

GLENCOE CORRELATION
BIOLOGY: THE DYNAMICS OF LIFE
NEW JERSEY
 Core Curriculum Content Standards for Science
 Grade 12

| STANDARDS | PAGE REFERENCES |
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| STANDARD 5.1 (SCIENTIFIC PROCESSES) ALL STUDENTS WILL DEVELOP PROBLEM-SOLVING, DECISION-MAKING AND INQUIRY SKILLS, REFLECTED BY FORMULATING USABLE QUESTIONS AND HYPOTHESES, PLANNING EXPERIMENTS, CONDUCTING SYSTEMATIC OBSERVATIONS, INTERPRETING AND ANALYZING DATA, DRAWING CONCLUSIONS, AND COMMUNICATING RESULTS. | |
| Building upon knowledge and skills gained in the preceding grades, by the end of Grade 12, students: | |
| A. Habits of Mind | |
| 1. When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit. | SE: <i>Problem-Solving Lab</i> 16 <i>MiniLab</i> 236, 860 <i>Design Your Own BioLab</i> 58-59, 164-165, 496-497, 734-735, 835-836, 964-965 <i>Internet BioLab</i> 126-127 |
| 2. Assess the risks and benefits associated with alternative solutions. | SE: <i>Design Your Own BioLab</i> 58-59, 164-165, 496-497, 522-523, 734-735, 835-836, 964-965 <i>*When designing and conducting experiments, students will assess different experimental designs to assess the risks and benefits of using a particular method.</i> |
| 3. Engage in collaboration, peer review, and accurate reporting of findings. | SE: <i>Internet BioLab</i> 24-25, 274-275, 414-415, 544-545, 626-627 TWE: AS 37, 59, 97, 687 |
| 4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise. | SE: <i>Design Your Own BioLab</i> 164-165 <i>MiniLab</i> 228 <i>Connection to Chemistry</i> 240 <i>Connection to Math</i> 276, 416 <i>Problem-Solving Lab</i> 283 <i>Physical Science Connection</i> 655 <i>Connection to Physics</i> 778 TWE: QD 15 PSC 655 |
| B. Inquiry and Problem Solving | |
| 1. Select and use appropriate instrumentation to design and conduct investigations. | SE: <i>Design Your Own BioLab</i> 164-165, 496-497, 735-736, 756-757, 964-965 TWE: MA 18 AS 39, 735 IN 861 |
| 2. Show that experimental results can lead to new questions and further investigations. | SE: 16 <i>Design Your Own BioLab</i> 58-59, 734-735, 757-758, 910-911 <i>Investigate BioLab</i> 874-875 TWE: AL 13 |

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| C. Safety | |
| 1. Understand, evaluate and practice safe procedures for conducting science investigations. | SE: 14-15 <i>Design Your Own BioLab</i> 164-165, 496-497 <i>Internet BioLab</i> 544-545 <i>Reference Handbook</i> 1107-1109 TWE: 16T IN 15 |
| STANDARD 5.2 (SCIENCE AND SOCIETY) ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF HOW PEOPLE OF VARIOUS CULTURES HAVE CONTRIBUTED TO THE ADVANCEMENT OF SCIENCE AND TECHNOLOGY, AND HOW MAJOR DISCOVERIES AND EVENTS HAVE ADVANCED SCIENCE AND TECHNOLOGY. | |
| Building upon knowledge and skills gained in the preceding grades, by the end of Grade 12, students: | |
| A. Cultural Contributions | |
| 1. Recognize the role of the scientific community in responding to changing social and political conditions and how scientific and technological achievement effect historical events. | SE: 345, 347-348, 351-353 <i>Problem-Solving Lab</i> 353 <i>Biology and Society</i> 854, 1044 TWE: AL 350 CD 394 CA 1028, 1051 |
| B. Historical Perspectives | |
| 1. Examine the lives and contributions of important scientists who effected major breakthroughs in our understanding of the natural and designed world. | SE: 253, 381-383, 394-396, 1024-1025 <i>Focus On History</i> 467 TWE: EN 282, 284 CDIV 284 EX 935 |
| 2. Discuss significant technological achievements in which science has played an important part as well as technological advances that have contributed directly to the advancement of scientific knowledge. | SE: 171-172, 281-282, 341-345, 347-348, 349-353, 1039 <i>BioTechnology</i> 304, 462 <i>Inside Story</i> 346 <i>Focus On</i> 1064-1065 TWE: EX 348 PR 1039 |
| 3. Describe the historical origin of important scientific developments such as atomic theory, genetics, plate tectonics, etc., showing how scientific theories develop, are tested, and can be replaced or modified in light of new information and improved investigative techniques. | SE: 172, 253-260, 281-283, 380-385, 394-397, 443-445, 1024-1025 TWE: EN 255, 282 UM 381 CD 394 IN 444 |

