

LOCALLY DEVELOPED COURSE OUTLINE

# Forensic Science Studies 25-3

Submitted By:  
Chinook's Edge School Division No. 73

Submitted On:  
Mar. 19, 2013

# Board Motion

## Motion Conclusion

## Motion Date

Apr. 3, 2013

## Motion Number

20130405022

## Motions

Resolution #20130405022 Moved By: T. James Motion that Chinook's Edge School District Board of Education approve this 3rd day of April, 2013, the following Locally Developed courses based on the attached course outlines:

Abnormal Psychology 35-3 ACQUIRED from Pembina Hills Regional Division No. 7 for use from September 1, 2013 through August 31, 2014.

Forensic Science Studies 25-3 and Forensic Science Studies 35-3 ACQUIRED from International Public Schools for use from September 1, 2013 through August 31, 2014.

History Through Film: Fact and Fiction 25-3 DEVELOPED by Chinook's Edge School District for use from September 1, 2013 through August 31, 2016.

CARRIED

## Course Basic Information

|                             |  |
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| <b>Course Name</b>          | Forensic Science Studies 25  |
| <b>Credit Number</b>        | 3  |
| <b>Hours of Instruction</b> | 62.50 hrs  |
| <b>Implementation Dates</b> | 9/1/2013 - 8/31/2014   |
| <b>Proposal Type</b>        | New  |
| <b>Development Type</b>     | Acquired   |
| <b>Designed Grade Level</b> | Grade 10<br>Grade 11<br>Grade 12   |
| <b>Course Description</b>   | Forensic science is the application of scientific principles, methods, and technologies for the purpose of solving debates including legal proceedings. Through the study of forensic science, students are given the opportunity to explore how scientific concepts from a variety of disciplines (biology, chemistry, and physics) apply specifically to this unique field. This course will promote the importance of scientific literacy and problem solving techniques. |
| <b>Course Prerequisite</b>  | SCIENCE 10<br>(MINIMUM FINAL MARK 50%)<br>- required prerequisite to Forensic Science 25   |

# Philosophy

Forensic science is the application of scientific principles, methods, and technologies for the purpose of solving debates including legal proceedings. Through the study of forensic science, students are given the opportunity to explore how scientific concepts from a variety of disciplines (biology, chemistry, and physics) apply specifically to this unique field. This course will promote the importance of scientific literacy and problem solving techniques.

Emphasis is placed on Canadian methods and legal protocols as students enhance their understanding of science and to explore this unique career area.

# Rationale

The role of Basic Education is to prepare students for further study in post-secondary programs and to enter the world of work immediately or after further study. Career development courses are created not only to compliment the academic studies but to allow students to explore and develop career awareness and specific skills related to careers.

Forensic Science 25 does allow instructional time for students to ‘explore’ careers, but it is not an ‘exploratory’ course that lacks rigor or teacher direction. Students are guided, prompted and focused by the certificated teachers providing direct instruction to students to begin to ‘upskill’ the future workforce. This does not prevent the use of guest speakers or presenters, but supports the use of community experts as part of a planned delivery of instruction.

Upon completion of Forensic Science 25, students will not only have earned high school credits reflective of the learning they have acquired, but students may additionally earn:

- career related course credits as part of the Alberta Tech Prep Credential (Career Credential)
- contributions to their Skills Portfolio

# Learner Outcomes

Introduction to Forensic Science 25 is a course in which students will be expected to:

- recognize the steps in securing a crime scene and the various types of evidence that may be collected in order to solve a crime
- identify various types of evidence that may be collected at a crime scene including procedures for identification, collection, and analysis for the purpose of investigating and prosecuting crimes
- recognize the evolving importance of DNA evidence in investigating and prosecuting crimes
- understand the techniques and principles associated with forensic document analysis in investigating and prosecuting crimes
- understand the techniques and principles associated with polygraph testing and their historical relevance and limitations in solving and prosecuting crimes
- recognize that alcohol and its effect on the human body play a major role in motor vehicle deaths and understand the legal aspects of impaired driving and blood alcohol testing
- recognize that forensic science includes a wide variety of research and career fields and understand the skills and formal training requirements of these fields.

