Term Information

Effective Term	Autumn 2014
Previous Value	*Summer 2012*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

The Department of Anthropology requests that "Introduction to Forensic Sciences"

(3211) serve as a General Education (GE) Biological Science course within the Natural

Sciences category.

What is the rationale for the proposed change(s)?

Based upon our understanding of the expected learning outcomes for such courses, we believe that Introduction to Forensic Sciences is especially appropriate for inclusion as a GE elective in the Biological Sciences category. This course offers students a survey of forensic sciences, a field that includes a broad range of scientific disciplines as applied in the medico-legal system. This course also highlights the interdisciplinary nature the biological sciences, and their interdependence with other sciences, including the Natural, Mathematical, and Physical sciences.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

N/A

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Anthropology
Fiscal Unit/Academic Org	Anthropology - D0711
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	3211
Course Title	Introduction to Forensic Science
Transcript Abbreviation	Intro to Forensics
Course Description	This team-taught interdisciplinary course will give students an introduction to the major concepts, issues and techniques used in forensic science. It is designed to expose students to different disciplines and career paths within forensic science.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No

Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	
Exclusions	Not open to students with credit for 211.

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	45.0202
Subsidy Level	Baccalaureate Course
Intended Rank	Freshman, Sophomore, Junior, Senior

Quarters to Semesters

Quarters to Semesters	Semester equivalent of a quarter course (e.g., a 5 credit hour course under quarters which becomes a 3 credit hour course under semesters)
List the number and title of current course being converted	ArtsSci 211: Introduction to Forensic Science.

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors
General Education course:
Biological Science

Previous Value

Required for this unit's degrees, majors, and/or minors

Course Details

Course goals or learning objectives/outcomes

- Comprehend the breadth of the field of forensic science
- Exhibit a basic knowledge of the methods & measures used in forensics
- Identify the social factors that impact forensic science
- Categorize types of evidence

Content Topic List

- Forensic techniques
- Forensic evidence in the courtroom
- Collection and analyses of crime scene evidence

Attachments

- Anth 3211 Cover Letter.pdf: Cover Letter

  (Cover Letter. Owner: Freeman,Elizabeth A.)

- Email Exchange ANTH3211.docx: Email Exchange

  (Concurrence. Owner: Freeman,Elizabeth A.)

- ANTH3211_Syllabus_GE.docx: Syllabus

  (Syllabus. Owner: Freeman,Elizabeth A.)

- ANT 3211 - Natural Science GE Anthropology proposal.docx: GE Rational

  (GEC Course Assessment Plan. Owner: Freeman,Elizabeth A.)

Comments

- Concurrence was requested but the party contacted did not respond- see attached email. *(by Freeman,Elizabeth A. on 04/08/2014 10:11 AM)*
- See 9-24-13 e-mail to E. Freeman. *(by Vankeerbergen,Bernadette Chantal on 09/24/2013 02:41 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Freeman,Elizabeth A.	05/16/2013 03:47 PM	Submitted for Approval
Approved	McGraw,William Scott	05/16/2013 03:48 PM	Unit Approval
Approved	Haddad,Deborah Moore	05/16/2013 04:48 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	09/24/2013 02:42 PM	ASCCAO Approval
Submitted	Freeman,Elizabeth A.	04/08/2014 10:12 AM	Submitted for Approval
Approved	McGraw,William Scott	04/08/2014 10:13 AM	Unit Approval
Approved	Haddad,Deborah Moore	04/08/2014 11:03 AM	College Approval
Pending Approval	Vankeerbergen,Bernadette Chantal Nolen,Dawn Jenkins,Mary Ellen Bigler Hogle,Danielle Nicole Hanlin,Deborah Kay	04/08/2014 11:03 AM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

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Phone (614) 292-4149
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May 16, 2013

TO: Arts and Sciences Curriculum Committee

FROM: Sam D. Stout

RE: GE Status for Anthropology 3211

To Whom It May Concern:

The Department of Anthropology requests that "Introduction to Forensic Sciences" (3211) serve as a General Elective (GE), Biological Science course within the Natural Sciences category. Based upon our understanding of the expected learning outcomes for such courses, we believe that Introduction to Forensic Sciences is especially appropriate for inclusion as a GE elective in the Biological Sciences category. This course offers students a survey of forensic sciences, a field that includes a broad range of scientific disciplines as applied in the medico-legal system (See attached course syllabus). I might add that this course also highlights the interdisciplinary nature the biological sciences, and their interdependence with other sciences, including the Natural, Mathematical, and Physical sciences. I strongly support approval of Anthropology 3211 as a GE course.

