Forensic Science

Dress Code		Official HOSA uniform or business professional attire
SLC Orientation		Event explained to the competitors and individual timecards handed out. Students will return to the event room at least 5 minutes before their allotted time.
Team Numbers		Teams will consist of 2 people
Round # 1 Online Test		Competitors will take an online test during the testing window. Combined team scores will be used to qualify into Round 2 of the competition. Advisors will be informed of which competitors have moved on from Round 1 to qualify to participate in Round 2 at SLC.
Round # 2		- Competitors will have a secret scenario to solve when it is their turn to compete. - Students should not share the secret scenario when they leave the event as it is an automatic disqualification. -Teams will have a total of 40 minutes for round two analysis.
Scoring		Scores from Round One will be combined with Round Two rubric scores for a combined final score.

Event Summary
Forensic Science allows HOSA members to work as a team to apply their knowledge and skills in creating a solution to a forensic science-related problem. This competitive event consists of two rounds, and each team consists of 2 people. Round One is a written test that evaluates the team's understanding of forensic science. The test score from Round One will be used to qualify the team for Round Two. In Round Two, teams will be given a case study to analyze, including physical evidence and written information such as police reports and an autopsy. Teams may have time to view a "crime scene" and/or review resources to write their conclusions with supporting evidence. This event aims to inspire members to be proactive future health professionals and critically examine elements of a forensic case.

***CAUTION**: The content and pictures in the suggested resources are graphic in nature and may be considered offensive by some. HOSA Advisors should seek administrative and parental approval before allowing HOSA members to participate in this event.*
This event is intended for advanced level HOSA members who have already completed one or more courses in Medical Terminology and Anatomy & Physiology.

Official References
The below references are used in the development of the test questions

a. Bertino, A., Bertino. P. (Latest Ed) *Forensic Science Fundamentals.* National Geographic Learning/South-Western Cengage Learning.
b. Bell, S. (Latest Ed). *Forensic Science*. Taylor & Francis Group/CRC Press.

Optional References: Competitors should have a strong background in Medical Terminology, Anatomy and Physiology, and Pathophysiology in order to best respond to the round two case study. The

following resources are recommended study materials to assist competitors with these subjects. Round One test questions are NOT taken from these resources:

a. Simmers, L., Simmers-Nartker, K., Simmers-Kobelak, S, and Morris, L. *DHO: Health Science*, Cengage Learning, Latest edition.
b. Ehrlich, Ann. Medical Terminology for Health Professions, Cengage Learning. Latest *Edition.*
c. Frazier. *Essentials of Human Diseases and Conditions*. Elsevier, Latest edition.

ROUND ONE: The Test

Test Instructions: The written test will consist of 50 multiple-choice items in a maximum of 60 minutes.

The team test score average from Round One will be used to qualify the team for the Round Two case study.

Round I: Written Test Plan

The test plan for Forensic Science is:

- Forensic History and Careers - 10%
- Crime Scene and Death Investigation - 20%
- Forensic Toxicology and Pharmacology - 20%
- Forensic Anthropology - 10%
- Forensic Entomology - 10%
- Identification of Blood, Bloodstains, Biological Fluids and Stains - 10%
- Techniques of DNA Analysis - 10%
- Forensic Psychology and Psychiatry - 10%

Sample Round One Test Questions

1. What is the term for a conscious and deliberate attempt to minimize or deny symptoms of a mental disorder? (Bell pp 318)
   A. Deception
   B. Malingering
   C. Dissimulation
   D. Incompetence

2. Where are blowfly eggs usually found on a dead body? (Bell pp 122)
   A. Close to a wound or natural orifice
   B. Under any covering such as clothing, leaves, etc.
   C. On the chest or in a hairy body area
   D. Under the body close to the ground

3. When a victim drowns in freshwater, what term describes the massive destruction of RBC's? (Bertino pp 500)
   A. Pneumothorax
   B. Asphyxia
   C. Sickling of RBC's
   D. Autolysis

ROUND TWO: The Case Study

In Round Two, each team will be asked to solve the same case study. The case study is a secret problem that is not disclosed until the event begins. Professional ethics demand that competitors DO NOT discuss or reveal the secret topic until after the event has concluded. Competitors who violate this ethical standard will be penalized per the GRRs.

No pre-printed or recorded materials/notes may be brought to the competition. Competitors will be provided with index cards for taking notes. They may keep these index cards with them throughout the event. Teams must bring pencils and have the option to bring one highlighter each to the competition.