# General Outcomes

- 1 Recognize the steps in securing a crime scene and the various types of evidence that may be collected in order to solve a crime**
- 2 Identify various types of evidence that may be collected at a crime scene including procedures for identification, collection, and analysis for the purpose of investigating and prosecuting crimes**
- 3 Recognize the evolving importance of DNA evidence in investigating and prosecuting crimes**
- 4 Understand the techniques and principles associated with forensic document analysis in investigating and prosecuting crimes**
- 5 Understand the techniques and principles associated with polygraph testing and their historical relevance and limitations in solving and prosecuting crimes**
- 6 Recognize that alcohol and its effect on the human body play a major role in motor vehicle deaths and understand the legal aspects of impaired driving and blood alcohol testing**
- 7 Recognize that forensic science includes a wide variety of research and career fields and understand the skills and formal training requirements of these fields.**
- 8 Fire investigation - Students will answer forensic problems in the area of fire investigation (and Forensic Engineering and Architecture).**
- 9 Forensic Accounting - Students will answer forensic problems in the area of fraud and determine evidence processing.**
- 10 Forensics in Technology Areas (Computer Examination, Audio & Video) - Students will answer forensic problems in technical areas of Computers, Audio and Video.**
- 11 Forensic Pathology - Students will answer forensic problems in the area of medicine, specifically regarding death.**
- 12 Forensic Anthropology - Students will forensic problems using skeleton evidence.**
- 13 Forensic Entomology - Students will answer forensic problems using the study of entomology to provide information.**
- 14 Forensic Odontology - Students will answer forensic problems using an understanding of dental information.**
- 15 Forensic Psychology and Psychiatry - Students will answer forensic problems related to the practice of forensic psychology and psychiatry.**

## Specific Learner Outcomes

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| <p><b>1 Recognize the steps in securing a crime scene and the various types of evidence that may be collected in order to solve a crime</b></p>   | <p>25-3 35-3</p> |
| <p>1.1 Understand, from a legal standpoint, the importance of properly securing a crime scene</p>   | <p>X</p>         |
| <p>1.2 Outline protocols used when a crime scene is being secured and evidence is being procured by law enforcement members.</p>  | <p>X</p>         |
| <p>1.3 Classify the various types of evidence that may be obtained at a crime scene</p>   | <p>X</p>         |
| <p>1.4 Identify the importance of taking safety precautions at a crime scene</p>  | <p>X</p>         |
| <p><b>2 Identify various types of evidence that may be collected at a crime scene including procedures for identification, collection, and analysis for the purpose of investigating and prosecuting crimes</b></p>   | <p>25-3 35-3</p> |
| <p>2.1 In the content area of Physical Evidence the student will be able to: identify various examples of physical evidence that may be found at a crime scene understand, from a legal standpoint, the importance of physical evidence from a crime scene recognize what steps are taken to identify, collect and manage physical evidence at a crime scene describe the two types of physical evidence in criminal investigations - individualized and identified recognize examples of individualized evidence and identified evidence from various crime scene examples discuss how the collection of physical evidence has changed and improved over time describe the rule of evidence concerning physical evidence analyze the use of physical evidence in legal proceedings</p> | <p>X</p>         |

