

Apogee Program Session 1

Course Title: Detective Science

Course Description

“Eliminate all other possible solutions to the crime and there’s only one left; it must be the answer, no matter how absurd.” This was a guiding philosophy of Sherlock Holmes and still is for the detectives of popular TV dramas. In this course, students learn the forensic science involved in solving crimes, including how to collect fingerprints, crack secret codes, and examine corrosion evidence. Earth sciences, technology, life sciences, and physical sciences are combined to solve new mysteries every day. The course also includes studying detective fiction, from writers Peter Abrahams to Ellen Raskin. At the end of the course, each student designs and writes his/her own mystery to be figured out by fellow students. This course is ideal for students who enjoy using their problem-solving skills to crack mysteries, and are interested in reading and writing detective stories.

This course is broken into two major sections: 1) practical labs and activities in which students learn and work with different crime investigation techniques (CSI: Basic Training), 2) a literature and writing part in which students read some new and classic forensic/detective novels, as well as create mysteries that stump even the sharpest sleuth!

The lab section of this course involves activities focusing on earth science, life science, and physical science, as well as inquiry and technology. These hands-on critical thinking activities challenge each student's mind and encourage him/her to think like a detective. The labs take place mainly in the morning section of the course.

The literature section involves the reading of three adolescent novels from the mystery/detective genre. Students participate in literature circles with these novels, and use the information and concepts learned in the morning class to create mysteries of their own. The reading and writing portion of this course mainly takes place during the afternoon section of the day.

Essential Questions

- 1) What is the science behind forensic evidence collection and analysis?
- 2) How can evidence be used to solve a mystery, both at a crime scene and in a piece of literature?

Outcomes

Upon successful completion of this course, students will:

- Think critically when examining evidence
- Use literature to further their understanding of forensic science
- Collect evidence from a crime scene
- Apply earth, life, and physical science to a crime scene investigation
- Learn the process of keeping a scientific journal
- Work in pairs or groups to collaborate and share ideas
- Form conclusions based on evidence collected during an investigation
- Apply new concepts to the writing process during the completion of a mystery

Instructional Strategies

The lab portion of this class will be taught using the fundamentals of inquiry-based science processes. Inquiry-based science helps to develop critical and reflective thinking skills, problem solving abilities and curiosity

toward science. Starting with an open-ended question or demonstration, students will work in cooperative groups to investigate various areas of forensic science through exploratory lab situations where they will construct ideas about the validity of test results, practical uses for forensic evidence, and the scientific method while recording their data and capturing their thoughts in a scientific journal.

In the literary portion of the class students will meet together to analyze and discuss the assigned reading passage. The literature circles will initially be guided by teacher-created questions to focus a discussion around the clues and suspects pulled from the reading, shifting to a student-led conversation about other events in the story, as well as personal insights and connections. The ultimate goal is for the students to engage in critical thinking while reflecting on peers' opinions and to debate opposing opinions in order to more deeply understand the reading. Finally, in the writing portion, students will be lead through a creative writing process in which they will author their very own mystery story, weaving clues, suspects, and forensic evidence into a unique plot. The students will work through the keys to good writing, the elements of a story, peer editing, and the stages of drafting a well-crafted piece of writing.

Resources and Materials

- **Books**
 - Code Orange by Caroline Cooney
 - The Westing Game by Ellen Raskin
 - Behind the Curtain by Peter Abrahams
- **Materials**
 - Students will need 2 *separate* notebooks
 - One for the science journal
 - One for the literature & writing portion

Student Assessment

- **Pre-Assessment**

During the first day of class students will be challenged to share their opinions and grapple with the validity of forensics as a science and as evidence in criminal proceedings. Before learning can take place, students must value the knowledge they are about to learn.
- **Documentation of Learning**
 - *Lab Notebook* – Students will complete inquiry-based science labs each day and will be expected to record thoughts, ideas, data, and conclusions in a specific format during all investigations. Lab notebooks will be checked regularly. At the end of the course, students will have a complete Forensic Lab notebook detailing each of the areas of forensics and their validity.
 - *Literature Notebook* – Students will keep lists of suspects, clues, and conclusions on a nightly basis as part of their homework after reading. These lists will be used during in-class small group discussions. Students will also be asked to write reflections based on their readings and discussions after small group discussions.
 - *Weekly Evaluations* – At the end of each week, student's notebooks will be collected and commented on, as well as evaluated against a rubric. These evaluations will be returned to students each Monday.
 - *Mystery Story* – As a part of their study of literature, students will craft their own Mystery Story. Students will go through the drafting process from brainstorming to peer editing to final draft.
- **Post-Assessment**

As a grand finale to the course, students will set up the ultimate crime for the parents to solve. Students will work in small groups to set up evidence stations where they will use their expertise to guide their

family members through the collection and analysis of evidence. With the right know-how and instruction, the crime will be solved!

