Cellular components and their general functions/molecular transport through the plasma membranes
<b>Sept 26</b>	<b>Midterm 1 Sept 29</b>		
<b>Oct 5</b>	Metabolism/cellular respiration	Chapter 6&7	How cells obtain energy
<b>READING WEEK OCTOBER 10-14</b>			
<b>Oct 17</b>	Photosynthesis/Cell communication	Chapter 8&9	How plants obtain energy/cell-to-cell signalling
<b>Oct 24</b>	Reproduction at the cellular level	Chapter 9	Cellular reproduction
<b>Oct 31</b>	<b>Midterm 2 Nov 3</b>		
<b>Nov 7</b>	The cellular basis of inheritance	Chapter 10-14	Gene/DNA transmission
<b>Nov 14</b>	Molecular Biology I	Chapter 14-16	DNA/RNA expression regulation
<b>Nov 21</b>	Molecular Biology II	Chapter 14-16	Protein expression regulation
<b>Nov 28</b>	Biotechnology	Chapter 17	Molecular biology tools

**Course evaluation:**

Midterm 1 Sept 29, 20%

Midterm 2 Nov 3, 20%

Final exam, 20%

Lab evaluation (see Lab syllabus for details), 40%

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