Respectfully,

Sam D. Stout, Ph.D.
Professor
stout.126@osu.edu

ANTH 3211: *Introduction to Forensic Science*

Fall 2013. Call # 15518
Class: WF 9.35am – 10.55am Gateway Film Theater #3

Course Description: This team-taught interdisciplinary course will give students an introduction to the major concepts, issues and techniques used in forensic science. It is designed to expose students to different disciplines and career paths within forensic science.

Student Learning Outcomes: Students successfully completing this course will:

1. Comprehend the breadth and interdisciplinary nature of the field of forensic science.
2. Exhibit a basic knowledge of the methods and measures used in forensic science.
3. Identify the social factors that impact forensic science.
4. Categorize types of evidence and their importance to the law.
5. Apply concepts and methods to hypothetical case studies.

NB: We will add appropriate GE language once the course is granted GE status.

Course Faculty:

Coordinator: Jules R. Angel, PhD, Rm. 4046, Smith Labs.
Angel.29@osu.edu
Office hours 1.35pm – 3.05pm MW

Instructor: Sam Stout, PhD, Rm. 4052, Smith Labs.
Stout.1@osu.edu
Office hours by appt.

Textbook: Houck, M., and J. Siegel (2010) Fundamentals of Forensic Science 2nd edition. Elsevier Press, Amsterdam, New York, 672 pp. ISBN 13: 978-0-12-374989-5

Interdisciplinary Course: This course is a core course in the Forensic Science minor. Information regarding the minor and its requirements may be obtained from angel.29@osu.edu and advising in Denney Hall.

STUDENTS WITH DISABILITIES: ARE RESPONSIBLE FOR MAKING THEIR NEEDS KNOWN TO THE INSTRUCTOR AS SOON AS THE SEMESTER BEGINS, AND ARE RESPONSIBLE FOR SEEKING AVAILABLE ASSISTANCE FROM THE OFFICE OF DISABILITY SERVICES (292-3307), PRIOR TO OR AT THE BEGINNING OF THE QUARTER. THE OFFICE FOR DISABILITY SERVICES PROVIDES ASSISTANCE IN VERIFYING THE NEED FOR ACCOMMODATIONS & DEVELOPING ACCOMMODATION STRATEGIES.

Please note that if you have ANY issue that will impact you taking this class, including but not limited to anxiety, panic attacks, ADHD, depression etc., then you are encouraged to contact ODS for assessment and accommodations. Please do not wait until the end of the semester to decide you required help – be proactive in your educational needs.

Disability services are found at 150, Pomerene Hall, Neil Ave., 292–3307; TDD 292–0901; 24hr info 292–0870. Any student requesting accommodations MUST provide a letter from ODS detailing those accommodations BEFORE the first exam.

Cancellation Notices: http://anthropology.osu.edu/news/coursenews.php

In case of unexpected instructor absences, the information will be posted on the above departmental website. This site should be consulted in the event of inclement weather to check for possible class cancellations or delays. As a rule of thumb, class is cancelled only if OSU cancels class. Thus if OSU has closed (or the building is otherwise closed for a safety reason) class will be cancelled. Do not call the Department of Anthropology. Rather, check the Anthropology website (http://anthropology.osu.edu/).

Attendance: ***Attendance is mandatory*****.** This class, as an essential core course, will set students up for the rest of the minor. Consider the class as you would a job – you will earn your grade (as you would a paycheck). If you have unexcused absences then your 'paycheck' will suffer as a result. Getting and handing in the unannounced graded activities will partly serve as your attendance, thus absences and tardiness will be detrimental to your final grade. If you miss a class, you are responsible for the material covered. If you want an absence erased due to 'life happening' you must provide some kind of documentation (e.g. funeral home note, flight itinerary, letter from work, car tow receipt, email from another professor, doctor's note etc.) The instructor authenticates those excuses. Please ensure the excuse covers the days of absence! The instructor will only accept excuse documents within 14 days after the actual absence in question; The instructor will NOT accept multiple excuse documents bundled at the end of the semester.

Please be prompt in class, not only to minimize interruptions but as tardiness counts toward attendance too. The instructor take attendance sign-in, and will use those records for grading purposes. That is, if you are within 1% of the next fractional grade, then the instructor will consider advancing a student who had regular attendance to that higher grade. You must make sure you sign in every class – on most days that is the **only** record of your attendance. **It is up to you to check the sign in sheet and query any absences you think are not accurate ASAP**.

Please note – you MUST be in class to hand in homework, get writing assignments and give in writing assignments unless you have prior written permission or a documented excuse. As attendance in mandatory in this class, attendance points drop precipitously with each unexcused absence. 0 – 1 unexcused absences = 50/50 pts; 2 unexcused absences = 40/50 pts; 3 unexcused absences = 25/50 pts; 4 or more unexcused absences = 0/50 (zero) points. Each tardy drops any attendance points by 2 pts.