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| <p>2.2 In the content area of Fingerprint Evidence the student will be able to: identify the first use of fingerprint evidence in history explain the value of fingerprint evidence in criminal investigations explain the physiological cause of fingerprints in humans describe how fingerprint evidence is specifically used by law enforcement to identify and/or to apprehend criminal suspect(s) describe the three basic types of fingerprint evidence left behind at a crime scene: visible, latent and physical classify the basic fingerprint ridge patterns that exist: ulnar loop, radial loop, double / twinned loop, plain whorl, central pocket whorl, accidental whorl, plain arch, tented arch identify specific fingerprint pattern from samples given explain how the passage of time affects the quality of fingerprint evidence understand the importance of following proper laboratory safety protocols when analyzing latent fingerprint samples describe how the lifting powder application is used to enhance and analyze latent fingerprint samples left behind at a crime scene and state the types of surfaces that lifting powders work best upon perform a laboratory experiment(s) using the lifting powder application technique to enhance and analyze various latent fingerprint samples describe how the iodine fumigation is used to enhance and analyze latent fingerprint samples left behind at a crime scene and outline the types of surfaces that the iodine fumigation technique works best upon use iodine fumigation technique in the laboratory to enhance and analyze various latent fingerprint samples describe how the cryanoacrylate/'krazy glue' fumigation is used to enhance and analyze latent fingerprint samples left behind at a crime scene outline the type(s) of surface(s) that cryanoacrylate/'krazy glue' fumigation works best upon use the cryanoacrylate/'krazy glue' fumigation technique to enhance and analyze various latent fingerprint samples in the laboratory investigate historical case studies where forensic fingerprint identification was used to successfully solve a crime and lend to conviction describe the rule of evidence concerning fingerprint evidence analyze the use of physical evidence in legal proceedings</p> | <p>X</p> |
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2.3 In the content area of Microscopic Trace Evidence - the student will be able to: state the general types of microscopic trace evidence that would likely be found at a crime scene and give examples of each (e.g. identified, individualized, organic, inorganic) understand how the process of microscopic analysis of organic & inorganic evidence is conducted by forensic scientists outline protocols for the collection of trace evidence at a crime scene and the limitations and benefits of such evidence in investigating and prosecuting crimes describe the basic types of microscopic organic substances that would likely be found useful at a crime scene (e.g. hair, blood, semen, bone, skin) describe various types of microscopic inorganic substances that would be found useful at a crime scene (e.g. carpet, clothing fibers, glass, sand, dirt) Observe, classify, and attempt to identify microscopic samples of various types of mock organic and inorganic crime scene evidence explain the value of microscopic hair sample evidence in placing a person at a crime scene while understanding the legal limitations of using such evidence in prosecuting crimes describe the general macroscopic and microscopic differences in hair samples from various parts of the human body (e.g. head, beard, eyebrow, leg/arm, pubic) explain how a color-treated hair strand will look microscopically different from untreated hair strand discuss what the potential value would be to forensic experts if a color-treated hair strand(s) and/or a untreated hair strand(s) was found at a crime scene outline the microscopic variations in the root of a hair that has been forcibly removed vs. fallen out naturally discuss what the potential value would be to forensic experts if a been forcibly removed hair strand(s) and/or a naturally fallen out hair strand(s) was found at a crime scene outline the microscopic variations in the tip of a hair that has been recently cut vs. not recently been cut discuss what the potential value would be to forensic experts if a been recently cut hair strand(s) and/or a not recently cut hair strand(s) was found at a crime scene state the unique microscopic features of tips of hair that have been exposed to flames or high heat discuss what the potential value would be to forensic experts if a hair strand(s) that has been exposed to flames or high heat was found at a crime scene identify the microscopic and macroscopic differences between hair roots of humans, dogs, cats compare the microscopic differences of various types of hair cuticles/shafts (human, dog, cat) indicate the origin and unique microscopic features of various hair medulla index patterns (e.g. fragmented amorphous, continuous morphous, multiserial, lattice, vacuolated, uniserial) discuss the potential value to forensic