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| STANDARD 5.3 (MATHEMATICAL APPLICATIONS) ALL STUDENTS WILL INTEGRATE MATHEMATICS AS A TOOL FOR PROBLEM-SOLVING IN SCIENCE, AND AS A MEANS OF EXPRESSING AND/OR MODELING SCIENTIFIC THEORIES. | |
| Building upon knowledge and skills gained in the preceding grades, by the end of Grade 12, students: | |
| A. Numerical Operations | |
| 1. Reinforce indicators from previous grade level. | SE: <i>MiniLab</i> 102, 112 <i>Investigate BioLab</i> 104-105, 386-387, 988-989 <i>Internet BioLab</i> 626-627 TWE: CA 21 AS 23, 627 AL 316-317 |
| B. Geometry and Measurement | |
| 1. When performing mathematical operations with measured quantities, express answers to reflect the degree of precision and accuracy of the input data. | SE: <i>Internet BioLab</i> 24-25 <i>MiniLab</i> 155, 173, 476 <i>Investigate BioLab</i> 988-989 TWE: AS 23 |
| C. Patterns and Algebra | |
| 1. Apply mathematical models that describe physical phenomena to predict real world events. | SE: 101, 202-203 <i>Problem-Solving Lab</i> 203 <i>Connection to Math</i> 276, 416 <i>Investigate BioLab</i> 386-387 TWE: IN 317 |
| D. Data Analysis and Probability | |
| 1. Construct and interpret graphs of data to represent inverse and non-linear relationships, and statistical distributions. | SE: <i>Problem-Solving Lab</i> 20, 72, 704 <i>Internet BioLab</i> 24-25, 414-415 TWE: IN 98 EX 483 |
| STANDARD 5.4 (NATURE AND PROCESS OF TECHNOLOGY) ALL STUDENTS WILL UNDERSTAND THE INTERRELATIONSHIPS BETWEEN SCIENCE AND TECHNOLOGY AND DEVELOP A CONCEPTUAL UNDERSTANDING OF THE NATURE AND PROCESS OF TECHNOLOGY. | |
| Building upon knowledge and skills gained in the preceding grades, by the end of Grade 12, students: | |
| A. Science and Technology | |
| 1. Know that scientific inquiry is driven by the desire to understand the natural world and seeks to answer questions that may or may not directly influence humans, while technology is driven by the need to meet human needs and solve human problems. | SE: 22-23 TWE: DI 30 |
| B. Nature of Technology | |
| 1. Assess the impacts of introducing a new technology in terms of alternative solutions, costs, tradeoffs, risks, benefits and environmental impact. | SE: 345, 347-348, 350-353 <i>Connection to Chemistry</i> 106 <i>BioTechnology</i> 356 <i>Biology and Society</i> 498 TWE: EN 345 IN 345 BJ 353 |

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| C. Technological Design | |
| 1. Plan, develop, and implement a proposal to solve an authentic, technological problem. | SE: <i>Problem-Solving Lab</i> 347 <i>Design Your Own BioLab</i> 834-835 TWE: EN 117 |
| STANDARD 5.5 (CHARACTERISTICS OF LIFE) ALL STUDENTS WILL GAIN AN UNDERSTANDING OF THE STRUCTURE, CHARACTERISTICS, AND BASIC NEEDS OF ORGANISMS AND WILL INVESTIGATE THE DIVERSITY OF LIFE. | |
| Building upon knowledge and skills gained in the preceding grades, by the end of Grade 12, students: | |
| A. Matter, Energy and Organization in Living Systems | |
| 1. Relate the structure of molecules to their function in cellular structure and metabolism. | SE: 157-162, 163, 222-224 <i>Inside Story</i> 162 <i>BioDigest</i> 245 TWE: EN 159 UM 222 |
| 2. Explain how plants convert light energy to chemical energy. | SE: 184, 225-228, 230 <i>Inside Story</i> 229 <i>BioDigest</i> 247 TWE: IN 227 DI 230 |
| 3. Describe how plants produce substances high in energy content that become the primary source of energy for life. | SE: 46, 221, 225 <i>BioDigest</i> 133 TWE: RE 51 |
| 4. Relate disease in humans and other organisms to infections or intrinsic failures of system. | SE: 212-213, 271, 478-483, 494-495, 1023-1024, 1028-1029, 1031-1033 <i>Inside Story</i> 1034 TWE: TTPK 1032 |
| B. Diversity and Biological Evolution | |
| 1. Explain that through evolution the Earth's present species developed from earlier distinctly different species. | SE: 10, 393-397 <i>BioDigest</i> 468 TWE: QD 394 VL 396 |
| 2. Explain how the theory of natural selection accounts for extinction as well as an increase in the proportion of individuals with advantageous characteristics within a species. | SE: 396-397, 407-409 <i>Problem-Solving Lab</i> 397 <i>BioDigest</i> 496 TWE: DI 103 CA 468 |
| C. Reproduction and Heredity | |
| 1. Describe how information is encoded and transmitted in genetic material. | SE: 163, 180-181, 255-262, 263-270, 281-285, 288-295 <i>BioDigest</i> 245 <i>Inside Story</i> 286-287 TWE: AL 266 AS 293 |
| 2. Explain how genetic material can be altered by natural and/or artificial means; mutations and new gene combinations may have positive, negative, or no effect on organisms or species. | SE: 212, 296-301 <i>Problem-Solving Lab</i> 299 <i>MiniLab</i> 300 TWE: EN 297 IS 298 MA 300 DI 301 |

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| 3. Assess the impact of current and emerging technologies on our understanding of inherited human characteristics. | SE: 341-345, 347-348, 349-353 <i>Inside Story</i> 346 <i>Problem-Solving Lab</i> 352 <i>BioDigest</i> 363 TWE: EN 345 AL 350 BJ 353 |

Codes Used for TWE Pages

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| AL | Additional Lab |
| AS | Assessment |
| BJ | Biology Journal |
| CA | Challenge Activity |
| CD | Concept Development |
| CDIV | Cultural Diversity |
| DI | Daily Intervention |
| EN | Enrichment |
| EX | Extension |
| IN | Inquiry |
| IS | Inclusion Strategy |
| MA | Modified Assessment |
| PR | Project |
| PSC | Physical Science Connection |
| QD | Quick Demo |
| RE | Reinforcement |
| TTPK | Tying to Previous Knowledge |
| UM | Using Models |
| VL | Visual Learning |