Being physically present in class is not enough to earn you these points, you must be actively engaged in listening, taking notes, and being otherwise attentive. Web surfing, texting, or doing other work will not be tolerated unless it is part of a class activity.

Missed Lectures

If you miss a lecture, lecture notes may not be provided. Some presenters do not make their PPT's available at all, and others only provide edited versions – The instructor has no control on whether a visiting instructor makes their PPT's available or not, or how quickly they can provide it. You are urged to make a NOTES BUDDY in class.

Make-ups

If you have a documented excuse for missing an in-class activity day then you will be allowed to make-up that activity as long as it occurs before the graded item is returned to your classmates; if you do not have a documented excuse presented within the grading timeframe explained above then you will receive a zero. It is up to YOU to make the instructor aware of an excused absence ASAP. This is especially true if it is an absence that is known in advance – e.g. flight, work, Drs appt., etc. The instructor will only grade items once the excuse IN HAND. The instructor will not chase students for excuses in order to grade their work.

Make-up exams are at the discretion of the instructors and will be **entirely** essay in format. If you miss an exam you have **24 hours** to contact the instructors by email. Official documentation is required and exams must be taken within one week after the original exam date – The instructor will only grade assignments when they have the excuse in hand. Students who fail to make contact will receive a zero for the exam. Any documentation will be authenticated. No one is permitted to take the exam if they arrive late after the first person has left the exam room.

Grading

In accordance with university policy, grades cannot be discussed over the phone or through e-mail, nor may exam scores be posted. Your grades cannot be discussed with anyone other than you unless your *express written consent* is provided. Do not contact the Arts and Sciences office regarding grades. **Extra credit work cannot be used to make up a grade**. Final grades are based on a standardized distribution using the total number of points available for the course, and we use the OSU grading scheme except that A's start at 92%.

Your course grade will be determined as follows:

Exam 1	100 points
Exam 2	100 points
Final Exam – 2 sections	
1. examination on the material since the second midterm	100 points
2. application of ALL materials presented in the class to case studies	50 points
Take home quizzes (n=4)	100 points
Take home chapter questions (50 pts per section)	150 points
Attendance	50 points
Total	**650 points**

Exams

Exams will contain questions in a variety of formats, i.e., multiple choice, short answer, fill in the blank, short answer, applied etc.

Take Home items

Take home activities will be distributed in class and are to be completed and turned in *at the beginning* of the next scheduled class meeting or points will be deducted for it being late. Only hard copies will be accepted. For typed assignments use 12 pt Times New Roman font and place your name, "ANTH 3211," and the date in the *header*. FIVE points will be deducted for every *day* the assignment is late; this includes non-class days and weekends. Excuses such as "computer problems" or "printer malfunctions" are not acceptable.

Chapter Questions/homework

At the end of each chapter are up to 20 Test Your Knowledge study questions. For each chapter you will complete between 10-20 of those (details later) – they must be typed. These questions will help you read the chapter and study for the exams. We will collect some chapters for grading on exam day; the exact chapters required will be announced on exam day, so bring ALL your completed chapter questions in.

All take home work is to be completed by the individual student – whilst you may find it useful to work together sometimes, any work you hand in MUST BE YOURS AND YOURS ALONE. Should any irregularities be apparent, then a report will be made to COAM.

Late Assignments: All late assignments will receive a 10% reduction in the assignment grade for each calendar day it is late (this includes weekends & days when the class is not meeting).

Philosophy of Grading

Students *earn* their grades, so your final grade is your responsibility alone. The only legitimate reason to change a grade is if the instructor has made a mistake in grading. Any questions about grading must be submitted in writing within the first week following the questioned item. If necessary, details of a students' academic progress in the class will be discussed with the faculty coordinator.

The following are not legitimate reasons to request a grade change: 1) you need a higher grade or you will fail to graduate, lose a scholarship, be dismissed from OSU, or lose athletic eligibility, or 2) you are only one point shy of a higher grade. Each time that argument is accepted, many other students are also only one point shy. Remember, if you are 1 % shy and you have had only one or less unexcused absences instructor will bump you up 1%!!

Earning a grade in this class will mean attending lectures, participating in discussion, asking and answering questions, studying for exams and fulfilling assignments on time. The grade you earn thus depends on your abilities and dedication as a student. This class is a tool towards earning your graduation and to that end the instructor will give you the information to assemble a comprehensive

view of forensic science. If you have to graduate, get a specific job, keep a scholarship, keep athletic eligibility etc., then you are encouraged to be the best student you can be by working hard, scheduling plenty of time to study, making study buddies, and knowing exactly what your ongoing grade is.