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| <p>scientists that an animal hair sample (e.g. from a dog, cat, deer, cow, rabbit) found at a crime scene may offer analyze various types of hair/fur samples from a mock crime scene and attempt to identify the origin of the samples describe the rule of evidence concerning microscopic trace evidence analyze the use of physical evidence in legal proceedings</p> <p>2.4 In the content area of Body Fluid Evidence - the student will be able to: outline the main types of body fluid evidence that forensic science investigators would find useful at a crime scene (e.g. blood, semen, skin, saliva, tears, mucous) understand that DNA analysis of body fluid evidence is not done in all criminal investigations and thus other analysis techniques must also be used; discuss reasons for this explain the forensic significance an individual being a 'secretor' identify the basic components of human blood (e.g. plasma, erythrocytes/red blood cells, leucocytes/white blood cells, platelets/thrombocytes) and explain which component(s) forensic science investigators would find most useful to analyze. describe the differences between the four basic blood human types perform an experiment to identify basic blood types using various simulated blood samples identify the major microscopic difference between simulated human red blood cells and animal red blood cells explain the use of phenolphthalein and luminol by forensic scientists to identify latent blood evidence explore the valuable information that can be inferred from various types of blood stain/spatter evidence left at a crime scene compare and contract the distinct pattern that free-falling blood will leave behind from various heights (simulated) compare and contrast the distinct patterns left behind when a fresh or partially dried blood is smeared (simulated) explain how various forces (e.g. different velocities, angles) applied to an exposed source of blood will result in distinct blood spatter patterns relate historical case studies where blood stain and/or spatter evidence was used to successfully solve a crime and convict the perpetrator(s) outline the collection and use of semen evidence in sex related crimes and describe two types of tests that are performed to confirm the presence of semen (e.g. microscopy, fast blue B) explain how body fluid evidence is collected describe the rule of evidence concerning body fluid evidence analyze the use of physical evidence in legal proceedings</p> | <p>X</p> |
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| <p><b>3 Recognize the evolving importance of DNA evidence in investigating and prosecuting crimes</b></p> | <p>25-3 35-3</p> |
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| 3.1 Indicate the first use of DNA print evidence in history   | X |
| 3.2 Explain the value of DNA print evidence in criminal investigations  | X |
| 3.3 Understand the basic molecular structure and function of the DNA molecule   | X |
| 3.4 Outline the significance of Variable Number Tandem Repeat (VNTR) patterns within a DNA sample   | X |
| 3.5 Describe how mitochondrial DNA can be used to identify unknown human remains  | X |
| 3.6 Explain why Nuclear DNA is used to identify criminal suspect(s) rather than mitochondrial DNA   | X |
| 3.7 Describe the basic steps involved a DNA print analysis technique  | X |
| 3.8 Outline new techniques and technologies that have resulted in changes to the sample sizes required in order to detect and analaze DNA evidence                | X |
| 3.9 Differentiate between Restrictive Fragment Length Polymorphism (RFLP) and Polymerase Chain Reaction (PCR) DNA print analysis techniques                       | X |
| 3.10 Explain why criminal DNA print evidence is supported by population frequency values  | X |
| 3.11 Identify and compare various samples of nuclear DNA prints (mock or authentic)   | X |
| 3.12 Discuss the possible value of a comprehensive national or global DNA data bank and propose the positive and negative implications of having such a data bank | X |
| 3.13 Outline the legal proceedings required to have a person's DNA stored in Canada's DNA data bank   | X |
| 3.14 Relate the use of DNA print evidence to the investigation and prosecution of historical crime case studies   | X |
| 3.15 Describe the rule of evidence concerning DNA print evidence  | X |
| 3.16 Analyze the use of physical evidence in legal proceedings  | X |

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| <b>4 Understand the techniques and principles associated with forensic document analysis in investigating and prosecuting crimes</b>  | 25-3 35-3 |
| 4.1 Outline the types of crimes that would most likely involve forensic document analysis   | X         |
| 4.2 Understand that forensic document analysis is a broad field that involves various scientific techniques (ie. handwriting analysis/graphology, typescript analysis, ink analysis/chromatography, paper analysis, statement analysis/profiling) | X         |
| 4.3 Describe how acquisition of slope, size of letters, and letter design can help to identify the suspect responsible for an unknown handwriting sample  | X         |
| 4.4 Analyze and attempt to identify various handwriting samples from a mock crime scene based upon the acquisition of slope, size of letters, and letter design   | X         |
| 4.5 Understand how statement analysis and profiling attempts to outline behavioral characteristics of a suspect based upon his/her handwriting sample   | X         |
| 4.6 Explain the process of ink analysis through chromatography and understand that every ink sample creates a unique chromatographic pattern according to their specific molecular structure  | X         |
| 4.7 Relate the use of forensic document analysis to a historical criminal case (e.g. Lindbergh kidnapping, Unabomber, JonBenet Ramsey, Jack the Ripper, Son of Sam, Zodiac Killer, Anthrax letters, Washington sniper shootings)                  | X         |
| 4.8 Describe the rule of evidence concerning document analysis evidence   | X         |
| 4.9 Analyze the use of physical evidence in legal proceedings   | X         |

