

MCS Forensic Science Subject Group Overview

Unit Name	Unit 1: History & Law	Unit 2: Crime Scene Investigation & Collection	Unit 3: Physical Evidence-Hair, Fiber, Soil Glass Analysis	Unit 4: Physical Evidence-Impression Evidence (Fingerprints, Footwear, tool marks)	Unit 5: Forms of Communication - Handwriting and Digital Evidence	Unit 6: Biological Evidence-DNA Profiling	Unit 7: Biological Evidence-Blood Typing & Bloodstain Patterns	Unit 8: Forensic Toxicology	Unit 9: Forensic Entomology	Unit 10: Forensic Anthropology	Unit 11: Death Investigation
Time Frame	2 weeks	6 weeks	6 weeks	4 weeks	2 weeks	4 weeks	3 weeks	3 weeks	2 weeks	2 weeks	2 weeks
Standards/IB Topics	SFS1. A	SFS1. B, C, D SFS2. A	SFS2. B SFS2. E	SFS4. A, B, C	SFS2.C, D	SFS3. E	SFS3. C, D	SFS3. A, B	SFS5. D	SFS5. E	SFS5. A, B, C
Content Specific Information (texts, documents, methods)	<p>Statement of Inquiry Human observation sometimes results in inaccurate perception.</p> <p>Phenomenon Julius Earl Ruffin spent 21 years in jail for a crime he did not commit.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> Scientific Observation History of Forensics 	<p>Statement of Inquiry Inadequate evidence collection can lead to false imprisonment.</p> <p>Phenomenon Officers in the JonBenet Ramsey case made mistakes that may have resulted in the contamination or destruction of evidence.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> Locard's Principle of Exchange Types of Evidence Collecting & Analyzing Evidence 	<p>Statement of Inquiry Locard's Exchange Principle dictates that evidence, both physical and biological, is to be found at the scene of the crime.</p> <p>Phenomenon Fibers found on victims bodies in the Atlanta Child murder case lead investigators to a common location.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of Hair, Fiber, Soil, Glass Analysis Characteristics of Hair, Fiber, Soil, Glass Collecting Hair, Fiber, Soil, Glass Evidence Forensic Analysis of Hair, Fibers, Soil, & Glass 	<p>Statement of Inquiry Locard's Principle suggests that the perpetrator always leaves something behind in a crime scene.</p> <p>Phenomenon William West was booked into a federal prison in Leavenworth, Kansas. To much surprise his name, Bertillon measurements, and resemblance matched a man already incarcerated.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of impression evidence Characteristics of impression evidence Collecting impression evidence 	<p>Statement of Inquiry The techniques and tools used in forensic document examinations leverage well-established principles of physics and chemistry.</p> <p>Phenomenon A tourist in Miami was issued a parking ticket which he overpaid. On his \$2 refund check from the city, he changed the amount and deposited \$1.45 million into his account in Argentina.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of communication evidence Characteristics of communication evidence Collecting communication evidence 	<p>Statement of Inquiry As technology advances, forensics scientists are able to analyze smaller and smaller biological samples to develop a DNA profile.</p> <p>Phenomenon A body torso was found in a sewer (missing all identifiable features). The police were still able to identify the victim</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of DNA profiling Characteristics of blood 	<p>Statement of Inquiry Because blood demonstrates surface tension, or cohesive forces that act like an outer skin, a drop of blood dropped at a 90° angle forms a near perfect spherical shape.</p> <p>Phenomenon An 80 year old woman was found dead on the floor of her bathroom. Her husband states it was suicide.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of blood spatter evidence Characteristics of blood and blood spatter Collecting blood 	<p>Statement of Inquiry Investigators rely on forensics toxicologists to make reliable conclusions about the impact a specific amount of substance would have on a specific individual.</p> <p>Phenomenon Cory Monteith, a star from <i>Glee</i>, was found dead of a drug overdose in 2013. Death was classified as a suicide, even though Cory was very happy in life.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of Forensic toxicology Characteristics of Poisons, Toxins, and 	<p>Statement of Inquiry By studying the insect population and the developing larval stages, forensics scientists can estimate the postmortem index.</p> <p>Phenomenon A badly burned body of an unidentified person was found in the woods in Mexico. The only tissue remaining was a piece of burned liver that could not be analyzed for DNA. Maggots were found feeding on human tissue at the crime scene. From this they were able to identify the</p>	<p>Statement of Inquiry With their training in archaeology, forensic anthropologists are knowledgeable about excavating buried remains.</p> <p>Phenomenon A skull was found in Missouri at an old boy scout camp. Through forensic analysis the skull was determined to be that of Bun Chee Nyhuis, the scoutmaster's wife.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of Forensic Anthropology Characteristics of bones 	<p>Statement of Inquiry Bacteria, Archaea, and microbial eukaryotes are used to provide insight into several aspects of medicolegal death investigations.</p> <p>Phenomenon An unidentified body was found in the back seat of a wrecked vehicle where the driver had fled the scene and the passenger was injured.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> Mechanisms of death Manner of death Post-mortem changes

