BIO101H

HONORS GENERAL BIOLOGY

5 Credit Hours

Prepared by:
Dora Mitchell

Revised Date:
September 2013

Ms. Linda Abernathy, Division Chair, Math, Science & Business
Ms. Shirley Davenport, Dean, Arts & Science Education
BIO101H: Honors General Biology

I. CATALOG DESCRIPTION

A. Course pre-requisites/co-requisites:
   Honors Program admission
   Reading proficiency

B. 5 semester credit hours

C. General Biology examines the physical, chemical and functional aspects common to all organisms, and presents a general survey of life forms. Students will have the opportunity to learn and apply scientific processes based on lecture, lab, class discussions, and activities, in addition to presenting and leading discussions on current scientific topics. Laboratory time is required. Honors General Biology fulfills part of the requirement for an Honors Certificate or Honors Diploma. Students cannot apply both BIO101 and BIO101H toward graduation (F)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

<table>
<thead>
<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehend the basics of scientific methodology, and analyze and evaluate the validity of science-based literature</td>
<td>Examination</td>
</tr>
<tr>
<td></td>
<td>Laboratory exercises</td>
</tr>
<tr>
<td>Identify and comprehend universal chemical and cellular processes utilized by life forms</td>
<td>Examination</td>
</tr>
<tr>
<td></td>
<td>Laboratory exercises</td>
</tr>
<tr>
<td>Identify and comprehend basic components of evolutionary and ecological processes</td>
<td>Examination</td>
</tr>
<tr>
<td>Comprehend basic biological terminology</td>
<td>Examination</td>
</tr>
<tr>
<td>Utilize basic biological equipment and materials</td>
<td>Laboratory exercises</td>
</tr>
<tr>
<td>Analyze and interpret data from biological studies, and present results in graphic form</td>
<td>Laboratory exercises</td>
</tr>
<tr>
<td>Research and comprehend information relating to current topics in Biology</td>
<td>Current events presentations</td>
</tr>
<tr>
<td>Describe the significance of the life and death of Henrietta Lacks and the scientific discoveries made from HeLa cells.</td>
<td>Writing assignments from <em>The Immortal Life of Henrietta Lacks</em></td>
</tr>
</tbody>
</table>

III. OUTLINE OF TOPICS
A. Science overview
   1. Scientific process and hypothesis formation
   2. Experimental design and statistical testing
   3. Types of scientific studies
   4. Scientific literature

B. Chemical basis for life
   1. Characteristics of life
   2. Basic chemical components including atoms, molecules, and compounds
   3. Atomic structure and function
   4. Chemical bonding
   5. Water chemistry, including pH
   6. Energy and matter
   7. Organic chemistry
   8. Structure and function of macromolecules

C. Cell biology
   1. Cell theory
   2. Structure and function of cells
   3. Prokaryotes and eukaryotes
   4. Membrane transport mechanisms
   5. Enzymes and metabolism
   6. Cellular respiration and digestion
   7. Nutrients

D. Genetics
   1. DNA replication, genes, and chromosomes
   2. Cell cycle, mutations, and cellular reproduction
   3. Trait inheritance, including qualitative and quantitative genetics
   4. Mendelian genetics, including sex determination and sex linkage
   5. Protein synthesis and gene expression
   6. Genetic modification

E. Evolution
   1. Theory of evolution
   2. Evidence supporting evolution theory
   3. Evolutionary history of life forms
   4. Natural selection and mechanisms resulting in evolutionary modification
   5. Speciation and species concepts
   6. Biological classification, and life form diversity

F. Ecology
   1. Population concepts and dynamics
   2. Community and ecosystem ecology
   3. Climate and biomes
   4. Extinction causes and consequences
5. Natural resource protection

G. Animal structure and function
1. Basics of tissues, organs, and organ systems
2. Internal environmental regulation
3. Organ systems, including nervous, endocrine, respiratory, cardiovascular, muscular, skeletal, and reproductive
4. Human reproduction

H. Plant biology
1. Plant structure
2. Plant reproduction
3. Plant physiology, including adaptations
4. Photosynthesis

IV. METHODS OF INSTRUCTION

A. Lectures
B. PowerPoint presentations
C. Videos and video clips

B. Class discussion
C. Laboratory exercises

V. REQUIRED TEXTBOOKS


VI. REQUIRED MATERIALS

No required materials

VII. SUPPLEMENTAL REFERENCES

No supplemental references

VIII. METHODS OF EVALUATION
A. Examinations
B. Laboratory exercises
C. Current events presentation
D. Writing assignments from *The Immortal Life of Henrietta Lacks*
E. Grading Scale
   90-100% = A
   80-89% = B
   70-79% = C
   60-69% = D
   Below 60% = F

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library phone 636-481-3169)

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College Website, http://www.jeffco.edu/jeffco/index.php?option=com_weblinks&catid=26&Itemid=84)

XI. ATTENDANCE STATEMENT

Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.