Carmen Carmen is the Course Management System currently in use at OSU. You can access Carmen at http://carmen.osu.edu and use your OSU username. You will find your grades, some class notes, some power points, exam review sheets, and other important pieces of information. Not all instructors use power points, others use them but don't post them. You will need to attend class to get the course material. You are responsible for ALL the material in the class whether you are there or not and whether it is covered in the book or only in class.

ACADEMIC MISCONDUCT

All students should become familiar with the rules governing alleged academic and non-academic misconduct. All students should be familiar with what constitutes academic misconduct, especially as it pertains to plagiarism and test taking. The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." **Examples of academic misconduct include, but are not limited to, plagiarism, unauthorized collaboration, copying the work of another student, and possession of unauthorized materials during an exam. Ignorance of the code is not considered an excuse for academic misconduct.** Be aware that academic misconduct also includes inaccurate verbal excuses for absences and fabricated medical excuse forms. This instructor WILL pursue alleged cases of academic misconduct. The code of student behavior also covers non-academic misconduct in the form of sexual harassment, and threatening or coercive behavior against any person in the class.

Ignorance of the rules governing academic and non-academic misconduct or ignorance of what constitutes academic and non-academic misconduct is not an acceptable defense. If the instructor suspects that a student has committed academic misconduct, then they are obliged by the University Rules to report my suspicions to the Committee on Academic Misconduct. Sanctions for violating the University's Code of Student Conduct could include a failing grade in the course and suspension or dismissal from the University. Sources of information: Academic Misconduct Pages: http://oaa.osu.edu/coam/home.html Preserving Academic Integrity: http://oaa.osu.edu/coam/ten-suggestions.html

Plagiarism.

Students should also be aware of what constitutes plagiarism. This includes, but is not limited to, passing off somebody else's words, ideas, research papers, quotes or test answers as your own and without the proper acknowledgment. Anything that is not your own, original work MUST be referenced by source. Apart from in-class discussions, students in Anth. 3211 are expected to produce their own work on writing assignments, homework and tests, and any other material should be cited appropriately.

Week	Date	Lecture Topic[a]	Lecturer	Chapter
intro	W Aug 22	Course Administration, Introduction	ANGEL	1

intro	F Aug 24	Intro – chain of custody	ANGEL	1
1	W Aug 29	The nature of evidence, types, classification	PLESICH	3
1	F Aug 31	The courtroom, expert witness; Criminal Justice	PLESICH	23
2	W Sept 5	The Crime Scene	DIETZ	2
2	F Sept 7	Video	GAILLARD	article on Carmen
3	W Sept 12	Spectroscopic techniques	HARRIS	5
3	F Sept 14	Separation methods in forensic science	HARRIS	6
4	W Sept 19	EXAM 1		
4	F Sept 21	Serology	KENNEDY	10
5	W Sept 26	DNA analysis: DNA structure	ZIANNI	11
5	F Sept 28	DNA typing and PCR	ZIANNI	11
6	W Oct 3	Integration of DNA typing results	ZIANNI	11
6	F Oct 5	CODIS	SCHWADERER	11
7	W Oct 10	Pathology	TATE	7
7	F Oct 12	Entomology	SHETLAR	9
8	W Oct 17	Blood Stain patterns	OSUPD	10
8	F Oct 19	EXAM 2		
9	W Oct 24	Forensic Toxicology	WYMAN	13,14
9	F Oct 26	Pharmacology and case study	WYMAN	14
10	W Oct 31	Friction Ridge Examination	OSUPD	19
10	F Nov 2	Firearms/toolmarks	OSUPD	21
11	W Nov 7	Questioned documents	ANGEL	20
11	F Nov 9	Fire investigation	HAPP	18
12	W Nov 14	Forensic archaeology	ANGEL	no chp
12	F Nov 16	Forensic engineering	MORR	no chp
13	W Nov 21	NO CLASSES Thanksgiving		
13	F Nov 23	NO CLASSES Thanksgiving		
14	W Nov 28	Forensic Psych	KUKOR	article on Carmen
14	F Nov 30	Review	ANGEL	no chp
	DEC 7	**FINAL EXAM**	**8am – 9.45am**	

The FINAL is at a COMPLETELY DIFFERENT TIME TO CLASS!!!!!

[a] Some lectures may be changed if presenters become unavailable.

Request to add Natural Science—Biological Science to Anthropology 3211 to General Education Curriculum

Below are responses to four concerns conveyed in the email dated 9/24/2013 from Bernadette Vankeerbergen, Program Manager for ASC Curriculum and Assessment to the Department of Anthropology:

Issue 1: *The biological content of the course is not evident. Eight lectures are related to biology and everything else is not related to biological science. (One could make a case that the course covers as much physical science as biological science.)*

Anthropology response and clarification: Of the 25 lectures delivered during the course, 11 deal *directly* with biology (see * Table 2) and ten deal *indirectly* with biology (see # Table 2).