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| <b>5 Understand the techniques and principles associated with polygraph testing and their historical relevance and limitations in solving and prosecuting crimes</b> | 25-3 35-3 |
| 5.1 State when and by whom the polygraph testing device was invented   | X         |
| 5.2 Explain the role that polygraph testing plays in criminal investigations   | X         |

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| 5.3 Outline the types of circumstances in which the polygraph test may be used   | X |
| 5.4 Explain how the polygraph testing device works and describe how a polygraph test is performed by a forensic examiner               | X |
| 5.5 State some of the major physiological signs of stress triggered by the sympathetic nervous system that the polygraph test analyzes | X |
| 5.6 Outline when polygraph testing is useful and when it is not  | X |
| 5.7 Discuss the accuracy of the polygraph test and admissibility in a court of law   | X |
| 5.8 Relate the use of polygraph testing to a historical crime scene case   | X |

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| <b>6 Recognize that alcohol and its effect on the human body play a major role in motor vehicle deaths and understand the legal aspects of impaired driving and blood alcohol testing</b> | <b>25-3 35-3</b> |
| 6.1 Understand that alcohol is a natural chemical compound produced by micro-organisms during the anaerobic process of fermentation   | X                |
| 6.2 Describe the route alcohol follows through the human body before it is absorbed   | X                |
| 6.3 Outline how alcohol consumption can adversely affect various parts of the human body (e.g. stomach, intestines, liver, skin, muscles)   | X                |
| 6.4 Describe how specific regions of the human brain (e.g. cerebrum, cerebellum, hypothalamus, pituitary gland, medulla oblongata) are physiologically affected by alcohol consumption    | X                |
| 6.5 Explain how a continuous increase in Blood Alcohol Content (BAC) corresponds to predictable physiological and behavioral changes in the human body                                    | X                |
| 6.6 Identify the major physiological and behavioral changes in the human body when exposed to increasing amounts of alcohol   | X                |
| 6.7 Outline the effects that alcohol consumption can have upon one's ability to operate a motor vehicle   | X                |

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| 6.8 State the specific BAC that defines a person as intoxicated under the law and guilty of impaired driving   | X |
| 6.9 Explain how various alcohol testing devices (i.e. Breathalyzer, Intoxilyzer, Alcosensor) are used by law enforcement officers to measure an individual's BAC and the limitations | X |
| 6.10 Outline the legal consequences of being charged and/or convicted with impaired driving  | X |
| 6.11 Compare the legal standard of impaired driving (level of BAC) varies between Canada and other countries around the world  | X |
| 6.12 Research and compare the rates of impaired driving charges among various age groups, gender and/or across various parts of Canada   | X |

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| <b>7 Recognize that forensic science includes a wide variety of research and career fields and understand the skills and formal training requirements of these fields.</b>        | <b>25-3 35-3</b> |
| 7.1 Identify a variety of specific career fields related to forensic science and law enforcement and that an individual cannot be an expert in all areas                          | X                |
| 7.2 Outline the job description and requirements of a specific career(s) related to forensic science  | X                |
| 7.3 Understand the requirements for acceptance as a police recruit and for possible careers in the forensic investigation unit within the police service                          | X                |
| 7.4 Recognize the need for post-secondary training for a career related to forensic science   | X                |
| 7.5 Identify various post-secondary programs related to forensic science and institutions where these programs are offered  | X                |
| 7.6 Describe the "CSI effect" that has occurred for Canadian jurors expecting court trials to be the same as fictional television (e.g., witness evidence has less believability) | X                |

