San Bernardino Valley College
Curriculum Approved: October 20, 2003
Last Updated: October 2003

I. CATALOG DESCRIPTION:

A. Department Information

Division:	Criminal Justice
Department:	Police Science
Course Number:	CRMJUS 090
Course Title:	Bloodstain Pattern Analysis
Prerequisites:	CRMJUS 088 and MATH 093 or MATH 103 or equivalent
Lecture:	24 Hours
Lab:	30 Hours
Units:	2.0 Per semester

B. Catalog and Schedule Description:
This course is designed to be an advanced level course for those persons considering a career in Forensic Sciences or Criminalistics. Lecture topics include the physical properties of blood, the dynamics of blood in flight, mathematical principles relating to bloodstain pattern interpretation and what this information can tell you about the crime that took place.

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOME FOR STUDENTS:

Upon successful completion of the course the student should be able to:

A. Calculate distance between the target surface and the origin of the blood at the time of bloodshed.
B. Determine the point(s) of origin of blood.
C. Describe the type of impact that caused the questioned stains.
D. Appraise the direction of the impact that caused the questioned stains.
E. Distinguish movement and directionality of persons and/or objects while they were shedding blood.
F. Examine number of blows, shots, etc.
G. Evaluate the position of the victim(s) and/or objects during bloodshed
H. Measure the movements of the victim and/or objects after bloodshed begins.
I. Organize notes, sketches and photographs to document all aspects of bloodstain analysis.
J. Prepare clear and concise written reports of their analysis.
K. Testify on their analysis in a professional and articulate manner.
L. Propose to “educate the jury” on this discipline in order to make their testimony easily understandable.

IV. CONTENT:

A. History of Bloodstain Interpretation
B. Definitions
   1. Low energy
   2. Impact spatter
   3. Satellite
   4. Misting
   5. Diluted
   6. Arterial and arteriole
   7. Venous and capillary
   8. Skeletonization
   9. Wipes and swipes
   10. Contact
   11. Void

12. Cast-off
13. Projected
14. Blood dripping into blood

C. Definition exercises
D. Interpreting Bloodstain patterns
   1. Physical properties of blood
      a) Liquid properties
         i. flows, has movement
         ii. affected by gravity
         iii. surface tension
         iv. cohesion, adhesion, absorption
         v. spreads to fill available space
         vi. viscosity
      b) Forward motion
         i. continues forward until stopped by opposing force
         ii. forwards speed stays constant
      c) Every action has equal and opposite reaction
         i. satellite spatter
         ii. blood dripping into blood
         iii. blow back spatter
      d) Blood components
         i. formed elements
         ii. plasma
      e) Response to breached circulatory system
      f) Blood in flight
         i. spherical shape
         ii. oscillation
         iii. contact/collapse
         iv. displacement
         v. dispersions
         vi. retraction
   2. Stain shape and Impact angle relationship
   3. Determining motion and directionality
      a) General sequence of events
      b) Droplet directionality
      c) Pattern directionality
      d) Repetitive patterns
   4. Point of origin
      a) Point of convergence
      b) Angle of impact
         i. choosing stains for calculations
         ii. stain measurement
         iii. right angle triangles
         iv. graphing
         v. stringing
         vi. limitations
E. Reconstruction exercises
F. Documenting bloodstains
   1. Identifying / separating patterns
      a) Grid lines
      b) Observation numbers
      c) Colored dots & Arrows
   2. Photography
   3. Sketching
G. Collecting blood

1. Locating
2. Identifying
3. Sample collection
4. Comparison standards
5. Analysis

H. Reports
1. Overview
2. Photographs
3. Interpretation
   a) Define all technical terms
   b) Only standard abbreviations
   c) Relate each pattern to previously described
   d) Include all measurements
   e) Use complete sentences
   f) Use proper grammar
   g) List all photographs that depict described observation
   h) List item number of stain collected
   i) Conclusion

I. Courtroom presentation
1. Educating the jury
2. Practical demonstrations
3. Power-point presentations
4. Testimony
   a) Technical questions
   b) Know your trig
5. Know your physics
6. Know your biology
7. Hypothetical questions
8. Simple terminology

V. METHODS OF INSTRUCTION:

A. Lecture
B. Discussion
C. Visual presentations
D. Demonstration
E. Hands-on exercises
F. Practical exercises

VI. TYPICAL ASSIGNMENTS:

A. Lecture
B. Reading
C. Class and Group Discussions of Significant Issues and Topics
D. Hands-on exercises, such as:
1. Proper collection of bloodstain evidence
2. Pattern reconstruction
3. Point of origin determination
4. Sequence of events determination
5. Mock crime scene processing
6. Report writing
7. Create court displays / demonstrations

VII. EVALUATION(S):

A. Methods of Evaluation
1. Feedback/Discussions
2. Practical exercises after each subject taught
3. Midterm examination, multiple choice and true/false

4. Final examination, multiple choice and true/false
5. Final examination, mock crime scene
6. Final examination, mock court

B. Frequency of Evaluation
1. Feedback and discussion throughout course as deemed necessary
2. Practical exercises after each subject is taught
3. Examinations as outlined above

C. Typical Exam Questions:
1. Bloodstains always “point”:
   a) To their destination
   b) To their origin
   c) Randomly
   d) Towards the suspects position
2. Cast-off stains always occur in a beating assault
   a) True
   b) False

VIII. TYPICAL TEXT(S):

Current text(s) and/or handouts provided by instructor as approved by P.O.S.T. and San Bernardino Valley College.

IX. OTHER SUPPLIES REQUIRED BY STUDENTS:

35mm camera