

METROPOLITAN STATE COLLEGE of DENVER
Office of Academic Affairs
NEW SYLLABUS 3710

REGULAR COURSE SYLLABUS

School of: Letters, Arts & Sciences

Department: Chemistry

CIP Code: 40.0502

Prefix & Course Number: CHE 3710

Crosslisted With*: _____

Course Title: Criminalistics II

Check All That Apply: Required for Major: _____ Required for Minor: _____ Specified

Elective: _____

Required for Concentration: Elective: _____ Service Course: _____

Credit Hours: 4 (3+3)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 45 Lab 45 Internship _____ Practicum _____ Other (please specify type and hours):

Schedule Type(s): B Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

** NOTE: This information must be included in the course description.

Restrictions (Variable Topics Course): None

Prerequisite(s): CHE 3700

Corequisite(s): None

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s):

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Catalog Course Description:

This course is a continuation of CHE 3700 that focuses on forensic biology, DNA analysis, and hair analysis. The development of oral and written communication skills is emphasized.

APPROVED:

Department Chair OR Program Director

Dean OR Associate Dean

Associate VP, Academic Affairs

Charles G. Tondall
Date 1/29/07

Dal Ramsey
Date 1/31/07

Quida S. Curran
Date 2/20/07

Date

Prefix and Course Number: CHE 3710

Required Reading and Other Materials will be equivalent to:

Forensic DNA Typing, 2nd Edition, Butler, J. M., Elsevier 2005.

Forensic Science Handbook, Vol. I., 2nd Edition, Saferstein, R., Pearson/Prentice Hall 2002.

Specific, Measurable Student Behavioral Learning Objectives:

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

1. describe the analysis of hair, including species, race and somatic origin, and discuss the assignment of weight to the analysis.
2. describe the chemistry, biochemistry, and molecular biology of DNA as it applies to individualization of forensic samples.
3. describe and diagram the polymerase chain reaction.
4. describe at least one method of sequencing DNA.
5. describe the basis of Short Tandem Repeat analysis.
6. perform a peroxidase test.
7. perform an acid phosphatase test.
8. identify blood using a microcrystal test.
9. calculate a frequency of occurrence from a DNA profile.
10. identify semen by P-30 and microscopic methods.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

- I. Hair analysis
 - A. Structure of hair
 - B. Species determination
 - C. Racial origin
 - D. Somatic origin
 - E. Comparison
 - F. Assignment of weight to comparison (a literature study and discussion)
- II. Forensic biology
 - A. History
 - B. Identification of body fluids
 - 1) Blood
 - 2) Semen
 - 3) Saliva
 - 4) Others
 - C. Species determination of body fluids
 - D. Individualization of body fluids
 - 1) Immunochemistry
 - 2) Protein/enzyme polymorphism
 - 3) DNA polymorphism
 - a) restriction fragment length polymorphism (RFLP)
 - b) polymerase chain reaction based methods
 1. single nucleotide substitutions
 2. short tandem repeats
 3. sequencing
 4. mitochondrial DNA analysis

Evaluation of Student Performance

At least one 75 minute mid-term evaluation and a 120 minute final examination will be given. Quizzes may be used. Several laboratory projects must be completed and detailed reports written.

A research paper and oral presentation may also be required.