Issue 2: *Expected learning outcome #2 of GE Natural Science—Biological Science is not at all addressed, namely: "Students understand key events in the development of science and recognize that science is an evolving body of knowledge."*

Anthropology response and clarification: The introductory lectures cover the history of science and all the lectures cover the evolving nature of science. This is most evident in the five lectures on serology, DNA, and CODIS (Combined DNA Index System).

Issue 3: *Explain how all four expected learning outcomes for GE Natural Science—Biological Science are addressed in the lectures. Provide appropriate details from the lectures. The GE assessment plan submitted is not about the GE. It should very specifically target the four expected learning outcomes for GE Natural Science—Biological Science. Direct and/or indirect assessment measures should specifically link to those outcomes. See instructions in ASC Curriculum and Assessment Manual (pp. 42-43):*
https://asccas.osu.edu/sites/asccas.osu.edu/files/ASC_CurrAssess_Operations_Manual.pdf

Anthropology response and clarification:

(1) Students understand the basic facts, principles, theories and methods of modern science.

These subjects are covered in numerous lectures and incorporate the following: Locards Principle; history of forensic science; scientific method; types of forensic laboratories; class and individual identification; preservation , packaging and presentation of evidence for court; science versus law; Daubert Test for science; and how scientific experts testify.

(2) Students understand key events in the development of science and recognize that science is an evolving body of knowledge.

These are covered in considerable depth in seven lectures including – Introduction, Serology, DNA (3), CODIS, Pathology. These lectures trace how the fields of forensics in general and biology in particularly have evolved. We locate these discussions in the realm of the evolution from description to the process of science and discovery.

(3) Students describe the inter-dependence of scientific and technological developments.

Every lecture covers the integration of science and technology – how cutting-edge methods and techniques are used to solve crimes. For example, the CODIS lecture this year incorporates the first chimera DNA case they had encountered, and the methods they used to unravel the samples.

(4) Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Every lecture and every lecturer explains their field using case studies. <u>The entire class is based on using science and technology to address problems of the contemporary world.</u>

Issue 4: *Request for letter of support from the Center for Life Sciences Education.*

Anthropology Response: Anthropology requested a letter of concurrence from Dr. Caroline Breitenberger twice via email. There was no response.

Summary: In addition to the course coordinators, both of whom are forensic scientists (Stout, Angel), ANTH 3211 uses lecturers who are authorities in their fields of forensic science and who are fully engaged in the forensic community (Table 1). The majority of these experts (12/16 or 75%) are directly involved with forensic cases and court testimony on a regular basis and offer the students enrolled in the course a window onto science and the scientific method relating mostly to biology. Criminal investigations are interdisciplinary in nature. Forensic scientists use many different investigative approaches to solving crimes, but they all involve the scientific method. Forensic science laboratories deal with a great deal of biological evidence amongst other evidence types, but their analyses are very much biological in nature. This class, therefore, fulfills the real world needs of forensic disciplines and in doing so addresses the findings in the National Academy of Sciences report of 2009. We contend that the relevance of Anthropology 3211, Introduction to Forensic Sciences, to the biological sciences, and its appropriateness as a GE Natural Science course, is strongly evidenced in the content of its lectures, and the expertise and affiliations of its lecturers. Topics and affiliations of the lecturers are presented in Tables 1 and 2, and include Chemistry and Biochemistry, Biological Anthropology and Skeletal Biology, Pathology, Genetics, Entomology, Toxicology, and Biomechanics. Most significantly for the learning experience of students taking this course is its interdisciplinary content. As with essentially all sciences today, the natural and biological sciences are becoming increasingly

interdisciplinary. Using forensic science as a vehicle, this course effectively addresses and illustrates this fact. As a result of taking this course, students from a wide variety of majors are encouraged to appreciate and understand the importance of interdisciplinary perspectives in science in general and their academic disciplines in particular. We believe that the Introduction to Forensic Sciences course provides students in the Natural and Biological Sciences a unique and valuable educational experience, potentially laying the groundwork for future coursework and careers in science generally.

