

Custody of Forensic DNA

Syllabus

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Course Title:

Custody of Forensic DNA.

The course will provide one semester credit hour and is offered online.

Instructors:

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Office Hours :

We will be available daily from 4:00-7:00 pm. We will respond to your E-mail during these hours.

Course Description:

The goal of “Custody of Forensic DNA” course is to provide students with following topics:

1. Overview of DNA, Biology and Typing: (3 lectures)

This will introduce and describe the following key concepts: DNA structure, DNA function, base pairing, chromosomes, genes, DNA markers, DNA polymorphism. In addition the course will give a general idea about the scientific basics, history of DNA typing, and its use in human identification. The course reviews the different methods of DNA typing, the DNA sample processing. Degraded DNA, PCR inhibitors, mixed sample and low copy number.

2. Unique Handling and Custody of Forensic DNA Samples: (4 lectures)

This subject will define the term of "chain of custody", and why the chain of custody is important for litigation and regulatory agencies to be able to prove the legal integrity of all samples and data introduced as evidence. Also, the course will describe the chain of custody procedures such as sampling preparation, sample collection, sample transport, sample receiving by lab- sample custodian, sample analysis, sample archiving, and sample–data recordkeeping. In addition, the course will cover issues of quality assurance and quality control.

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3. Identification of Samples such as Biological Fluids (Blood, Semen, and Salvia): (5 lectures)

Basic forensic serology, the serological concept such as definition of antigens and antibodies, explanation of the strength of antigen-antibody binding and antigen- antibody binding reaction will be discussed. Also, the different serology techniques will be explained. In addition this course describes the biological characteristics and presumptive test for some samples such as blood, semen and saliva.

4. Application of Forensic DNA: (3 lectures)

Three to five case studies will be discussed and each student will make a summary and draw conclusions for each case will pose five questions for discuss by all learners. All students will be expected to participate in the Blackboard Discussion of these questions.

This course will benefit students of Criminal Justice, Forensic Science, Genetics, Biology, Microbiology, Entomology, and Anthropology. This course also will benefit the forensic professionals working at state, local, and ethnic agencies who are involved in the collection, transfer, analysis, storage, and disposal of samples and data and a broad audience of adult learners. This course has no prerequisites.

Course Objectives:

DNA typing is probably one of the most important advances in forensic science in recent years. DNA evidence collected from a crime scene can implicate or eliminate a suspect; similar to the use of fingerprints. Only 0.1% of DNA (about 3 million bases) differs from one person to the next. Scientists can use these variable regions to generate a DNA profile of an individual, using samples from blood, bone, hair, and other body tissues and products.

The most important aspect of forensic DNA typing is maintaining the chain of custody. Chain of custody refers to the time course in which evidence was handled and includes every person who handled the evidence. It is strictly defined as the movement and location of real evidence from the time it is obtained to the time it is presented in court. However, a chain of custody is the documentation and testimony that proves that the evidence has not been altered or tampered with in any way since it was obtained. This is necessary both to assure its admissibility in a judicial proceeding and its probative value in any preceding investigation. All persons in the chain of custody must be prepared to testify in court to validate the integrity of the evidence. If the chain of custody is broken in any way, the evidence will be excluded from court testimony.

The goals of this course are to provide students with the ability to understand and identify the proper procedures for documenting the possession or custody of samples and data, and to recognize the importance of establishing and maintaining correct chain-of-custody procedures when handling samples and data.

Also, the aim of this course is to provide the students with basic knowledge of forensic biology and serology that is needed to understand the forensic DNA typing tests and the identification tests of biological fluids such as blood, salvia and semen.

In addition three to five case studies will be discuss through this course to provide the student with the ability to understanding and evaluation the significant of chain of custody or some actual DNA typing tests.

Textbooks:

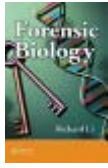
We recommend two textbooks or use in this course. These texts are listed below. Much of the information for the power point presentations are taken from the textbooks and are the intellectual property of the authors, Information contained in the power points lectures may

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be used for educational purposes only. Any errors in information contained in the lectures are the responsibility of the instructors, and not the authors of the textbooks. The books that will be used in this course are:

1- Forensic Biology: Identification and DNA Analysis of Biological Evidence



Author: Richard Li

Publisher: CRS Press Taylor& Francis 2008

[http:// www.taylorandfrancis.com](http://www.taylorandfrancis.com)

<http://www.crcpress.com>

ISBN 1420043439, 9781420043433

2- DNA: forensic and legal applications



Authors: Lawrence F. Kobilinsky, Thomas F. Liotti, Jamel Oeser-Sweat.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

3- Other materials will be sourced from several online sites.

Technical Requirements:

The requirements for successful completion of this course are as following:

- A basic understanding of the internet and how to access its resources.
- A valid e-mail address and familiarity with sending and receiving e-mail.
- You must also know or learn how to use Blackboard Courseware.

The Blackboard website offers tutorials for those who are not familiar with the program.

The location of assignments and course material will always be posted in the announcements section and an e-mail sent to all students.

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Course content and Grading:

This is one credit course consists of 3 lectures per week for five weeks , two hours exams, and case discussions. Topics will be suggested for the research paper, or students may choose their own. Due dates for assignments will be posted, and work posted after the due dates will not be graded unless you have contacted the instructor and received permission for a late submission of the assignments. Assignments will be submitted via Blackboard. Participation in the discussions is required and will be graded. Discussion posts must exhibit some thought about the topic. A simple “I agree” or similar responses will receive no points. The Discussion Board should be used only for your topic discussions. A social room will also be supplied. Exams will consist of multiple choice, true or false, matching questions and definitions. Questions will be taken from the lectures. Format and grading criteria for the term paper will be posted.

Points:

2 Hourly Exams (100 points each) -----	200
Case studies discussion-----	100
Weekly discussion/participation-----	100
Weekly assignments-----	100
Total points -----	500

Letter grades will be assigned based on points earned in the course in accordance with the University of Nebraska’s grading policy. For more information visit the website on the grading policy at: <http://www.unl.edu/regrec/acadserv/handbookframes.htm> and click on “grade system” in the index.

Exams will consist of multiple choice, true or false, matching questions, definitions and short essay questions. Questions will be taken from the lectures. Graduate level exams may include additional questions.

Format and grading criteria for the term paper will be posted. Graduate and undergraduate requirements will be separate.

Grading Scale

Graduate Students

98-100 = A+	85-89 = B+	74-76 = C+	64-66 = D+
94-97 = A	80-84 = B	70-73 = C	60-63 = D
90-93 = A-	77-79 = B-	67-69 = C-	57-59 = D-

56 and below = F

Undergraduate Students

96-100 = A+	81-85 = B+	68-72 = C+	56-59 = D+
91-95 = A	77-80 = B	64-67 = C	52-55 = D
86-90 = A-	73-76 = B-	60-63 = C-	48-51 = D-

47 and below = F

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Policy on Timely Submission of Exams and Assignments:

To benefit and make the most out of the course, turn in exams and other assignments on time. Late submission of exams and assigned work will result in the loss of points which will affect your final course grades. In case of circumstances which prevent students/participants from turning in an assignment or exam on time, it is suggested that you inform the course instructor(s) ahead of time or as soon as circumstances are known.

Academic Dishonesty:

Students are expected to conduct themselves with honesty and integrity. Please review the student code of conduct at www.unl.edu/sja/Student-Record-Policy.pdf and UNL's policy on academic integrity and academic dishonesty at www.unl.edu/UFP/acadinte.htm.

Take Interest, Be Focused and Enjoy the Course

John E. Foster and Samira S. ELShall