				<ul style="list-style-type: none"> Forensic Analysis of impression evidence. 	<ul style="list-style-type: none"> Forensic analysis of communication evidence 	<ul style="list-style-type: none"> Characteristics of Blood and DNA profiling Collection and preservation of DNA evidence Forensic analysis of DNA 	<ul style="list-style-type: none"> spatter evidence Forensic analysis of blood spatter 	<ul style="list-style-type: none"> Drugs Collecting toxicological evidence Forensic analysis of poisons, toxins, and drugs 	<ul style="list-style-type: none"> identity of the victim. <p>CORE IDEAS</p> <ul style="list-style-type: none"> History of forensic Entomology Characteristics of Forensic Entomology Processing a crime scene for insect evidence Forensic analysis of insect evidence. 	<ul style="list-style-type: none"> The search, collection, and documentation of skeletal remains Forensic analysis of skeletal remains 	
Common Assessments/ Major Projects	<p>SEP</p> <ul style="list-style-type: none"> Constructing Explanations <p>Major Projects:</p> <ul style="list-style-type: none"> Case Study 	<p>SEP</p> <ul style="list-style-type: none"> Plan and Carry Out Investigations Constructing Arguments From Evidence Developing Models to analyze and Communicate Information <p>Major Projects:</p> <ul style="list-style-type: none"> Collecting Evidence from Crime Scene 	<p>SEP</p> <ul style="list-style-type: none"> Planning and Carrying Out An Investigation Asking Questions <p>Major Projects:</p> <ul style="list-style-type: none"> Trace Evidence Collection and Analysis 	<p>SEP</p> <ul style="list-style-type: none"> Constructing Explanations Analyze and Interpret Data Constructing Explanations <p>Major Projects:</p> <ul style="list-style-type: none"> Fingerprint analysis Footwear Analysis Tool mark Analysis 	<p>SEP</p> <ul style="list-style-type: none"> Analyze and Interpret Data Constructing Explanations <p>Major Projects:</p> <ul style="list-style-type: none"> Handwriting analysis Examination of U.S. Currency: Is It Authentic or Counterfeit? 	<p>SEP</p> <ul style="list-style-type: none"> Plan and Carry Out an Investigation <p>Major Projects:</p> <ul style="list-style-type: none"> Detecting for the presence of Blood Gel Electrophoresis 	<p>SEP</p> <ul style="list-style-type: none"> Constructing Explanations Plan and Carry Out Investigations <p>Major Projects:</p> <ul style="list-style-type: none"> Calculating blood stain patterns and trajectory 	<p>SEP</p> <ul style="list-style-type: none"> Asking Questions Analyze and Interpret Data <p>Major Projects:</p> <ul style="list-style-type: none"> Drug Analysis Blood Alcohol Simulator 	<p>SEP</p> <ul style="list-style-type: none"> Analyze and Interpret Data <p>Major Projects:</p> <ul style="list-style-type: none"> Decay of tissue with insect identification 	<p>SEP</p> <ul style="list-style-type: none"> Plan and Carry Out an Investigation <p>Major Projects:</p> <ul style="list-style-type: none"> Bone sample analysis Gravesite Excavation 	<p>SEP</p> <ul style="list-style-type: none"> Asking Questions Constructing Arguments Based on Evidence Using Mathematics and Computational Thinking Analyzing and Interpreting Data Planning and Carrying Out an Investigation <p>Major Projects:</p> <ul style="list-style-type: none"> Crime Scene/Death Investigation Culminating Project
Level Specific Differentiation	Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.										

<p>Resources</p>	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course 	<ul style="list-style-type: none"> • Textbook Forensic Science Bertino & Bertino, 3rd Edition • Forensic Science Schoology Course
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