Table 1. Individual lecturers for ANTH 3211 and their affiliations

Name	**No. Lectures**	**Place of work**
Jules Angel, PhD	3	OSU Dept. Anthropology; OSU FACT (bone ID and recovery team), forensic archaeologist
Dave Plesich, JD	2	Sgt. with Hilliard PD; Attorney at Law
Cindy Gaillard, BA	1	Executive producer, WOSU
Joe Dietz	1	CSI, BCII
Clay Harris, PhD	2	OSU Dept. of Chemistry and Biochemistry
Jian Chen, MD, PhD	1	OSUWMC Division of Transfusion Medicine, Dept. of Pathology
Mike Zianni, MS	3	Manager OSU Plant-Microbe Genomics Facility
Abby Schwaderer, BS	1	DNA Laboratory Supervisor, BCII
Larry Tate, MD	1	Forensic Pathologist, Franklin County Coroners Office (ret)
Dave Shetlar, PhD	1	OSU, Dept. of Entomology, Landscape Entomology
Dave Rose, MS	3	Capt. In OSUPD; anthropology PhD student
John Wyman, PhD, DABT, DABFT	2	Chief Toxicologist Cuyahoga County Medical Examiner's Office
Sam Stout, PhD	1	OSU Dept. Anthropology; OSU FACT; forensic anthropologist
Mike Defrancisco	1	Columbus Fire Dept. Computer Voice Stress Analysis investigator
Doug Morr, MS, PE	1	Biomechanical engineer, SEA Ltd.
Teryy Kukor, PhD, ABPP	1	Director of Forensic Services at Netcare, forensic psychologist

ANTH 3211: Introduction to Forensic Science

Course Description: This team-taught interdisciplinary course will give students an introduction to the major concepts, issues and techniques used in forensic science. It is designed to expose students to different disciplines and career paths within forensic science. The content of this class directly addresses the goals of the GE Natural Science category.

Expected Learning Outcomes:

1. How do the course objectives address the GE category expected learning outcomes?

Student Learning Outcomes: Students successfully completing this course will:

1. Comprehend the breadth and interdisciplinary nature of the field of forensic science.
2. Exhibit a basic knowledge of the methods and measures used in forensic science.
3. Identify the social factors that impact forensic science.
4. Categorize types of evidence and their importance to the law.
5. Apply concepts and methods to hypothetical case studies.

2. How do the readings assigned address the GE category expected learning outcomes?

The required book in this class is Houck, M., and J. Siegel (2010) Fundamentals of Forensic Science, 2nd edition. Elsevier Press, Amsterdam, New York, 672 pp. ISBN 13: 978-0-12-374989-5. Of the 23 chapters, 17 are covered by the 17 subject areas (see section 3) in this class.

3. How do the topics address the GE category expected learning outcomes?

For each of the 17 subject areas (Table 1), between one and three experts in the field deliver a lecture to the class. They address the history, the latest techniques, and the application of the subject to forensic investigation, from crime scene to court room.

The class stresses the interdisciplinary nature of forensic investigation, showing how evidence can be analyzed by many different experts from many different backgrounds in order to give an integrated result for law enforcement to use.

Lecturers provide extensive examples, by way of case studies, to show how their subject area is an integral part of forensic investigation.

Table 2. Subjects covered in ANTH 3211.

Lecture Topic	Number of Lectures	Covered Subjects
Intro, chain of custody	2#	Scientific method, history, systematics, temporal and spatial management, packaging biological evidence, case studies
Evidence types, the courtroom	2	Systematics, legal system, state and federal law, case studies
The crime scene	1#	Systematics, temporal and spatial management, case studies, identifying and testing biological fluids
Video	1	Technical and practical aspects of video and photography applications, case studies
Spectroscopy and separation methods	2#	Use of biology, physics and chemistry to identify unknown substances, case studies
Serology, DNA	5*	The biology of blood, body fluids, and DNA, DNA profiling and individual matching, case studies
Forensic Pathology	1*	Autopsies, the biology of deciding cause and manner of death, case studies
Entomology	1*	Biology and taxonomy of insects, insect ID, insect succession, post mortem interval, case studies
Blood spatter analysis	1*	Trigonometric analysis of blood spots to ascertain number, direction and sequence of injuries resulting in bleeding, case studies
Forensic toxicology and pharmacology	2*	Postmortem biological signs of drug use, biology of drug use, chemical analyses and measurement of molecular structure for drug identification, case studies
Fingerprint analysis	1#	History, systematics, biology of fingerprints, physics and chemistry of fingerprint visualization, case studies
Firearms and tools marks	1#	The physics and chemistry of firearms and bullets, biology of firearm wounds, trigonometry of shooting scenes, case studies
Questioned documents	1	Physical and chemical aspects of document fraud, case studies
Fire investigation	1#	The physics and chemistry of fire, arson investigation, case studies; the biology of voice stress analyses
Forensic archaeology and anthropology	1*	Biological aspects of human remains identification, field recovery, postmortem interval assessment, creating a biological profile from skeletal remains (sex, age, ancestry, stature, trauma, pathology, taphonomy), case studies
Forensic engineering	1#	The biology and physics of trauma analysis, case studies
Forensic psychology	1#	Competency and insanity determination, case studies

* lectures dealing directly with biology; # lectures indirectly dealing with biology

4. How do the written assignments address the GE category expected learning outcomes?

Written assignments comprise four take home quizzes, take home study questions (80 – 100 per section, over three sections), and a CSI extra credit. The study questions at the end of each chapter help master the basics of each chapter while the quizzes are more synthetic.