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| <b>8 Fire investigation - Students will answer forensic problems in the area of fire investigation (and Forensic Engineering and Architecture).</b> | <b>25-3 35-3</b> |
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| 8.1 The student will classify sources of fire   | X |
| 8.2 The student will describe various methods for arson investigation                                 | X |
| 8.3 The student will identify the criminal charges of arson   | X |
| 8.4 The student will describe various types of bombs and explain the likely damage of each type       | X |
| 8.5 The student will describe careers within this area of study and possible paths to enter the field | X |

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| <b>9 Forensic Accounting - Students will answer forensic problems in the area of fraud and determine evidence processing.</b>  | <b>25-3 35-3</b> |
| 9.1 The student will describe economic crime   | X                |
| 9.2 The student will describe proper manner in which allegations of fraud should be investigated to meet the requirements of civil/criminal court procedures   | X                |
| 9.3 The student will list the procedures that can be implemented to deter fraud  | X                |
| 9.4 The student will describe the details of each step to process evidence (release property as appropriate, deliver evidence for laboratory analysis, package for shipping, prepare cleared property, destroy cleared property) | X                |
| 9.5 The student will describe careers within this area of study and possible paths to enter the field  | X                |

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| <b>10 Forensics in Technology Areas (Computer Examination, Audio &amp; Video) - Students will answer forensic problems in technical areas of Computers, Audio and Video.</b> | <b>25-3 35-3</b> |
| 10.1 The student will identify prosecutable computer crimes  | X                |
| 10.2 The student will describe mitigative measure to protect the IT infrastructure   | X                |
| 10.3 The student will describe the elements of speech compared in a t-f-a spectrographic (voiceprint) to lead to voice identification  | X                |
| 10.4 The student will compare the acceptability of voice identification evidence   | X                |

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| 10.5 The student will describe audio (and/or video) enhancement technique to improve listenability of a sound source. (Intelligibility enhancement beyond the scope of this course.) | X |
| 10.6 The student will identify unknown sound using original recording device   | X |
| 10.7 The student will develop a scientific work flow involving the analysis of video evidence, criminal case reporting and courtroom presentation                                    | X |
| 10.8 The student will describe careers within this area of study and possible paths to enter the field   | X |

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| <b>11 Forensic Pathology - Students will answer forensic problems in the area of medicine, specifically regarding death.</b> | <b>25-3 35-3</b> |
| 11.1 The student will describe disease as a cause of death   | X                |
| 11.2 The student will identify changes in the appearance of the face and body after death                                    | X                |
| 11.3 The student will identify roles and differences of coroner and medical examiner with specifics from Alberta and Canada  | X                |
| 11.4 The student will describe careers within this area of study and possible paths to enter the field                       | X                |

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| <b>12 Forensic Anthropology - Students will forensic problems using skeleton evidence.</b>               | <b>25-3 35-3</b> |
| 12.1 The student will describe difference between human and animal skeleton systems                      | X                |
| 12.2 The student will identify measurable traits of skeleton that can aid in identification              | X                |
| 12.3 The student will interpret skeleton traits to respond to a question, e.g. lifestyle of the homeless | X                |
| 12.4 The student will describe careers within this area of study and possible paths to enter the field   | X                |

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| <b>13 Forensic Entomology - Students will answer forensic problems using the study of entomology to provide information.</b> | <b>25-3 35-3</b> |
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| 13.1 The student will describe how the impact of insects can assist to determine age of carrion        | X |
| 13.2 The student will identify insects unique and common to specific environments or locations         | X |
| 13.3 The student will describe careers within this area of study and possible paths to enter the field | X |

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| <b>14 Forensic Odontology - Students will answer forensic problems using an understanding of dental information.</b> | <b>25-3 35-3</b> |
| 14.1 The student will identify uses of dental examination  | X                |
| 14.2 The student will illustrate the use of bite marks for identification  | X                |
| 14.3 The student will describe careers within this area of study and possible paths to enter the field               | X                |

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| <b>15 Forensic Psychology and Psychiatry - Students will answer forensic problems related to the practice of forensic psychology and psychiatry.</b>             | <b>25-3 35-3</b> |
| 15.1 The student will describe profiling   | X                |
| 15.2 The student will identify uses of geographic profiling  | X                |
| 15.3 The student will assess trial competency (case study)   | X                |
| 15.4 The student will describe the role of a Forensic Psychologist in a court-appointed monitoring of compliance with mental health or criminal justice settings | X                |
| 15.5 The student will describe careers within this area of study and possible paths to enter the field   | X                |

## Facilities or Equipment

### Facility

There are no special facilities or spaces required to teach this course.

