



# FLORIDA Standards Correlations



## Next Generation Sunshine State Standards

### Forensic Science: Fundamentals & Investigations, 9-12

STANDARD	STUDENT/TEACHER EDITION	MTRs and EEs
<p><a href="#">SC.912.E.5.8</a>: Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.</p>	<p>Chapter 2, p. 32; Students read about advances in technology used for thermal imaging.</p> <p>Chapter 2, p. 39; Students read about advances in technology used for surveillance and evidence collection, including GPS, surveillance cameras, ground penetrating radar, facial recognition, and cell phones.</p> <p>Chapter 4, pp. 105-107; Students read and learn about how microscopic analysis and a scanning electron microscope are used to analyze fibers collected as evidence.</p>	<p>MA.K12.MTR.2.1</p> <p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.1</a>: Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science.</p>	<p>Chapter 7, pp. 242-243; Student learn about cell replication through DNA</p> <p>Chapter 8, pp. 297-298; Students read about the nature and structure of blood cells.</p> <p>Chapter 12, p. 508; Students learn about how cells expire or die.</p>	<p>MA.K12.MTR.5.1</p> <p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.2</a>: Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).</p>	<p>Chapter 5 Forensic Botany pp. 147 – 166</p> <p>Chapter 8, Antigen and Antibody response. pp. 298 - 300.</p>	<p>ELA.K12.EE.2.1</p>

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<p><a href="#">SC.912.L.14.4:</a> Compare and contrast structure and function of various types of microscopes.</p>	<p>Chapter 3, pp. 71; Students read and learn about how microscopes are used to analyze hair used as evidence.</p> <p>Activity 3-1, 3-2, pp. 82-91; Students use microscopes and analyze samples.</p> <p>Chapter 4, p. 93 (Key Terms define various microscope types) p. 105-106; Students read and learn about how microscopes are used to analyze fibers as evidence.</p> <p>Activity 4-1 – 4-5, pp. 117-131; Students use microscopes to analyze fibers.</p>	<p>MA.K12.MTR.5.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.6:</a> Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.</p>	<p>Chapter 9, p. 363; Students research pesticides and herbicides used in their area, and report on the health risks associated with each.</p>	<p>MA.K12.MTR.4.1 ELA.K12.EE.1.1</p>
<p><a href="#">SC.912.L.14.11:</a> Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.</p>	<p>Chapter 12, pp. 517-522; Students learn about autopsies of bodies and how the different body parts, organs, tissues, and systems are studied.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.12:</a> Describe the anatomy and histology of bone tissue.</p>	<p>Chapter 14, pp. 596-621; Students learn about the science of bones, their bone structure, and composition.</p> <p>Activity 14-1 – 14-5, pp. 634-644; Students analyze bones to determine age, gender, ancestry, etc.</p>	<p>MA.K12.MTR.3.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.34:</a> Describe the composition and physiology of blood, including that of the plasma and the formed elements.</p>	<p>Chapter 8, pp. 297-303; Students learn about the science of blood beginning with the components of blood cells, the number in the body, and the function of each component.</p>	<p>MA.K12.MTR.7.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.L.14.35:</a> Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.</p>	<p>Chapter 8., pp. 297-303; Students learn about the discovery of blood types and how this can be determined based on the presence of antigens and the Rh factor.</p>	<p>MA.K12.MTR.7.1 ELA.K12.EE.3.1</p>
<p><a href="#">SC.912.L.14.51:</a> Describe the function of the vertebrate integumentary system.</p>	<p>Chapter 6, The Science of Fingerprints, pp. 199</p>	
<p><a href="#">SC.912.L.15.15:</a> Describe how mutation and genetic recombination increase genetic variation.</p>	<p>Chapter 7, DNA Profiling pp 252 – 269, Obj 7.1 What is DNA profiling?</p>	