1. Quiz 1 – Concept mapping of the chain of custody. Students show how the chain of custody concept involves many different people, places, things, tests, equipment etc. to give an integrated result that is admissible in court.
2. Quiz 2 – Testing DNA knowledge. Students show their overall knowledge of blood, DNA, DNA testing, profiling and matching in a hypothetical case based on the Innocence Project. They are instructed to write an explanation to a family member of a newly exonerated prisoner. They are to illustrate in technical and non-technical language how new testing on DNA from an old case has shown the innocence of the incarcerated person.
3. Quiz 3 – Testing toxicology knowledge. Students are given a hypothetical case involving a DUI stop. They have to calculate Blood Alcohol Content at the time of a stop from a blood sample taken some time later. They also have to explain how the Ohio *per se* DUI law relates to the case.
4. Quiz 4 – Fingerprint identification and classification. Students are given a number of fingerprint pictures. They have to identify the prints, label minutiae, and use the Henry System to classify some prints.

Finally, the last class period involves an extra credit assignment. The class watches a CSI episode and each student provides a written report on those elements of the program that incorrectly depict science based on the knowledge he/she has acquired.

5. How do the prerequisites provide an appropriate level of preparation for the proposed course? If there are no prerequisites, please indicate how this is consistent with the proposed level of the course.

There are no prerequisites for this class. ANTH 3211 is the core class that introduces students to the field of forensic science. As an intro class at the 3000 level, the class is deliberately pitched to the incoming forensic minor students and anyone curious about forensic science.

6. What type(s) of experiences will students have in the laboratory component of the course—if a lab is included?

There are no labs in this class.

Assessment Plan

The assessment for ANTH 3211 includes both direct and indirect measures. The direct measures involve embedded questions on exams, the synthetic quizzes, and the extra credit assignment. Indirect measures comprise student self-evaluations.

The measures of competency for the direct assessments are that the average grade for correct answers is between 74% and 78%. The measure for indirect assessments is that approximately 75% of the students report a positive view of the class components, and a positive impact on the students' concept of forensic science.

Embedded questions examples:

Multiple Choice

1. If a man with blood type B (BB) marries a woman who has type A (AO), what blood type(s) could their potential children have?
   a. A only
   b. B only
   c. AB only
   d. BOTH B and O
   e. BOTH B and AB

2. In serological examinations, _____ tests are _____, but not specific.
   a. Presumptive, confirmatory
   b. Presumptive, sensitive
   c. Confirmatory, sensitive
   d. Confirmatory, positive
   e. NONE of the above

3. During gel electrophoresis, a negative charge allows DNA fragments to be separated based on their:
   a. Size.
   b. Charge.
   c. Protein encoding regions.
   d. DNA fingerprints.
   e. Loci.

4. What protein is used to determine the sex of an individual?
   a. Amelogenin
   b. Lectin
   c. Actin
   d. Tubulin
   e. NONE of the above

5. As a forensic biologist, you have been given two DNA profiles to compare; one from a sample found at a crime scene and another collected from a suspect. Only 10 loci are identical, indicating a partial match. What can you conclude?
   a. The two samples are from the same person.
   b. The two samples are from two different people.
   c. The two samples are from two different people that share the same ancestry.
   d. The two samples are from two different people that are probably siblings.
   e. There is not enough information given to draw a conclusion.

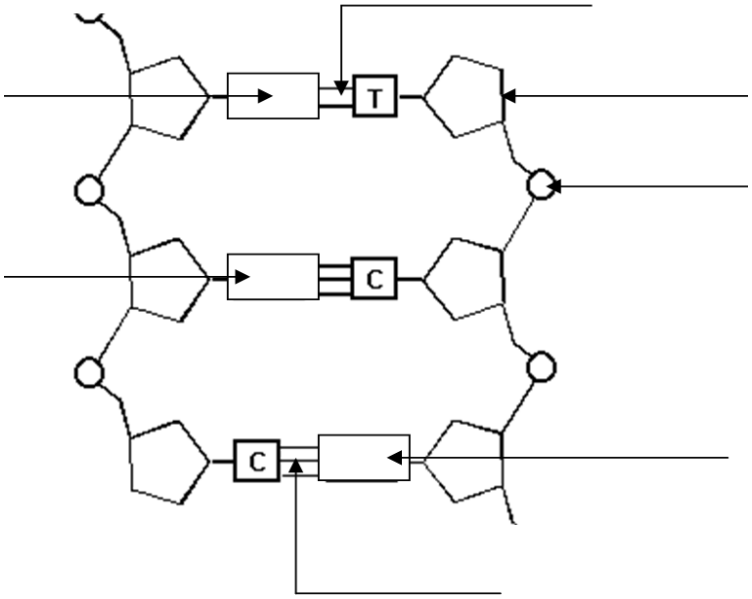
6. Time of death can be determined through several means, one being *rigor mortis* (Latin for 'the stiffness of death'). Another indication is *livor mortis* or lividity. What does this term refer to?
   a. Cloudiness in the eyes.
   b. Gravitational pooling of blood.
   c. Degree of digestion of stomach contents.
   d. Relaxation of muscles subsequent to *rigor mortis*.
   e. A, B, and C.