Schedule

Date(s)	Topic(s)	In-Class Activities	Assignment/Assessment
6/27	<p>Introduction</p> <p>CSI: Basic Training Skills of a Forensic Scientist</p> <p>It's a Mystery! -Makings of a good Mystery -Short Story Investigation -Begin <u>Code Orange</u></p>	<p>-Course Outline</p> <p>-Basic Training Activities: Paying Attention to Details</p> <p>-Literature circles - Journal Writing</p>	<p>-CSI: Profile</p> <p>- Student journal investigation questions</p> <p>-Crime Journal -Reading Log</p> <p>HW: CO Log</p>
6/28	<p>CSI: Basic Training Fingerprinting</p> <p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project Intro</p>	<p>-Fingerprint Identifiers -Typing fingerprints -Matching Fingerprints -Fingerprint Collection</p> <p>-Group Discussion</p> <p>-Brainstorming</p>	<p>- Student journal notes & investigation questions</p> <p>- Crime Journals</p> <p>- Reading Log</p> <p>HW: CO Log & Story Ideas</p>
6/29	<p>CSI: Basic Training Chromatography</p> <p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story (characters & suspects)</p>	<p>-Understanding Ink Composition -Creating Chromatographs -Ink analysis</p> <p>-Group Discussion</p> <p>-Brainstorming</p>	<p>- Student journal notes & investigation questions</p> <p>- Crime Journals</p> <p>- Reading Log</p> <p>HW: CO Log & Character List</p>
6/30	<p>CSI: Basic Training Handwriting Analysis & Orthography</p>	<p>-Handwriting Analysis</p> <p>-psychological profiling of celebrity & classmate profiles</p>	<p>- Student journal notes & investigation questions</p>

	<p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project (Setting & Clues)</p>	<p>-Group Discussion -Brainstorming</p>	<p>- Crime Journals - Reading Log HW: <u>CO</u> Log & Clue List</p>
7/1	<p>CSI: Basic Training Cheiloscopy & Forensic Dentistry</p> <p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project (Title & Summary)</p>	<p>-patterns & history -Matching print -Dental records -Tooth ID -class debate</p> <p>-Group Discussion -Brainstorming</p>	<p>- Student journal notes & investigation questions - Crime Journals - Reading Log Weekend HW: Story Drafting</p>
7/4	<p>CSI: Basic Training Shoe Impressions & Footprints</p> <p>It's a Mystery! -Begin <u>BTC</u> -Short Story Investigation -Mystery Story Project (Drafting)</p>	<p>Casting Shoe Impressions -Tread Patterns -Footprint vs. Height investigation</p> <p>-Group Discussion -Drafting Mystery Story</p>	<p>- Student journal notes & investigation questions - Crime Journals - Reading Log HW: <u>WG</u> Log & Clue List</p>
7/5	<p>CSI: Basic Training Blood-Typing & Blood Spatter</p> <p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project (Drafting)</p>	<p>-Blood Typing Mystery -Blood Spatter Comparative</p> <p>-Group Discussion -Drafting</p>	<p>- Student journal notes & investigation questions - Crime Journals - Reading Log HW: <u>WG</u> Log & Clue List</p>
7/6	<p>CSI: Basic Training DNA & Genetics</p>	<p>-DNA fingerprinting -Matching DNA</p>	<p>- Student journal notes & investigation questions</p>

	<p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project (Drafting)</p>	<p>samples -Group Discussion -Drafting</p>	<p>- Crime Journals - Reading Log HW: WG Log & Question List for Field Trip</p>
7/7	<p>DNA/Genetics Field Trip</p>	<p>- Field trip to Field Museum DNA Discovery Center</p>	<p>- Student journal of museum exhibit HW: WG Log & Field Trip Reflection</p>
7/8	<p>CSI: Basic Training -Field Trip Discussion -Feature Film Friday!!! (Clue)</p> <p>It's a Mystery! -Literature Circles -Short Story Investigation -Mystery Story Project (Peer Edit)</p>	<p>-Watch movie -Record Suspect & Clue Info -Group Discussion -Peer Edit</p>	<p>- Student notes - Crime Journals - Reading Log Weekend HW: Revise Mystery Story based on Peer Edit</p>
7/11	<p>CSI: Basic Training Crime Scene Sketching</p> <p>It's a Mystery! -Begin <u>CG</u> -Short Story Investigation -Mystery Story Project (Typing in Lab)</p>	<p>-Types of Evidence -Sketching techniques -Create & Diagram Crime Scene -Group Discussion -Drafting</p>	<p>- Student journal notes & investigation questions - Crime Journals - Reading Log HW: BTC Log & Clue List</p>
7/12	<p>CSI: Basic Training 1) Evanston Police Dept. Forensic Evidence Team Visit 2) Witness Interrogation & Body Language</p> <p>It's a Mystery!</p>	<p>-List of questions for Forensic Examiner & Detectives -Body Language Interpretation (30s video clip) -Group Discussion</p>	<p>- Student journal notes & investigation questions - Crime Journals - Reading Log</p>

	-Lit Circles -Short Story Investigation -Mystery Story Project (Typing in Lab)	-Drafting	HW: BTC Log & Clue List
7/13	CSI: Basic Training EXPO presentation design & planning It's a Mystery! -Lit Circles -Mystery Story Project (Typing in Lab/ Peer Edit)	-Divide into Forensic teams -Plan Crime & Evidence stations -Group Discussion -Drafting	- Student journal notes & investigation questions - Crime Journals - Reading Log HW: BTC Log Mystery DONE
7/14	CSI: Basic Training EXPO presentation design & planning It's a Mystery! -Mystery Story Sharing -Peer Commentary on Mystery Story	-Divide into Forensic teams -Plan Crime & Evidence stations -Group Discussion -Evaluating Peer Work	- Student journal notes & investigation questions - Crime Journals - Reading Log HW: None ☺
7/15	EXPO!	CSI: Crime Solving Stations	NA

CTD Statement on Third-Party Web Sites

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.