## **Equipment**

There is no special equipment recommended or required to teach this course.

## **Learning Resources**

Teachers are required to investigate and utilize resources based on their training and experience in the field.

## **Others**

### **Identification of Controversial or Sensitive Course Content**

It is expected that all issues and texts that may be controversial or sensitive be discussed with the school administration prior to their coverage in class.

### **Identification of Safety Components**

All Chinook's Edge School Division No. 73 procedures will be followed if students are taken off campus (re: planning, parental permission, risk assessment, etc.).

Chinook's Edge School Division No. 73 Administrative Procedure 2-09 *Field Trips and Excursions*.

## Significant Overlap with Provincial Curriculum

There is a small amount of overlap between this course and other science courses. The curriculum however is of a spiral nature because it is covered in much greater detail in Forensic Science 25. Currently the topic of Forensic Science is covered in the grade 6 curriculum. Areas of overlap include the following:

Fingerprint Analysis: Currently this topic exists in the grade six curriculum, however this topic in Forensic Science 25 is covered in greater detail. For example, students in Forensic Science 25 must know 8 distinct fingerprint patterns, while students in grade six generally use 4. Also, in Forensic Science 25 the enhancement of latent fingerprints is analyzed in detail through three types of chemical analysis, while in grade 6 they are only using powder.

Document Analysis: Grade 6 students are required to analyze ink and handwriting samples. Forensic Science 25 students will cover this in greater detail (eg. students will be required to understand molecularly why chromatography works) and further develop their problem solving skills using more difficult cases.

There are areas of overlap with Biology 20 and 30. These areas are:

Body Fluid Evidence: One area of this unit, blood typing, can be addressed in Biology 20 (note that blood typing is *not* listed as required objective but is often covered when teaching blood components or immunity). However, this topic is necessary in Forensic Science 25 because not all students have taken Biology 20 and must have this relevant background information before they can comprehend the material in this unit. This topic is fundamental in this unit as some crime scene investigations still utilize this technique.

Forensic Genetics: In order to cover this topic properly a basic understanding of DNA is required. This does overlap with this Biology 30 curriculum however, this topic is necessary in Forensic Science 25 because not all students have taken Biology 30 and must have this relevant background information before they can comprehend the material in this unit. The DNA fingerprint comparison techniques are also discussed in Biology 30 (ex. PCR) but again generally not in as much detail as would be required in Forensic Science 25 course.

# Assessment

Assessment tools will include assignment such as worksheets, laboratory experiments, library/internet research assignments, group mystery projects, and the exploration of case study examples.

Students will be assessed and evaluated through a variety of forms such as...

## **Suggested daily in-class assignments (recommended emphasis 65**

### **- 70%)**

- Worksheets
- Internet research assignments
- Presentations
- Library research projects
- Case studies
- Group & individual projects
- Laboratory experiments
- Quizzes and Exams

## **Suggested Final Assessment (recommended emphasis 30 - 35%)**

- instructor created cumulative mystery lab
- student created mystery lab
- critique of forensic science methods in a movie

## Course Evaluation and Monitoring

The Associate Superintendent, Learning Services, in collaboration with the school Principal, will evaluate and monitor the course(s) to ensure that all requirements (by Alberta Education, by the developing school board, and by Chinook's Edge School Division No. 73) are met. The school Principal will supervise the course implementation at the school level.

Course pre-requisites, copyright privileges, and conditions listed by the developing board will be adhered to.

## Appendix I

# Appendix II

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