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<a href="#">SC.912.L.16.2:</a> Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.	Chapter 7, pp. 242-259; Students read and learn about DNA profiling, DNA collection, and DNA analysis.	MA.K12.MTR.4.1 ELA.K12.EE.1.1
<a href="#">SC.912.L.16.9:</a> Explain how and why the genetic code is universal and is common to almost all organisms.	Chapter 7, pp. 242-250; Students read and learn about genetic code, DNA collection, and DNA analysis.	MA.K12.MTR.4.1 ELA.K12.EE.1.1
<a href="#">SC.912.L.16.10:</a> Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.	Chapter 7, p. 236; Students read about the Buckskin Girl, a victim identified by DNA testing. Chapter 7, pp. 255-259; Students learn about how biotechnology including DNA is impacting family searches, and personal medical risks.	MA.K12.MTR.6.1 ELA.K12.EE.2.1
<a href="#">SC.912.L.16.11:</a> Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis.	Chapter 3, pp. 62-73; Students read and learn about how hair can be used as evidence due to DNA. Chapter 6, p. 198; Students read about how biometric identification is being used.	MA.K12.MTR.5.1 ELA.K12.EE.2.1
<a href="#">SC.912.L.16.12:</a> Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant DNA molecules (DNA cloning).	Chapter 7, p. 265; Student learn about the development of PCR testing and the technique used to create multiples of DNA strand. Chapter 3, pp. 62-64, pp. 72-73; Students read and learn about how hair can be used as evidence due to DNA.	MA.K12.MTR.5.1 ELA.K12.EE.2.1
<a href="#">SC.912.L.17.1:</a> Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.	Chapter 7, pp. 246-248; Students read about how different alleles are distributed differently in different populations.	MA.K12.MTR.1.1 ELA.K12.EE.2.1
<a href="#">SC.912.L.18.1:</a> Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.	Chapter 7, DNA Profiling, pp. 259	

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<p><a href="#">SC.912.N.1.1:</a> Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:</p>	<p>Chapter 1, pp. 3-11; Students read and learn about how observation and deductive reasoning is used in forensic science. Specifically discussed is how observation in eyewitness testimony is used and methods to increase observational abilities. Activity 1-1 - 1-3, pp. 18-22; Students practice observational skills and analyze results.</p>	<p>MA.K12.MTR.5.1 ELA.K12.EE.3.1</p>
<p><a href="#">SC.912.N.1.2:</a> Describe and explain what characterizes science and its methods.</p>	<p>Chapter 1, pp. 4-6; Students read about the scientific method and the Claim Evidence Reasoning Model.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.1.3:</a> Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.</p>	<p>Chapter 1, pp. 3-11; Students read about forensic science and observation and how analytical thinking is used.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.1.4:</a> Identify sources of information and assess their reliability according to the strict standards of scientific investigation.</p>	<p>Chapter 2, pp. 24-39; Students read and learn about crime scene investigation. They learn about the reliability and validity of evidence.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.1.1</p>
<p><a href="#">SC.912.N.1.6:</a> Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.</p>	<p>Chapter 11, pp. 454-474; Students read about forensic entomology and the process of collection and analysis and how this can be related to a criminal investigation. Chapter 16, pp. 694-711; Students read about taking casts and impressions and how these should be used in forensic evidence.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.2.1:</a> Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).</p>	<p>Chapter 1, What is Forensic Science?, pp. 3- 10</p>	<p>ELA.K12.EE.2.1</p>

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<p><a href="#">SC.912.N.2.4</a>: Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.</p>	<p>Chapter 10, pp. 406-407; Students learn about the history of forensic handwriting analysis and how experts have enhanced the process allowing it to now be admissible in court and deemed to be reliable.</p>	<p>MA.K12.MTR.2.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.3.1</a>: Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.</p>	<p>Chapter 2, Crime Scene Investigation and Evidence; pp. 25 – 28</p>	<p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.3.2</a>: Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.</p>	<p>Chapter 3, History of Hair Analysis; p. 63 Chapter 4, History of Fibers; p. 95 Chapter 5, History of Forensic Botany; p 136</p>	<p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.3.5</a>: Describe the function of models in science, and identify the wide range of models used in science.</p>	<p>Chapter 13, pp. 546-559; Students learn about soil evidence and the models used to determine the origin and composition.</p>	<p>MA.K12.MTR.3.1 ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.N.4.1</a>: Explain how scientific knowledge and reasoning provide an empirically based perspective to inform society's decision making.</p>	<p>Chapter 7, p. 263; Going Further #3; Students research the 14th Amendment and then debate the use of genealogy databases, referencing scientific facts and scientific studies.</p>	<p>MA.K12.MTR.4.1 ELA.K12.EE.4.1</p>
<p><a href="#">SC.912.N.4.2</a>: Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.</p>	<p>Chapter 9, Activity 9-2, pp. 385-389; Students debate cannabis legalization, focusing on scientific evidence and research and discussing different arguments for and against based on social and individual effects of the drug.</p>	<p>MA.K12.MTR.4.1 ELA.K12.EE.4.1</p>