7. Postmortem redistribution is a source of complication in toxicological testing. What does *postmortem redistribution* refer to?
   a. High amounts of potassium collecting in the vitreous humor.
   b. Drug binding to melanin in the hair.
   c. Drugs being released from organs such as the liver, and increasing in concentration in the blood.
   d. Diacetyl morphine rapidly being metabolized to monoacetyl morphine.
   e. Drugs being redistributed into maggots and other animals that feed on dead bodies.

8. What is *biomechanics*?
   a. Principles of mechanics applied to a biological system.
   b. Biological responses of mechanical systems.
   c. Scientific evaluation of biopotentials.
   d. Conversion of human energy to mechanical impedance.
   e. ALL of the above.

Short Answer

1. Label all the parts on the schematic of a DNA molecule **AND** CIRCLE A *SINGLE* NUCLEOTIDE. Include the letter of complementary bases.



2. Two brothers get into a verbal argument which escalates to a physical altercation. Taking the fight outside, the brothers begin to bleed from their injuries. The older brother pulls out a gun and shoots his brother in the arm. Both flee the scene before you and the police arrive. You type the blood stains at the scene as type B (the majority of stains) and O. Explain why, and show how, the stains can belong to genetically related brothers.

3. In November a partially clad woman's body was found by passing motorists in a wooded area approximately 50 feet from a well-traveled highway in suburban Washington, DC. Her body was cold, rigor mortis was absent, and only minor external decompositional changes were evident. The victim had died of multiple stab wounds to the chest and neck. During the autopsy, several large maggots were observed migrating away from the corpse. Several additional maggots were removed from the neck wounds and clothing." Generally, how are maggots on dead bodies helpful in determining time of death?

Indirect measure sample questions:

1. What were your top **five** modules and why?

2. How has this course impacted you with regards to forensics (or not impacted you as the case may be)?

3. What was the most challenging exercise and why?

In addition to evaluations by the instructors, the anthropology advisor, Dr. Scott McGraw will review the results of the direct and indirect measures. Learning how students are impacted and challenged will enable the course to evolve as do both science and technology. Using practicing experts enables the class to keep up to date with the latest techniques and technology, as well as allowing students to network with those experts. All information gained from the direct and indirect measures will be archived in the office of Dr. Sam Stout (lead instructor).

From: Breitenberger, Caroline
Sent: Thursday, March 20, 2014 2:17 PM
To: Larsen, Clark
Subject: RE: Anthropology 3211, Introduction to Forensic Science, GE status (Natural Science - Biological Science)

Hi Clark:
Sorry this fell off my radar. (I did receive an earlier submission.)
I'll get you a response by Monday.

Caroline

From: Larsen, Clark
Sent: Wednesday, February 26, 2014 2:10 PM
To: Breitenberger, Caroline
Cc: Vankeerbergen, Bernadette; Haddad, Deborah; McGraw, Scott
Subject: Anthropology 3211, Introduction to Forensic Science, GE status (Natural Science - Biological Science)

Dear Caroline,

The Department of Anthropology submitted a request for Natural Science-Biological Science GE status for Anthropology 3211, Introduction to Forensic Science. Bernadette Vankeerbergen, Program Manager for ASC Curriculum Assessment, raised four concerns regarding the course and our GE status request. Attached please find two documents: (1) the responses to the concerns (pp. 1-3) and the body of the request and accompanying materials (pp. 4-10), and (2) the course syllabus. Dr. Vankeerbergen asked that we resubmit our GE request, addressing the concerns, along with a concurrence from you. Would you be willing to write a concurrence and email it to me so that we can resubmit our request?

By the way, this is actually the third time that I have submitted this to you. However, for the first two attempts, I either had an incorrect email address for you or it ended up somewhere else, which I just discovered this afternoon.

In advance, many thanks for your attention to this important curricular matter.

Best regards,

Clark

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