CASE STUDY ANALYSIS OPTIONS*:*

a. **There may be a physical crime scene.** If this is the case, competitors will be given six (6) minutes to view the scene and take notes prior to the written conclusion. Teams will then be given 34 minutes to write their conclusion, for a total of 40 minutes.
    i. This part of the event allows competitors to gather evidence/information about the death. There may be a written police report and/or other written information about the case. There may be physical evidence in the room for the competitors to visually analyze, including but not limited to a manikin, bones, dental x-rays, photos, or other physical evidence. There may also be a police officer, medical examiner and/or witness(es) in the room. Each team will analyze the same information/evidence, possibly at the same time, but will not be allowed to interact with anything they see or hear. Actors/personnel will not answer any questions.
b. **If the case study does not involve a crime scene or physical evidence and instead is in a written or digital format**, then competitors will be directed to a room for developing their written conclusion and will be given a total of 40 minutes.
    i. This part of the event allows competitors to gather evidence/information about the death. There may be a written police report and/or other written information about the case. A digital tool, such as Anatomage, Thinglink, etc…may also be an option used in this part of the event.

One copy of the written information will be provided per team, including the police report, autopsy, etc., if applicable. If provided, team members will be allowed to take notes on these documents and use them to help develop their written conclusion. These will be returned to event personnel at the conclusion of this event. Team members will be allowed to take notes on any provided documents and use them to help develop their written conclusion.

Competitors will identify the time of death range, immediate cause of death, manner of death, other conditions contributing to cause of death (if applicable) in addition to evidence (pertinent observations and facts) about the case that explains why teams came to the conclusions they reached. Teams will write up their conclusions following the report template below and submit this per the instructions given by event personnel.

Competitor Must Provide

- Highlighters (optional)

FORENSIC SCIENCE
Written Conclusion

This form will be provided digitally to competitors at ILC.

Section#_____ Team # _____

Division: SS _____ PSC _____

CASE STUDY OPINION

Time of Death Range: _____

Immediate Cause of Death: _____

Manner of Death: _____

Other Conditions contributing to the immediate cause of death, if applicable:

_____

_____

Evidence to support opinion:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

FORENSIC SCIENCE - ROUND TWO

Team _____ Judge's Signature _____

Items Evaluated	Excellent 10 points	Good 8 points	Average 6 points	Fair 4 points	Poor 0 points	JUDGE SCORE
1. Time of Death Range	Indicates the date and approximate time of death correctly.	N/A	Indicates a close approximation of the correct date and time of death.	N/A	Date or time is not close to the actual date or time of death or is missing altogether.	
2. Immediate Cause of Death	Accurately identifies the medical cause of death.	N/A	A partial identification of the medical cause of death is included.	N/A	The response does not reflect an accurate cause of death.	
3. Manner of Death: - Natural - Accident - Suicide - Homicide - Undetermined	Accurately identifies the manner of death as one of the five listed.	N/A	N/A	N/A	Does not accurately identify the manner of death as one of the five listed.	
4. Other Conditions, as applicable	Team includes most specific and relevant factors contributing to the death but not considered the immediate cause.	N/A	Team includes only some of the relevant factors contributing to the death but not considered the immediate cause.	N/A	Team is not able to identify contributing factors to the death.	
5. EVIDENCE - Connects Evidence to Conclusions	Writing includes numerous pieces of evidence that completely supports the conclusions with logical details, facts, or examples.	N/A	Writing includes some pieces of evidence that partially supports the conclusions.	N/A	Writing does not include any pieces of evidence to support the conclusions.	
6. EVIDENCE -Application of Knowledge	Team draws numerous accurate conclusions using their knowledge of human anatomy and physiology and forensic science	N/A	Team draws several accurate conclusions using their knowledge of human anatomy and physiology and forensic science	N/A	Team draws very few accurate conclusions using their knowledge of human anatomy and physiology and forensic science	
7. EVIDENCE - Concise, clear and logical	Physical evidence of this case was explained in a clear, concise and logical manner.	Physical evidence was explained in a way that was mostly clear, concise and logical.	The evidence was explained moderately clear, concise, and logically.	Some of the evidence was explained in a clear and logical manner.	The evidence was not explained in a clear or concise manner and information was not logical.	
Items Evaluated	**Excellent 5 points**	**Good 4 points**	**Average 3 points**	**Fair 2 points**	**Poor 0 points**	**JUDGE SCORE**
8. Neatness and Spelling	Remarks are written neatly and spelled correctly.	Most of the remarks are written neatly and spelled correctly.	Some of the remarks were written neatly and spelled correctly.	The remarks have several errors and spelling errors.	Work appears to be sloppy and many words are spelled incorrectly.	
9. Grammar and Mechanics	Errors in grammar, spelling, punctuation, and capitalization are minimal and not distracting. (0-1 errors).	Minimal errors are found (1-2 errors). They do not detract from the general flow of the written conclusion.	2-3 errors were found, and they detract from the overall flow of the written conclusion.	There are 3-4 errors which detract from the overall meaning and flow of the written conclusion.	More than five errors are found. Errors are glaring, and the written conclusion is difficult to read.	
					Total Points (80):	