SCIENCE OF CONTEMPORARY ISSUES
NATS 1212
Winter Quarter, 2004

INSTRUCTOR:  Dr. Sheldon S. York
S.G. Mudd Building, Room 253
Email  syork@du.edu
Telephone 303 871-2990

LECTURE TEXT:  Essential Biology, 2nd Ed., by Campbell, Reece, and Simon,
Benjamin Cummings, 2004

COURSE DESCRIPTION:

Our knowledge of how genetic information is stored and used to produce living organisms has
grown enormously over the last forty years. Over the last twenty years this has led to exciting
discoveries concerning the molecular basis of cancer. One objective of this quarter is to provide
an understanding of this fascinating field of science. Along the way, we will see how genes can
be isolated and cloned, how the human genome project has progressed, and how a variety of
genesis involved in cancer have been detected. The ability to detect genetic flaws and thereby
predict the likelihood of medical problems years before they occur creates new challenges for
society, e.g. how this information will be used by employers and insurance companies. You will
be asked to consider issues such as these and formulate your own thoughts as to how society
should deal with them.

EXAMS:

There will be three hour exams and a comprehensive final exam, each worth 100 points. If your
grade on the final exam is better than on an hour exam, then your final exam grade will be
counted twice and replace your lowest hour exam grade. Likewise, if you miss an hour exam,
then your final exam grade will be counted twice to make up for the missed hour exam. With
one exception, THERE WILL BE NO MAKEUP EXAMS. The only exception will be if you
are a member of a University team, e.g. athletic or debate team, and you have a game scheduled
away from the campus at the time of the exam. You will have to inform your instructor of this
before the exam and make arrangements at that time for a make-up exam.

GRADING:  Your final grade will be based on the following point distribution

Hour Exams, 100 points each  300 points
Final Exam          100 points
Laboratory Reports  135 points

These points are distributed such that three-quarters of your final grade will depend on the
lecture portion of the course and one quarter will depend on the laboratory portion of the course.
# LECTURE TOPICS AND READING ASSIGNMENTS:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>Jan 5</td>
<td>DNA Structure and Replication</td>
<td>Chapter 10, pp.171-176</td>
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<td>7</td>
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<td>9</td>
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<tr>
<td>12</td>
<td>Transcription and Translation</td>
<td>Chapter 10, pp. 176-186</td>
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<td>14</td>
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<td>16</td>
<td>Mutations</td>
<td>Chapter 10, pp. 186-187</td>
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<td>19</td>
<td>Martin Luther King Holiday</td>
<td>Chapter 13, pp. 266-267</td>
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<tr>
<td>23</td>
<td>Hour Exam 1</td>
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<td>26</td>
<td>Mitosis and Meiosis</td>
<td>Chapter 8, pp. 119-126, 128-134</td>
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<td>28</td>
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<td>30</td>
<td>Inheritance of Genetic Traits</td>
<td>Chapter 9, pp. 142-147, 149-153, 157-158, 163-166</td>
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<td>Feb 2</td>
<td>&quot;</td>
<td>Chapter 12, pp. 217-223</td>
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<td>4</td>
<td>Recombinant DNA Technology</td>
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<td>11</td>
<td>Hour Exam 2  Last day to drop without Instructor approval</td>
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<td>13</td>
<td>DNA Sequencing and the Human Genome Project</td>
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<td>23</td>
<td>DNA profiling</td>
<td>Article on Short Tandem Repeats</td>
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<td>25</td>
<td>Cancer</td>
<td>Chapter 8, pp. 126-127</td>
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<td>27</td>
<td>Last day to add or drop. Instructor approval required.</td>
<td>Chapter 11, pp. 208-212</td>
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<td>Mar 1</td>
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<td>5</td>
<td>Hour Exam 3</td>
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<td>12</td>
<td>Final Exam, Fri. March 12, 10:00 a.m.-11:45 a.m. This exam is comprehensive</td>
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<td>DATES</td>
<td>EXPERIMENT</td>
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<tr>
<td>Jan. 12, 13</td>
<td>Isolation of DNA</td>
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<td>Jan. 20</td>
<td>DNA Structure, Transcription, and Translation</td>
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<td>Jan. 26, 27</td>
<td>Ames Test to Detect Mutagens</td>
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<td>Feb. 2, 3</td>
<td>Mitosis and Meiosis</td>
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<td>Feb. 9, 10</td>
<td>Cloning Genes</td>
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<td>Feb. 16, 17</td>
<td>Human Genome Project</td>
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<td>Feb. 23, 24</td>
<td>DNA Profiling</td>
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<td>Mar. 1, 2</td>
<td>Analysis of Genetic Defects</td>
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The only way to make up a lab is by going to another lab section that same week. You must have a good reason for missing your lab and have permission from your Teaching Assistant before going to another lab section. If you are unable to make up a lab and you have a valid excuse for missing the lab, the points for your other lab experiments will be adjusted to correct for the difference.

Unless you are told otherwise, lab reports must be turned in at the end of the laboratory exercise.