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<a href="#">SC.912.P.8.1</a> : Differentiate among the four states of matter.	Chapter 9, Forensic Toxicology; pp. 373 – 379	ELA.K12.EE.2.1
<a href="#">SC.912.P.8.2</a> : Differentiate between physical and chemical properties and physical and chemical changes of matter.	Chapter 15, pp. 653-659; Students learn about the properties of glass.	MA.K12.MTR.1.1 ELA.K12.EE.2.1
<a href="#">SC.912.P.8.7</a> : Interpret formula representations of molecules and compounds in terms of composition and structure.	Chapter 14, Bone structure and composition p. 601	ELA.K12.EE.2.1
<a href="#">SC.912.P.8.11</a> : Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.	Chapter 3, Microscope Analysis, Chemical Analysis, pp. 71-74 Chapter 12, The Process of Death, p. 508 Chapter 13, Soil Chemistry, pp. 549-551	ELA.K12.EE.2.1
<a href="#">SC.912.P.8.12</a> : Describe the properties of the carbon atom that make the diversity of carbon compounds possible.	Chapter 3, Hair Analysis, pp. 60 New Hair Analysis Techniques Helps Identify Human Identification	ELA.K12.EE.2.1
<a href="#">SC.912.P.10.1</a> : Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.	Chapter 18, Kinetic Energy of a Projectile, pp. 779	ELA.K12.EE.2.1
<a href="#">SC.912.P.10.18</a> : Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.	Chapter 3, Microscopic Analysis, pp. 71, Figure 3-12	ELA.K12.EE.2.1
<a href="#">SC.912.P.10.20</a> : Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another.	Chapter 15, Advances in Glass Production Analysis, pp. 668 - 671	ELA.K12.EE.2.1

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<p><a href="#">SC.912.P.10.21</a>: Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver.</p>	<p>Chapter 18, Science of Ballistics, pp. 781 - 787</p>	<p>ELA.K12.EE.2.1 ELD.K12.EI.SI.1</p>
<p><a href="#">SC.912.P.12.1</a>: Distinguish between scalar and vector quantities and assess which should be used to describe an event.</p>	<p>Chapter 15, Refraction Index – Normal Line, p. 658 Figure 15.8 &amp; 15.9</p>	<p>ELA.K12.EE.2.1 ELD.K12.EI.SC.1</p>
<p><a href="#">SC.912.P.12.2</a>: Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.</p>	<p>Chapter 8, Characteristics of Blood Evidence, pp. 303 – 306 Chapter 8, Forces Affecting Blood Splatter Area of Convergence pp. 306 - 309</p>	<p>ELA.K12.EE.2.1 ELA.K12.EE.6.1</p>
<p><a href="#">SC.912.P.12.3</a>: Interpret and apply Newton's three laws of motion.</p>	<p>Chapter 18, p. 781, p. 787, p. 808, Short Answer #16; Students relate Newton's Third Law of Motion to a bullet being propelled from a firearm and to the breechblock impression on a cartridge casing.</p>	<p>MA.K12.MTR.3.1 ELA.K12.EE.5.1</p>
<p><a href="#">SC.912.P.12.5</a>: Apply the law of conservation of linear momentum to interactions, such as collisions between objects.</p>	<p>Chapter 15, Fracture and Speed of an Object, pp. 662-669</p>	<p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.P.12.7</a>: Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving.</p>	<p>Chapter 8, Activity 8-1, A Presumption Test for Blood, pp. 324 - 325</p>	<p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.P.12.9</a>: Recognize that time, length, and energy depend on the frame of reference.</p>	<p>Chapter 2, Seven S's of a Crime Scene Investigation, pp. 29-25</p>	<p>ELA.K12.EE.2.1</p>
<p><a href="#">SC.912.P.12.12</a>: Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.</p>	<p>Chapter 12, p. 531, Going Further #3; Students research and describe the chemical reaction that occurs between sulfur and hemoglobin, resulting in the marbling effect of the body during putrefaction.</p>	<p>MA.K12.MTR.1.1 ELA.K12.EE.5.1</p>